



By-Email

Ref.No.: MGM/P&E/ 226

Date: 27/05/2024

To,
The Additional Director,
Ministry of Environment and Forest & Climate Change,
Eastern Region Office,
A/3, Chandrasekharapur,
Bhubaneswar-751023

Subject: Submission of half-yearly compliance report on the stipulated environmental clearance terms and conditions in respect of Bamebari Iron and Manganese Mine of M/s TATA Steel Ltd., for the period from October'2023 to March'2024.

Reference:

- 1) MoEFCC's Letter Ref No: J-11015/85/2003-IA. II(M) dated 17th November 2005.
- 2) MoEFCC's notification vide S.O-5845 (E), dated 28th November 2018.

Respected Sir,

We are herewith submitting the six-monthly compliance report on the status of the implementation of the conditions stipulated in environmental clearance awarded to us vide MoEFCC's Letter Ref No: J-11015/85/2003-IA. II(M) dated 17th November 2005 in respect of Bamebari Iron and Manganese Mine of M/s TATA Steel Ltd. for the period from October'2023 to March'2024 for your kind perusal.

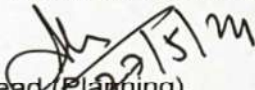
This is in reference to the above referred MoEFCC's notification, the six-monthly compliance report is being submitted only in soft copy mode, shared with your good office at e-mail @ roe.z.bsr-mef@nic.in.

We believe the above submission is in order.

Thanking You,

Yours Faithfully,

F: TATA STEEL LTD.


Head (Planning),
Bamebari Iron & Manganese Mines,
Ferro Alloys Mineral Division

Encl: As above.

Copy To:

- 1) Zonal Office Kolkata, Central Pollution Control Board, South end Conclave, Block 502, 5th and 6th Floors, 1582 Rajdanga Main Road, Kolkata, West Bengal 700107.
- 2) The Member Secretary, State Pollution Control Board, A/118, Nilakantha Nagar, Bhubaneswar, Odisha-751012.
- 3) The Regional Officer, State Pollution Control Board, Baniapat, DD College Road, Keonjhar, Odisha-758001.

TATA STEEL LIMITED

Ferro Alloys & Manganese Division, Manganese Group of Mines, At/P.O.: Bichhakundi, Via: Joda,

Dist: Keonjhar Odisha – 758 034 Tel.: 9238101370, email : mnminesadmin@tatasteel.com

Regd. Office : Bombay House, 24 Homi Modi Street, Mumbai – 400 001 Tel 912266658282, Fax 912266657724

Corporate Identity Number L27100MH1907PLC000260 Website www.tatasteel.com

Your (**Environment Clearance**) application has been **Submitted** with following details

Proposal No	IA/OR/MIN/11660/2005
Compliance ID	71233432
Compliance Number(For Tracking)	EC/M/COMPLIANCE/71233432/2024
Reporting Year	2024
Reporting Period	01 Jun(01 Oct - 31 Mar)
Submission Date	27-05-2024
IRO Name	ARTATRANA MISHRA
IRO Email	jhk109@ifs.nic.in
State	ODISHA
IRO Office Address	Integrated Regional Offices, Bhubaneswar

Note:- SMS and E-Mail has been sent to ARTATRANA MISHRA, ODISHA with Notification to Project Proponent.

**Half Yearly Compliance Report
2024
01 Jun(01 Oct - 31 Mar)**

Acknowledgment

Proposal Name		Bamebari Manganese Ore Mine of M/s Tata Steel, ML Area: 464 ha {Production Capacity: 0.832 LTPA}	
Name of Entity / Corporate Office		Tata Steel	
Village(s)		N/A	
District		KENDUJHAR	
Proposal No.	IA/OR/MIN/11660/2005	Category	Non-Coal Mining
Plot / Survey / Khasra No.	N/A	Sub-District	N/A
State	ODISHA	Entity's PAN	NA
MoEF File No.	No.J-11015/85/2004-IA.II(M)No.J-11015/85/2004-IA.II(M)	Entity name as per PAN	NA

Compliance Reporting Details

Reporting Year 2024

Remarks (if any) Six Monthly EC Compliance Report in respect of Bamebari Iron & Mn Mine Project Type: Mining (Open Cast)
Mineral: Manganese Ore (83200 Tonnes per annum)

Reporting Period 01 Jun(01 Oct - 31 Mar)

Details of Production and Project Area

Name of Entity / Corporate Office Tata Steel

	Project Area as per EC Granted	Annual Project Area in Possession
Private	0	15.503
Revenue Land	67.165	0.102
Forest	382.269	448.395
Others	14.566	0
Total	464	463.99999999999994

Production Capacity

Sr. no	Product Name	units	Valid Upto	Capacity	Production last year	Capacity as per CTO
1	Manganese Ore	Tons per Annum (TPA)	31/03/2025	83200	82885	83200

Conditions

Specific Conditions

Sr.No.	Condition Type	Condition Details
1	Statutory compliance	Mining shall not be undertaken in areas of forestland within the lease without the necessary approvals / forestry clearance.

PPs Submission: Complied

The present leasehold area of Bamebari Iron & Manganese Mine is 464.0 ha. Out of which, forest land and non-forest land prevails over 448.395 ha and 15.605 ha. respectively. Stage-II Forest clearance has been accorded vide letter no 8-72/2004-FC dt 25.01.2007 for 145.329 ha of forest land. FC for balance forest area of 303.066 ha (Sabik Forest & Balance HAL Forest) has been applied. Presently, Mining is carried out in restricted manner within the extent of stage-II diverted area of 145.329 ha, non-forestland of 15.605 ha and some portions of the broken-up forestland (broken up prior to 1980).

Date:
27/05/2024

2	GREENBELT	Topsoil should be stacked properly with proper slope at earmarked site(s) with adequate measures and should be used for reclamation and rehabilitation of mined out area.
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PPs Submission: Complied

No topsoil generated during the period October 2023 to March 2024 since mining has not advanced into any virgin land. Whenever topsoil is generated, it will be stacked in a designated place earmarked for the same. Topsoil recovered during mining operation earlier has been concurrently used for plantation over matured dumps and for roadside avenue plantation.

Date:
27/05/2024

3	WASTE MANAGEMENT	OB and other wastes should be stacked at earmarked sites only and should not be kept active for long periods of time. Plantation should be taken up for soil stabilization along the slopes of the dump and terraced after every 5-6 m of height and overall slope angle shall be maintained not exceeding 28°. Sedimentation pits shall be constructed at the corners of the garland drains. Retention/toe walls shall be provided at the base of the dumps.
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PPs Submission: Complied

Mining and all its associated operational activities are ensured in line with the provisions of approved mining plan. Dedicated sites have been earmarked for storing overburden (OB) and other waste and/or minerals/ mineral rejects. The status thereof is updated in the surface plan on quarterly basis. All matured dumps are stabilized by bio-reclamation with the plantation of Vetiver grass on the slopes and native varieties of forestry saplings. The dump is terraced at every 5-6 mtrs and overall slope is maintained well within 28°. Environmental Protection Measures ensured at site especially for the dump management aspects are as follows: 1. Network of Garland Drains and/or Toe Walls 2. Intermittent Sedimentation tanks/settling pits 3. Slope stabilization by means of coir matting and/or vetiver grass plantation 4. Final rehabilitation measures by means of native varieties of forestry saplings both on the slope and benches of the dump. Copy of latest surface plan is [enclosed herewith](#).

Date:
27/05/2024

4	WASTE MANAGEMENT	Minerals rejects shall be stacked separately at earmarked site/dump only.
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PPs Submission: Complied

The mineral rejects generated during manual processing of manganese ore (i.e. sorting, dressing and

Date:

sizing) has been stacked separately at earmarked site. The designated site for mineral storage is indicated in the surface plan which is updated on quarterly basis.		27/05/2024
5	WATER QUALITY MONITORING AND PRESERVATION	Catch drains and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from soil, OB and mineral dumps. The drains should be regularly desilted and maintained properly. Garland drains (size, gradient & length) and sump capacity should be designed keeping 50% safety margin over and above the peak sudden rainfall and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper settling of silt material. Storm water return system should be provided. Storm water should not be allowed to go to the effluent treatment plant during high rainfall/super cyclone period. A separate storm water sump for this purpose should be created.
PPs Submission: Complied Existing catch drains & garland drains have been constructed all along the periphery of dump at the toe, so that silt/sediments in the surface runoff can be arrested. Size, gradient and length of the drains and the ponds are adequately made with respect to the size of the same to take care of the peak flow during the rainy season. The garland drain, catch drains and sedimentation pits are periodically desilted and maintained properly every year before the onset of monsoon. The storm water which gets collected in the lower most areas of the leasehold, during rains, is connected to a series of drains which lead to mine pit to store the water and also recharge the ground water table.		Date: 27/05/2024
6	WATER QUALITY MONITORING AND PRESERVATION	Dimension of retaining wall at the toe of OB dumps and benches within the mine to check run-off and siltation should be based on the rainfall data.
PPs Submission: Complied While designing network of garland drains, checkdams, retention walls and rain passes for slope protection as well as arresting silt and sediment during monsoon season, following factors are considered such as Rainfall (peak scenarios), catchment area, gradient slope and retention hours.		Date: 27/05/2024
7	AIR QUALITY MONITORING AND PRESERVATION	Trace Metals such as Ni, Co, As and Hg should be analyzed in dust fall and soil samples for at least one year during summer, monsoon and winter seasons. If concentrations of these metals are found below the standards, then with prior approval of MOEF this specific monitoring could be discontinued.
PPs Submission: Complied Yearly monitoring of trace metals both in dust fall and soil samples for parameters like Ni, Co, As and Hg is being carried out. So far, no such trace mineral has been detected in the collected samples. An abstract of dust fall analysis carried out during year FY 24 is enclosed herewith .		Date: 27/05/2024
8	AIR QUALITY MONITORING AND PRESERVATION	Mineral and OB transportation shall be in trucks/dumpers covered with tarpaulins. Vehicular emissions should be kept under control and regularly monitored. Suitable measures should be taken to check fugitive emissions from haulage roads & transfer points, etc.
PPs Submission: Complied Mineral Transportation is ensured by tippers and all the trucks are covered with tarpaulins before issuance of transit permits for their onward transportation. All the despatch vehicles are mandatorily required to have "Pollution under Check (PuC)" certificate to enter the mine. To restrict the fugitive emissions form haul roads, the following measures have been taken up: -1. Fixed Sprinkling System for the Haul Roads 2. Mist Canons at sorting yards 3. Automatic Wheel wash facility at the exit point of the mines 4. Dust suppression by means of mobile water tanker (capacity 10KI) deployed for Haul Roads and other locations. 5. Fixed sprinkling arrangement at railway siding		Date: 27/05/2024
9	GREENBELT	A green belt of adequate width should be raised by planting the

		native species around ML area. Plantation should also be carried out along roads, OB dump sites etc. in consultation with the local DFO/Agriculture Department. The density of the trees should be not less than 2500 plants per ha.
PPs Submission: Complied Plantation activities are ensured in accordance with the provisions of Progressive Mine Closure Plan (PMCP). Tata Steel Limited has developed a site-specific biodiversity management plan for implementation of measures for protection and conservation of biodiversity in and around the mine. Accordingly, emphasis on the principles of restoration is ensured by following scientific plantation strategies with the help of mixed varieties of native (non-exotic) forestry saplings in the scheme of plantation. So far, around 57.971 hectares of area (including waste dump, safety zone, back filled area and avenue plantation zones) have been covered under plantation with 287220 nos of saplings (approx.). In the process of afforestation, the mine has ensured rehabilitation of around 35.129 hectares over OB dump and 1.5 ha of backfilled area where the saplings have attained self-sustaining stage. Glimpses of Dump management and associated afforestation measures undertaken at mine level is enclosed herewith .		Date: 27/05/2024
10	Statutory compliance	Groundwater shall not be used for mine operations. Prior approval of CGWA shall be obtained for using groundwater.
PPs Submission: Complied Ground water is not being used for any mining associated processes. There are no wet beneficiation plants within the lease. Majorly water is used for meeting domestic requirements of office areas, rest shelters areas for workers, supply to villagers in nearby villages nearby and Haul Road dust suppression purposes. Presently, mine draws around 146 KLD of ground water from 3-4 bore wells which is exclusively used for drinking & domestic consumption and is also supplied to local villagers for drinking purposes. As there is seepage evidenced for one of the quarries thus it's dewatering potential of 246KLD has been included in the purview of NOC granted by CGWA vide NOC no. CGWA/NOC/MIN/REN/2/2023/8486 which is valid till 22nd July 2024. Copy of the said NOC is enclosed herewith .		Date: 27/05/2024
11	MINING PLAN	Mining will not intersect groundwater. Prior permission of the MOEF and CGWA shall be taken to mine below water table.
PPs Submission: Complied As per the approved mining plan and status thereof, it is conclusive that ultimate pit depth of the mine at the end of mine plan period will not intersect the regional ground water table; however at Joribar bar pit, seepage was evidenced during FY23 mainly attributed to some localised aquifer which was identified during a detailed hydrogeological investigation carried out by engaging a CGWA empanelled agency and with the help of ground water modelling studies, it was estimated that peak seepage for Joribar would be around 482KLD. Based on the above said studies and deliberations at CGWA, NOC was granted to Bamebari mine for the Abstraction of 130 KLD (from bore wells) and 482 KLD from Mine pits (as seepage) vide NOC no. CGWA/NOC/MIN/REN/2/2023/8486 valid till 22nd July 2024.		Date: 27/05/2024
12	WATER QUALITY MONITORING AND PRESERVATION	Regular monitoring of ground water level and quality should be carried out by establishing a network of existing wells and constructing new piezometers. The monitoring should be done for quantity four times a year in pre-monsoon (April / May), monsoon (August). Post-monsoon (November) and winter (January) seasons and for quality in May. Data thus collected should be submitted to the Ministry of Environment & Forest & Central Ground Water Authority quarterly.
PPs Submission: Complied A network of open dug wells and bore wells have been identified for monitoring of GW levels and quality in and around the mine areas. A copy of the abstract of GW level recorded during the monitoring period is enclosed herewith		Date: 27/05/2024
13	WATER QUALITY	Trace metals such as Fe, Cr+6, Cu, Se, As, Cd, Hg, Pb, Zn and Mn

	MONITORING AND PRESERVATION	at specific locations for both surface water downstream and in ground water at lower elevations from mine area, shall be periodically monitored in consultation with the OSPCB and State Ground Water Board. Suitable treatment measures shall be undertaken in case levels are found to be higher than permissible limits.
PPs Submission: Complied Water Quality parameters are regularly tested for both surface water and ground water. Monitoring reports are submitted to SPCB from time to time. So far from the water quality analysis result of both surface and ground water attributes, no such adverse impacts have been observed when compared with applicable permissible limits/standards prescribed. An abstract of water quality assessment for Oct'23 to Mar'24 is enclosed herewith .		Date: 27/05/2024
14	Statutory compliance	"Consent to Operate" should be obtained from SPCB before expanding mining activities.
PPs Submission: Complied Consent to Operate for Production of Mn Ore for 180000 TPA and Operation of stationary Screening Plant of 1X70 TPH has been accorded by SPCB, Odisha vide letter No. 544/IND/I/CON/189 dated 07-01-2022 which is valid up to 31/03/2025. A copy of the valid CTO is enclosed herewith .		Date: 27/05/2024
15	Statutory compliance	A Conservation Plan for conservation of endangered fauna including the Indian Elephant found in and around the mine area shall be prepared and implemented in consultation with identified agencies/institutions and with the State Forest Department. The Plan should be dovetailed with that prepared / under implementation / proposed for the endangered fauna found in the Reserve Forest in the buffer zone of the project site. The costs for the specific activities/tasks should be earmarked in the Conservation Plan and shall not be diverted for any other purpose. Year wise status of the implementation of the Plan and the expenditure thereon should be reported to the Ministry of Environment & forests, RO, Bhubaneswar.
PPs Submission: Complied A site specific wildlife conservation plan has been approved by PCCF, Bhubaneswar, Odisha and Chief Wildlife Warden Odisha vide memo no. 7743 / 1 WL-SSP -01/2015 dated 01.09.2015. Following funds have been deposited by PP to State Forest Dept till date for – • Rs. 4,69,81,000/- for the implementation of various provisions of site-Specific wildlife conservation plan like avifauna monitoring, solar fencing and other • Rs 166.10 Lakhs for activities to be implemented by the user agency in the project impacted area A copy of the approval of site-specific wildlife conservation plan is enclosed herewith .		Date: 27/05/2024
16	MINING PLAN	A Final Mine Closure Plan along with details of Corpus Fund should be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval.
PPs Submission: Complied A Final Mine Closure Plan (FMCP) shall be prepared in accordance with the provisions laid down under the "GUIDELINES FOR PREPARATION OF FINAL MINE CLOSURE PLANS" as prescribed by Indian Bureau of Mines. As per the said guideline, FMCP is required to be prepared 2 years in advance from the date of closure/life of the mine. However presently during the approval of Mine Plan, a progressive mine closure plan (PMCP) is being submitted for approval. During the process of such approval, based on the "area put to use" for excavation and allied activities, we have deposited a sum of Rs. 11.59165 Cr to Indian Bureau of Mines (IBM) in the form of Bank Guarantees towards financial assurance for the implementation of measures of PMCP provisions. This approval was communicated to the Regional office , MoEF & CC, Bhubaneswar vide our letter no MGM/P&E/696/20 dated 01.10.2020.		Date: 27/05/2024

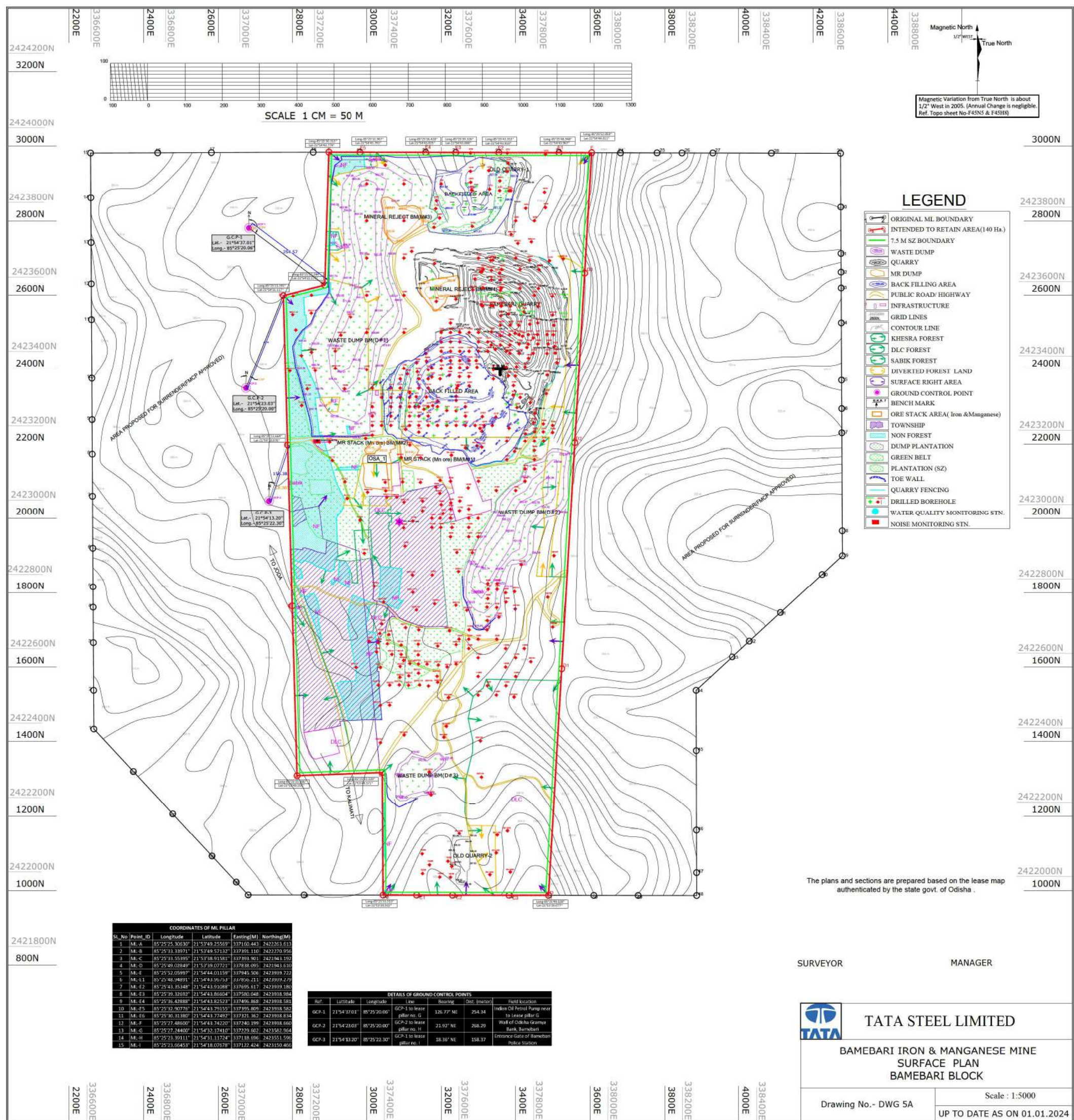
General Conditions

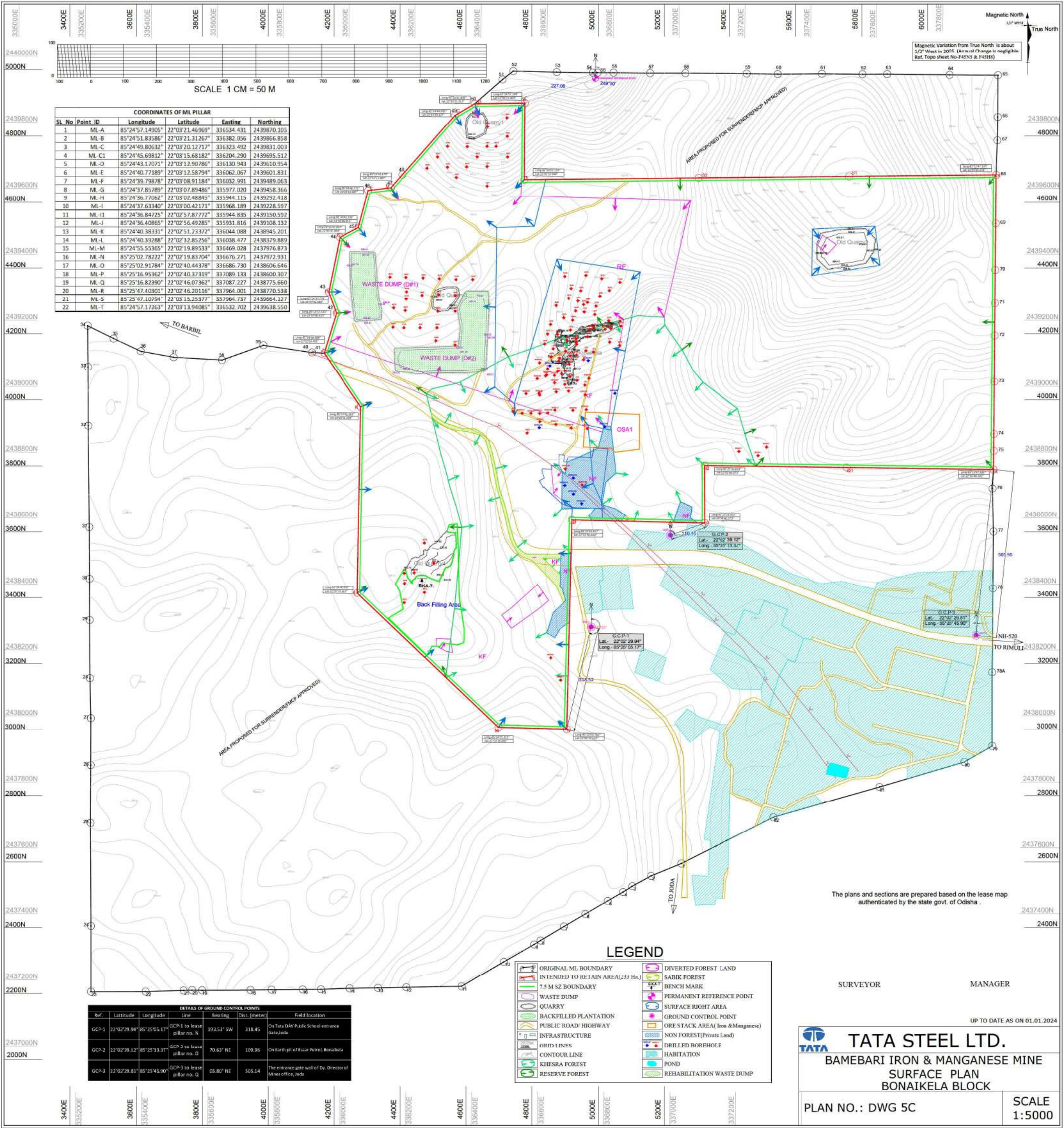
Sr.No.	Condition Type	Condition Details
1	MINING PLAN	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forests.
PPs Submission: Complied There is no change in the mining technology and scope of working of the mines. Mining is carried out as proposed by using shovel-dumper combination. Dry mobile screening is carried out with the help of a 1X75 TPH screen plant.		Date: 27/05/2024
2	Corporate Environmental Responsibility	The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry and its Regional Office located at Bhubaneshwar.
PPs Submission: Complied A dedicated cost Centre for maintaining all environmental expenditure is maintained in a separate GL account having a unique cost centre mapped in the SAP system. All sorts of environmental protection related expenditures are booked in the said cost centre for accounting purpose. The details of expenditure incurred during the last 3 financial years is as under: • FY-2021-22: Rs. 219.6 Lakhs • FY-2022-23: Rs. 218.33 Lakhs • FY-2023-24: Rs. 302.7 Lakhs		Date: 27/05/2024
3	MISCELLANEOUS	The Regional Office of this Ministry located at Bhubaneshwar shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data/information/monitoring reports.
PPs Submission: Complied The company has been extending full co-operation to the officers of the Regional Office and other statutory agencies by furnishing the requisite data / information / monitoring reports as and when required. The same shall be continued in future as well.		Date: 27/05/2024
4	PUBLIC HEARING	A copy of clearance letter will be marked to the concerned Panchayat/local NGO, if any, from whom suggestion/ representation has been received while processing the proposal.
PPs Submission: Complied The clearance letter has been uploaded on the website of the Company. Copy of the clearance letter marked to Sarpanch, Gram Panchayat, Palasa on 12.01.2006.		Date: 27/05/2024
5	Corporate Environmental Responsibility	The State Pollution Control Board should display a copy of the clearance letter at the Regional Office, District Industry Centre and Collector's Office/Tehsildar's Office for 30 days.
PPs Submission: Complied The EC documents was displayed in the office of Regional Office, District Industry Centre and Collector's Office/ Tehsildar's Office for 30 days.		Date: 27/05/2024
6	Statutory compliance	The project authorities should advertise at least in two local newspapers widely circulated around the project, one of which shall be in the vernacular of the locality concerned within seven days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and may also be seen at Web Site of the Ministry of Environment & Forests at

		http://envfor.nic.in. and a copy of the same should be forwarded to the Regional Office of this Ministry located at Bhubaneswar.
PPs Submission: Complied A copy of Environmental Clearance with regard to Joda West Manganese Mine was published in Oriya News Papers Anupam Bharat & Aam Khabar on 10.01.2006.		Date: 27/05/2024
7	MINING PLAN	No change in the calendar plan including excavation, quantum of manganese ore and waste should be made.
PPs Submission: Complied Production and excavation quantum is regulated by the Mine Plan approved by Indian bureau of Mines (IBM). No change in the calendar plan has been made. Total annual production achieved from the mine is well within the EC limit of 0.832 Lakh tonnes per annum.		Date: 27/05/2024
8	AIR QUALITY MONITORING AND PRESERVATION	Four ambient air quality-monitoring stations should be established in the core zone as well as in the buffer zone for RPM, SPM, SO ₂ , NO _x monitoring. Location of the stations should be decided based on the meteorological data, topographical features, and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board. Data on ambient air quality (RPM, SPM, SO ₂ & NO _x) should be regularly submitted to the Ministry including its Regional office at Bhubaneswar and the State Pollution Control Board/Central Pollution Control Board once in six. Months.
PPs Submission: Complied In consultation with Regional Office, State Pollution Control Board (Keonjhar Region), 04 nos of dedicated Ambient Air Quality monitoring station have been established and regular monitoring is being carried out twice a week. Photographs of fixed type platforms properly geotagged with the spatial coordinates have been shared with State Pollution Control Board and the same was accepted to SPCB during renewal of CTO. In addition to this, 12 nos of locations have also been identified in the buffer zone for regular monitoring. Abstract of Ambient Air Quality monitoring result for the period during October 2023 to March 2024 is enclosed herewith .		Date: 27/05/2024
9	AIR QUALITY MONITORING AND PRESERVATION	Drills should be wet operated or with dust extractors and controlled blasting should be practiced.
PPs Submission: Complied Wet drilling concept is already in place and practiced. Exploratory drills have been provided with inbuilt DE system. Controlled blasting technique with NONEL is in practice. Ground vibrations are being checked for every blasts done in the mine. Blasting parameters are assessed periodically by engaging agency like CIMFR, Dhanbad. Based on the recommendation of such assessments, the blasting rounds are designed and fired.		Date: 27/05/2024
10	AIR QUALITY MONITORING AND PRESERVATION	Fugitive dust emissions from all the sources should be controlled regularly monitored and data recorded properly. Water spraying arrangements on haul roads, wagon loading, dumpers/ trucks, loading & unloading points should be provided and properly maintained.
PPs Submission: Complied Following measures are ensured for containment of fugitive dust emission: 1. Mobile water tanker (cap-10Kl) for Haul Roads, Dump yards and other locations) 2. Mist Canons (30 LPH) for sorting yards and screening plants 3. Fixed Sprinkling system for static haul roads 4. Automatic Wheel wash facility at Railway Siding and exit point of the mines. Photographs of the fugitive dust pollution control measures deployed at the mine are enclosed herewith .		Date: 27/05/2024
11	Noise Monitoring & Prevention	Adequate measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in blasting and drilling operations, operations of HEMM should be provided

		with ear plugs/ muffs.
<p>PPs Submission: Complied</p> <p>Ear plugs & Earmuffs are provided to the workers working in mining operation & DG operations and other high noise generating equipment's. Provision of acoustic enclosures are invariably ensured before the installation of such noise generating instruments. Following monitoring measures are ensured for the regulation of noise pollution associated impacts: 1. Monitoring of Noise level (both ambient noise survey) and workplace noise survey is carried out on monthly basis using an integrated sound level meter. 2. Occupational Noise Exposure assessment is also carried out for the persons engaged in high noise generating areas on quarterly basis by sampling individual workers over eight-hour durations. Noise level monitoring data for the period during October 2023 to March 2024 is enclosed herewith.</p>		Date: 27/05/2024
12	WATER QUALITY MONITORING AND PRESERVATION	Industrial wastewater (workshop and wastewater from the mine) should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May, 1993 and 31st December 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.
<p>PPs Submission: Complied</p> <p>For effective management of effluent following mitigative measures are ensured at the mine level: 1. Effluents from Workshop/Garage: Vehicle washing system and associated operational activities are provided with separate catchment drains and finally the effluents are collected in Oil-Water Separation system having skimming arrangements for oil and grease 2. Wastewater/runoff collected from the mine pits: Since there is no wet process thus no wastewater is generated at any stage from any process. 3. Surface runoff is channelized and accumulated in the mine pit. After adequate retention period, the same is pumped to water treatment plant for final treatment before domestic consumption. Periodically water samples from mine pits and oil-water separation system are collected and analysed by an NABL accredited agency for checking compliance w.r.t applicable standards.</p>		Date: 27/05/2024
13	MISCELLANEOUS	Environmental laboratory should be established with adequate number and type of pollution monitoring and analysis equipment in consultation with the State Pollution Control Board.
<p>PPs Submission: Complied</p> <p>Environmental Monitoring services are carried out by engaging an NABL Accredited agency having it's laboratory recognized by Ministry of Environment, Forest & Climate Change. Though no captive laboratory has been established at site but the entire services is outsourced to the third party who have an environmental laboratory within 20 Kms from the mine.</p>		Date: 27/05/2024
14	Human Health Environment	Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.
<p>PPs Submission: Complied</p> <p>Personnel Protective Equipment's (PPEs) are being mandatorily used by all the workers as per applicability. It is regularly ensured at the entry points. Safe Operating Procedure based training is imparted to all the workers apart from the initial VT training. Periodical Medical Examination of employees (departmental & contractual) are conducted as per prescribed norms of Mines Rule, 1955. Besides, Occupational health surveillance assessment as mentioned below are also carried out: 1. Personal Dust Sampling & Free Silica exposure assessment by a DGMS approved agency. 2. Hand-Arm Vibration & Whole Body Vibration Exposure Assessment report by a DGMS approved laboratory 3. Mn Poisoning test (periodic) by a medical laboratory. Copy of the Manganese Testing report carried out in July 2023 and the Vibration Exposure Assessment are enclosed herewith.</p>		Date: 27/05/2024
15	Corporate Environmental Responsibility	A separate environmental management cell with suitable qualified personnel should be set up under the control of a Senior Executive,

		who will report directly to the Head of the Organization.
<p>PPs Submission: Complied</p> <p>The company has made a robust arrangement for reviewing and monitoring the implementation of Environment management plan. A Centralized Environmental Management Department has been set up headed by the Chief (Environment) and supporting staff. The operation and legal sections at mine level include Head (Mine & Production Planning), Head (Environment), Senior Manager - Mine Planning, Area Manager (RM Environment), Environment Engineer, Chemists, etc.</p>		<p>Date: 27/05/2024</p>
<p>Visit Remarks</p>		
<p>Last Site Visit Report Date:</p>		<p>N/A</p>
<p>Additional Remarks:</p>		





DUST FALL ANALYSIS RESULT ABSTRACT-BAMEBARI IRON & MN MINE of M/s TATA STEEL LIMITED

DUST FALL ANALYSIS (SUMMER SEASON-MAY'23 to JUNE'23)								
Location	Dust Fall Rate for Particles (gm/m2/month)			Heavy Metal Concentration (mg/Kg) or PPM				
	Insoluble	Soluble	Total Dust	Lead	Ni	Co	Hg	As
Nr. Project Office (Bamebari)	0.22	0.34	0.56	<0.005	0.21	0.05	BDL	0.008
Nr. Sorting Yard (Joribar)	0.23	0.29	0.52	<0.005	0.26	0.08	BDL	0.006
Nr. Dumping Yard (Bamebari block)	1.34	0.49	1.83	<0.005	0.12	0.14	BDL	0.018
Bamebari Village (Nr. High School)	0.48	0.25	0.73	<0.005	BDL	0.05	BDL	0.020
Palasa-Ka Village	0.71	0.26	0.97	<0.005	BDL	0.04	BDL	0.018
Jadibahal Village (Playground)	0.42	0.27	0.69	<0.005	BDL	0.04	BDL	0.018
DUST FALL ANALYSIS (WINTER SEASON-JANUARY'23 to FEBRUARY'23)								
Location	Dust Fall Rate for Particles (gm/m2/month)			Heavy Metal Concentration (mg/Kg) or PPM				
	Insoluble	Soluble	Total Dust	Lead	Ni	Co	Hg	As
Nr. Project Office (Bamebari)	0.34	0.23	0.57	<0.005	0.14	0.31	BDL	0.005
Nr. Sorting Yard (Joribar)	0.36	0.28	0.64	<0.005	0.16	0.24	BDL	BDL
Nr. Dumping Yard (Bamebari block)	0.58	0.29	0.87	<0.005	0.19	0.25	BDL	BDL
Bamebari Village (Nr. High School)	0.49	0.36	0.85	<0.005	0.34	0.08	BDL	0.022
Palasa-Ka Village	0.71	0.39	1.1	<0.005	BDL	BDL	BDL	BDL
Jadibahal Village (Playground)	1.23	0.43	1.66	<0.005	BDL	BDL	BDL	BDL
DUST FALL ANALYSIS (POST MONSOON -OCTOBER'23 to NOVEMBER'23)								
Location	Dust Fall Rate for Particles (gm/m2/month)			Heavy Metal Concentration (mg/Kg) or PPM				
	Insoluble	Soluble	Total Dust	Lead	Ni	Co	Hg	As
Nr. Project Office (Bamebari)	0.43	0.26	0.69	BDL	0.26	0.32	BDL	BDL
Nr. Sorting Yard (Joribar)	1.04	0.32	1.36	0.32	0.16	0.22	BDL	0.022
Nr. Dumping Yard (Bamebari block)	1.02	0.26	1.28	BDL	0.15	0.18	BDL	BDL
Bamebari Village (Nr. High School)	0.68	0.31	0.99	0.22	0.24	0.08	BDL	0.024
Palasa-Ka Village	0.52	0.35	0.87	0.14	BDL	BDL	BDL	BDL
Jadibahal Village (Playground)	0.38	0.29	0.67	0.08	BDL	BDL	BDL	BDL

DUMP MANAGEMENT PRACTICES AT BAMEBARI IRON & MANGANESE MINE OF M/s TATA STEEL LIMITED

Fig.1 Check Dam in Series



Fig.2 Garland Drain with Toe Wall



Fig.3 & 4 Rain Passes for slope protection



Fig.5 Coir Matting of Dump Slopes for stabilization



**Fig.6 Vetiver Plantation on
Dump slope**



भारत सरकार
जल शक्ति मंत्रालय
जल संसाधन, नदी विकास
और गंगा संरक्षण विभाग
केन्द्रीय भूमि जल प्राधिकरण
Government of India
Ministry of Jal Shakti
Department of Water Resources,
River Development & Ganga Rejuvenation
Central Ground Water Authority

(भूजल निकासी हेतु अनापत्ति प्रमाण पत्र)

NO OBJECTION CERTIFICATE (NOC) FOR GROUND WATER ABSTRACTION

Project Name:	Bamebari Iron And Manganese Mine		
Project Address:	Bamebari Iron And Manganese Mine, Tata Steel Ltd., At./po : Bamebari,, Tahsil / Taluk: Barbil / Champua Pin-758034		
Village:	Palasa	Block:	Champua
District:	Kendujhar	State:	Odisha
Pin Code:			
Communication Address:	Bamebari Iron And Manganese Mine Of M/s Tata Steel Limited, Administrative Office At/po- Bichhakundi, P.s-joda, 758034 (keonjhar, Odisha), Ferro Alloys Mineral Division (joda), Keonjhar, Odisha, Joda, Kendujhar, Odisha - 758034		
Address of CGWB Regional Office :	Central Ground Water Board South Eastern Region, Bhujal Bhawan, Khandagiri Square, Nh-5, Bhubaneshwar, Khordha, Odisha - 750001		

1.	NOC No.:		CGWA/NOC/MIN/REN/2/2023/8486				2.	Date of Issuance		02/11/2023					
3.	Application No.:		21-4/1194/OR/MIN/2017				4.	Category: (GWRE 2022)		Safe					
5.	Project Status:		Existing With Additional Ground Water Requirement				6.	NOC Type:		Renewal					
7.	Valid from:		23/07/2022				8.	Valid up to:		22/07/2024					
9.	Ground Water Abstraction Permitted:														
Fresh Water			Saline Water				Dewatering				Total				
m³/day		m³/year		m³/day		m³/year		m³/day		m³/year		m³/day		m³/year	
130.00		47450.00						482.00		175930.00					
10.	Details of ground water abstraction /Dewatering structures														
Total Existing No.: 4							Total Proposed No.: 0								
		DW	DCB	BW	TW	MP	MPu	DW	DCB	BW	TW	MP	MPu		
Abstraction Structure*		0	0	3	0	0	0	0	0	0	0	0	0		
Dewatering Structure*		0	0	0	0	1	0	0	0	0	0	0	0		
*DW- Dug Well; DCB-Dug-cum-Bore Well; BW-Bore Well; TW-Tube Well; MP-Mine Pit;MPu-Mine Pumps															
11.	Ground Water Abstraction/Restoration Charges paid (Rs.):							1098523.00							
12.	Environment Compensation (if applicable) paid (Rs.):							0.00							
13.	Number of Piezometers(Observation wells) to be constructed/ monitored & Monitoring mechanism.					No. of Piezometers			Monitoring Mechanism						
								Manual	DWLR**	DWLR With Telemetry					
**DWLR - Digital Water Level Recorder					2			0	1	1					

18/11, जामनगर हाउस, मानसिंह रोड, नई दिल्ली - 110011 / 18/11, Jamnagar House, Mansingh Road, New Delhi-110011

Phone: (011) 23383561 Fax: 23382051, 23386743

Website: cgwa-noc.gov.in

पानी बचाये - जीवन बचाये
SAVE WATER - SAVE LIFE

(Compliance Conditions given overleaf)

This is an auto generated document & need not to be signed.

CENTRAL GROUND WATER AUTHORITY

18/11, जामनगर हाउस, मानसिंह रोड, नई दिल्ली - 110011 / 18/11, Jamnagar House, Mansingh Road, New Delhi-110011

Phone: (011) 23383561 Fax: 23382051, 23386743

Website: cgwa-noc.gov.in

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Validity of this NOC shall be subject to compliance of the following conditions:

Mandatory conditions:

- 1) Installation of tamper proof digital water flow meter with telemetry on all the abstraction structure(s) shall be mandatory for all users seeking No Objection Certificate and intimation regarding their installation shall be communicated to the CGWA within 30 days of grant of No Objection Certificate.
- 2) Proponents shall mandatorily get water flow meter calibrated from an authorized agency once in a year.
- 3) Construction of purpose-built observation wells (piezometers) for ground water level monitoring shall be mandatory as per Section 14 of Guidelines. Water level data shall be made available to CGWA through web portal. Detailed guidelines for construction of piezometers are given in Annexure-II of the guidelines.
- 4) Proponents shall monitor quality of ground water from the abstraction structure(s) once in a year. Water samples from bore wells/ tube wells / dug wells shall be collected during April/May every year and analysed in NABL accredited laboratories for basic parameters (cations and anions), heavy metals, pesticides/ organic compounds etc. Water quality data shall be made available to CGWA through the web portal.
- 5) In case of mining projects, additional key wells shall be established in consultation with the Regional Director, CGWB for ground water level monitoring four (4) times a year (January, May, August and November) in core as well as buffer zones of the mine.
- 6) In case of mining project the firm shall submit water quality report of mine discharge/ seepage from Govt. approved/ NABL accredited lab.
- 7) The firm shall report compliance of the NOC conditions online in the website (www.cgwa-noc.gov.in) within one year from the date of issue of this NOC.
- 8) Industries abstracting ground water in excess of 100 m³/d shall undertake annual water audit through certified auditors and submit audit reports within three months of completion of the same to CGWA. All such industries shall be required to reduce their ground water use by at least 20% over the next three years through appropriate means.
- 9) Application for renewal can be submitted online from 90 days before the expiry of NOC. Ground water withdrawal, if any, after expiry of NOC shall be illegal & liable for legal action as per provisions of Environment (Protection) Act, 1986.
- 10) This NOC is subject to prevailing Central/State Government rules/laws/norms or Court orders related to construction of tube well/ground water abstraction structure / recharge or conservation structure/discharge of effluents or any such matter as applicable.

General conditions:

- 11) No additional ground water abstraction and/or de-watering structures shall be constructed for this purpose without prior approval of the Central Ground Water Authority (CGWA).
- 12) The proponent shall seek prior permission from CGWA for any increase in quantum of groundwater abstraction (more than that permitted in NOC for specific period).
- 13) Proponents shall install roof top rain water harvesting in the premise as per the existing building bye laws in the premise.
- 14) The project proponent shall take all necessary measures to prevent contamination of ground water in the premises failing which the firm shall be responsible for any consequences arising thereupon.
- 15) In case of industries that are likely to contaminate the ground water, no recharge measures shall be taken up by the firm inside the plant premises. The runoff generated from the rooftop shall be stored and put to beneficial use by the firm.
- 16) Wherever feasible, requirement of water for greenbelt (horticulture) shall be met from recycled / treated waste water.
- 17) Wherever the NOC is for abstraction of saline water and the existing wells (s) is /are yielding fresh water, the same shall be sealed and new tubewell(s) tapping saline water zone shall be constructed within 3 months of the issuance of NOC. The firm shall also ensure safe disposal of saline residue, if any.
- 18) Unexpected variations in inflow of ground water into the mine pit, if any, shall be reported to the concerned Regional Director, Central Ground Water Board.
- 19) In case of violation of any NOC conditions, the applicant shall be liable to pay the penalties as per Section 16 of Guidelines.
- 20) This NOC does not absolve the proponents of their obligation / requirement to obtain other statutory and administrative clearances from appropriate authorities.
- 21) The issue of this NOC does not imply that other statutory / administrative clearances shall be granted to the project by the concerned authorities. Such authorities would consider the project on merits and take decisions independently of the NOC.
- 22) In case of change of ownership, new owner of the industry will have to apply for incorporation of necessary changes in the No Objection Certificate with documentary proof within 60 days of taking over possession of the premises.
- 23) This NOC is being issued without any prejudice to the directions of the Hon'ble NGT/court orders in cases related to ground water or any other related matters.
- 24) Proponents, who have installed/constructed artificial recharge structures in compliance of the NOC granted to them previously and have availed rebate of upto 50% (fifty percent) in the ground water abstraction charges/ground water restoration charges, shall continue to regularly maintain artificial recharge structures.
- 25) Industries which are likely to cause ground water pollution e.g. Tanning, Slaughter Houses, Dye, Chemical/ Petrochemical, Coal washeries, pharmaceutical, other hazardous units etc. (as per CPCB list) need to undertake necessary well head protection measures to ensure prevention of ground water pollution as per Annexure III of the guidelines.
- 26) In case of new infrastructure projects having ground water abstraction of more than 20 m³/day, the firm/entity shall ensure implementation of dual water supply system in the projects.
- 27) In case of infrastructure projects, paved/parking area must be covered with interlocking/perforated tiles or other suitable measures to ensure groundwater infiltration/harvesting.
- 28) In case of coal and other base metal mining projects, the project proponent shall use the advance dewatering technology (by construction of series of dewatering abstraction structures) to avoid contamination of surface water.
- 29) The NOC issued is conditional subject to the conditions mentioned in the Public notice dated 27.01.2021 failing which penalty/EC/cancellation of NOC shall be imposed as the case may be.
- 30) This NOC is issued subject to the clearance of Expert Appraisal Committee (EAC) (if applicable).
- 31) In the self-compliance report, the PP shall submit details of Drilling Agency/ Agencies, which has/ have constructed BW(s)/ TW(s) along with undertaking to the effect that all necessary measures have been taken as per directions of Hon'ble Supreme Court provided in Annexure-VII of guidelines dated 24.09.2020 in respect of abandoned/ failed BW(s)/ TW(s)/Piezometer(s), if any. The PP is advised to engage registered drilling agency/ agencies. In the event of any mishap/ unfortunate incident due to negligence in taking measures for prevention of accident due to falling in Bore Well, both PP and concerned drilling agency shall jointly be held responsible and penal action as per extant Government rules shall be taken.

(Non-compliance of the conditions mentioned above is likely to result in the cancellation of NOC and legal action against the proponent.)

CENTRAL GROUND WATER AUTHORITY

Department of Water Resources, River Development and Ganga Rejuvenation
Ministry of Jal Shakti, Govt. of India

18/11, जामनगर हाउस, मानसिंह रोड, नई दिल्ली - 110011 / 18/11, Jamnagar House, Mansingh Road, New Delhi-110011

Phone: (011) 23383561 Fax: 23382051, 23386743

Website: cgwa-noc.gov.in

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MIDC Butibori, Nagpur, Maharashtra, India - 441 122

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https://www.anaconlaboratories.com

Test Report

Sl. No.	Village Name	Date of Measurement	Details of location	Static Water Level from Measuring Point in Mtrs. (Level in mbmp)	Measuring Point i.e. MP distance above ground level in Mtrs. (magl)	Water level Below Ground Level in Mtrs. = mbmp - magl
1	Ganua Village	17/10/2023	Dugwell near road (Mr. Keshar Patra)	3.81	0.53	3.28
2	Guruda Village	17/10/2023	Dugwell near Club	4.26	0.65	3.61
3	Khondbond Village	17/10/2023	Dugwell in field (Mr. Mothua Munda)	3.64	0.70	2.94
4	OMC Colony	17/10/2023	Dugwell near road	3.27	0.50	2.77

M/s Khondbond Iron & Manganese Mine

(M/s TATA Steel Limited)

District - Kendujhar,

State - Odisha-758 034.

Ground Water Table Measurement

October-2023

Chemist:- *Sanj*

-----End of Report-----

Authorized Signatory

Sanj



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Test Report

M/s Khondbond Iron & Manganese Mine

(M/s TATA Steel Limited)

District - Kendujhar,

State - Odisha-758 034.

Ground Water Table Measurement

November-2023

Sl. No.	Village Name	Date of Measurement	Details of location	Static Water Level from Measuring Point in Mtrs. (Level in mbmp)	Measuring Point i.e. MP distance above Ground level in Mtrs. (magl)	Water level Below Ground Level in Mtrs. = mbmp - magl
1	Ganua Village	17/11/2023	Dugwell near road (Mr. Keshar Patra)	3.93	0.53	3.40
2	Guruda Village	17/11/2023	Dugwell near Club	4.53	0.65	3.88
3	Khondbond Village	17/11/2023	Dugwell in field (Mr. Mothua Munda)	3.78	0.70	3.08
4	OMC Colony	17/11/2023	Dugwell near road	3.61	0.50	3.11

Chemist:- *SNM*

-----End of Report-----

Authorized Signatory

Signature



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Test Report

M/s Khondbond Iron & Manganese Mine

(M/s TATA Steel Limited)

District - Kendujhar,

State - Odisha-758 034.

Ground Water Table Measurement

December-2023

Sl. No.	Village Name	Date of Measurement	Details of location	Static Water Level from Measuring Point in Mtrs. (Level in mbmp)	Measuring Point i.e. MP distance above ground level in Mtrs. (magl)	Water level Below Ground Level in Mtrs. = mbmp - magl
1	Gannua Village	15/12/2023	Dugwell near road (Mr. Keshar Patra)	4.16	0.53	3.63
2	Guruda Village	15/12/2023	Dugwell near Club	4.72	0.65	4.07
3	Khondbond Village	15/12/2023	Dugwell in field (Mr. Mothua Munda)	3.91	0.70	3.21
4	OMC Colony	15/12/2023	Dugwell near road	3.84	0.50	3.34

Chemist:-

SPM

-----End of Report-----

Authorized Signatory

Dr. Anil

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Test Report

M/s Khondbond Iron & Manganese Mine

(M/s TATA Steel Limited)

District - Kendujhar,

State - Odisha-758 034.

Ground Water Table Measurement

January-2024

Sl. No.	Village Name	Date of Measurement	Details of location	Static Water Level from Measuring Point in Mtrs. (Level in mbmp)	Measuring Point i.e. MP distance above ground level in Mtrs. (magl)	Water level Below Ground Level in Mtrs. = mbmp - magl
1	Ganua Village	20/01/2024	Dugwell near road (Mr. Keshar Patra)	4.57	0.53	4.04
2	Guruda Village	20/01/2024	Dugwell near Club	5.14	0.65	4.49
3	Khondbond Village	20/01/2024	Dugwell in field (Mr. Mothua Munda)	4.16	0.70	3.46
4	OMC Colony	20/01/2024	Dugwell near road	3.92	0.50	3.42

Chemist:-



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-----End of Report-----

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Sl. No.	Village Name	Date of Measurement	Details of location	Static Water Level from Measuring Point in Mtrs. (Level in mbmp)	Measuring Point i.e. MP distance above ground level in Mtrs. (magl)	Water level Below Ground Level in Mtrs. = mbmp - magl
1	Ganna Village	13/02/2024	Dugwell near road (Mr. Keshar Patra)	4.62	0.53	4.09
2	Guruda Village	13/02/2024	Dugwell near Club	5.47	0.65	4.82
3	Khondbond Village	13/02/2024	Dugwell in field (Mr. Mothua Munda)	4.26	0.70	3.56
4	OMC Colony	13/02/2024	Dugwell near road	4.19	0.50	3.69

M/s Khondbond Iron & Manganese Mine

(M/s TATA Steel Limited)

District - Kendujhar,

State - Odisha-758 034.

Ground Water Table Measurement

February-2024

Chemist:-

Signature

-----End of Report-----

Authorized Signatory

Signature



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Test Report

M/s Khondbond Iron & Manganese Mine
(M/s TATA Steel Limited)
District - Kendujhar,
State - Odisha-758 034.

Ground Water Table Measurement

March-2024

Sl. No.	Village Name	Date of Measurement	Details of location	Static Water Level from Measuring Point in Mtrs. (Level in mbmp)	Measuring Point i.e. MP distance above ground level in Mtrs. (magl)	Water level Below Ground Level in Mtrs. = mbmp - magl
1	Ganua Village	20/03/2024	Dugwell near road (Mr. Keshar Patra)	4.68	0.53	4.15
2	Guruda Village	20/03/2024	Dugwell near Club	5.51	0.65	4.86
3	Khondbond Village	20/03/2024	Dugwell in field (Mr. Mothua Munda)	4.37	0.70	3.67
4	OMC Colony	20/03/2024	Dugwell near road	4.26	0.50	3.76

Chemist:-

[Signature]

Authorized Signatory

[Signature]

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Test Report

M/s Joda East Iron Mine

(M/s TATA Steel Limited)

District - Kendujhar,

State - Odisha-758 034.

Ground Water Table Measurement

October-2023

Sl. No.	Village Name	Date of Measurement	Details of location	Static Water Level from Measuring Point in Mtrs. (Level in mbmp)	Measuring Point i.e. MP distance above ground level in Mtrs. (magl)	Water level Below Ground Level in Mtrs. = mbmp - magl
1	Khuntapani Basti	16/10/2023	Dugwell near School	4.16	0.80	3.36
2	Komar Joda Basti	16/10/2023	Dugwell near Road	4.97	0.80	4.17
3	Hudi Sahi Basti	16/10/2023	Dugwell (Mr. Jagbandhu Nayar)	5.16	0.80	4.36
4	Banaikala Basti	16/10/2023	Gov. Dugwell	3.52	0.70	2.82
5	Ramjan Hutting Basti	16/10/2023	Dugwell	4.27	0.50	3.77

Chemist:-

Sony

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Authorized Signatory

Seam





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Test Report

M/s Joda East Iron Mine
(M/s TATA Steel Limited)
District - Kendujhar,
State - Odisha-758 034.

Ground Water Table Measurement
November-2023

Sl. No.	Village Name	Date of Measurement	Details of location	Static Water Level from Measuring Point in Mtrs. (Level in mbmp)	Measuring Point i.e. MP distance above ground level in Mtrs. (magl)	Water level Below Ground Level in Mtrs. = mbmp - magl
1	Khuntapani Basti	16/11/2023	Dugwell near School	4.48	0.80	3.68
2	Komar Joda Basti	16/11/2023	Dugwell near Road	5.16	0.80	4.36
3	Hudi Sahi Basti	16/11/2023	Dugwell (Mr. Jagbandhu Nayar)	5.39	0.80	4.59
4	Banaikala Basti	16/11/2023	Gov. Dugwell	3.81	0.70	3.11
5	Ramjan Hutting Basti	16/11/2023	Dugwell	4.62	0.50	4.12

Chemist:-

S.D. Singh

-----End of Report-----

Authorized Signatory

Sanjay

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Test Report

M/s Joda East Iron Mine
 (M/s TATA Steel Limited)
 District - Kendujhar,
 State - Odisha-758 034.

Ground Water Table Measurement
December-2023

Sl. No.	Village Name	Date of Measurement	Details of location	Static Water Level from Measuring Point in Mtrs. (level in mbmp)	Measuring Point i.e. MP distance above ground level in Mtrs. (magl)	Water level Below Ground Level in Mtrs. = mbmp - magl
1	Khuntapani Basti.	14/12/2023	Dugwell near School	4.62	0.80	3.82
2	Komar Joda Basti	14/12/2023	Dugwell near Road	5.38	0.80	4.58
3	Hudi Sahi Basti	14/12/2023	Dugwell (Mr. Jagbandhu Nayar)	5.47	0.80	4.67
4	Banaikala Basti	14/12/2023	Gov. Dugwell	4.16	0.70	3.46
5	Ramjan Hutting Basti	14/12/2023	Dugwell	4.79	0.50	4.29

Chemist:- *Spnd*

-----End of Report-----

Authorized Signatory

Signature



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M/s Joda East Iron Mine
(M/s TATA Steel Limited)
District - Kendujhar,
State - Odisha-758 034.

Ground Water Table Measurement
January-2024

Sl. No.	Village Name	Date of Measurement	Details of location	Static Water Level from Measuring Point in Mtrs. (Level in mbmp)	Measuring Point i.e. MP distance above ground level in Mtrs. (magl)	Water level Below Ground Level in Mtrs. = mbmp - magl	Test Report
1	Khuntapani Basti	18/01/2024	Dugwell near School	4.73	0.80	3.93	
2	Komar Joda Basti	18/01/2024	Dugwell near Road	5.94	0.80	5.14	
3	Hudi Sahi Basti	18/01/2024	Dugwell (Mr. Jagbandhu Nayar)	5.81	0.80	5.01	
4	Banaikala Basti	18/01/2024	Gov. Dugwell	4.76	0.70	4.06	
5	Ramjan Hutting Basti	18/01/2024	Dugwell	4.92	0.50	4.42	

Signature

Authorized Signatory

-----End of Report-----

Chemist:-



Thank you for instilling your trust and faith in our services. We cherish our relationship with you, and we put in a lot of hard work in making sure that you get a seamless experience at every stage of your interaction with us. In our constant endeavor towards ensuring that your next experience will be significantly better than the current one, we welcome your feedback on feedback@anacon.in.



Anacon Laboratories

Anacon Laboratories Pvt. Ltd. Nagpur Lab

FP-34, 35, Food Park, Five Star Industrial Estate,

MIDC Butibori, Nagpur, Maharashtra, India - 441 122

+ 91 8045685558 Email : info@anacon.in

https://www.anaconlaboratories.com

Test Report

Sl. No.	Village Name	Date of Measurement	Details of location	Static Water Level from Measuring Point in Mtrs. (Level in mbmp)	Measuring Point i.e. MP distance above ground level in Mtrs. (magl)	Water level Below Ground Level in Mtrs. = mbmp - magl
1	Khuntapani Basti	12/02/2024	Dugwell near School	4.82	0.80	4.02
2	Komar Joda Basti	12/02/2024	Dugwell near Road	6.03	0.80	5.23
3	Hudi Sahi Basti	12/02/2024	Dugwell (Mr. Jagbandhu Nayar)	5.92	0.80	5.12
4	Banaikala Basti	12/02/2024	Gov. Dugwell	4.81	0.70	4.11
5	Ranjian Hutting Basti	12/02/2024	Dugwell	5.12	0.50	4.62

Ground Water Table Measurement

February-2024

M/s Joda East Iron Mine

(M/s TATA Steel Limited)

District - Kendujhar,

State - Odisha-758 034.

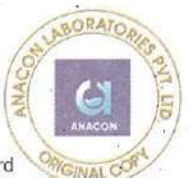
Chemist:-

[Signature]

Authorized Signatory

[Signature]

-----End of Report-----



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Test Report

M/s Joda East Iron Mine

(M/s TATA Steel Limited)

District - Kendujhar,

State - Odisha-758 034.

Ground Water Table Measurement

March-2024

Sl. No.	Village Name	Date of Measurement	Details of location	Static Water Level from Measuring Point in Mtrs. (Level in mbmp)	Measuring Point i.e. MP distance above ground level in Mtrs. (magl)	Water level Below Ground Level in Mtrs. = mbmp - magl
1	Khuntapani Basti	18/03/2024	Dugwell near School	4.92	0.80	4.12
2	Komar Joda Basti	18/03/2024	Dugwell near Road	6.13	0.80	5.33
3	Hudi Sahi Basti	18/03/2024	Dugwell (Mr. Jagbandhu Nayar)	6.04	0.80	5.24
4	Banaikala Basti	18/03/2024	Gov. Dugwell	4.87	0.70	4.17
5	Ramjan Hutting Basti	18/03/2024	Dugwell	5.26	0.50	4.76

Verified by

Snehal Raut
Deputy Technical Manager

Authorized Signatory

Dr. (Mrs.) S. D. Garway
Quality Manager

----End of Report----



WATER MONITORING REPORT

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000004746F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2023-24/211CA8

Date :

21/03/2024

Sample No. :

MSKNB/FD/2023-24/03/WYABCJ

Date of receipt of sample:

08/03/2024

Date(s) of performance:

08/03/2024 - 21/03/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Water & Residue in Water
2. Description of sample	Drinking Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	07/03/2024
5. Place of sampling	Joribar pit office (BIMM)
6. Environmental conditions during sampling & Transport	(2 -5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS:17614(P-5) 2022
8. Identification of the personnel performing sampling by MSK	Akash Kumar Shethy, Mukesh Haiburu

Report No. : MSKPL/FD/2023-24/211CA8

Sample No. : MSKNB/FD/2023-24/03/WYABCJ

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Acceptable Limit	Permissible Limit	Result
1	Cadmium as Cd	mg/l	IS 3025 (Part 2)	0.003	No Relaxation	BDL(DL:0.001)
2	Total Chromium as Cr	mg/l	IS 3025 (Part 2)	0.05	No relaxation	BDL(DL:0.01)
3	Silver as Ag	mg/l	IS 3025 (Part 2)	0.1	No Relaxation	BDL(DL:0.005)
4	Silica (as SiO ₂)	mg/l	IS 3025 (Part 35)	Not Specified	Not Specified	BDL(DL:0.1)
5	Selenium as Se	mg/l	IS 3025 (Part 2)	0.01	No relaxation	BDL(DL:0.005)
6	Mercury as Hg	mg/l	IS 3025 (Part 48)	0.001	No relaxation	BDL(DL:0.0002)
7	Zinc as Zn	mg/l	IS 3025 (Part 2)	5	15	BDL(DL:0.02)
8	Colour	Hazen	IS 3025 (Part 4)	5	15	BDL(DL:1.0)
9	Cyanide as CN	mg/l	IS 3025 (Part 27) Sec1	0.05	No relaxation	BDL(DL:0.02)
10	Fluoride as F	mg/l	IS 3025 (Part 60)	1.0	1.5	BDL(DL:0.2)
11	Nitrate as NO ₃	mg/l	APHA (24th EDITION) 4500-NO ₃ -B	45	No Relaxation	0.65
12	Nickel (as Ni)	mg/l	IS 3025 (Part 2)	0.02	No Relaxation	BDL(DL:0.01)
13	Arsenic as As	mg/l	IS 3025 (Part 2)	0.01	No Relaxation	BDL(DL:0.005)
14	Manganese as Mn	mg/l	IS 3025 (Part 2)	0.1	0.3	BDL(DL:0.02)
15	Lead as Pb	mg/l	IS 3025 (Part 2)	0.01	No relaxation	BDL(DL:0.005)
16	Copper as Cu	mg/l	IS 3025 (Part 2)	0.05	1.5	BDL(DL:0.02)

Reviewed By:

Signature

Name : Ms. Apurva Saha, Ms. Piali Ganguly

Designation : Sr. Exec. Chemist, Executive Chemist

Authorized Signatory:

Signature

Name

Dr. Soumyadeep Mukhopadhyay

Designation

Lab In charge

Head Office:

Shraichi Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel. : 91 33 40143000 / 22650007 Fax : 91 33 22650008
Email : info@mitrask.com Website : www.mitrask.com

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000004746F

Opinion : Acceptable limit & Permissible limit are as per IS:10500:2012

Statement of Conformity NA

— END —

Reviewed By:

Signature : *Mr. P. Ganguly*
Name : Mr. Arunee Saha, Ms. Piali Ganguly
Designation : Sr. Exe. Chemist, Executive Chemist

Authorized Signatory:

Signature : *Dr. Soumyadeep Mukhopadhyay*
Name : Dr. Soumyadeep Mukhopadhyay
Designation : Lab. in charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per GPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shree Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
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West Bengal
Tel. : +91 7044036120
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TC-6950



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ULR: TC-695024000004746F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2023-24/211CA8

Date :

21/03/2024

Sample No. :

MSKNB/FD/2023-24/03/WYABCJ

Date of receipt of sample:

08/03/2024

Date(s) of performance:

08/03/2024 - 09/03/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Biological

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Water & Residue in Water
2. Description of sample	Drinking Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	07/03/2024
5. Place of sampling	Joribar pit office (BIMM)
6. Environmental conditions during sampling & Transport	(2-5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS:17614(P-25) 2022
8. Identification of the personnel performing sampling by MSK	Akash Kumar Shethy, Mukesh Haiburu

Report No. : MSKPL/FD/2023-24/211CA8

Sample No. : MSKNB/FD/2023-24/03/WYABCJ

RESULT

Micro Biology

Sl No.	Parameter	UOM	Method	Acceptable Limit	Permissible Limit	Result
1	Total coliform	/100ml	IS 15185	Not Detectable	Not Applicable	Not Detected
2	E. coli	/100ml	IS 15185	Not Detectable	Not Applicable	Not Detected

Opinion : Acceptable limit & Permissible limit are as per IS:10500:2012

Statement of Conformity NA

----- END -----

Reviewed By:

Signature

Name : Mr. Maitreyee Chakraborty

Designation : Executive Microbiologist

Authorized Signatory:

Signature

Name : Ms. Maitreyee Chakraborty

Designation : Executive Microbiologist

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

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Email : info@mitrask.com Website : www.mitrask.com

Mitra S. K. Private Limited

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CIN: U51909WB1956PTC023037

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E : barbil@mitrask.co.in
W : www.mitrask.com



Report No. MSKGL/ED/2023-24/005495

Date: 25.03.2024

ANALYSIS REPORT OF DRINKING WATER

Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	BAMEBARI IRON & MANGANESE MINES (BIMM)
Date of sampling	07.03.2024
Location	Joribar Pit Office R O Water (BIMM)

CHEMICAL ANALYSIS OF WATER AS PER IS: 10500 - 2012

Sl. No.	Test Parameters	Unite	Method	Norms as per IS: 10500-2012		Results
				Desirable Limit	Permissible Limit	
1	Ammonical Nitrogen	mg/l	APHA (24th Edition), 4500-NH3-F	0.5	No Relaxation	<0.1
2	Calcium (as Ca)	mg/l	APHA (24th Edition), 3500 Ca B	75	200	26
3	Chloride (as Cl)	mg/l	APHA (24th Edition), 4500 -Cl B	250	1000	10
4	Odour	Hazen	3025 (Part-5)-1983; Rffm:2012	Agreeable	Agreeable	Agreeable
5	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	---	209
6	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	0.3	No Relaxation	<0.05
7	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	30	100	5.8
8	Phenolic Compound (as C6H5OH)	mg/l	APHA (24th Edition), 5530C (Chloroform Extraction)	0.001	0.002	<0.001
9	Potassium (as K)	mg/l	APHA (24th Edition), 3500 K B	---	---	<1.0
10	Salinity	PSU	APHA (24th Edition), 2520B	---	---	0.107
11	Sodium (as Na)	mg/l	APHA (24th Edition), 3500 Na B	---	---	5.2
12	Sulphate (as SO4)	mg/l	APHA (24th Edition) 4500 SO42-E	200	400	3.1
13	Taste	None	IS 3025 (Part 8)-1983 Rffm:2012_(O)	Agreeable	Agreeable	Agreeable
14	Total Alkalinity (as CaCO3)	mg/l	APHA (24th Edition), 2320B	200	600	92
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	500	2000	124
16	Total Hardness (as CaCO3)	mg/l	APHA (24th Edition), 2340 C	200	600	88
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	---	---	<2.5
18	Turbidity	N.T.U	APHA (24th Edition), 2130B	1	5	<1.0
19	pH value at 25 deg C	None	APHA 24th Edition, 2023, 4500, H+B	6.5-8.5	No Relaxation	7.38

Checked by:

For Mitra S. K. Private Limited

Authorized Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000004745F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2023-24/T11CAW

Date :

21/03/2024

Sample No. :

MSKNB/FD/2023-24/03/SCGBF1

Date of receipt of sample:

08/03/2024

Date(s) of performance:

08/03/2024 - 21/03/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Water & Residue in Water
2. Description of sample	Drinking Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	07/03/2024
5. Place of sampling	Joribar Shorting Yard (BIMM)
6. Environmental conditions during sampling & Transport	(2 -5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS:17614 (P-5) 2022
8. Identification of the personnel performing sampling by MSK	Akash Kumar Shethy, Mukesh Haiburu

Report No. : MSKPL/FD/2023-24/T11CAW

Sample No. : MSKNB/FD/2023-24/03/SCGBF1

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Acceptable Limit	Permissible Limit	Result
1	Cadmium as Cd	mg/l	IS 3025 (Part 2)	0.003	No Relaxation	BDL(DL:0.001)
2	Total Chromium as Cr	mg/l	IS 3025 (Part 2)	0.05	No relaxation	BDL(DL:0.01)
3	Silver as Ag	mg/l	IS 3025 (Part 2)	0.1	No Relaxation	BDL(DL:0.005)
4	Silica (as SiO ₂)	mg/l	IS 3025 (Part 35)	Not Specified	Not Specified	BDL(DL:0.1)
5	Selenium as Se	mg/l	IS 3025 (Part 2)	0.01	No relaxation	BDL(DL:0.005)
6	Mercury as Hg	mg/l	IS 3025 (Part 48)	0.001	No relaxation	BDL(DL:0.0002)
7	Zinc as Zn	mg/l	IS 3025 (Part 2)	5	15	BDL(DL:0.02)
8	Colour	Hazen	IS 3025 (Part 4)	5	15	BDL(DL:1.0)
9	Cyanide as CN	mg/l	IS 3025 (Part 27) Sec1	0.05	No relaxation	BDL(DL:0.02)
10	Fluoride as F	mg/l	IS 3025 (Part 60)	1.0	1.5	0.25
11	Nitrate as NO ₃	mg/l	APHA (24th EDITION) 4500-NO ₃ -B	45	No Relaxation	0.74
12	Nickel (as Ni)	mg/l	IS 3025 (Part 2)	0.02	No Relaxation	BDL(DL:0.01)
13	Arsenic as As	mg/l	IS 3025 (Part 2)	0.01	No Relaxation	BDL(DL:0.005)
14	Manganese as Mn	mg/l	IS 3025 (Part 2)	0.1	0.3	BDL(DL:0.02)
15	Lead as Pb	mg/l	IS 3025 (Part 2)	0.01	No relaxation	BDL(DL:0.005)
16	Copper as Cu	mg/l	IS 3025 (Part 2)	0.05	1.5	BDL(DL:0.02)

Reviewed By:

Signature : *Atanayee Saha*
Name : Ms. Atanayee Saha, Ms. Piali Gariguty
Designation : Sr. Exe. Chemist, Executive Chemist

Authorized Signatory:

Signature : *Dr. Sourya Mohan Mukhopadhyay*
Name : Dr. Sourya Mohan Mukhopadhyay
Designation : Lab in charge

Address of Laboratory :

Building No. P-48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000004745F

Opinion : Acceptable limit & Permissible limit are as per IS:10500:2012

Statement of Conformity NA

— END —

Reviewed By:

Signature: *Aravind Saha P. Ganguly*

Name: Ms. Aravind Saha, Ms. Pasi Ganguly

Designation: Sr. Exe. Chemist, Executive Chemist

Authorized Signatory:

Signature: *Dr. Soumyajit Mukhopadhyay*

Name: Dr. Soumyajit Mukhopadhyay

Designation: Lab in charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

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Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



Scan for Portal

ULR: TC-695024000004745F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2023-24/T11CAW

Date :

21/03/2024

Sample No. :

MSKNB/FD/2023-24/03/SCGBF1

Date of receipt of sample:

08/03/2024

Date(s) of performance:

08/03/2024 - 09/03/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Biological

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Water & Residue in Water
2. Description of sample	Drinking Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	07/03/2024
5. Place of sampling	Joribar Shorting Yard (BIMM)
6. Environmental conditions during sampling & Transport	(2 -5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS:17614(P-25) 2022
8. Identification of the personnel performing sampling by MSK	Akash Kumar Shethy, Mukesh Haiburu

Report No. : MSKPL/FD/2023-24/T11CAW

Sample No. : MSKNB/FD/2023-24/03/SCGBF1

RESULT

Micro Biology

Sl No.	Parameter	UOM	Method	Acceptable Limit	Permissible Limit	Result
1	Total coliform	/100ml	IS 15185	Not Detectable	Not Applicable	Not Detected
2	E. coli	/100ml	IS 15185	Not Detectable	Not Applicable	Not Detected

Opinion : Acceptable limit & Permissible limit are as per IS:10500:2012

Statement of Conformity NA

----- END -----

Reviewed By:

Signature

Name : Ms. Maitreyee Chakraborty

Designation : Executive Microbiologist

Authorized Signatory:

Signature

Name : Ms. Maitreyee Chakraborty

Designation : Executive Microbiologist

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Tel. : 91 33 40143000 / 22650007 Fax : 91 33 22650009
Email : info@mitrask.com Website : www.mitrask.com

Report No. MSKGL/ED/2023-24/005501

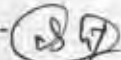
Date: 25.03.2024

ANALYSIS REPORT OF DRINKING WATER


Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	BAMEBARI IRON & MANGANESE MINES (BIMM)
Date of sampling	07.03.2024
Location	Joribar Shorting Yard R O Water (BIMM)

CHEMICAL ANALYSIS OF WATER AS PER IS: 10500 - 2012

Sl. No.	Test Parameters	Unite	Method	Norms as per IS: 10500-2012		Results
				Desirable Limit	Permissible Limit	
1	Ammonical Nitrogen	mg/l	APHA (24th Edition), 4500-NH3-F	0.5	No Relaxation	<0.1
2	Calcium (as Ca)	mg/l	APHA (24th Edition), 3500 Ca B	75	200	37
3	Chloride (as Cl)	mg/l	APHA (24th Edition), 4500-Cl B	250	1000	12
4	Odour	Hazen	3025 (Part-5)-1983; Rffm: 2012	Agreeable	Agreeable	Agreeable
5	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	---	243
6	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	0.3	No Relaxation	<0.05
7	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	30	100	6.7
8	Phenolic Compound (as C6H5OH)	mg/l	APHA (24th Edition), 5530C (Chloroform Extraction)	0.001	0.002	<0.001
9	Potassium (as K)	mg/l	APHA (24th Edition), 3500 K B	---	---	<1.0
10	Salinity	PSU	APHA (24th Edition), 2520B	---	---	0.124
11	Sodium (as Na)	mg/l	APHA (24th Edition), 3500 Na B	---	---	5.4
12	Sulphate (as SO4)	mg/l	APHA (24th Edition), 4500 SO42-E	200	400	5.3
13	Taste	None	IS 3025 (Part 8)-1983 Rffm: 2012 (O)	Agreeable	Agreeable	Agreeable
14	Total Alkalinity (as CaCO3)	mg/l	APHA (24th Edition), 2320B	200	600	112
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	500	2000	146
16	Total Hardness (as CaCO3)	mg/l	APHA (24th Edition), 2340 C	200	600	120
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	---	---	<2.5
18	Turbidity	N.T.U	APHA (24th Edition), 2130B	1	5	<1.0
19	pH value at 25 deg C	None	APHA 24th Edition, 2023, 4500, H+B	6.5-8.5	No Relaxation	7.49

Checked by: 

For Mitra S. K. Private Limited


Authorized Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000004741F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2023-24/S11C94

Date :

21/03/2024

Sample No. :

MSKNB/FD/2023-24/03/12BC05

Date of receipt of sample:

08/03/2024

Date(s) of performance:

08/03/2024 - 21/03/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Water & Residue in Water
2. Description of sample	Drinking Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	07/03/2024
5. Place of sampling	Bamebari WTP-INLET
6. Environmental conditions during sampling & Transport	(2 -5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS:17614(P-5) 2022
8. Identification of the personnel performing sampling by MSK	Akash Kumar Shethy, Mukesh Haiburu

Report No. : MSKPL/FD/2023-24/S11C94

Sample No. : MSKNB/FD/2023-24/03/12BC05

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Acceptable Limit	Permissible Limit	Result
1	Colour	Hazen	IS 3025 (Part 4)	5	15	BDL(DL:1.0)
2	Cyanide as CN	mg/l	IS 3025 (Part 27) Sec1	0.05	No relaxation	BDL(DL:0.02)
3	Mercury as Hg	mg/l	IS 3025 (Part 48)	0.001	No relaxation	BDL(DL:0.0002)
4	Silica (as SiO ₂)	mg/l	IS 3025 (Part 35)	Not Specified	Not Specified	BDL(DL:0.1)
5	Fluoride as F	mg/l	IS 3025 (Part 60)	1.0	1.5	0.28
6	Zinc as Zn	mg/l	IS 3025 (Part 2)	5	15	BDL(DL:0.02)
7	Selenium as Se	mg/l	IS 3025 (Part 2)	0.01	No relaxation	BDL(DL:0.005)
8	Cadmium as Cd	mg/l	IS 3025 (Part 2)	0.003	No Relaxation	BDL(DL:0.001)
9	Silver as Ag	mg/l	IS 3025 (Part 2)	0.1	No Relaxation	BDL(DL:0.005)
10	Total Chromium as Cr	mg/l	IS 3025 (Part 2)	0.05	No relaxation	BDL(DL:0.01)
11	Nitrate as NO ₃	mg/l	APHA (24th EDITION) 4500-NO ₃ -B	45	No Relaxation	0.80
12	Nickel (as Ni)	mg/l	IS 3025 (Part 2)	0.02	No Relaxation	BDL(DL:0.01)
13	Arsenic as As	mg/l	IS 3025 (Part 2)	0.01	No Relaxation	BDL(DL:0.005)
14	Manganese as Mn	mg/l	IS 3025 (Part 2)	0.1	0.3	BDL(DL:0.02)
15	Lead as Pb	mg/l	IS 3025 (Part 2)	0.01	No relaxation	BDL(DL:0.005)
16	Copper as Cu	mg/l	IS 3025 (Part 2)	0.05	1.5	BDL(DL:0.02)

Reviewed By:

Signature

Name

Designation

Atrayee Saha P. Ganguly
Ms. Atrayee Saha, Ms. Pooi Ganguly

Sr. Exe. Chemist, Executive Chemist

Authorized Signatory:

Signature

Name

Designation

Dr. Soumyadeep Mukhopadhyay
Lab in charge

Head Office:

Shrachi Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India
Tel. : 91 33 40143000 / 22650007 Fax : 91 33 22650008
Email : info@mitrask.com Website : www.mitrask.com

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West Bengal
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Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000004741F

Opinion : Acceptable limit & Permissible limit are as per IS:10500:2012

Statement of Conformity NA

----- END -----

Reviewed By:

Signature: *Abhaya Saha P. Ganguly*
Name: Ms. Abhaya Saha, Ms. Piali Ganguly
Designation: Sr. Exe. Chemist, Executive Chemist

Authorized Signatory:

Signature: *[Signature]*
Name: Dr. Soumyadip Mukhopadhyay
Designation: Lab In charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shuchi Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
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West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-69502400004741F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2023-24/S11C94

Date :

21/03/2024

Sample No. :

MSKNB/FD/2023-24/03/12BC05

Date of receipt of sample:

08/03/2024

Date(s) of performance:

08/03/2024 - 11/03/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Biological

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Water & Residue in Water
2. Description of sample	Drinking Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	07/03/2024
5. Place of sampling	Bamebari WTP-INLET
6. Environmental conditions during sampling & Transport	(2-5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS:17614(P-25) 2022
8. Identification of the personnel performing sampling by MSK	Akash Kumar Shethy, Mukesh Haiburu

Report No. : MSKPL/FD/2023-24/S11C94**Sample No. :** MSKNB/FD/2023-24/03/12BC05

RESULT

Micro Biology

Sl No.	Parameter	UOM	Method	Acceptable Limit	Permissible Limit	Result
1	Total coliform	/100ml	IS 15185	Not Detectable	Not Applicable	Detected
2	E. coli	/100ml	IS 15185	Not Detectable	Not Applicable	Not Detected

Opinion : Acceptable limit & Permissible limit are as per IS:10500:2012

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name : Ms. Maitreyee Chakraborty

Designation : Executive Microbiologist

Authorized Signatory:

Signature

Name : Ms. Maitreyee Chakraborty

Designation : Executive Microbiologist

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report. The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shradhi Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel. : 91 33 40143000 / 22650007 Fax : 91 33 22650006
Email : info@mitrask.com Website : www.mitrask.com

Report No. MSKGL/ED/2023-24/ 005499


Date: 25.03.2024

ANALYSIS REPORT OF DRINKING WATER

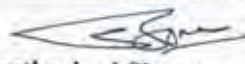
Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	BAMEBARI IRON & MANGANESE MINES (BIMM)
Date of sampling	07.03.2024
Location	Bamebari WTP Inlet (BIMM)

CHEMICAL ANALYSIS OF WATER AS PER IS: 10500 - 2012

Sl. No.	Test Parameters	Unite	Method	Norms as per IS: 10500-2012		Results
				Desirable Limit	Permissible Limit	
1	Ammonical Nitrogen	mg/l	APHA (24th Edition), 4500-NH3-F	0.5	No Relaxation	<0.1
2	Calcium (as Ca)	mg/l	APHA (24th Edition), 3500 Ca B	75	200	24
3	Chloride (as Cl)	mg/l	APHA (24th Edition), 4500 -Cl B	250	1000	8
4	Odour	Hazen	3025 (Part-5)-1983; Rffm: 2012	Agreeable	Agreeable	Agreeable
5	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	---	190
6	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	0.3	No Relaxation	<0.05
7	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	30	100	6.7
8	Phenolic Compound (as C6H5OH)	mg/l	APHA (24th Edition), 5530C (Chloroform Extraction)	0.001	0.002	<0.001
9	Potassium (as K)	mg/l	APHA (24th Edition), 3500 K B	---	---	<1.0
10	Salinity	PSU	APHA (24th Edition), 2520B	---	---	0.097
11	Sodium (as Na)	mg/l	APHA (24th Edition), 3500 Na B	---	---	3.4
12	Sulphate (as SO4)	mg/l	APHA (24th Edition), 4500 SO42-E	200	400	5.2
13	Taste	None	IS 3025 (Part 8)-1983 Rffm: 2012_(0)	Agreeable	Agreeable	Agreeable
14	Total Alkalinity (as CaCO3)	mg/l	APHA (24th Edition), 2320B	200	600	88
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	500	2000	116
16	Total Hardness (as CaCO3)	mg/l	APHA (24th Edition), 2340 C	200	600	88
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	---	---	<2.5
18	Turbidity	N.T.U	APHA (24th Edition), 2130B	1	5	<1.0
19	pH value at 25 deg C	None	APHA 24th Edition, 2023, 4500, H+B	6.5-8.5	No Relaxation	6.23

Checked by: 

For Mitra S. K. Private Limited


Authorized Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000004740F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2023-24/Z11C9H

Date :

21/03/2024

Sample No. :

MSKNB/FD/2023-24/03/0ZGBEV

Date of receipt of sample:

08/03/2024

Date(s) of performance:

08/03/2024 - 21/03/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Water & Residue in Water
2. Description of sample	Drinking Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	07/03/2024
5. Place of sampling	Bamebari WTP-OUTLET
6. Environmental conditions during sampling & Transport	(2 -5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS:17614(P-5) 2022
8. Identification of the personnel performing sampling by MSK	Akash Kumar Shethy, Mukesh Halburu

Report No. : MSKPL/FD/2023-24/Z11C9H

Sample No. : MSKNB/FD/2023-24/03/0ZGBEV

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Acceptable Limit	Permissible Limit	Result
1	Cadmium as Cd	mg/l	IS 3025 (Part 2)	0.003	No Relaxation	BDL(DL:0.001)
2	Total Chromium as Cr	mg/l	IS 3025 (Part 2)	0.05	No relaxation	BDL(DL:0.01)
3	Silver as Ag	mg/l	IS 3025 (Part 2)	0.1	No Relaxation	BDL(DL:0.005)
4	Silica (as SiO ₂)	mg/l	IS 3025 (Part 35)	Not Specified	Not Specified	BDL(DL:0.1)
5	Selenium as Se	mg/l	IS 3025 (Part 2)	0.01	No relaxation	BDL(DL:0.005)
6	Mercury as Hg	mg/l	IS 3025 (Part 48)	0.001	No relaxation	BDL(DL:0.0002)
7	Zinc as Zn	mg/l	IS 3025 (Part 2)	5	15	BDL(DL:0.02)
8	Colour	Hazen	IS 3025 (Part 4)	5	15	BDL(DL:1.0)
9	Cyanide as CN	mg/l	IS 3025 (Part 27) Sec1	0.05	No relaxation	BDL(DL:0.02)
10	Fluoride as F	mg/l	IS 3025 (Part 60)	1.0	1.5	BDL(DL:0.2)
11	Nitrate as NO ₃	mg/l	APHA (24th EDITION) 4500-NO ₃ -B	45	No Relaxation	BDL(DL:0.4)
12	Nickel (as Ni)	mg/l	IS 3025 (Part 2)	0.02	No Relaxation	BDL(DL:0.01)
13	Arsenic as As	mg/l	IS 3025 (Part 2)	0.01	No Relaxation	BDL(DL:0.005)
14	Manganese as Mn	mg/l	IS 3025 (Part 2)	0.1	0.3	BDL(DL:0.02)
15	Lead as Pb	mg/l	IS 3025 (Part 2)	0.01	No relaxation	BDL(DL:0.005)
16	Copper as Cu	mg/l	IS 3025 (Part 2)	0.05	1.5	BDL(DL:0.02)

Reviewed By:

Signature

Name : Ms. Aranya Saha, Ms. Piali Ganguly

Designation : Sr. Exe. Chemist, Executive Chemist

Authorized Signatory:

Signature

Name : Dr. Soumyadeep Mukhopadhyay

Designation : Lab In charge

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000004740F

Opinion : Acceptable limit & Permissible limit are as per IS:10500:2012

Statement of Conformity NA

— END —

Reviewed By:

Signature: *Atreyee Saha P. Ganguly*
Name: Ms. Atreyee Saha, Ms. Piali Ganguly
Designation: Sr. Exe. Chemist, Executive Chemist

Authorized Signatory:

Signature: *Dr. Soumyadeep Mukhopadhyay*
Name: Dr. Soumyadeep Mukhopadhyay
Designation: Lab In charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report. The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shree Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
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West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



Scan for Portal

ULR: TC-695024000004740F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd (MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2023-24/Z11C9H

Date :

21/03/2024

Sample No. :

MSKNB/FD/2023-24/03/02GBEV

Date of receipt of sample:

08/03/2024

Date(s) of performance:

08/03/2024 - 09/03/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000158017/056, Date - 16/09/2023

Discipline:

Biological

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Water & Residue in Water
2. Description of sample	Drinking Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	07/03/2024
5. Place of sampling	Bamebari WTP-OUTLET
6. Environmental conditions during sampling & Transport	(2 -5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS:17614(P-25) 2022
8. Identification of the personnel performing sampling by MSK	Akash Kumar Shethy, Mukesh Haiburu

Report No. : MSKPL/FD/2023-24/Z11C9H**Sample No. :** MSKNB/FD/2023-24/03/02GBEV

RESULT

Micro Biology

Sl No.	Parameter	UOM	Method	Acceptable Limit	Permissible Limit	Result
1	Total coliform	/100ml	IS 15185	Not Detectable	Not Applicable	Not Detected
2	E. coli	/100ml	IS 15185	Not Detectable	Not Applicable	Not Detected

Opinion : Acceptable limit & Permissible limit are as per IS:10500:2012

Statement of Conformity NA

----- END -----

Reviewed By:

Signature

Name : Ms. Maitreyee Chakraborty

Designation : Executive Microbiologist

Authorized Signatory

Signature

Name : Ms. Maitreyee Chakraborty

Designation : Executive Microbiologist

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report. The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

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Mitra S. K. Private Limited

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CIN: U51909WB1956PTC023037

T : +91 94370 09815, 94370 09820, 94370 75269
E : barbil@mitrask.co.in
W : www.mitrask.com



Report No. MSKGL/ED/2023-24/005497

Date: 25.03.2024

ANALYSIS REPORT OF DRINKING WATER

Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	BAMEBARI IRON & MANGANESE MINES (BIMM)
Date of sampling	07.03.2024
Location	Bamebari WTP Outlet (BIMM)

CHEMICAL ANALYSIS OF WATER AS PER IS: 10500 - 2012

Sl. No.	Test Parameters	Unite	Method	Norms as per IS: 10500-2012		Results
				Desirable Limit	Permissible Limit	
1	Ammonical Nitrogen	mg/l	APHA (24th Edition), 4500-NH3-F	0.5	No Relaxation	<0.1
2	Calcium (as Ca)	mg/l	APHA (24th Edition), 3500 Ca B	75	200	29
3	Chloride (as Cl)	mg/l	APHA (24th Edition), 4500 -Cl B	250	1000	10
4	Odour	Hazen	3025 (Part-5)-1983; Riffm: 2012	Agreeable	Agreeable	Agreeable
5	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	---	210
6	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	0.3	No Relaxation	<0.05
7	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	30	100	7.7
8	Phenolic Compound (as C ₆ H ₅ OH)	mg/l	APHA (24th Edition), 5530C (Chloroform Extraction)	0.001	0.002	<0.001
9	Potassium (as K)	mg/l	APHA (24th Edition), 3500 K B	---	---	<1.0
10	Salinity	PSU	APHA (24th Edition), 2520B	---	---	0.107
11	Sodium (as Na)	mg/l	APHA (24th Edition), 3500 Na B	---	---	3.7
12	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	200	400	5.9
13	Taste	None	IS 3025 (Part 8)-1983 Riffm: 2012_(O)	Agreeable	Agreeable	Agreeable
14	Total Alkalinity (as CaCO ₃)	mg/l	APHA (24th Edition), 2320B	200	600	96
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	500	2000	128
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	200	600	104
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	---	---	<2.5
18	Turbidity	N.T.U	APHA (24th Edition), 2130B	1	5	<1.0
19	pH value at 25 deg C	None	APHA 24th Edition, 2023, 4500, H+B	6.5-8.5	No Relaxation	6.91

Checked by:

For Mitra S. K. Private Limited

Authorized Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000002275F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2023-24/2MFA50

Date :

12/02/2024

Sample No. :

MSKNB/FD/2023-24/02/VFL21M

Date of receipt of sample:

03/02/2024

Date(s) of performance:

03/02/2024 - 12/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(If any)	NA
4. Date of sampling	02/02/2024
5. Place of sampling	Jalhari Nala, Jaroli
6. Environmental conditions during sampling & Transport	(2 - 5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS 17614 (P-23) 2021
8. Identification of the personnel performing sampling by MSK	Mukesh Halburu, Akash Ku. Sethy, Pratik Ku. Mantri

Report No. : MSKPL/FD/2023-24/2MFA50

Sample No. : MSKNB/FD/2023-24/02/VFL21M

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Result
1	Arsenic as As	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
2	Boron as B	mg/l	IS 3025 (Part 2)	BDL(DL:0.25)
3	Cadmium as Cd	mg/l	IS 3025 (Part 2)	BDL(DL:0.001)
4	Colour	Hazen	IS 3025 (Part 4)	BDL(DL:1.0)
5	Copper as Cu	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
6	Cyanide as CN	mg/l	IS 3025 (Part 27) Sec1	BDL(DL:0.02)
7	Fluoride as F	mg/l	IS 3025 (Part 60)	0.24
8	Hexavalent Chromium (as Cr+6)	mg/l	IS 3025 (Part 52) Sec2	BDL(DL:0.01)
9	Lead as Pb	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
10	Manganese as Mn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
11	Mercury as Hg	mg/l	IS 3025 (Part 48)	BDL(DL:0.0002)
12	Nitrate as NO3	mg/l	APHA (24th EDITION) 4500-NO3- B	0.63
13	Zinc as Zn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)

Opinion : NA

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name: Ms. Alayee Saha, Ms. Piali Ganguly

Designation: Sr. Exe. Chemist, Executive Chemist

Authorized Signatory:

Signature

Name

Designation: Lab in charge

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000002275F

Reviewed By:

Signature: *Abhijit Saha P. Ganguly*

Name: Mr. Abhijit Saha, Ms. Piali Ganguly

Designation: Sr. Exe. Chemist, Executive Chemist

Authorized Signatory:

Signature: *Dr. Soumyadeep Mukherjee*

Name: Dr. Soumyadeep Mukherjee

Designation: Lab in charge

Results relate only to the item(s) tested.

The Test Report shall not be reproduced except in full, without the permission of Mitra S.K. Private Limited.

A reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

A reserved part of sample(s) for chemical analysis (Solid, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (N/A) 1 month from the date of issue of the Test Report.

A reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000002275F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

A/Po. - Joda, Dist. - Keonjhar, Odisha - 756034 India

Report No. :

MSKPL/FD/2023-24/2MFA50

Date :

12/02/2024

Sample No. :

MSKNB/FD/2023-24/02/VFL21M

Date of receipt of sample:

03/02/2024

Date(s) of performance:

03/02/2024 - 08/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Biological

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	02/02/2024
5. Place of sampling	Jalhari Nala, Jaroli
6. Environmental conditions during sampling & Transport	(2 - 5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS 17614 (P-25) 2022
8. Identification of the personnel performing sampling by MSK	Mukesh Haiburu, Akash Ku. Sethy, Pratik Ku. Mantri

Report No. : MSKPL/FD/2023-24/2MFA50**Sample No. :** MSKNB/FD/2023-24/02/VFL21M

RESULT

Micro Biology

Sl No.	Parameter	UOM	Method	Result
1	Total coliform	MPN/100ml	Standard methods for the examination of water & waste water, 24th edn, 9221B	14

Opinion : NA**Statement of Conformity** NA

— END —

Reviewed By:

Signature

Name : Ms. Malreyee Chakraborty

Designation : Executive Microbiologist

Authorized Signatory:

Signature

Name : Ms. Malreyee Chakraborty

Designation : Executive Microbiologist

e results relate only to the item(s) tested.

e Test Report shall not be reproduced except in full, without the permission of Mitra S. K. Private Limited.

e reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

e reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

e reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shradhi Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel : 91 33 40143000 / 22650007 Fax : 91 33 22650008
Email : info@mitrask.com Website : www.mitrask.com

Report No. MSKGL/ED/2023-24/005035


Date: 16.02.2024

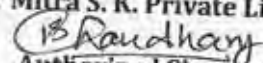
ANALYSIS REPORT OF SURFACE WATER

Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	Tiringpahar Iron & Manganese Mines (TIMM)
Date of sampling	02.02.2024
Location	Jalhari Nala Jurudi (TIMM)

CHEMICAL ANALYSIS OF WATER

Sl. No.	Test Parameters	Unite	Method	Max. Tolerance Limit as per CPCB	Results
1	Biochemical Oxygen Demand (as BOD)	mg/l	APHA (24th Edition), 5210B	30	<2.0
2	Calcium (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	32
3	Chemical Oxygen Demand (COD)	mg/l	APHA (24th Edition), 5220B	250	<4.0
4	Chloride (as Cl ⁻)	mg/l	APHA (24th Edition), 4500 -Cl B	---	12
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	5.2
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	157
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	0.3
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	10.6
9	Odour	mg/l	APHA (24th Edition), 2150B	Agreeable	Agreeable
10	Oil and Grease	mg/l	APHA (24th Edition), 5520B	10	<5.0
11	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	APHA (24th Edition), 5530C (Chloroform Extraction)	1	<0.001
12	Salinity	PSU	APHA (24th Edition), 2520B	---	0.081
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	1.1
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	76
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	94
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	64
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	19.8
18	pH value at 19.2 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	7.5

Checked by:- 

For Mitra S. K. Private Limited

Authorized Signatory

Address of Laboratory :

Building No. P-48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel.: +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000002273F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2023-24/KXFA5D

Date :

12/02/2024

Sample No. :

MSKNB/FD/2023-24/02/6FJ24Z

Date of receipt of sample:

03/02/2024

Date(s) of performance:

03/02/2024 - 12/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/058, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	02/02/2024
5. Place of sampling	Tindharla baitarani River Up Stream
6. Environmental conditions during sampling & Transport	(2 - 5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS 17814 (P-23) 2021
8. Identification of the personnel performing sampling by MSK	Mukesh Haiburu, Akash Ku. Sethy, Pratik Ku. Mantri

Report No. : MSKPL/FD/2023-24/KXFA5D**Sample No. :** MSKNB/FD/2023-24/02/6FJ24Z

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Result
1	Arsenic as As	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
2	Boron as B	mg/l	IS 3025 (Part 2)	BDL(DL:0.25)
3	Cadmium as Cd	mg/l	IS 3025 (Part 2)	BDL(DL:0.001)
4	Colour	Hazen	IS 3025 (Part 4)	BDL(DL:1.0)
5	Copper as Cu	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
6	Cyanide as CN	mg/l	IS 3025 (Part 27) Sec1	BDL(DL:0.02)
7	Fluoride as F	mg/l	IS 3025 (Part 60)	BDL(DL:0.2)
8	Hexavalent Chromium (as Cr+6)	mg/l	IS 3025 (Part 52) Sec2	BDL(DL:0.01)
9	Lead as Pb	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
10	Manganese as Mn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
11	Mercury as Hg	mg/l	IS 3025 (Part 48)	BDL(DL:0.0002)
12	Nitrate as NO3	mg/l	APHA (24th EDITION) 4500-NO3- B	BDL(DL:0.4)
13	Zinc as Zn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)

Opinion : NA**Statement of Conformity** NA

— END —

Reviewed By:

Signature:

Name: Mr. Atreyee Sahas, Ms. Piali Ganguly

Designation: Sr. Exec. Chemist, Executive Chemist

Authorized Signatory:

Signature:

Name: Dr. Saumyadeep Mukhopadhyay

Designation: Lab in charge

Head Office:

Shree Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India
Tel.: 91 33 40143000 / 22850007 Fax: 91 33 22850008
Email: info@mitrask.com Website: www.mitrask.com

Address of Laboratory :

Building No. P-48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950

Doc No. : MSK/GEN/1907



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ULR: TC-695024000002273F

Reviewed By:

Signature: *Abayee Saha P. Ganguly*

Name: Ms. Abayee Saha, Ms. Piali Ganguly

Designation: Sr. Exec. Chemist, Executive Chemist

Authorized Signatory:

Signature: *Souryadeep Mukherjee*

Name: Dr. Souryadeep Mukherjee

Designation: Lab in charge

Results relate only to the item(s) tested.

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Reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

Reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

Reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000002273F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

AI/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2023-24/KXFA5D

Date :

12/02/2024

Sample No. :

MSKNB/FD/2023-24/02/6FJ24Z

Date of receipt of sample:

03/02/2024

Date(s) of performance:

03/02/2024 - 08/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Biological

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	02/02/2024
5. Place of sampling	Tindharia baitarani River Up Stream
6. Environmental conditions during sampling & Transport	(2 - 5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS 17614 (P-25) 2022
8. Identification of the personnel performing sampling by MSK	Mukesh Haiburu, Akash Ku. Sethy, Pratik Ku. Mantri

Report No. : MSKPL/FD/2023-24/KXFA5D**Sample No. :** MSKNB/FD/2023-24/02/6FJ24Z

RESULT

Micro Biology

Sl No.	Parameter	UOM	Method	Result
1	Total coliform	MPN/100ml	Standard methods for the examination of water & waste water, 24th edn, 9221B	6.8

Opinion : NA**Statement of Conformity** NA

— END —

Reviewed By:

Signature

Name : Ms. Maitreyee Chakraborty

Designation : Executive Microbiologist

Authorized Signatory:

Signature

Name : Ms. Maitreyee Chakraborty

Designation : Executive Microbiologist

e results relate only to the item(s) tested.

is Test Report shall not be reproduced except in full, without the permission of Mitra S.K. Private Limited.

e reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days in the date of issue of the Test Report.

e reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

e reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office:

Shrachi Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700015, West Bengal, India.
Tel. : 91 33 40143000 / 22650007 Fax : 91 33 22650008
Email : info@mitrask.com Website : www.mitrask.com

Report No. MSKGL/ED/2023-24/005024


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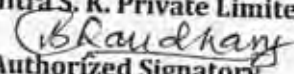
ANALYSIS REPORT OF SURFACE WATER

Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	Tiringpahar Iron & Manganese Mines (TIMM)
Date of sampling	02.02.2024
Location	Tindharia Up Stream Baitarani River (TIMM)

CHEMICAL ANALYSIS OF WATER

Sl. No.	Test Parameters	Unit	Method	Max. Tolerance Limit as per CPCB	Results
1	Biochemical Oxygen Demand (as BOD)	mg/l	APHA (24th Edition), 5210B	30	<2.0
2	Calcium (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	12
3	Chemical Oxygen Demand (COD)	mg/l	APHA (24th Edition), 5220B	250	<4.0
4	Chloride (as Cl ⁻)	mg/l	APHA (24th Edition), 4500 -Cl B	---	10
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	6.2
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	70
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	0.4
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	5.8
9	Odour	mg/l	APHA (24th Edition), 2150B	Agreeable	Agreeable
10	Oil and Grease	mg/l	APHA (24th Edition), 5520B	10	<5.0
11	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	APHA (24th Edition), 5530C (Chloroform Extraction)	1	<0.001
12	Salinity	PSU	APHA (24th Edition), 2520B	---	0.038
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	2.2
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	24
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	42
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	36
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	2.5
18	pH value at 25 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	7.82

Checked by: 

For Mitra S. K. Private Limited

Authorized Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000002274F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2023-24/H3FA56

Date :

12/02/2024

Sample No. :

MSKNB/FD/2023-24/02/P4R23A

Date of receipt of sample:

03/02/2024

Date(s) of performance:

03/02/2024 - 12/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	02/02/2024
5. Place of sampling	Gurubeda Baitarani River
6. Environmental conditions during sampling & Transport	(2 - 5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS 17614 (P-23) 2021
8. Identification of the personnel performing sampling by MSK	Mukesh Haiburu Akash Ku. Sethy, Pratik Ku. Mantri

Report No. : MSKPL/FD/2023-24/H3FA56

Sample No. : MSKNB/FD/2023-24/02/P4R23A

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Result
1	Arsenic as As	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
2	Boron as B	mg/l	IS 3025 (Part 2)	BDL(DL:0.25)
3	Cadmium as Cd	mg/l	IS 3025 (Part 2)	BDL(DL:0.001)
4	Colour	Hazen	IS 3025 (Part 4)	BDL(DL:1.0)
5	Copper as Cu	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
6	Cyanide as CN	mg/l	IS 3025 (Part 27) Sec1	BDL(DL:0.02)
7	Fluoride as F	mg/l	IS 3025 (Part 60)	BDL(DL:0.2)
8	Hexavalent Chromium (as Cr+6)	mg/l	IS 3025 (Part 52) Sec2	BDL(DL:0.01)
9	Lead as Pb	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
10	Manganese as Mn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
11	Mercury as Hg	mg/l	IS 3025 (Part 48)	BDL(DL:0.0002)
12	Nitrate as NO3	mg/l	APHA (24th EDITION) 4500-NO3- B	0.52
13	Zinc as Zn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)

Opinion : NA

Statement of Conformity NA

— END —

Reviewed By:

Signature:

Name: Mr. Arayee Saha, Ms. Piali Ganguly

Designation: Sr. Exe. Chemist, Executive Chemist

Authorized Signatory:

Signature:

Name: Dr. Soumyadeep Mukhopadhyay

Designation: Lab In charge

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000002274F

Reviewed By:

Signature:

Name: Ms. Abayese Saha, Ms. Poo Ganguly

Designation: Sr. Exe. Chemist, Executive Chemist

Authorized Signatory:

Signature:

Name:

Dr. Soumyadeep Mukhopadhyay

Designation:

Lab In charge

Results relate only to the item(s) tested.

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Reserved part of sample(s) for chemical analysis (Non-perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

Reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline 4 (A) 1 month from the date of issue of the Test Report.

Reserved part of sample(s) for Microbiological analysis (Non-perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000002274F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2023-24/H3FA56

Date :

12/02/2024

Sample No. :

MSKNB/FD/2023-24/02/P4R23A

Date of receipt of sample:

03/02/2024

Date(s) of performance:

03/02/2024 - 08/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Biological

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	02/02/2024
5. Place of sampling	Gurubeda Baitarani River
6. Environmental conditions during sampling & Transport	(2 - 5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS 17614 (P-25) 2022
8. Identification of the personnel performing sampling by MSK	Mukesh Haiburu, Akash Ku. Sethy, Pratik Ku. Mantri

Report No. : MSKPL/FD/2023-24/H3FA56**Sample No. :** MSKNB/FD/2023-24/02/P4R23A

RESULT

Micro Biology

Sl No.	Parameter	UOM	Method	Result
1	Total coliform	MPN/100ml	Standard methods for the examination of water & waste water, 24th edn, 9221B	17

Opinion : NA**Statement of Conformity** NA

— END —

Reviewed By:

Signature

Name : Ms. Maitreyee Chakraborty

Designation : Executive Microbiologist

Authorized Signatory:

Signature

Name

Ms. Maitreyee Chakraborty

Designation

Executive Microbiologist

Results relate only to the item(s) tested.

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Reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

Reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

Reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shreeji Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel. : 91 33 40143000 / 22650007 Fax : 91 33 22650009
Email : info@mitrask.com Website : www.mitrask.com

Report No. MSKGL/ED/2023-24/005034


Date: 16.02.2024

ANALYSIS REPORT OF SURFACE WATER

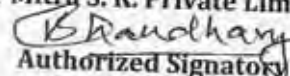
Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	Tiringpahar Iron & Manganese Mines (TIMM)
Date of sampling	02.02.2024
Location	Gurubeda Baitarani River (TIMM)

CHEMICAL ANALYSIS OF WATER

Sl. No.	Test Parameters	Unite	Method	Max. Tolerance Limit as per CPCB	Results
1	Biochemical Oxygen Demand (as BOD)	mg/l	APHA (24th Edition), 5210B	30	<2.0
2	Calcium (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	12
3	Chemical Oxygen Demand (COD)	mg/l	APHA (24th Edition), 5220B	250	<4.0
4	Chloride (as Cl ⁻)	mg/l	APHA (24th Edition), 4500 -Cl B	---	10
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	6.9
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	116
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	0.60
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	2.9
9	Odour	mg/l	APHA (24th Edition), 2150B	Agreeable	Agreeable
10	Oil and Grease	mg/l	APHA (24th Edition), 5520B	10	<5.0
11	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	APHA (24th Edition), 5530C (Chloroform Extraction)	1	<0.001
12	Salinity	PSU	APHA (24th Edition), 2520B	---	0.06
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	3.7
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	36
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	68
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	24
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	6.9
18	pH value at 19.7 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	6.45

Checked by:- 

For Mitra S. K. Private Limited


Authorized Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000002272F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

Date :

Sample No. :

Date of receipt of sample:

Date(s) of performance:

Location of performance of

Reference No. & Date :

Discipline:

MSKPL/FD/2023-24/54FA53

12/02/2024

MSKNB/FD/2023-24/02/4KD204

03/02/2024

03/02/2024 - 12/02/2024

Permanent Facility

3000156017/056, Date - 16/09/2023

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	02/02/2024
5. Place of sampling	Tindharai balarani River Down Stream
6. Environmental conditions during sampling & Transport	(2 - 5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS 17614 (P-23) 2021
8. Identification of the personnel performing sampling by MSK	Mukesh Haiburu, Akash Ku. Sethy, Pratik Ku. Mantri

Report No. : MSKPL/FD/2023-24/54FA53

Sample No. : MSKNB/FD/2023-24/02/4KD204

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Result
1	Arsenic as As	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
2	Boron as B	mg/l	IS 3025 (Part 2)	BDL(DL:0.25)
3	Cadmium as Cd	mg/l	IS 3025 (Part 2)	BDL(DL:0.001)
4	Colour	Hazen	IS 3025 (Part 4)	BDL(DL:1.0)
5	Copper as Cu	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
6	Cyanide as CN	mg/l	IS 3025 (Part 27) Sec1	BDL(DL:0.02)
7	Fluoride as F	mg/l	IS 3025 (Part 60)	BDL(DL:0.2)
8	Hexavalent Chromium (as Cr+6)	mg/l	IS 3025 (Part 52) Sec2	BDL(DL:0.01)
9	Lead as Pb	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
10	Manganese as Mn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
11	Mercury as Hg	mg/l	IS 3025 (Part 48)	BDL(DL:0.0002)
12	Nitrate as NO3	mg/l	APHA (24th EDITION) 4500-NO3- B	BDL(DL:0.4)
13	Zinc as Zn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)

Opinion : NA

Statement of Conformity NA

— END —

Reviewed By

Signature: *Arunima Saha, P. Ganguly*

Name : Ms. Arunima Saha, Ms. Pooja Ganguly

Designation : Sr. Exe. Chemist, Executive Chemist

Authorized Signatory:

Signature: *Dr. Sounildeep Mukhopadhyay*

Name :

Designation : Lab In charge

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000002272F

Reviewed By:

Signature: *Abhishek Saha P. Ganguly*
Name: Ms. Abhishek Saha, Ms. Piali Ganguly
Designation: Sr. Exe. Chemist, Executive Chemist

Authorized Signatory:

Signature: *Dr. Soumyadeep Mukhopadhyay*
Name: Dr. Soumyadeep Mukhopadhyay
Designation: Lab In charge

he results relate only to the item(s) tested.

he Test Report shall not be reproduced except in full, without the permission of Mitra S.K. Private Limited.

he reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.
he reserved part of sample(s) for chemical analysis (Solid, Solid & Liquid Volume) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.
he reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel : +91 7044036120
Email: udayanlab@mitrask.com



TC-8950



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ULR: TC-695024000002272F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2023-24/54FA53

Date :

12/02/2024

Sample No. :

MSKNB/FD/2023-24/02/4KD204

Date of receipt of sample:

03/02/2024

Date(s) of performance:

03/02/2024 - 08/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Biological

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	02/02/2024
5. Place of sampling	Tindharia baitarani River Down Stream
6. Environmental conditions during sampling & Transport	(2 - 5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS 17614 (P-25) 2022
8. Identification of the personnel performing sampling by MSK	Mukesh Haiburu, Akash Ku. Sethy, Pratik Ku. Mantri

Report No. : MSKPL/FD/2023-24/54FA53**Sample No. :** MSKNB/FD/2023-24/02/4KD204

RESULT

Micro Biology

Sl No.	Parameter	UOM	Method	Result
1	Total coliform	MPN/100ml	Standard methods for the examination of water & waste water, 24th edtn, 9221B	6.8

Opinion : NA**Statement of Conformity** NA

END

Reviewed By:

Signature

Name: Ms. Maitreyee Chakraborty

Designation: Executive Microbiologist

Authorized Signatory:

Signature

Name: Ms. Maitreyee Chakraborty

Designation: Executive Microbiologist

The results relate only to the item(s) tested.

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A reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office:

Branch Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel : 91 33 40143000 / 22650007 Fax : 91 33 22650008
Email : info@mitrask.com Website : www.mitrask.com

Report No. MSKGL/ED/2023-24/005026


Date: 16.02.2024

ANALYSIS REPORT OF SURFACE WATER

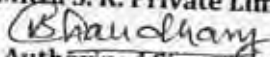
Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	Tiringpahar Iron & Manganese Mines (TIMM)
Date of sampling	02.02.2024
Location	Tindharia Down Stream Baitarani River (TIMM)

CHEMICAL ANALYSIS OF WATER

Sl. No.	Test Parameters	Unit	Method	Max. Tolerance Limit as per CPCB	Results
1	Biochemical Oxygen Demand (as BOD)	mg/l	APHA (24th Edition), 5210B	30	<2.0
2	Calcium (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	—	16
3	Chemical Oxygen Demand (COD)	mg/l	APHA (24th Edition), 5220B	250	<4.0
4	Chloride (as Cl)	mg/l	APHA (24th Edition), 4500 -Cl B	—	8
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	6.5
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	—	124
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	0.49
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	—	4.8
9	Odour	mg/l	APHA (24th Edition), 2150B	Agreeable	Agreeable
10	Oil and Grease	mg/l	APHA (24th Edition), 5520B	10	<5.0
11	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	APHA (24th Edition), 5530C (Chloroform Extraction)	1	<0.001
12	Salinity	PSU	APHA (24th Edition), 2520B	—	0.064
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	2.8
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	36
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	72
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	36
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	4.2
18	pH value at 19.2 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	7.75

Checked by:- 

For Mitra S. K. Private Limited


Authorized Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044038120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000002539F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

Al/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2023-24/NEFA50

Date :

17/02/2024

Sample No. :

MSKNB/FD/2023-24/02/QHL4DC

Date of receipt of sample:

07/02/2024

Date(s) of performance:

07/02/2024 - 17/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	06/02/2024
5. Place of sampling	Baitarani River Kilandra Village JWMM
6. Environmental conditions during sampling & Transport	(2 - 5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS 17614 (P-23) 2021
8. Identification of the personnel performing sampling by MSK	Kshilish Kr Mohanty

Report No. : MSKPL/FD/2023-24/NEFA50

Sample No. : MSKNB/FD/2023-24/02/QHL4DC

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Result
1	Arsenic as As	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
2	Boron as B	mg/l	IS 3025 (Part 2)	BDL(DL:0.25)
3	Cadmium as Cd	mg/l	IS 3025 (Part 2)	BDL(DL:0.001)
4	Colour	Hazen	IS 3025 (Part 4)	BDL(DL:1.0)
5	Copper as Cu	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
6	Cyanide as CN	mg/l	IS 3025 (Part 27) Sec1	BDL(DL:0.02)
7	Fluoride as F	mg/l	IS 3025 (Part 60)	0.41
8	Hexavalent Chromium (as Cr+6)	mg/l	IS 3025 (Part 52) Sec2	BDL(DL:0.01)
9	Lead as Pb	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
10	Manganese as Mn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
11	Mercury as Hg	mg/l	IS 3025 (Part 48)	BDL(DL:0.0002)
12	Nitrate as NO3	mg/l	APHA (24th EDITION) 4500-NO3- B	1.89
13	Zinc as Zn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)

Opinion : NA

Statement of Conformity NA

— END —

Reviewed By:

Signature: *Mr. Alrayee Saha* *P. Ganguly*

Name : Mr. Alrayee Saha, Mr. Pali Ganguly

Designation : Sr. Exe. Chemist, Executive Chemist

Authorized Signatory:

Signature :

Name :

Designation :

Dr. Soumyadeep Mukherjee

Lab In charge

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel.: +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000002539F

Reviewed By:

Signature:

Name: Ms. Arpita Saha, Ms. Piali Ganguly

Designation: Sr. Exe. Chemist, Executive Chemist

Authorized Signatory:

Signature:

Name: Dr. Soumyadeep Mukhopadhyay

Designation: Lab in charge

No results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed Food) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagiadanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000002539F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 756034 India

Report No. :

MSKPL/FD/2023-24/NEFA50

Date :

17/02/2024

Sample No. :

MSKNB/FD/2023-24/02/QHL4DC

Date of receipt of sample:

07/02/2024

Date(s) of performance:

07/02/2024 - 12/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Biological

We hereby certify that the following sample Drawn by us has been analyzed with the following results.

1. Group	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	06/02/2024
5. Place of sampling	Baitarani River Kilandra Village JWMM
6. Environmental conditions during sampling & Transport	(2 - 5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS 17614 (P-25) 2022
8. Identification of the personnel performing sampling by MSK	Kshitish Kr Mohanty

Report No. : MSKPL/FD/2023-24/NEFA50**Sample No. :** MSKNB/FD/2023-24/02/QHL4DC

RESULT

Micro Biology

Sl No.	Parameter	UOM	Method	Result
1	Total coliform	MPN/100ml	Standard methods for the examination of water & waste water, 24th edn, 9221B	11

Opinion : NA**Statement of Conformity** NA

— END —

Reviewed By:

Signature

Name : Ms. Matreyee Chakraborty

Designation : Executive Microbiologist

Authorized Signatory:

Signature

Name : Ms. Matreyee Chakraborty

Designation : Executive Microbiologist

Results relate only to the item(s) tested.

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A reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

A reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

A reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shreechi Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel. : 91 33 40143000 / 22650007 Fax : 91 33 22650008
Email : info@mitrask.com Website : www.mitrask.com

Report No. MSKGL/ED/2023-24/005049


Date: 20.02.2024

ANALYSIS REPORT OF SURFACE WATER

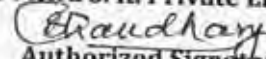
Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	06.02.2024
Location	Baitarni River Kandra Village (JWIMM)

CHEMICAL ANALYSIS OF WATER

Sl. No.	Test Parameters	Unite	Method	Max. Tolerance Limit as per CPCB	Results
1	Biochemical Oxygen Demand (as BOD)	mg/l	APHA (24th Edition), 5210B	30	<2.0
2	Calcium (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	11
3	Chemical Oxygen Demand (COD)	mg/l	APHA (24th Edition), 5220B	250	<4.0
4	Chloride (as Cl ⁻)	mg/l	APHA (24th Edition), 4500 -Cl B	---	4
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	6.8
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	138
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	<0.05
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	2.9
9	Odour	mg/l	APHA (24th Edition), 2150B	Agreeable	Agreeable
10	Oil and Grease	mg/l	APHA (24th Edition), 5520B	10	<5.0
11	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	APHA (24th Edition), 5530C (Chloroform Extraction)	1	<0.001
12	Salinity	PSU	APHA (24th Edition), 2520B	---	0.071
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	1.1
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	68
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	82
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	40
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	14.4
18	pH value at 19.2 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	7.06

Checked by:- 

For Mitra S. K. Private Limited


Authorized Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950

Doc No : MSK/GEN/1907



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ULR: TC-69502400002540F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

Date :

Sample No. :

Date of receipt of sample:

Date(s) of performance:

Location of performance of

Reference No. & Date :

Discipline:

MSKPL/FD/2023-24/Q2FA58

17/02/2024

MSKNB/FD/2023-24/02/SDV50M

07/02/2024

07/02/2024 - 17/02/2024

Permanent Facility

3000156017/055, Date - 16/09/2023

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	06/02/2024
5. Place of sampling	Sona River before confluence with Baitarani River
6. Environmental conditions during sampling & Transport	(2 - 5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS 17614 (P-23) 2021
8. Identification of the personnel performing sampling by MSK	Kshitish Kr Mohanty

Report No. : MSKPL/FD/2023-24/Q2FA58

Sample No. : MSKNB/FD/2023-24/02/SDV50M

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Result
1	Arsenic as As	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
2	Boron as B	mg/l	IS 3025 (Part 2)	BDL(DL:0.25)
3	Cadmium as Cd	mg/l	IS 3025 (Part 2)	BDL(DL:0.001)
4	Colour	Hazen	IS 3025 (Part 4)	BDL(DL:1.0)
5	Copper as Cu	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
6	Cyanide as CN	mg/l	IS 3025 (Part 27) Sec1	BDL(DL:0.02)
7	Fluoride as F	mg/l	IS 3025 (Part 60)	0.34
8	Hexavalent Chromium (as Cr+6)	mg/l	IS 3025 (Part 52) Sec2	BDL(DL:0.01)
9	Lead as Pb	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
10	Manganese as Mn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
11	Mercury as Hg	mg/l	IS 3025 (Part 48)	BDL(DL:0.0002)
12	Nitrate as NO3	mg/l	APHA (24th EDITION) 4500-NO3- B	1.56
13	Zinc as Zn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)

Opinion : NA

Statement of Conformity NA

END

Reviewed By:

Signature:
Name: Ms. Aranyee Saha, Ms. Piali Ganguly
Designation: Sr. Exm. Chemist, Executive Chemist

Authorized Signatory:

Signature:
Name: Dr. Soumyajit Mukhopadhyay
Designation: Lab In charge

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000002540F

Reviewed By:

Signature: *Amitayee Saha, P. Ganguly*

Name : Ms. Amitayee Saha, Ms. Piali Ganguly

Designation : Sr. Exe. Chemist, Executive Chemist

Authorized Signatory:

Signature

Name : Dr. Soumyadeep Mukhopadhyay

Designation : Lab in charge

The results relate only to the sample(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sterile Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



Scan for Portal

ULR: TC-695024000002540F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2023-24/Q2FA58

Date :

17/02/2024

Sample No. :

MSKNB/FD/2023-24/02/SDV50M

Date of receipt of sample:

07/02/2024

Date(s) of performance:

07/02/2024 - 12/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Biological

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	06/02/2024
5. Place of sampling	Sona River before confluence with Baitarani River
6. Environmental conditions during sampling & Transport	(2 - 5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS 17614 (P-25) 2022
8. Identification of the personnel performing sampling by MSK	Kshitish Kr Mohanty

Report No. : MSKPL/FD/2023-24/Q2FA58**Sample No. :** MSKNB/FD/2023-24/02/SDV50M

RESULT

Micro Biology

Sl No.	Parameter	UOM	Method	Result
1	Total coliform	MPN/100ml	Standard methods for the examination of water & waste water, 24th edn, 9221B	14

Opinion : NA**Statement of Conformity** NA

— END —

Reviewed By:

Signature

Name : Ms. Matreysa Chakraborty

Designation : Executive Microbiologist

Authorized Signatory:

Signature

Name : Ms. Matreysa Chakraborty

Designation : Executive Microbiologist

e results relate only to the item(s) tested.

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a reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days in the date of issue of the Test Report.

a reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

a reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office:

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Tel. : 91 33 40143000 / 22650007 Fax : 91 33 22650008
Email : info@mitrask.com Website : www.mitrask.com

Report No. MSKGL/ED/2023-24/005050


Date: 20.02.2024

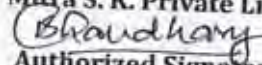
ANALYSIS REPORT OF SURFACE WATER

Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	06.02.2024
Location	Sona River Kandra Village before confluence with Baitarni River (JWIMM)

CHEMICAL ANALYSIS OF WATER

Sl. No.	Test Parameters	Unit	Method	Max. Tolerance Limit as per CPCB	Results
1	Biochemical Oxygen Demand (as BOD)	mg/l	APHA (24th Edition), 5210B	30	<2.0
2	Calcium (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	8
3	Chemical Oxygen Demand (COD)	mg/l	APHA (24th Edition), 5220B	250	<4.0
4	Chloride (as Cl ⁻)	mg/l	APHA (24th Edition), 4500 -Cl B	---	12
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	7.1
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	127
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	0.7
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	2.9
9	Odour	mg/l	APHA (24th Edition), 2150B	Agreeable	Agreeable
10	Oil and Grease	mg/l	APHA (24th Edition), 5520B	10	<5.0
11	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	APHA (24th Edition), 5530C (Chloroform Extraction)	1	<0.001
12	Salinity	PSU	APHA (24th Edition), 2520B	---	0.066
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	4.4
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	48
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	76
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	32
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	15.2
18	pH value at 19.2 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	6.9

Checked by:- 

For Mitra S. K. Private Limited

Authorized Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
 3, Pagladanga Road, Kolkata 700015
 West Bengal
 Tel. : +91 7044038120
 Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000002641F

TEST REPORT**Name & Address of Customer :**

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/B138B2

Date :

17/02/2024

Sample No. :

MSKNB/ED/2023-24/02/B04A8H

Date of receipt of sample:

07/02/2024

Date(s) of performance:

07/02/2024 - 17/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Pollution & Environment
2. Description of sample	Effluent Water
3. Unique identification of sample(if any)	NA
4. Date of sampling	06/02/2024
5. Place of sampling	Bamebari Oil separation Near Garage
6. Environmental conditions during sampling & Transport	(2 - 5) deg C Cold chain maintained.
7. Sampling Plan & Method used	APHA 24th edition, 2023
8. Identification of the personnel performing sampling by MSK	Pratik Kr Mantri
9. Field Equipments Used	N/A

Report No. : MSKPL/ED/2023-24/B138B2

Sample No. : MSKNB/ED/2023-24/02/B04A8H

RESULT**Chemical**

Sl No.	Parameter	UOM	Method	Result
1	Arsenic as (As)	mg/l	APHA (24th Edition), 3120 B	BDL(DL:0.005)
2	Boron (as B)	mg/l	APHA (24th Edition), 4500 - B C	BDL(DL:0.5)
3	Cadmium as Cd	mg/l	APHA (24th Edition), 3120 B	BDL(DL:0.05)
4	Colour	Hazen	APHA (24th Edition), 2120B	BDL(DL:5.0)
5	Copper (as Cu)	mg/l	APHA (24th Edition), 3120 B	0.28
6	Cyanide (as CN)	mg/l	APHA (24th Edition), 4500 CN - F	BDL(DL:0.02)
7	Fluoride (as F)	mg/l	APHA (24th Edition), 4500 F- C/D	0.3
8	Hexavalent Chromium (as Cr+6)	mg/l	APHA (24th Edition), 3500 Cr B	BDL(DL:0.05)
9	Lead (as Pb)	mg/l	APHA (24th Edition), 3120 B	BDL(DL:0.05)
10	Manganese (as Mn)	mg/l	APHA (24th Edition), 3120 B	BDL(DL:0.05)
11	Mercury (as Hg)	mg/l	APHA (24th Edition) 3112 B	BDL(DL:0.001)
12	Nitrate (as NO3)	mg/l	APHA (24th Edition), 4500 NO3-E	2.6
13	Zinc (as Zn)	mg/l	APHA (24th Edition), 3120 B	0.07

Opinion : NA

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name : Mr. Somnath Bardhan, Ms. Piali Ganguly

Designation : Technical In charge, Exe. Chemist

Authorized Signatory:

Signature

Name

Mr. Somnath Bardhan, Ms. Piali Ganguly

Designation

Technical in charge, Exe. Chemist

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office:

Shree Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
 Tel. : 91 33 40143000 / 22650007 Fax : 91 33 22650008
 Email : info@mitrask.com Website : www.mitrask.com

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000002641F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/B13BB2

Date :

17/02/2024

Sample No. :

MSKNB/ED/2023-24/02/B04A8H

Date of receipt of sample:

07/02/2024

Date(s) of performance:

07/02/2024 - 12/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Biological

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Pollution & Environment
2. Description of sample	Effluent Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	06/02/2024
5. Place of sampling	Bamebari Oil separation Near Garage
6. Environmental conditions during sampling & Transport	(2 - 5) deg C Cold chain maintained.
7. Sampling Plan & Method used	APHA 24th edition, 2023
8. Identification of the personnel performing sampling by MSK	Pratik Kr Mantri
9. Field Equipments Used	N/A

Report No. : MSKPL/ED/2023-24/B13BB2

Sample No. : MSKNB/ED/2023-24/02/B04A8H

RESULT

Micro Biology

Sl No.	Parameter	UOM	Method	Result
1	Total coliform	MPN/100ml	Standard methods for the examination of water & waste water, 24th edn, 9221B	17

Opinion : NA

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name : Ms. Maitreyee Chakraborty

Designation : Executive Microbiologist

Authorized Signatory:

Signature

Name : Ms. Maitreyee Chakraborty

Designation : Executive Microbiologist

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shree Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India
Tel. : 91 33 40143000 / 22650007 Fax : 91 33 22650008
Email : info@mitrask.com Website : www.mitrask.com

Report No. MSKGL/ED/2023-24/005087

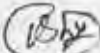
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ANALYSIS REPORT OF WASTE/EFFLUENT WATER

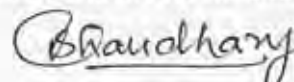
Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	BAMEBARI IRON & MANGANESE MINES (BIMM)
Date of sampling	06.02.2024
Location	Bamebari Oil Separation Water Near Garage (BIMM)

CHEMICAL ANALYSIS OF WATER AS PER IS: 2490

Sl. No.	Test Parameters	Unit	Method	Max. Tolerance Limit as per CPCB	Results
1	Biochemical Oxygen Demand (as BOD)	mg/l	APHA (24th Edition), 5210B	30	15
2	Calcium (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	38
3	Chemical Oxygen Demand (COD)	mg/l	APHA (24th Edition), 5220B	250	60
4	Chloride (as Cl)	mg/l	APHA (24th Edition), 4500 -Cl B	---	20
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	5.8
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	340
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	0.11
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	16
9	Odour	mg/l	APHA (24th Edition), 2150B	Agreeable	Agreeable
10	Oil and Grease	mg/l	APHA (24th Edition), 5520B	10	6.8
11	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	APHA (24th Edition), 5530C (Chloroform Extraction)	1	<0.001
12	Salinity	PSU	APHA (24th Edition), 2520B	---	0.174
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	3
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	140
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	204
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	162
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	76.3
18	pH value at 23.7 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	7.4

Checked by:- 

For Mitra S. K. Private Limited



Authorized Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000002642F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/K13BBQ

Date :

17/02/2024

Sample No. :

MSKNB/ED/2023-24/02/DUDA7E

Date of receipt of sample:

07/02/2024

Date(s) of performance:

07/02/2024 - 17/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results.

1. Group	Pollution & Environment
2. Description of sample	Effluent Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	06/02/2024
5. Place of sampling	Bamebari STP In Let
6. Environmental conditions during sampling & Transport	(2 - 5) deg C Cold chain maintained.
7. Sampling Plan & Method used	APHA 24th edition,2023
8. Identification of the personnel performing sampling by MSK	Pratik Kr Mantri
9. Field Equipments Used	N/A

Report No. : MSKPL/ED/2023-24/K13BBQ

Sample No. : MSKNB/ED/2023-24/02/DUDA7E

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Result
1	Arsenic as (As)	mg/l	APHA (24th Edition), 3120 B	BDL(DL:0.005)
2	Boron (as B)	mg/l	APHA (24th Edition), 4500 - B C	BDL(DL:0.5)
3	Cadmium as Cd	mg/l	APHA (24th Edition), 3120 B	BDL(DL:0.05)
4	Colour	Hazen	APHA (24th Edition), 2120B	BDL(DL:5.0)
5	Copper (as Cu)	mg/l	APHA (24th Edition), 3120 B	BDL(DL:0.05)
6	Cyanide (as CN)	mg/l	APHA (24th Edition), 4500 CN - F	BDL(DL:0.02)
7	Fluoride (as F)	mg/l	APHA (24th Edition), 4500 F- C/D	0.37
8	Hexavalent Chromium (as Cr+6)	mg/l	APHA (24th Edition), 3500 Cr B	BDL(DL:0.05)
9	Lead (as Pb)	mg/l	APHA (24th Edition), 3120 B	BDL(DL:0.05)
10	Manganese (as Mn)	mg/l	APHA (24th Edition), 3120 B	1.14
11	Mercury (as Hg)	mg/l	APHA (24th Edition) 3112 B	BDL(DL:0.001)
12	Nitrate (as NO3)	mg/l	APHA (24th Edition), 4500 NO3-E	BDL(DL:0.5)
13	Zinc (as Zn)	mg/l	APHA (24th Edition), 3120 B	0.1

Opinion : NA

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name Mr. Somnath Bardhan, Ms. Piali Ganguly

Designation Technical In charge, Exe. Chemist

Authorized Signatory:

Signature

Name

Designation

Mr. Somnath Bardhan, Ms. Piali Ganguly

Technical In charge, Exe. Chemist

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shree Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.

Tel. : 91 33 40143000 / 22650007 Fax : 91 33 22650006

Email : info@mitrask.com Website : www.mitrask.com

Address of Laboratory :

Building No. P-48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



Scan for Portal

ULR: TC-695024000002642F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/K13BBQ

Date :

17/02/2024

Sample No. :

MSKNB/ED/2023-24/02/DUDA7E

Date of receipt of sample:

07/02/2024

Date(s) of performance:

07/02/2024 - 12/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Biological

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Pollution & Environment
2. Description of sample	Effluent Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	06/02/2024
5. Place of sampling	Bamebari STP In Let
6. Environmental conditions during sampling & Transport	(2 - 5) deg C Cold chain maintained.
7. Sampling Plan & Method used	APHA 24th edition,2023
8. Identification of the personnel performing sampling by MSK	Pratik Kr Mantri
9. Field Equipments Used	N/A

Report No. : MSKPL/ED/2023-24/K13BBQ**Sample No. :** MSKNB/ED/2023-24/02/DUDA7E

RESULT

Micro Biology

Sl No.	Parameter	UOM	Method	Result
1	Total coliform	MPN/100ml	Standard methods for the examination of water & waste water, 24th edtn, 9221B	26

Opinion : NA**Statement of Conformity** NA

— END —

Reviewed By:

Signature

Name : Ms. Maitreyee Chakraborty

Designation : Executive Microbiologist

Authorized Signatory:

Signature

Name : Ms. Maitreyee Chakraborty

Designation : Executive Microbiologist

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shradhi Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
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Email : info@mitrask.com Website : www.mitrask.com

Report No. MSKGL/ED/2023-24/005088


Date: 22.02.2024

ANALYSIS REPORT OF WASTE/EFFLUENT WATER

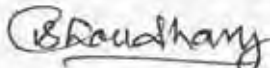
Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	BAMEBARI IRON & MANGANESE MINES (BIMM)
Date of sampling	06.02.2024
Location	Bamebari STP Inlet (BIMM)

CHEMICAL ANALYSIS OF WATER AS PER IS: 2490

Sl. No.	Test Parameters	Unite	Method	Max. Tolerance Limit as per CPCB	Results
1	Biochemical Oxygen Demand (as BOD)	mg/l	APHA (24th Edition), 5210B	30	52
2	Calcium (as CaCo ₃)	mg/l	APHA (24th Edition), 2340 C	---	34
3	Chemical Oxygen Demand (COD)	mg/l	APHA (24th Edition), 5220B	250	192
4	Chloride (as Cl)	mg/l	APHA (24th Edition), 4500 -Cl B	---	40
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	5.1
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	402
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	1.8
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	12
9	Odour	mg/l	APHA (24th Edition), 2150B	Agreeable	Disagreeable
10	Oil and Grease	mg/l	APHA (24th Edition), 5520B	10	5.2
11	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	APHA (24th Edition), 5530C (Chloroform Extraction)	1	<0.001
12	Salinity	PSU	APHA (24th Edition), 2520B	---	0.206
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ 2-E	---	5.9
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	148
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	338
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	136
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	39.8
18	pH value at 23.7 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	7.14

Checked by: 

For Mitra S. K. Private Limited



Authorized Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000002643F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/X13BB3

Date :

17/02/2024

Sample No. :

MSKNB/ED/2023-24/02/TD8A9K

Date of receipt of sample:

07/02/2024

Date(s) of performance:

07/02/2024 - 17/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Pollution & Environment
2. Description of sample	Effluent Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	06/02/2024
5. Place of sampling	Bamebari STP Out Let
6. Environmental conditions during sampling & Transport	(2 - 5) deg C Cold chain maintained.
7. Sampling Plan & Method used	APHA 24th edition,2023
8. Identification of the personnel performing sampling by MSK	Pratik Kr Mantri
9. Field Equipments Used	N/A

Report No. : MSKPL/ED/2023-24/X13BB3

Sample No. : MSKNB/ED/2023-24/02/TD8A9K

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Result
1	Arsenic as (As)	mg/l	APHA (24th Edition), 3120 B	BDL(DL:0.005)
2	Boron as B)	mg/l	APHA (24th Edition), 4500 - B C	BDL(DL:0.5)
3	Cadmium as Cd	mg/l	APHA (24th Edition), 3120 B	BDL(DL:0.05)
4	Colour	Hazen	APHA (24th Edition), 2120B	BDL(DL:5.0)
5	Copper as Cu)	mg/l	APHA (24th Edition), 3120 B	BDL(DL:0.05)
6	Cyanide (as CN)	mg/l	APHA (24th Edition), 4500 CN - F	BDL(DL:0.02)
7	Fluoride (as F)	mg/l	APHA (24th Edition), 4500 F- C/D	0.21
8	Hexavalent Chromium (as Cr+6)	mg/l	APHA (24th Edition), 3500 Cr B	BDL(DL:0.05)
9	Lead as Pb)	mg/l	APHA (24th Edition), 3120 B	BDL(DL:0.05)
10	Manganese as Mn)	mg/l	APHA (24th Edition), 3120 B	0.11
11	Mercury as Hg)	mg/l	APHA (24th Edition) 3112 B	BDL(DL:0.001)
12	Nitrate as NO3)	mg/l	APHA (24th Edition), 4500 NO3-E	BDL(DL:0.5)
13	Zinc as Zn)	mg/l	APHA (24th Edition), 3120 B	0.08

Opinion : NA

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name

Mr. Somnath Bairdhan, Ms. Piali Ganguly

Designation : Technical In charge, Exe. Chemist

Authorized Signatory:

Signature

Name

Mr. Somnath Bairdhan, Ms. Piali Ganguly

Designation : Technical In charge, Exe. Chemist

This results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for microbiological analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office:

Sirachi Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
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Building No. P-46, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000002643F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/X13BB3

Date :

17/02/2024

Sample No. :

MSKNB/ED/2023-24/02/TD8A9K

Date of receipt of sample:

07/02/2024

Date(s) of performance:

07/02/2024 - 12/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Biological

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Pollution & Environment
2. Description of sample	Effluent Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	06/02/2024
5. Place of sampling	Bamebari STP Out Let
6. Environmental conditions during sampling & Transport	(2 - 5) deg C Cold chain maintained.
7. Sampling Plan & Method used	APHA 24th edition, 2023
8. Identification of the personnel performing sampling by MSK	Pratik Kr Mantri
9. Field Equipments Used	N/A

Report No. : MSKPL/ED/2023-24/X13BB3**Sample No. :** MSKNB/ED/2023-24/02/TD8A9K

RESULT

Micro Biology

Sl No.	Parameter	UOM	Method	Result
1	Total coliform	MPN/100ml	Standard methods for the examination of water & waste water, 24th edn, 9221B	11

Opinion : NA**Statement of Conformity** NA

— END —

Reviewed By:

Signature :

Name : Ms. Malleswari Chakraborty

Designation : Executive Microbiologist

Authorized Signatory:

Signature :

Name : Ms. Malleswari Chakraborty

Designation : Executive Microbiologist

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Head Office: Shreeji Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel. : 91 33 40143000 / 22650007 Fax : 91 33 22550008
Email : info@mitrask.com Website : www.mitrask.com

Report No. MSKGL/ED/2023-24/005089


Date: 22.02.2024

ANALYSIS REPORT OF WASTE/EFFLUENT WATER

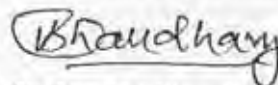
Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	BAMEBARI IRON & MANGANESE MINES (BIMM)
Date of sampling	06.02.2024
Location	Bamebari STP Outlet (BIMM)

CHEMICAL ANALYSIS OF WATER AS PER IS: 2490

Sl. No.	Test Parameters	Unite	Method	Max. Tolerance Limit as per CPCB	Results
1	Biochemical Oxygen Demand (as BOD)	mg/l	APHA (24th Edition), 5210B	30	27
2	Calcium (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	40
3	Chemical Oxygen Demand (COD)	mg/l	APHA (24th Edition), 5220B	250	116
4	Chloride (as Cl ⁻)	mg/l	APHA (24th Edition), 4500 -Cl B	---	38
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	6.2
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	390
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	1.2
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	14
9	Odour	mg/l	APHA (24th Edition), 2150B	Agreeable	Disagreeable
10	Oil and Grease	mg/l	APHA (24th Edition), 5520B	10	3.6
11	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	APHA (24th Edition), 5530C (Chloroform Extraction)	1	<0.001
12	Salinity	PSU	APHA (24th Edition), 2520B	---	0.200
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	2.9
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	144
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	240
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	158
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	29.4
18	pH value at 23.7 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	7.16

Checked by: 

For Mitra S. K. Private Limited


Authorized Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000002471F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2023-24/SEFBA8

Date :

16/02/2024

Sample No. :

MSKNB/FD/2023-24/02/8RE50J

Date of receipt of sample:

07/02/2024

Date(s) of performance:

07/02/2024 - 16/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Water & Residue in Water
2. Description of sample	Drinking Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	06/02/2024
5. Place of sampling	Bamebari Canteen R.O. Water
6. Environmental conditions during sampling & Transport	(2 -5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS:17614(P-5) 2022
8. Identification of the personnel performing sampling by MSK	Lalin Nalk

Report No. : MSKPL/FD/2023-24/SEFBA8

Sample No. : MSKNB/FD/2023-24/02/8RE50J

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Acceptable Limit	Permissible Limit	Result
1	Silver as Ag	mg/l	IS 3025 (Part 2)	0.1	No Relaxation	BDL(DL:0.005)
2	Zinc as Zn	mg/l	IS 3025 (Part 2)	5	15	BDL(DL:0.02)
3	Cadmium as Cd	mg/l	IS 3025 (Part 2)	0.003	No Relaxation	BDL(DL:0.001)
4	Colour	Hazen	IS 3025 (Part 4)	5	15	BDL(DL:1.0)
5	Copper as Cu	mg/l	IS 3025 (Part 2)	0.05	1.5	BDL(DL:0.02)
6	Cyanide as CN	mg/l	IS 3025 (Part 27) Sec1	0.05	No Relaxation	BDL(DL:0.02)
7	Fluoride as F	mg/l	IS 3025 (Part 60)	1.0	1.5	0.32
8	Lead as Pb	mg/l	IS 3025 (Part 2)	0.01	No Relaxation	BDL(DL:0.005)
9	Manganese as Mn	mg/l	IS 3025 (Part 2)	0.1	0.3	BDL(DL:0.02)
10	Mercury as Hg	mg/l	IS 3025 (Part 48)	0.001	No Relaxation	BDL(DL:0.0002)
11	Nickel (as Ni)	mg/l	IS 3025 (Part 2)	0.02	No Relaxation	BDL(DL:0.01)
12	Nitrate as NO3	mg/l	APHA (24th EDITION) 4500-NO3- B	45	No Relaxation	0.68
13	Selenium as Se	mg/l	IS 3025 (Part 2)	0.01	No Relaxation	BDL(DL:0.005)
14	Silica (as SiO2)	mg/l	IS 3025 (Part 35)	Not Specified	Not Specified	BDL(DL:0.1)
15	Total Chromium as Cr	mg/l	IS 3025 (Part 2)	0.05	No Relaxation	BDL(DL:0.01)
16	Arsenic as As	mg/l	IS 3025 (Part 2)	0.01	No Relaxation	BDL(DL:0.005)

Reviewed By:

Signature

Atrayee Sam P. Ganguly

Name

Ms. Atrayee Saha, Ms. Pinal Ganguly

Designation

Sr. Exe. Chemist, Executive Chemist

Authorized Signatory:

Signature

Name

Dr. Subinayak Muthusamy

Designation

Lab In charge

Head Office:

Shree Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India
Tel. : 91 33 40143000 / 22650007 Fax : 91 33 22650008
Email : info@mitrask.com Website : www.mitrask.com

Address of Laboratory :

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West Bengal
Tel.: +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000002471F

Opinion : Acceptable limit & Permissible limit are as per IS:10500:2012

Statement of Conformity NA

— END —

Reviewed By:

Signature: *Atayee Sam P Ganguly*
Name: Mr. Atayee Sam, Mr. Padi Ganguly
Designation: Sr. Exe. Chemist, Executive Chemist

Authorized Signatory:

Signature: *Dr. Soumyadeep Mukhopadhyay*
Name: Dr. Soumyadeep Mukhopadhyay
Designation: Lab In charge

e results relate only to the item(s) tested.

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e reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (AW) 1 month from the date of issue of the Test Report.

e reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shrotri Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India
Tel.: 91 33 40143000 / 22650007 Fax: 91 33 22650009
Email: info@mitrask.com Website: www.mitrask.com

Mitra S. K. Private Limited

Address of Laboratory :

Building No. P-48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950

Doc No: MSK/GEN/19/07



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ULR: TC-695024000002471F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

Date :

Sample No. :

Date of receipt of sample:

Date(s) of performance:

Location of performance of

Reference No. & Date :

Discipline:

MSKPL/FD/2023-24/SEFBA8

16/02/2024

MSKNB/FD/2023-24/02/8RE50J

07/02/2024

07/02/2024 - 08/02/2024

Permanent Facility

3000156017/056, Date - 16/09/2023

Biological

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Water & Residue in Water
2. Description of sample	Drinking Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	06/02/2024
5. Place of sampling	Bamebari Canteen R.O. Water
6. Environmental conditions during sampling & Transport	(2 -5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS:17614(P-25) 2022
8. Identification of the personnel performing sampling by MSK	Lalin Naik

Report No. : MSKPL/FD/2023-24/SEFBA8

Sample No. : MSKNB/FD/2023-24/02/8RE50J

RESULT

Micro Biology

Sl No.	Parameter	UOM	Method	Acceptable Limit	Permissible Limit	Result
1	Total Coliform Bacteria	/100ml	IS 15185	Not Detectable	Not Applicable	Not Detected
2	E. Coli	/100ml	IS 15185	Not Detectable	Not Applicable	Not Detected

Opinion : Acceptable limit & Permissible limit are as per IS:10500:2012

Statement of Conformity NA

— END —

Reviewed By

Signature

Name : Ms. Maitreyee Chakraborty

Designation : Executive Microbiologist

Authorized Signatory:

Signature

Name : Ms. Maitreyee Chakraborty

Designation : Executive Microbiologist

Results relate only to the item(s) tested.

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A reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

A reserved part of sample(s) for microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

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 E : barbil@mitrask.co.in
 W : www.mitrask.com

Report No. MSKGL/ED/2023-24/005044

Date: 20.02.2024

ANALYSIS REPORT OF DRINKING WATER

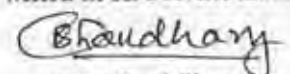
Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	BAMEBARI IRON & MANGANESE MINES (BIMM)
Date of sampling	06.02.2024
Location	Bamebari Canteen R.O. Water (BIMM)

CHEMICAL ANALYSIS OF WATER AS PER IS: 10500 - 2012

Sl. No.	Test Parameters	Unite	Method	Norms as per IS: 10500-2012		Results
				Desirable Limit	Permissible Limit	
1	Ammonical Nitrogen	mg/l	APHA (24th Edition), 4500-NH3-F	0.5	No Relaxation	<0.1
2	Calcium (as Ca)	mg/l	APHA (24th Edition), 3500 Ca B	75	200	27
3	Chloride (as Cl)	mg/l	APHA (24th Edition), 4500 -Cl B	250	1000	6
4	Odour	Hazen	3025 (Part-5)-1983; Rfm:2012	Agreeable	Agreeable	Agreeable
5	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	---	200
6	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	0.3	No Relaxation	<0.05
7	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	30	100	8
8	Phenolic Compound (as C ₆ H ₅ OH)	mg/l	APHA (24th Edition), 5530C (Chloroform Extraction)	0.001	0.002	<0.001
9	Potassium (as K)	mg/l	APHA (24th Edition), 3500 K B	---	---	<1.0
10	Salinity	PSU	APHA (24th Edition), 2520B	---	---	0.102
11	Sodium (as Na)	mg/l	APHA (24th Edition), 3500 Na B	---	---	2.8
12	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	200	400	1.4
13	Taste	None	IS 3025 (Part 8)-1983 Rfm:2012_(0)	Agreeable	Agreeable	Agreeable
14	Total Alkalinity (as CaCO ₃)	mg/l	APHA (24th Edition), 2320B	200	600	88
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	500	2000	120
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	200	600	100
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	---	---	<2.5
18	Turbidity	N.T.U	APHA (24th Edition), 2130B	1	5	<1.0
19	pH value at 25 deg C	None	APHA 24 th Edition, 2023, 4500, H+B	6.5-8.5	No Relaxation	6.74

Checked by:- 

For Mitra S. K. Private Limited


 Authorized Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagiadanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000002472F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2023-24/UXFBAL

Date :

16/02/2024

Sample No. :

MSKNB/FD/2023-24/02/MCX4EE

Date of receipt of sample:

07/02/2024

Date(s) of performance:

07/02/2024 - 16/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Water & Residue in Water
2. Description of sample	Drinking Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	06/02/2024
5. Place of sampling	Bamebari WTP Inlet
6. Environmental conditions during sampling & Transport	(2 -5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS:17614(P-5) 2022
8. Identification of the personnel performing sampling by MSK	Lalin Naik

Report No. : MSKPL/FD/2023-24/UXFBAL

Sample No. : MSKNB/FD/2023-24/02/MCX4EE

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Acceptable Limit	Permissible Limit	Result
1	Arsenic as As	mg/l	IS 3025 (Part 2)	0.01	No Relaxation	BDL(DL:0.005)
2	Zinc as Zn	mg/l	IS 3025 (Part 2)	5	15	BDL(DL:0.02)
3	Colour	Hazen	IS 3025 (Part 4)	5	15	BDL(DL:1.0)
4	Copper as Cu	mg/l	IS 3025 (Part 2)	0.05	1.5	BDL(DL:0.02)
5	Cyanide as CN	mg/l	IS 3025 (Part 27) Sec1	0.05	No Relaxation	BDL(DL:0.02)
6	Fluoride as F	mg/l	IS 3025 (Part 60)	1.0	1.5	BDL(DL:0.2)
7	Lead as Pb	mg/l	IS 3025 (Part 2)	0.01	No Relaxation	BDL(DL:0.005)
8	Manganese as Mn	mg/l	IS 3025 (Part 2)	0.1	0.3	BDL(DL:0.02)
9	Mercury as Hg	mg/l	IS 3025 (Part 48)	0.001	No Relaxation	BDL(DL:0.0002)
10	Nickel (as Ni)	mg/l	IS 3025 (Part 2)	0.02	No Relaxation	BDL(DL:0.01)
11	Nitrate as NO3	mg/l	APHA (24th EDITION) 4500-NO3- B	45	No Relaxation	BDL(DL:0.4)
12	Selenium as Se	mg/l	IS 3025 (Part 2)	0.01	No Relaxation	BDL(DL:0.005)
13	Silica (as SiO2)	mg/l	IS 3025 (Part 35)	Not Specified	Not Specified	BDL(DL:0.1)
14	Silver as Ag	mg/l	IS 3025 (Part 2)	0.1	No Relaxation	BDL(DL:0.005)
15	Total Chromium as Cr	mg/l	IS 3025 (Part 2)	0.05	No Relaxation	BDL(DL:0.01)
16	Cadmium as Cd	mg/l	IS 3025 (Part 2)	0.003	No Relaxation	BDL(DL:0.001)

Reviewed By:

Signature

Name : Mr. Atreyee Saha, Ms. Priya Ganguly

Designation : Sr. Exe. Chemist, Executive Chemist

Authorized Signatory:

Signature

Name : Dr. Soumyadeep Mukhopadhyay

Designation : Lab In charge

Head Office:

Shraachi Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India
Tel. : 91 33 40143000 / 22850007 Fax : 91 33 22850008
Email : info@mitrask.com Website : www.mitrask.com

Page 1 of 2

Address of Laboratory :

Building No. P-48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



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ULR: TC-695024000002472F

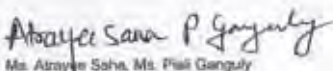
Opinion : Acceptable limit & Permissible limit are as per IS:10500:2012

Statement of Conformity NA

— END —

Reviewed By:

Signature

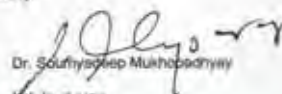


Name : Mr. Atayee Saha, Ms. Piali Ganguly

Designation : Sr. Exe. Chemist, Executive Chemist

Authorized Signatory:

Signature



Name : Dr. Soumyadeep Mukhopadhyay

Designation : Lab In charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office:

Shreechi Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel : 91 33 40143000 / 22650007 Fax : 91 33 22650008
Email : info@mitrask.com Website : www.mitrask.com

Address of Laboratory :

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West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000002472F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2023-24/UXFBAL

Date :

16/02/2024

Sample No. :

MSKNB/FD/2023-24/02/MCX4EE

Date of receipt of sample:

07/02/2024

Date(s) of performance:

07/02/2024 - 08/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Biological

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Water & Residue in Water
2. Description of sample	Drinking Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	06/02/2024
5. Place of sampling	Bamebari WTP Inlet
6. Environmental conditions during sampling & Transport	(2-5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS:17614(P-25) 2022
8. Identification of the personnel performing sampling by MSK	Lalin Nalk

Report No. : MSKPL/FD/2023-24/UXFBAL

Sample No. : MSKNB/FD/2023-24/02/MCX4EE

RESULT

Micro Biology

Sl No.	Parameter	UOM	Method	Acceptable Limit	Permissible Limit	Result
1	Total Coliform Bacteria	/100ml	IS 15185	Not Detectable	Not Applicable	Not Detected
2	E. Coli	/100ml	IS 15185	Not Detectable	Not Applicable	Not Detected

Opinion : Acceptable limit & Permissible limit are as per IS:10500:2012

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name Ms. Maitreyee Chakraborty

Designation : Executive Microbiologist

Authorized Signatory

Signature

Name Ms. Maitreyee Chakraborty

Designation : Executive Microbiologist

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report. The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sterile Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shreeji Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India
Tel. : 91 33 40143000 / 22650007 Fax : 91 33 22650008
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CIN: U51909WB1956PTC023037

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E : barbil@mitrask.co.in
W : www.mitrask.com

Report No. MSKGL/ED/2023-24/ 005048


Date: 20.02.2024

ANALYSIS REPORT OF DRINKING WATER

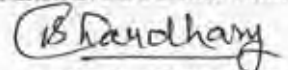
Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	BAMEBARI IRON & MANGANESE MINES (BIMM)
Date of sampling	06.02.2024
Location	Bamebari WTP Inlet (BIMM)

CHEMICAL ANALYSIS OF WATER AS PER IS: 10500 - 2012

Sl. No.	Test Parameters	Unite	Method	Norms as per IS: 10500-2012		Results
				Desirable Limit	Permissible Limit	
1	Ammonical Nitrogen	mg/l	APHA (24th Edition), 4500-NH ₃ -F	0.5	No Relaxation	<0.1
2	Calcium (as Ca)	mg/l	APHA (24th Edition), 3500 Ca B	75	200	26
3	Chloride (as Cl)	mg/l	APHA (24th Edition), 4500 -Cl B	250	1000	8
4	Odour	Hazen	3025 (Part-5)-1983; Rffm:2012	Agreeable	Agreeable	Agreeable
5	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	---	183
6	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	0.3	No Relaxation	<0.05
7	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	30	100	6.7
8	Phenolic Compound (as C ₆ H ₅ OH)	mg/l	APHA (24th Edition), 5530C (Chloroform Extraction)	0.001	0.002	<0.001
9	Potassium (as K)	mg/l	APHA (24th Edition), 3500 K B	---	---	<1.0
10	Salinity	PSU	APHA (24th Edition), 2520B	---	---	0.098
11	Sodium (as Na)	mg/l	APHA (24th Edition), 3500 Na B	---	---	3.8
12	Sulphate (as SO ₄)	mg/l	APHA (24th Edition) 4500 SO ₄ -E	200	400	1.6
13	Taste	None	IS 3025 (Part 8)-1983 Rffm:2012 (O)	Agreeable	Agreeable	Not Agreeable
14	Total Alkalinity (as CaCO ₃)	mg/l	APHA (24th Edition), 2320B	200	600	72
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	500	2000	110
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	200	600	92
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	---	---	<2.5
18	Turbidity	N.T.U	APHA (24th Edition), 2130B	1	5	<1.0
19	pH value at 25 deg C	None	APHA 24th Edition, 2023, 4500, H+B	6.5-8.5	No Relaxation	6.56

Checked by:- 

For Mitra S. K. Private Limited


Authorized Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-69502400002473F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2023-24/A6FBA7

Date :

16/02/2024

Sample No. :

MSKNB/FD/2023-24/02/MY851F

Date of receipt of sample:

07/02/2024

Date(s) of performance:

07/02/2024 - 16/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Water & Residue in Water
2. Description of sample	Drinking Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	06/02/2024
5. Place of sampling	Bamebari WTP outlet
6. Environmental conditions during sampling & Transport	(2 -5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS:17614(P-5) 2022
8. Identification of the personnel performing sampling by MSK	Lalin Naik

Report No. : MSKPL/FD/2023-24/A6FBA7

Sample No. : MSKNB/FD/2023-24/02/MY851F

RESULT

Chemical						
Sl No.	Parameter	UOM	Method	Acceptable Limit	Permissible Limit	Result
1	Arsenic as As	mg/l	IS 3025 (Part 2)	0.01	No Relaxation	BDL(DL:0.005)
2	Zinc as Zn	mg/l	IS 3025 (Part 2)	5	15	BDL(DL:0.02)
3	Colour	Hazen	IS 3025 (Part 4)	5	15	BDL(DL:1.0)
4	Copper as Cu	mg/l	IS 3025 (Part 2)	0.05	1.5	BDL(DL:0.02)
5	Cyanide as CN	mg/l	IS 3025 (Part 27) Sec1	0.05	No Relaxation	BDL(DL:0.02)
6	Fluoride as F	mg/l	IS 3025 (Part 60)	1.0	1.5	0.30
7	Lead as Pb	mg/l	IS 3025 (Part 2)	0.01	No Relaxation	BDL(DL:0.005)
8	Manganese as Mn	mg/l	IS 3025 (Part 2)	0.1	0.3	BDL(DL:0.02)
9	Mercury as Hg	mg/l	IS 3025 (Part 48)	0.001	No Relaxation	BDL(DL:0.0002)
10	Nickel (as Ni)	mg/l	IS 3025 (Part 2)	0.02	No Relaxation	BDL(DL:0.01)
11	Nitrate as NO3	mg/l	APHA (24th EDITION) 4500-NO3- B	45	No Relaxation	0.65
12	Selenium as Se	mg/l	IS 3025 (Part 2)	0.01	No Relaxation	BDL(DL:0.005)
13	Silica (as SiO2)	mg/l	IS 3025 (Part 35)	Not Specified	Not Specified	BDL(DL:0.1)
14	Silver as Ag	mg/l	IS 3025 (Part 2)	0.1	No Relaxation	BDL(DL:0.005)
15	Total Chromium as Cr	mg/l	IS 3025 (Part 2)	0.05	No Relaxation	BDL(DL:0.01)
16	Cadmium as Cd	mg/l	IS 3025 (Part 2)	0.003	No Relaxation	BDL(DL:0.001)

Reviewed By:

Signature

Atsaya Saha P. Ganguly

Name

Ms. Atsaya Saha, Ms. Piali Ganguly

Designation

Sr. Exk. Chemist, Executive Chemist

Authorized Signatory:

Signature

Name

Dr. Soumya Das Mukhopadhyay

Designation

Lab in charge

Head Office:

Shreeji Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel. : 91 33 40143000 / 22650007 Fax : 91 33 22650008
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Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
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West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000002473F

Opinion : Acceptable limit & Permissible limit are as per IS:10500:2012

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name

Designation : Sr. Exe. Chemist, Executive Chemist

Abiraj Saha P Ganguly
Ms. Abiraj Saha, Ms. Piali Ganguly

Authorized Signatory:

Signature

Name

Designation

Dr. Souryadeep Mukhopadhyay
Lab In charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shradhi Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700015, West Bengal, India
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West Bengal
Tel. : +91 7044036120
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TC-6950



Scan for Portal

ULR: TC-695024000002473F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2023-24/A6FBA7

Date :

16/02/2024

Sample No. :

MSKNB/FD/2023-24/02/MY851F

Date of receipt of sample:

07/02/2024

Date(s) of performance:

07/02/2024 - 08/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Biological

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Water & Residue in Water
2. Description of sample	Drinking Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	06/02/2024
5. Place of sampling	Bamebari WTP outlet
6. Environmental conditions during sampling & Transport	(2 -5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS:17614(P-25) 2022
8. Identification of the personnel performing sampling by MSK	Lalin Naik

Report No. : MSKPL/FD/2023-24/A6FBA7**Sample No. :** MSKNB/FD/2023-24/02/MY851F

RESULT

Micro Biology

Sl No.	Parameter	UOM	Method	Acceptable Limit	Permissible Limit	Result
1	Total Coliform Bacteria	/100ml	IS 15185	Not Detectable	Not Applicable	Not Detected
2	E. Coli	/100ml	IS 15185	Not Detectable	Not Applicable	Not Detected

Opinion : Acceptable limit & Permissible limit are as per IS:10500:2012

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name : Ms. Maitreyee Chakraborty

Designation : Executive Microbiologist

Authorized Signatory:

Signature

Name : Ms. Maitreyee Chakraborty

Designation : Executive Microbiologist

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is reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

is reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shreeji Centre (5th Floor), 746, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel. : 91 33 40143000 / 22650007 Fax : 91 33 22650006
Email : info@mitrask.com Website : www.mitrask.com

Report No. MSKGL/ED/2023-24/005046


Date: 20.02.2024

ANALYSIS REPORT OF DRINKING WATER

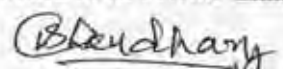
Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	BAMEBARI IRON & MANGANESE MINES (BIMM)
Date of sampling	06.02.2024
Location	Bamebari WTP Outlet (BIMM)

CHEMICAL ANALYSIS OF WATER AS PER IS: 10500 - 2012

Sl. No.	Test Parameters	Unite	Method	Norms as per IS: 10500-2012		Results
				Desirable Limit	Permissible Limit	
1	Ammonical Nitrogen	mg/l	APHA (24th Edition), 4500-NH3-F	0.5	No Relaxation	<0.1
2	Calcium (as Ca)	mg/l	APHA (24th Edition), 3500 Ca B	75	200	22
3	Chloride (as Cl)	mg/l	APHA (24th Edition), 4500 -Cl B	250	1000	10
4	Odour	Hazen	3025 (Part-5)-1983; Rffm: 2012	Agreeable	Agreeable	Agreeable
5	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	---	195
6	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	0.3	No Relaxation	<0.05
7	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	30	100	6
8	Phenolic Compound (as C ₆ H ₅ OH)	mg/l	APHA (24th Edition), 5530C (Chloroform Extraction)	0.001	0.002	<0.001
9	Potassium (as K)	mg/l	APHA (24th Edition), 3500 K B	---	---	<1.0
10	Salinity	PSU	APHA (24th Edition), 2520B	---	---	0.100
11	Sodium (as Na)	mg/l	APHA (24th Edition), 3500 Na B	---	---	4
12	Sulphate (as SO ₄)	mg/l	APHA (24th Edition) 4500 SO ₄ -E	200	400	<1.0
13	Taste	None	IS 3025 (Part 8)-1983 Rffm: 2012. (O)	Agreeable	Agreeable	Agreeable
14	Total Alkalinity (as CaCO ₃)	mg/l	APHA (24th Edition), 2320B	200	600	88
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	500	2000	116
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	200	600	80
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	---	---	<2.5
18	Turbidity	N.T.U	APHA (24th Edition), 2130B	1	5	<1.0
19	pH value at 25 deg C	None	APHA 24 th Edition, 2023, 4500, H+B	6.5-8.5	No Relaxation	6.58

Checked by:- 

For Mitra S. K. Private Limited


Authorized Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000002474F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2023-24/TWFBAJ

Date :

16/02/2024

Sample No. :

MSKNB/FD/2023-24/02/VD54D3

Date of receipt of sample:

07/02/2024

Date(s) of performance:

07/02/2024 - 16/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Water & Residue in Water
2. Description of sample	Drinking Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	06/02/2024
5. Place of sampling	Bichakundi WTP Inlet
6. Environmental conditions during sampling & Transport	(2 -5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS:17614(P-5) 2022
8. Identification of the personnel performing sampling by MSK	Lalin Naik

Report No. : MSKPL/FD/2023-24/TWFBAJ

Sample No. : MSKNB/FD/2023-24/02/VD54D3

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Acceptable Limit	Permissible Limit	Result
1	Arsenic as As	mg/l	IS 3025 (Part 2)	0.01	No Relaxation	BDL(DL:0.005)
2	Zinc as Zn	mg/l	IS 3025 (Part 2)	5	15	BDL(DL:0.02)
3	Colour	Hazen	IS 3025 (Part 4)	5	15	BDL(DL:1.0)
4	Copper as Cu	mg/l	IS 3025 (Part 2)	0.05	1.5	BDL(DL:0.02)
5	Cyanide as CN	mg/l	IS 3025 (Part 27) Sec1	0.05	No Relaxation	BDL(DL:0.02)
6	Fluoride as F	mg/l	IS 3025 (Part 60)	1.0	1.5	BDL(DL:0.2)
7	Lead as Pb	mg/l	IS 3025 (Part 2)	0.01	No Relaxation	BDL(DL:0.005)
8	Manganese as Mn	mg/l	IS 3025 (Part 2)	0.1	0.3	BDL(DL:0.02)
9	Mercury as Hg	mg/l	IS 3025 (Part 48)	0.001	No Relaxation	BDL(DL:0.0002)
10	Nickel (as Ni)	mg/l	IS 3025 (Part 2)	0.02	No Relaxation	BDL(DL:0.01)
11	Nitrate as NO3	mg/l	APHA (24th EDITION) 4500-NO3- B	45	No Relaxation	BDL(DL:0.4)
12	Selenium as Se	mg/l	IS 3025 (Part 2)	0.01	No Relaxation	BDL(DL:0.005)
13	Silica (as SiO2)	mg/l	IS 3025 (Part 35)	Not Specified	Not Specified	BDL(DL:0.1)
14	Silver as Ag	mg/l	IS 3025 (Part 2)	0.1	No Relaxation	BDL(DL:0.005)
15	Total Chromium as Cr	mg/l	IS 3025 (Part 2)	0.05	No Relaxation	BDL(DL:0.01)
16	Cadmium as Cd	mg/l	IS 3025 (Part 2)	0.003	No Relaxation	BDL(DL:0.001)

Reviewed By:

Signature

Name

Designation : Sr. Exe. Chemist, Executive Chemist

Atreyee Saha P. Ganguly
Ms. Atreyee Saha, Ms. Priat Ganguly

Authorized Signatory:

Signature

Name

Designation : Lab In charge

Dr. Souryadeep Mukhopadhyay

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000002474F

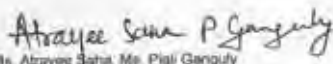
Opinion : Acceptable limit & Permissible limit are as per IS:10500:2012

Statement of Conformity NA

— END —

Reviewed By:

Signature



Name

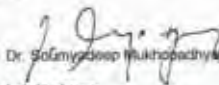
Mr. Atreyee Saha, Mr. Piali Ganguly

Designation

Sr. Exe. Chemist, Executive Chemist

Authorized Signatory:

Signature



Name

Dr. Sohamdeep Mukhopadhyay

Designation

Lab In charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office:

Shree Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700018, West Bengal, India
Tel. : 91 33 40143000 / 22650007 Fax : 91 33 22650008
Email : info@mitrask.com Website : www.mitrask.com

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000002474F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2023-24/TWFBAJ

Date :

16/02/2024

Sample No. :

MSKNB/FD/2023-24/02/VD54D3

Date of receipt of sample:

07/02/2024

Date(s) of performance:

07/02/2024 - 08/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Biological

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Water & Residue in Water
2. Description of sample	Drinking Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	06/02/2024
5. Place of sampling	Bichakundi WTP Inlet
6. Environmental conditions during sampling & Transport	(2 -5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS:17614(P-25) 2022
8. Identification of the personnel performing sampling by MSK	Lalin Naik

Report No. : MSKPL/FD/2023-24/TWFBAJ

Sample No. : MSKNB/FD/2023-24/02/VD54D3

RESULT

Micro Biology

Sl No.	Parameter	UOM	Method	Acceptable Limit	Permissible Limit	Result
1	Total Coliform Bacteria	/100ml	IS 15185	Not Detectable	Not Applicable	Not Detected
2	E. Coli	/100ml	IS 15185	Not Detectable	Not Applicable	Not Detected

Opinion : Acceptable limit & Permissible limit are as per IS:10500:2012

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name : Ms. Maitreyee Chakraborty

Designation : Executive Microbiologist

Authorized Signatory:

Signature

Name : Ms. Maitreyee Chakraborty

Designation : Executive Microbiologist

The results relate only to the item(s) tested.

The Test Report shall not be reproduced except in full, without the permission of Mitra S.K. Private Limited.

The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days on the date of issue of the Test Report.

The reserved part of sample(s) for microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

Head Office: Shree Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India
Tel. : 91 33 40143000 / 22650007 Fax : 91 33 22650008
Email : info@mitrask.com Website : www.mitrask.com

Report No. MSKGL/ED/2023-24/005047


Date: 20.02.2024

ANALYSIS REPORT OF DRINKING WATER

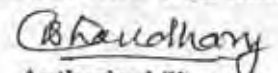
Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	06.02.2024
Location	Bichakundi WTP Inlet (JWIMM)

CHEMICAL ANALYSIS OF WATER AS PER IS: 10500 - 2012

Sl. No.	Test Parameters	Unite	Method	Norms as per IS: 10500-2012		Results
				Desirable Limit	Permissible Limit	
1	Ammonical Nitrogen	mg/l	APHA (24th Edition), 4500-NH ₃ -F	0.5	No Relaxation	<0.1
2	Calcium (as Ca)	mg/l	APHA (24th Edition), 3500 Ca B	75	200	11
3	Chloride (as Cl)	mg/l	APHA (24th Edition), 4500-Cl B	250	1000	10
4	Odour	Hazen	3025 (Part-5)-1983; Rfmm: 2012	Agreeable	Agreeable	Agreeable
5	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	---	84
6	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	0.3	No Relaxation	0.1
7	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	30	100	1.9
8	Phenolic Compound (as C ₆ H ₅ OH)	mg/l	APHA (24th Edition), 5530C (Chloroform Extraction)	0.001	0.002	<0.001
9	Potassium (as K)	mg/l	APHA (24th Edition), 3500 K B	---	---	<1.0
10	Salinity	PSU	APHA (24th Edition), 2520B	---	---	0.045
11	Sodium (as Na)	mg/l	APHA (24th Edition), 3500 Na B	---	---	2.8
12	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	200	400	<1.0
13	Taste	None	IS 3025 (Part 8)-1983 Rfmm: 2012 (0)	Agreeable	Agreeable	Agreeable
14	Total Alkalinity (as CaCO ₃)	mg/l	APHA (24th Edition), 2320B	200	600	24
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	500	2000	52
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	200	600	36
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	---	---	2.7
18	Turbidity	N.T.U	APHA (24th Edition), 2130B	1	5	<1.0
19	pH value at 25 deg C	None	APHA 24th Edition, 2023, 4500, H+B	6.5-8.5	No Relaxation	6.66

Checked by:- 

For Mitra S. K. Private Limited


Authorized Signatory

Address of Laboratory :

Building No. P-48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000003017F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

A/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2023-24/ZEFCB9

Date :

26/02/2024

Sample No. :

MSKNB/FD/2023-24/02/NE127V

Date of receipt of sample:

15/02/2024

Date(s) of performance:

15/02/2024 - 26/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Water & Residue in Water
2. Description of sample	Drinking Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	14/02/2024
5. Place of sampling	Joribar rest shelter (BIMM) R O water
6. Environmental conditions during sampling & Transport	(2-5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS:17614(P-5) 2022
8. Identification of the personnel performing sampling by MSK	PRANAB SETHI

Report No. : MSKPL/FD/2023-24/ZEFCB9

Sample No. : MSKNB/FD/2023-24/02/NE127V

RESULT

Chemical						
Sl No.	Parameter	UOM	Method	Acceptable Limit	Permissible Limit	Result
1	Cadmium as Cd	mg/l	IS 3025 (Part 2)	0.003	No Relaxation	BDL(DL:0.001)
2	Zinc as Zn	mg/l	IS 3025 (Part 2)	5	15	BDL(DL:0.02)
3	Colour	Hazen	IS 3025 (Part 4)	5	15	BDL(DL:1.0)
4	Copper as Cu	mg/l	IS 3025 (Part 2)	0.05	1.5	BDL(DL:0.02)
5	Cyanide as CN	mg/l	IS 3025 (Part 27) Sec1	0.05	No Relaxation	BDL(DL:0.02)
6	Fluoride as F	mg/l	IS 3025 (Part 60)	1.0	1.5	BDL(DL:0.2)
7	Lead as Pb	mg/l	IS 3025 (Part 2)	0.01	No Relaxation	BDL(DL:0.005)
8	Manganese as Mn	mg/l	IS 3025 (Part 2)	0.1	0.3	BDL(DL:0.02)
9	Mercury as Hg	mg/l	IS 3025 (Part 46)	0.001	No Relaxation	BDL(DL:0.0002)
10	Nickel (as Ni)	mg/l	IS 3025 (Part 2)	0.02	No Relaxation	BDL(DL:0.01)
11	Nitrate as NO3	mg/l	APHA (24th EDITION) 4500-NO3-B	45	No Relaxation	0.56
12	Selenium as Se	mg/l	IS 3025 (Part 2)	0.01	No Relaxation	BDL(DL:0.005)
13	Silica (as SiO2)	mg/l	IS 3025 (Part 35)	Not Specified	Not Specified	BDL(DL:0.1)
14	Silver as Ag	mg/l	IS 3025 (Part 2)	0.1	No Relaxation	BDL(DL:0.005)
15	Total Chromium as Cr	mg/l	IS 3025 (Part 2)	0.05	No Relaxation	BDL(DL:0.01)
16	Arsenic as As	mg/l	IS 3025 (Part 2)	0.01	No Relaxation	BDL(DL:0.005)

Reviewed By

Signature

Atreyee Saha P. Ganguly

Name Ms. Atreyee Saha, Ms. Palli Ganguly

Designation Sr. Exe. Chemist, Executive Chemist

Authorized Signatory

Signature

Name

Dr. Soumyadeep Mukherjee

Designation Lab in charge

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000003017F

Opinion : Acceptable limit & Permissible limit are as per IS:10500:2012

Statement of Conformity NA

— END —

Reviewed By:

Signature: *Abir Saha P. Ganguly*
Name: Ms. Arpan Saha, Ms. Piali Ganguly
Designation: Sr. Exs. Chemist, Executive Chemist

Authorized Signatory:

Signature: *Dr. Soumyadeep Mukhopadhyay*
Name: Dr. Soumyadeep Mukhopadhyay
Designation: Lab. in charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Sirachhi Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel. : 91 33 40143000 / 22650007 Fax : 91 33 22650009
Email : info@mitrask.com Website : www.mitrask.com

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



Scan for Portal

ULR: TC-695024000003017F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2023-24/ZEFCB9

Date :

26/02/2024

Sample No. :

MSKNB/FD/2023-24/02/NE127V

Date of receipt of sample:

15/02/2024

Date(s) of performance:

15/02/2024 - 16/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Biological

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Water & Residue in Water
2. Description of sample	Drinking Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	14/02/2024
5. Place of sampling	Joribar rest shelter (BIMM) R O water
6. Environmental conditions during sampling & Transport	(2 -5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS:17614(P-25) 2022
8. Identification of the personnel performing sampling by MSK	PRANAB SETHI

Report No. : MSKPL/FD/2023-24/ZEFCB9**Sample No. :** MSKNB/FD/2023-24/02/NE127V

RESULT

Micro Biology

Sl No.	Parameter	UOM	Method	Acceptable Limit	Permissible Limit	Result
1	Total Coliform Bacteria	/100ml	IS 15185	Not Detectable	Not Applicable	Not Detected
2	E. coli	/100ml	IS 15185	Not Detectable	Not Applicable	Not Detected

Opinion : Acceptable limit & Permissible limit are as per IS:10500:2012

Statement of Conformity NA

— END —

Reviewed By:

Signature :

Name Ms. Maitreyee Chakraborty

Designation Executive Microbiologist

Authorized Signatory:

Signature

Name Ms. Maitreyee Chakraborty

Designation Executive Microbiologist

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report. The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shraddha Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel. : 91 33 40143000 / 22650007 Fax : 91 33 22650008
Email : info@mitrask.com Website : www.mitrask.com

At/P.O.: BARBIL Ward No-6
 Dist.: Keonjhar, Odisha - 758035
 CIN: U51909WB1956PTC023037

T : +91 94370 09815, 94370 09820, 94370 75269
 E : barbil@mitrask.co.in
 W : www.mitrask.com

Report No. MSKGL/ED/2023-24/005030


Date: 25.02.2024

ANALYSIS REPORT OF DRINKING WATER

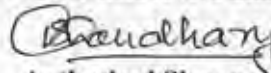
Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	BAMEBARI IRON & MANGANESE MINES (BIMM)
Date of sampling	14.02.2024
Location	Joribar Rest Shelter R O Water (BIMM)

CHEMICAL ANALYSIS OF WATER AS PER IS: 10500 - 2012

Sl. No.	Test Parameters	Unit	Method	Norms as per IS: 10500-2012		Results
				Desirable Limit	Permissible Limit	
1	Ammonical Nitrogen	mg/l	APHA (24th Edition), 4500-NH3-F	0.5	No Relaxation	<0.1
2	Calcium (as Ca)	mg/l	APHA (24th Edition), 3500 Ca B	75	200	30
3	Chloride (as Cl)	mg/l	APHA (24th Edition), 4500 -Cl B	250	1000	20
4	Odour	Hazen	3025 (Part-5)-1983; Rfm: 2012	Agreeable	Agreeable	Agreeable
5	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	—	—	253
6	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	0.3	No Relaxation	<0.05
7	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	30	100	9
8	Phenolic Compound (as C ₆ H ₅ OH)	mg/l	APHA (24th Edition), 5530C (Chloroform Extraction)	0.001	0.002	<0.001
9	Potassium (as K)	mg/l	APHA (24th Edition), 3500 K B	—	—	<1.0
10	Salinity	PSU	APHA (24th Edition), 2520B	—	—	0.129
11	Sodium (as Na)	mg/l	APHA (24th Edition), 3500 Na B	—	—	3.9
12	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	200	400	<1.0
13	Taste	None	IS 3025 (Part 8)-1983 Rfm: 2012 (O)	Agreeable	Agreeable	Agreeable
14	Total Alkalinity (as CaCO ₃)	mg/l	APHA (24th Edition), 2320B	200	600	96
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	500	2000	152
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	200	600	112
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	—	—	<2.5
18	Turbidity	N.T.U	APHA (24th Edition), 2130B	1	5	<1.0
19	pH value at 25 deg C	None	APHA 24th Edition, 2023, 4500, H+B	6.5-8.5	No Relaxation	7.58

Checked by: 

For Mitra S. K. Private Limited


 Authorized Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000003128F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2023-24/JTFF6F

Date :

29/02/2024

Sample No. :

MSKNB/FD/2023-24/02/CB1965

Date of receipt of sample:

17/02/2024

Date(s) of performance:

17/02/2024 - 29/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Water & Residue in Water
2. Description of sample	Drinking Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	15/02/2024
5. Place of sampling	First Aid Rest Shelter
6. Environmental conditions during sampling & Transport	(2 -5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS:17614(P-5) 2022
8. Identification of the personnel performing sampling by MSK	DAMBARUDHAR DAS

Report No. : MSKPL/FD/2023-24/JTFF6F

Sample No. : MSKNB/FD/2023-24/02/CB1965

RESULT

Chemical						
Sl No.	Parameter	UOM	Method	Acceptable Limit	Permissible Limit	Result
1	Cadmium as Cd	mg/l	IS 3025 (Part 2)	0.003	No Relaxation	BDL(DL:0.001)
2	Total Chromium as Cr	mg/l	IS 3025 (Part 2)	0.05	No relaxation	BDL(DL:0.01)
3	Silver as Ag	mg/l	IS 3025 (Part 2)	0.1	No Relaxation	BDL(DL:0.005)
4	Silica (as SiO ₂)	mg/l	IS 3025 (Part 35)	Not Specified	Not Specified	BDL(DL:0.1)
5	Selenium as Se	mg/l	IS 3025 (Part 2)	0.01	No relaxation	BDL(DL:0.005)
6	Mercury as Hg	mg/l	IS 3025 (Part 48)	0.001	No relaxation	BDL(DL:0.0002)
7	Zinc as Zn	mg/l	IS 3025 (Part 2)	5	15	BDL(DL:0.02)
8	Colour	Hazen	IS 3025 (Part 4)	5	15	BDL(DL:1.0)
9	Cyanide as CN	mg/l	IS 3025 (Part 27) Sec1	0.05	No relaxation	BDL(DL:0.02)
10	Fluoride as F	mg/l	IS 3025 (Part 60)	1.0	1.5	BDL(DL:0.2)
11	Nitrate as NO ₃	mg/l	APHA (24th EDITION) 4500-NO ₃ -B	45	No Relaxation	BDL(DL:0.4)
12	Nickel (as Ni)	mg/l	IS 3025 (Part 2)	0.02	No Relaxation	BDL(DL:0.01)
13	Arsenic as As	mg/l	IS 3025 (Part 2)	0.01	No Relaxation	BDL(DL:0.005)
14	Manganese as Mn	mg/l	IS 3025 (Part 2)	0.1	0.3	BDL(DL:0.02)
15	Lead as Pb	mg/l	IS 3025 (Part 2)	0.01	No relaxation	BDL(DL:0.005)
16	Copper as Cu	mg/l	IS 3025 (Part 2)	0.05	1.5	BDL(DL:0.02)

Reviewed By:

Signature

Atsayer Saha P. Ganguly

Name

Ms. Arayee Saha, Ms. Palli Ganguly

Designation

Sr. Eval. Chemist, Executive Chemist

Authorized Signatory:

Signature

Name

Dr. Soumyadeep Mukhopadhyay

Designation

Lab In charge

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



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ULR: TC-695024000003128F

Opinion : Acceptable limit & Permissible limit are as per IS:10500:2012

Statement of Conformity NA

— END —

Reviewed By:

Signature: *Atuljee Saha P Ganguly*

Name: Ms. Atuljee Saha, Ms. Piali Ganguly

Designation: Sr. Exe. Chemist, Executive Chemist

Authorized Signatory:

Signature: *Dr. Soumyadeep Mukhopadhyay*

Name: Dr. Soumyadeep Mukhopadhyay

Designation: Lab In charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shree Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel. : 91 33 40143000 / 22650007 Fax : 91 33 22650008
Email : info@mitrask.com Website : www.mitrask.com

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



Scan for Portal

ULR: TC-695024000003128F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

AVPo. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2023-24/JTFF6F

Date :

29/02/2024

Sample No. :

MSKNB/FD/2023-24/02/CB1965

Date of receipt of sample:

17/02/2024

Date(s) of performance:

17/02/2024 - 19/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000158017/056, Date - 16/09/2023

Discipline:

Biological

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Water & Residue in Water
2. Description of sample	Drinking Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	15/02/2024
5. Place of sampling	First Aid Rest Shelter
6. Environmental conditions during sampling & Transport	(2 -5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS:17614(P-25) 2022
8. Identification of the personnel performing sampling by MSK	DAMBARUDHAR DAS

Report No. : MSKPL/FD/2023-24/JTFF6F

Sample No. : MSKNB/FD/2023-24/02/CB1965

RESULT

Micro Biology

Sl No.	Parameter	UOM	Method	Acceptable Limit	Permissible Limit	Result
1	Total coliform	/100ml	IS 15185	Not Detectable	Not Applicable	Not Detected
2	E. coli	/100ml	IS 15185	Not Detectable	Not Applicable	Not Detected

Opinion : Acceptable limit & Permissible limit are as per IS:10500:2012

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name Ms. Maitreyee Chakraborty

Designation Executive Microbiologist

Authorized Signatory:

Signature

Name Ms. Maitreyee Chakraborty

Designation Executive Microbiologist

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shraddha Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700015, West Bengal, India.
Tel. : 91 33 40143000 / 22550007 Fax : 91 33 22550008
Email: info@mitrask.com Website: www.mitrask.com

Mitra S. K. Private Limited

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Report No. MSKGL/ED/2023-24/005032

Date: 25.02.2024

ANALYSIS REPORT OF DRINKING WATER

Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	BAMEBARI IRON & MANGANESE MINES (BIMM)
Date of sampling	15.02.2024
Location	First Aid Rest Shelter R O Water (BIMM)

CHEMICAL ANALYSIS OF WATER AS PER IS: 10500 - 2012

Sl. No.	Test Parameters	Unite	Method	Norms as per IS: 10500-2012		Results
				Desirable Limit	Permissible Limit	
1	Ammonical Nitrogen	mg/l	APHA (24th Edition), 4500-NH3-F	0.5	No Relaxation	<0.1
2	Calcium (as Ca)	mg/l	APHA (24th Edition), 3500 Ca B	75	200	10
3	Chloride (as Cl)	mg/l	APHA (24th Edition), 4500 -Cl B	250	1000	6
4	Odour	Hazen	3025 (Part-5)-1983; Rffm:2012	Agreeable	Agreeable	Agreeable
5	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	---	80
6	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	0.3	No Relaxation	<0.05
7	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	30	100	12
8	Phenolic Compound (as C6H5OH)	mg/l	APHA (24th Edition), 5530C (Chloroform Extraction)	0.001	0.002	<0.001
9	Potassium (as K)	mg/l	APHA (24th Edition), 3500 K B	---	---	<1.0
10	Salinity	PSU	APHA (24th Edition), 2520B	---	---	0.92
11	Sodium (as Na)	mg/l	APHA (24th Edition), 3500 Na B	---	---	3.8
12	Sulphate (as SO4)	mg/l	APHA (24th Edition) 4500 SO42-E	200	400	<1.0
13	Taste	None	IS 3025 (Part 8)-1983 Rffm:2012 (0)	Agreeable	Agreeable	Agreeable
14	Total Alkalinity (as CaCO3)	mg/l	APHA (24th Edition), 2320B	200	600	24
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	500	2000	48
16	Total Hardness (as CaCO3)	mg/l	APHA (24th Edition), 2340 C	200	600	28
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	---	---	<2.5
18	Turbidity	N.T.U	APHA (24th Edition), 2130B	1	5	<1.0
19	pH value at 25 deg C	None	APHA 24th Edition, 2023, 4500, H+B	6.5-8.5	No Relaxation	7.04

Checked by:-

For Mitra S. K. Private Limited

Authorized Signatory

WATER QUALITY MONITORING REPORT

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000002011F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2023-24/4EED6D

Date :

07/02/2024

Sample No. :

MSKNB/FD/2023-24/01/BET21Q

Date of receipt of sample:

05/01/2024

Date(s) of performance:

05/01/2024 - 15/01/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results.

1. Group	Water & Residue in Water
2. Description of sample	SURFACE WATER
3. Unique Identification of sample(if any)	NA
4. Date of sampling	04/01/2024
5. Place of sampling	BBL-4364 Palasa (kha) Village Pond Water
6. Environmental conditions during sampling & Transport	(2 - 5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS 17614 (P-23) 2021
8. Identification of the personnel performing sampling by MSK	Akash Kr Sethi,Pratik Kr. Mantri

Report No. : MSKPL/FD/2023-24/4EED6D**Sample No. :** MSKNB/FD/2023-24/01/BET21Q

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Result
1	Arsenic as As	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
2	Boron as B	mg/l	IS 3025 (Part 2)	BDL(DL:0.25)
3	Cadmium as Cd	mg/l	IS 3025 (Part 2)	BDL(DL:0.001)
4	Colour	Hazen	IS 3025 (Part 4)	BDL(DL:1.0)
5	Copper as Cu	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
6	Cyanide as CN	mg/l	IS 3025 (Part 27) Sec1	BDL(DL:0.02)
7	Fluoride as F	mg/l	IS 3025 (Part 60)	1.27
8	Hexavalent Chromium (as Cr+6)	mg/l	IS 3025 (Part 52) Sec2	BDL(DL:0.01)
9	Lead as Pb	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
10	Manganese as Mn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
11	Mercury as Hg	mg/l	IS 3025 (Part 48)	BDL(DL:0.0002)
12	Nitrate as NO3	mg/l	APHA (24th EDITION) 4500-NO3- B	0.91
13	Zinc as Zn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)

Opinion : NA**Statement of Conformity** NA

----- END -----

Reviewed By:

Signature

Name : Ms. Aratrik Saha, Mr. Piali Ganguly

Designation : Sr. Exec. Chemist, Executive Chemist

Authorized Signatory:

Signature

Name

Designation

Dr. Soumyadeep Mukherjee
Lab in charge

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000002011F

Reviewed By:

Signature

Name : Ms. Anayee Saha, Ms. Piali Ganguly

Designation : Sr. Exe. Chemist, Executive Chemist

Authorized Signatory:

Signature

Name

Designation : Lab in charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Solid, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Seawater, Sealed food) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

Address of Laboratory :

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3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000002011F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2023-24/4EED6D

Date :

07/02/2024

Sample No. :

MSKNB/FD/2023-24/01/BET21Q

Date of receipt of sample:

05/01/2024

Date(s) of performance:

05/01/2024 - 10/01/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Biological

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Water & Residue in Water
2. Description of sample	SURFACE WATER
3. Unique Identification of sample(if any)	NA
4. Date of sampling	04/01/2024
5. Place of sampling	BBL-4364 Palasa (kha) Village Pond Water
6. Environmental conditions during sampling & Transport	(2 - 5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS 17614 (P-25) 2022
8. Identification of the personnel performing sampling by MSK	Akash Kr Sethi,Pratik Kr. Mantri

Report No. : MSKPL/FD/2023-24/4EED6D

Sample No. : MSKNB/FD/2023-24/01/BET21Q

RESULT

Micro Biology

Sl No.	Parameter	UOM	Method	Result
1	Total coliform	MPN/100ml	Standard methods for the examination of water & waste water, 24th edtn, 9221B	12

Opinion : NA

Statement of Conformity NA

----- END -----

Reviewed By:

Signature :

Name : Mr. Sukanta Palui

Designation : Technical In charge

Authorized Signatory:

Signature :

Name : Mr. Sukanta Palui

Designation : Technical In charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report. The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shree Centre (5th Floor), 748, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India
Tel. : 91 33 40143000 / 22650007 Fax : 91 33 22650008
Email : info@mitrask.com Website : www.mitrask.com

Report No. MSKGL/ED/2023-24/004437


Date: 10.02.2024

ANALYSIS REPORT OF SURFACE WATER

Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	Bamebari Iron & Manganese Mines (BIMM)
Date of sampling	04.01.2024
Location	Palasa Kha Village Pond (BIMM)

CHEMICAL ANALYSIS OF WATER

Sl. No.	Test Parameters	Unite	Method	Max. Tolerance Limit as per CPCB	Results
1	Biochemical Oxygen Demand (as BOD)	mg/l	APHA (24th Edition), 5210B	30	9.2
2	Calcium (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	18
3	Chemical Oxygen Demand (COD)	mg/l	APHA (24th Edition), 5220B	250	36
4	Chloride (as Cl)	mg/l	APHA (24th Edition), 4500 -Cl B	---	68
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	5.2
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	589
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	0.83
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	17
9	Odour	mg/l	APHA (24th Edition), 2150B	Agreeable	Agreeable
10	Oil and Grease	mg/l	APHA (24th Edition), 5520B	10	<5.0
11	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	APHA (24th Edition), 5530C (Chloroform Extraction)	1	<0.001
12	Salinity	PSU	APHA (24th Edition), 2520B	---	0.303
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	3.2
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	216
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	360
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	116
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	18
18	pH value at 19.2 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	7.13

Checked by:- 

For Mitra S. K. Private Limited

Authorized Signatory


Mitra S. K. Private Limited

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



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ULR: TC-695024000000999F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/Q114F6

Date :

22/01/2024

Sample No. :

MSKNB/ED/2023-24/01/HU5EDZ

Date of receipt of sample:

05/01/2024

Date(s) of performance:

05/01/2024 - 22/01/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Pollution & Environment
2. Description of sample	Waste Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	04/01/2024
5. Place of sampling	BBL-4371 Bamebari Oil separation Near Garage
6. Environmental conditions during sampling & Transport	(2 - 5) deg C Cold chain maintained.
7. Sampling Plan & Method used	APHA 23rd edition,2017
8. Identification of the personnel performing sampling by MSK	Pratik Kr. Mantri, Kahitish Kr.Mahanty
9. Field Equipments Used	N/A

Report No. : MSKPL/ED/2023-24/Q114F6

Sample No. : MSKNB/ED/2023-24/01/HU5EDZ

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Result
1	Arsenic as (As)	mg/l	APHA (24th Edition), 3120 B	BDL(DL:0.005)
2	Boron (as B)	mg/l	APHA (24th Edition), 4500 - B C	1.2
3	Cadmium as Cd	mg/l	APHA (24th Edition), 3120 B	BDL(DL:0.05)
4	Colour	Hazen	APHA (24th Edition), 2120B	BDL(DL:5.0)
5	Copper (as Cu)	mg/l	APHA (24th Edition), 3120 B	0.09
6	Cyanide (as CN)	mg/l	APHA (24th Edition), 4500 CN - F	BDL(DL:0.02)
7	Fluoride (as F)	mg/l	APHA (24th Edition), 4500 F- C/D	0.24
8	Hexavalent Chromium (as Cr+6)	mg/l	APHA (24th Edition), 3500 Cr B	BDL(DL:0.05)
9	Lead (as Pb)	mg/l	APHA (24th Edition), 3120 B	BDL(DL:0.05)
10	Manganese (as Mn)	mg/l	APHA (24th Edition), 3120 B	0.08
11	Mercury (as Hg)	mg/l	APHA (24th Edition) 3112 B	BDL(DL:0.001)
12	Nitrate (as NO3)	mg/l	APHA (24th Edition), 4500 NO3-E	2.7
13	Zinc (as Zn)	mg/l	APHA (24th Edition), 3120 B	BDL(DL:0.05)

Opinion : NA

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name

Mr. Somnath Borthan, Dr. Devottam Banerjee

Designation : Technical In charge

Authorized Signatory:

Signature

Name

Designation : Lab In charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office:

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 West Bengal
 Tel. : +91 7044036120
 Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000000999F

TEST REPORT**Name & Address of Customer :**

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/Q114F6

Date :

22/01/2024

Sample No. :

MSKNB/ED/2023-24/01/HU5EDZ

Date of receipt of sample:

05/01/2024

Date(s) of performance:

05/01/2024 - 10/01/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Biological

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Pollution & Environment
2. Description of sample	Waste Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	04/01/2024
5. Place of sampling	BBL-4371 Bamebari Oil separation Near Garage
6. Environmental conditions during sampling & Transport	(2 - 5) deg C Cold chain maintained.
7. Sampling Plan & Method used	APHA 23rd edition, 2017
8. Identification of the personnel performing sampling by MSK	Pratik Kr. Mantri, Kshitish Kr. Mahanty
9. Field Equipments Used	N/A

Report No. : MSKPL/ED/2023-24/Q114F6

Sample No. : MSKNB/ED/2023-24/01/HU5EDZ

RESULT**Micro Biology**

Sl No.	Parameter	UOM	Method	Result
1	Total coliform	MPN/100ml	Standard methods for the examination of water & waste water, 24th edn, 9221B	17

Opinion : NA

Statement of Conformity NA

----- END -----

Reviewed By:

Signature

Name

Mr. Sukanta Paul

Designation : Technical In charge

Authorized Signatory:

Signature

Name

Mr. Sukanta Paul

Designation : Technical In charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

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Report No. MSKGL/ED/2023-24/004442

Date: 10.02.2024

ANALYSIS REPORT OF WASTE/EFFLUENT WATER


Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	BAMEBARI IRON & MANGANESE MINES (BIMM)
Date of sampling	04.01.2024
Location	Bamebari Oil Separation Water Near Garage (BIMM)

CHEMICAL ANALYSIS OF WATER AS PER IS: 2490

Sl. No.	Test Parameters	Unit	Method	Max. Tolerance Limit as per CPCB	Results
1	Biochemical Oxygen Demand (as BOD)	mg/l	APHA (24th Edition), 5210B	30	<2.0
2	Calcium (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	48
3	Chemical Oxygen Demand (COD)	mg/l	APHA (24th Edition), 5220B	250	<4.0
4	Chloride (as Cl ⁻)	mg/l	APHA (24th Edition), 4500 -Cl B	---	20
5	DO	mg/l	APHA 24th Edition, 2033 4500-O-C/G	---	5.7
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	296
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	2.6
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	5.8
9	Odour	mg/l	APHA (24th Edition), 2150B	Agreeable	Agreeable
10	Oil and Grease	mg/l	APHA (24th Edition), 5520B	10	<5.0
11	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	APHA (24th Edition), 5530C (Chloroform Extraction)	1	<0.001
12	Salinity	PSU	APHA (24th Edition), 2520B	---	0.151
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ 2-E	---	4.5
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	120
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	178
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	144
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	27.2
18	pH value at 23.7 deg C	None	APHA 24th Edition, 2033 4500-H+B	5.5-9.0	7.26

Checked by:-

For Mitra S. K. Private Limited


 Authorized Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
 3, Pagladanga Road, Kolkata 700015
 West Bengal
 Tel. : +91 7044036120
 Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000000998F

TEST REPORT**Name & Address of Customer :**

Tata Steel Ltd (MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/L114F1

Date :

22/01/2024

Sample No. :

MSKNB/ED/2023-24/01/5EXEE3

Date of receipt of sample:

05/01/2024

Date(s) of performance:

05/01/2024 - 22/01/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Pollution & Environment
2. Description of sample	Waste Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	04/01/2024
5. Place of sampling	BBL-4371 Bamebari STP In Let
6. Environmental conditions during sampling & Transport	(2 - 5) deg C Cold chain maintained.
7. Sampling Plan & Method used	APHA 23rd edition, 2017
8. Identification of the personnel performing sampling by MSK	Pratik Kr. Mantri, Kshitish Kr. Mahanty
9. Field Equipments Used	N/A

Report No. : MSKPL/ED/2023-24/L114F1

Sample No. : MSKNB/ED/2023-24/01/5EXEE3

RESULT**Chemical**

Sl No.	Parameter	UOM	Method	Result
1	Arsenic as (As)	mg/l	APHA (24th Edition), 3120 B	BDL(DL:0.005)
2	Boron (as B)	mg/l	APHA (24th Edition), 4500 - B C	0.36
3	Cadmium as Cd	mg/l	APHA (24th Edition), 3120 B	BDL(DL:0.05)
4	Colour	Hazen	APHA (24th Edition), 2120B	120
5	Copper (as Cu)	mg/l	APHA (24th Edition), 3120 B	0.08
6	Cyanide (as CN)	mg/l	APHA (24th Edition), 4500 CN - F	0.12
7	Fluoride (as F)	mg/l	APHA (24th Edition), 4500 F- C/D	0.15
8	Hexavalent Chromium (as Cr+6)	mg/l	APHA (24th Edition), 3500 Cr B	BDL(DL:0.05)
9	Lead (as Pb)	mg/l	APHA (24th Edition), 3120 B	BDL(DL:0.05)
10	Manganese (as Mn)	mg/l	APHA (24th Edition), 3120 B	1.64
11	Mercury (as Hg)	mg/l	APHA (24th Edition) 3112 B	BDL(DL:0.001)
12	Nitrate (as NO3)	mg/l	APHA (24th Edition), 4500 NO3-E	BDL(DL:0.5)
13	Zinc (as Zn)	mg/l	APHA (24th Edition), 3120 B	0.11

Opinion : NA

Statement of Conformity NA

----- END -----

Reviewed By:

Signed:

Name:

Designation : Technical In charge

Mr. Somnath Bardhan, Dr. Devottam Barojee

Authorized Signatory:

Signature :

Name:

Designation : Lab In charge

Dr. Soumyadeep Chakraborty

The results relate only to the item(s) tested.
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 The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.
 The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

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Report No. MSKGL/ED/2023-24/004438

Date: 10.02.2024

ANALYSIS REPORT OF WASTE/EFFLUENT WATER

Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	BAMEBARI IRON & MANGANESE MINES (BIMM)
Date of sampling	04.01.2024
Location	Bamebari STP Inlet (BIMM)

CHEMICAL ANALYSIS OF WATER AS PER IS: 2490

Sl. No.	Test Parameters	Unite	Method	Max. Tolerance Limit as per CPCB	Results
1	Biochemical Oxygen Demand (as BOD)	mg/l	APHA (24th Edition), 5210B	30	29
2	Calcium (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	45
3	Chemical Oxygen Demand (COD)	mg/l	APHA (24th Edition), 5220B	250	116
4	Chloride (as Cl ⁻)	mg/l	APHA (24th Edition), 4500 -Cl B	---	44
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	5.6
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	532
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	10
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	6.7
9	Odour	mg/l	APHA (24th Edition), 2150B	Agreeable	Disagreeable
10	Oil and Grease	mg/l	APHA (24th Edition), 5520B	10	<5.0
11	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	APHA (24th Edition), 5530C (Chloroform Extraction)	1	<0.001
12	Salinity	PSU	APHA (24th Edition), 2520B	---	0.275
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	5.4
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	188
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	326
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	140
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	95.7
18	pH value at 23.7 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	6.72

Checked by:-

For Mitra S. K. Private Limited


 Authorized Signatory

Mitra S. K. Private Limited



Address of Laboratory :

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West Bengal
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Email: udayanlab@mitrask.com



TC-6950



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TEST REPORT

ULR: TC-69502400000649F

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

Date :

Sample No. :

Date of receipt of sample:

Date(s) of performance:

Location of performance of

Reference No. & Date :

Discipline:

MSKPL/FD/2023-24/FKED6P

16/01/2024

MSKNB/FD/2023-24/01/WQD23G

05/01/2024

05/01/2024 - 16/01/2024

Permanent Facility

3000156017/056, Date - 16/09/2023

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Water & Residue in Water
2. Description of sample	DRINKING WATER
3. Unique Identification of sample(if any)	NA
4. Date of sampling	05/01/2024
5. Place of sampling	BBL-4369 Bamebari WTP Inlet
6. Environmental conditions during sampling & Transport	(2 -5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS:17614(P-5) 2022
8. Identification of the personnel performing sampling by MSK	Kshitish Kr.Mahanty,Pratik Kr. Mantri

Report No. : MSKPL/FD/2023-24/FKED6P

Sample No. : MSKNB/FD/2023-24/01/WQD23G

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Acceptable Limit	Permissible Limit	Result
1	Cadmium as Cd	mg/l	IS 3025 (Part 2)	0.003	No Relaxation	BDL(DL:0.001)
2	Arsenic as As	mg/l	IS 3025 (Part 2)	0.01	No Relaxation	BDL(DL:0.005)
3	Copper as Cu	mg/l	IS 3025 (Part 2)	0.05	1.5	BDL(DL:0.02)
4	Cyanide as CN	mg/l	IS 3025 (Part 27) Sec1	0.05	No Relaxation	BDL(DL:0.02)
5	Fluoride as F	mg/l	IS 3025 (Part 60)	1.0	1.5	BDL(DL:0.2)
6	Lead as Pb	mg/l	IS 3025 (Part 2)	0.01	No Relaxation	BDL(DL:0.005)
7	Manganese as Mn	mg/l	IS 3025 (Part 2)	0.1	0.3	BDL(DL:0.02)
8	Mercury as Hg	mg/l	IS 3025 (Part 48)	0.001	No Relaxation	BDL(DL:0.0002)
9	Nickel (as Ni)	mg/l	IS 3025 (Part 2)	0.02	No Relaxation	BDL(DL:0.01)
10	Nitrate as NO3	mg/l	APHA (24th EDITION) 4500-NO3-B	45	No Relaxation	0.84
11	Selenium as Se	mg/l	IS 3025 (Part 2)	0.01	No Relaxation	BDL(DL:0.005)
12	Silica (as SiO2)	mg/l	IS 3025 (Part 35)	Not Specified	Not Specified	BDL(DL:0.1)
13	Silver as Ag	mg/l	IS 3025 (Part 2)	0.1	No Relaxation	BDL(DL:0.005)
14	Total Chromium as Cr	mg/l	IS 3025 (Part 2)	0.05	No Relaxation	BDL(DL:0.01)
15	Zinc as Zn	mg/l	IS 3025 (Part 2)	5	15	BDL(DL:0.02)
16	Colour	Hazen	IS 3025 (Part 4)	5	15	BDL(DL:1.0)

Opinion : Acceptable limit & Permissible limit are as per IS:10500:2012

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name : Ms. Arayee Saha, Ms. Panki Ganguly

Designation : Sr. Exec. Chemist, Executive Chemist

Authorized Signatory:

Signature

Name

Designation

Dr. Sharmistha Mukhopadhyay

Lab In charge

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The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

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W : www.mitrask.com

Report No. MSKGL/ED/2023-24/ 004444


Date: 10.02.2024

ANALYSIS REPORT OF DRINKING WATER

Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	BAMEBARI IRON & MANGANESE MINES (BIMM)
Date of sampling	04.01.2024
Location	Bamebari WTP Inlet (BIMM)

CHEMICAL ANALYSIS OF WATER AS PER IS: 10500 - 2012

Sl. No.	Test Parameters	Unite	Method	Norms as per IS: 10500-2012		Results
				Desirable Limit	Permissible Limit	
1	Ammonical Nitrogen	mg/l	APHA (24th Edition), 4500-NH3-F	0.5	No Relaxation	<0.1
2	Calcium (as Ca)	mg/l	APHA (24th Edition), 3500 Ca B	75	200	22
3	Chloride (as Cl)	mg/l	APHA (24th Edition), 4500 -Cl B	250	1000	6
4	Odour	Hazen	3025 (Part-5)-1983; Rffm:2012	Agreeable	Agreeable	Agreeable
5	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	---	186
6	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	0.3	No Relaxation	<0.05
7	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	30	100	7.7
8	Phenolic Compound (as C ₆ H ₅ OH)	mg/l	APHA (24th Edition), 5530C (Chloroform Extraction)	0.001	0.002	<0.001
9	Potassium (as K)	mg/l	APHA (24th Edition), 3500 K B	---	---	<1.0
10	Salinity	PSU	APHA (24th Edition), 2520B	---	---	0.095
11	Sodium (as Na)	mg/l	APHA (24th Edition), 3500 Na B	---	---	4.4
12	Sulphate (as SO ₄)	mg/l	APHA (24th Edition) 4500 SO ₄ -E	200	400	1.4
13	Taste	None	IS 3025 (Part 8)-1983 Rffm:2012_(O)	Agreeable	Agreeable	Not Agreeable
14	Total Alkalinity (as CaCO ₃)	mg/l	APHA (24th Edition), 2320B	200	600	80
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	500	2000	110
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	200	600	88
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	---	---	<2.5
18	Turbidity	N.T.U	APHA (24th Edition), 2130B	1	5	<1.0
19	pH value at 25 deg C	None	APHA 24 th Edition, 2023, 4500, H+B	6.5-8.5	No Relaxation	6.53

Checked by:- 

For Mitra S. K. Private Limited


Authorized Signatory

Address of Laboratory :

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 West Bengal
 Tel. : +91 7044036120
 Email: udayanlab@mitrask.com



TC-6950



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TEST REPORT

ULR: TC-69502400000648F

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2023-24/5SED6K

Date :

16/01/2024

Sample No. :

MSKNB/FD/2023-24/01/CC322Q

Date of receipt of sample:

05/01/2024

Date(s) of performance:

05/01/2024 - 16/01/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Water & Residue in Water
2. Description of sample	DRINKING WATER
3. Unique Identification of sample(if any)	NA
4. Date of sampling	05/01/2024
5. Place of sampling	BBL-4368 Bamebari WTP outlet
6. Environmental conditions during sampling & Transport	(2 -5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS:17614(P-5) 2022
8. Identification of the personnel performing sampling by MSK	Kshilish Kr.Mahanty,Pratik Kr. Mantri

Report No. : MSKPL/FD/2023-24/5SED6K

Sample No. : MSKNB/FD/2023-24/01/CC322Q

RESULT**Chemical**

Sl No.	Parameter	UOM	Method	Acceptable Limit	Permissible Limit	Result
1	Arsenic as As	mg/l	IS 3025 (Part 2)	0.01	No Relaxation	BDL(DL:0.005)
2	Zinc as Zn	mg/l	IS 3025 (Part 2)	5	15	BDL(DL:0.02)
3	Colour	Hazen	IS 3025 (Part 4)	5	15	BDL(DL:1.0)
4	Copper as Cu	mg/l	IS 3025 (Part 2)	0.05	1.5	BDL(DL:0.02)
5	Cyanide as CN	mg/l	IS 3025 (Part 27) Sec1	0.05	No Relaxation	BDL(DL:0.02)
6	Fluoride as F	mg/l	IS 3025 (Part 60)	1.0	1.5	BDL(DL:0.2)
7	Lead as Pb	mg/l	IS 3025 (Part 2)	0.01	No Relaxation	BDL(DL:0.005)
8	Manganese as Mn	mg/l	IS 3025 (Part 2)	0.1	0.3	BDL(DL:0.02)
9	Mercury as Hg	mg/l	IS 3025 (Part 48)	0.001	No Relaxation	BDL(DL:0.0002)
10	Nickel (as Ni)	mg/l	IS 3025 (Part 2)	0.02	No Relaxation	BDL(DL:0.01)
11	Nitrate as NO3	mg/l	APHA (24th EDITION) 4500-NO3-B	45	No Relaxation	0.85
12	Selenium as Se	mg/l	IS 3025 (Part 2)	0.01	No Relaxation	BDL(DL:0.005)
13	Silica (as SiO2)	mg/l	IS 3025 (Part 35)	Not Specified	Not Specified	BDL(DL:0.1)
14	Silver as Ag	mg/l	IS 3025 (Part 2)	0.1	No Relaxation	BDL(DL:0.005)
15	Total Chromium as Cr	mg/l	IS 3025 (Part 2)	0.05	No Relaxation	BDL(DL:0.01)
16	Cadmium as Cd	mg/l	IS 3025 (Part 2)	0.003	No Relaxation	BDL(DL:0.001)

Opinion : Acceptable limit & Permissible limit are as per IS:10500:2012

Statement of Conformity NA

----- END -----

Reviewed By:

Signature

Name

Designation

Atreyee Saha P. Ganguly
 Ms. Atreyee Saha, Ms. Palli Ganguly

Sr. Exe. Chemist, Executive Chemist

Authorized Signatory

Signature

Name

Designation

Dr. Soumyadeep Mukhopadhyay

Lab In charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed Inert) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shraichi Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
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 Email : info@mitrask.com Website : www.mitrask.com

Address of Laboratory :

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3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayaniab@mitrask.com



TC-6950



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ULR: TC-69502400000648F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2023-24/5SED6K

Date :

16/01/2024

Sample No. :

MSKNB/FD/2023-24/01/CC322Q

Date of receipt of sample:

05/01/2024

Date(s) of performance:

05/01/2024 - 06/01/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Biological

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Water & Residue in Water
2. Description of sample	DRINKING WATER
3. Unique Identification of sample(if any)	NA
4. Date of sampling	05/01/2024
5. Place of sampling	BBL-4368 Bamebari WTP outlet
6. Environmental conditions during sampling & Transport	(2 -5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS:17614(P-25) 2022
8. Identification of the personnel performing sampling by MSK	Kshitish Kr Mahanty,Pratik Kr. Mantri

Report No. : MSKPL/FD/2023-24/5SED6K

Sample No. : MSKNB/FD/2023-24/01/CC322Q

RESULT

Micro Biology

Sl No.	Parameter	UOM	Method	Acceptable Limit	Permissible Limit	Result
1	Total Coliform Bacteria	/100ml	IS 15185	Not Detectable	Not Applicable	Not Detected
2	E. Coli	/100ml	IS 15185	Not Detectable	Not Applicable	Not Detected

Opinion : Acceptable limit & Permissible limit are as per IS:10500:2012

Statement of Conformity NA

----- END -----

Reviewed By:

Signature :

Name : Mr. Sukanta Palui

Designation : Technical in charge

Authorized Signatory:

Signature :

Name : Mr. Sukanta Palui

Designation : Technical in charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report. The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shree Centre (5th Floor), 748, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India
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Email : info@mitrask.com Website : www.mitrask.com

Report No. MSKGL/ED/2023-24/004443


Date: 10.02.2024

ANALYSIS REPORT OF DRINKING WATER

Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	BAMEBARI IRON & MANGANESE MINES (BIMM)
Date of sampling	04.01.2024
Location	Bamebari WTP Outlet (BIMM)

CHEMICAL ANALYSIS OF WATER AS PER IS: 10500 - 2012

Sl. No.	Test Parameters	Unite	Method	Norms as per IS: 10500-2012		Results
				Desirable Limit	Permissible Limit	
1	Ammonical Nitrogen	mg/l	APHA (24th Edition), 4500-NH3-F	0.5	No Relaxation	<0.1
2	Calcium (as Ca)	mg/l	APHA (24th Edition), 3500 Ca B	75	200	26
3	Chloride (as Cl)	mg/l	APHA (24th Edition), 4500 -Cl B	250	1000	12
4	Odour	Hazen	3025 (Part-5)-1983; Rffm: 2012	Agreeable	Agreeable	Agreeable
5	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	---	206
6	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	0.3	No Relaxation	<0.05
7	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	30	100	12
8	Phenolic Compound (as C6H5OH)	mg/l	APHA (24th Edition), 5530C (Chloroform Extraction)	0.001	0.002	<0.001
9	Potassium (as K)	mg/l	APHA (24th Edition), 3500 K B	---	---	<1.0
10	Salinity	PSU	APHA (24th Edition), 2520B	---	---	0.105
11	Sodium (as Na)	mg/l	APHA (24th Edition), 3500 Na B	---	---	4.3
12	Sulphate (as SO4)	mg/l	APHA (24th Edition) 4500 SO42-E	200	400	<1.0
13	Taste	None	IS 3025 (Part 8)-1983 Rffm: 2012_(O)	Agreeable	Agreeable	Agreeable
14	Total Alkalinity (as CaCO3)	mg/l	APHA (24th Edition), 2320B	200	600	96
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	500	2000	126
16	Total Hardness (as CaCO3)	mg/l	APHA (24th Edition), 2340 C	200	600	116
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	---	---	<2.5
18	Turbidity	N.T.U	APHA (24th Edition), 2130B	1	5	<1.0
19	pH value at 25 deg C	None	APHA 24th Edition, 2023.4500.H+B	6.5-8.5	No Relaxation	7.09

Checked by: 

For Mitra S. K. Private Limited


Authorized Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-69502400000650F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2023-24/TLED67

Date :

16/01/2024

Sample No. :

MSKNB/FD/2023-24/01/YES24L

Date of receipt of sample:

05/01/2024

Date(s) of performance:

05/01/2024 - 16/01/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Water & Residue in Water
2. Description of sample	DRINKING WATER
3. Unique Identification of sample(if any)	NA
4. Date of sampling	05/01/2024
5. Place of sampling	BBL-4370 Bamebari Canteen R.O. Water
6. Environmental conditions during sampling & Transport	(2 -5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS:17614(P-5) 2022
8. Identification of the personnel performing sampling by MSK	Kshitish Kr.Mahanty,Pratik Kr. Mantri

Report No. : MSKPL/FD/2023-24/TLED67

Sample No. : MSKNB/FD/2023-24/01/YES24L

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Acceptable Limit	Permissible Limit	Result
1	Arsenic as As	mg/l	IS 3025 (Part 2)	0.01	No Relaxation	BDL(DL:0.005)
2	Zinc as Zn	mg/l	IS 3025 (Part 2)	5	15	BDL(DL:0.02)
3	Colour	Hazen	IS 3025 (Part 4)	5	15	BDL(DL:1.0)
4	Copper as Cu	mg/l	IS 3025 (Part 2)	0.05	1.5	BDL(DL:0.02)
5	Cyanide as CN	mg/l	IS 3025 (Part 27) Sec1	0.05	No Relaxation	BDL(DL:0.02)
6	Fluoride as F	mg/l	IS 3025 (Part 60)	1.0	1.5	BDL(DL:0.2)
7	Lead as Pb	mg/l	IS 3025 (Part 2)	0.01	No Relaxation	BDL(DL:0.005)
8	Manganese as Mn	mg/l	IS 3025 (Part 2)	0.1	0.3	BDL(DL:0.02)
9	Mercury as Hg	mg/l	IS 3025 (Part 48)	0.001	No Relaxation	BDL(DL:0.0002)
10	Nickel (as Ni)	mg/l	IS 3025 (Part 2)	0.02	No Relaxation	BDL(DL:0.01)
11	Nitrate as NO3	mg/l	APHA (24th EDITION) 4500-NO3-B	45	No Relaxation	0.90
12	Selenium as Se	mg/l	IS 3025 (Part 2)	0.01	No Relaxation	BDL(DL:0.005)
13	Silica (as SiO2)	mg/l	IS 3025 (Part 35)	Not Specified	Not Specified	BDL(DL:0.1)
14	Silver as Ag	mg/l	IS 3025 (Part 2)	0.1	No Relaxation	BDL(DL:0.005)
15	Total Chromium as Cr	mg/l	IS 3025 (Part 2)	0.05	No Relaxation	BDL(DL:0.01)
16	Cadmium as Cd	mg/l	IS 3025 (Part 2)	0.003	No Relaxation	BDL(DL:0.001)

Opinion : Acceptable limit & Permissible limit are as per IS:10500:2012

Statement of Conformity NA

----- END -----

Reviewed By:

Signature

Name

Mr. Arayee Saha, Ms. Piali Ganguly

Designation

Sr. Exe. Chemist, Executive Chemist

Authorized Signatory:

Signature

Name

Dr. Souradeep Mukhopadhyay

Designation

Lab in charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

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West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000000650F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2023-24/TLED67

Date :

16/01/2024

Sample No. :

MSKNB/FD/2023-24/01/YES24L

Date of receipt of sample:

05/01/2024

Date(s) of performance:

05/01/2024 - 06/01/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Biological

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Water & Residue in Water
2. Description of sample	DRINKING WATER
3. Unique Identification of sample(if any)	NA
4. Date of sampling	05/01/2024
5. Place of sampling	BBL-4370 Bamebari Canteen R.O. Water
6. Environmental conditions during sampling & Transport	(2 -5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS:17614(P-25) 2022
8. Identification of the personnel performing sampling by MSK	Kshitish Kr.Mahanty,Pratik Kr. Mantri

Report No. : MSKPL/FD/2023-24/TLED67

Sample No. : MSKNB/FD/2023-24/01/YES24L

RESULT

Micro Biology

Sl No.	Parameter	UOM	Method	Acceptable Limit	Permissible Limit	Result
1	Total Coliform Bacteria	/100ml	IS 15185	Not Detectable	Not Applicable	Not Detected
2	E. Coli	/100ml	IS 15185	Not Detectable	Not Applicable	Not Detected

Opinion : Acceptable limit & Permissible limit are as per IS:10500:2012

Statement of Conformity NA

----- END -----

Reviewed By:

Signature

Name : Mr. Sukanta Palui

Designation : Technical In charge

Authorized Signatory:

Signature

Name : Mr. Sukanta Palui

Designation : Technical In charge

The results relate only to the item(s) tested.

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W : www.mitrask.com



Report No. MSKGL/ED/2023-24/004445

Date: 10.02.2024

ANALYSIS REPORT OF DRINKING WATER

Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	BAMEBARI IRON & MANGANESE MINES (BIMM)
Date of sampling	04.01.2024
Location	Bamebari R.O. Water (BIMM)

CHEMICAL ANALYSIS OF WATER AS PER IS: 10500 - 2012

Sl. No.	Test Parameters	Unite	Method	Norms as per IS: 10500-2012		Results
				Desirable Limit	Permissible Limit	
1	Ammonical Nitrogen	mg/l	APHA (24th Edition), 4500-NH3-F	0.5	No Relaxation	<0.1
2	Calcium (as Ca)	mg/l	APHA (24th Edition), 3500 Ca B	75	200	26
3	Chloride (as Cl)	mg/l	APHA (24th Edition), 4500 -Cl B	250	1000	8
4	Odour	Hazen	3025 (Part-5)-1983; Rffm: 2012	Agreeable	Agreeable	Agreeable
5	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	---	211
6	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	0.3	No Relaxation	<0.05
7	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	30	100	11
8	Phenolic Compound (as C ₆ H ₅ OH)	mg/l	APHA (24th Edition), 5530C (Chloroform Extraction)	0.001	0.002	<0.001
9	Potassium (as K)	mg/l	APHA (24th Edition), 3500 K B	---	---	<1.0
10	Salinity	PSU	APHA (24th Edition), 2520B	---	---	0.108
11	Sodium (as Na)	mg/l	APHA (24th Edition), 3500 Na B	---	---	4.4
12	Sulphate (as SO ₄)	mg/l	APHA (24th Edition) 4500 SO ₄ -E	200	400	<1.0
13	Taste	None	IS 3025 (Part 8)-1983 Rffm: 2012 (O)	Agreeable	Agreeable	Agreeable
14	Total Alkalinity (as CaCO ₃)	mg/l	APHA (24th Edition), 2320B	200	600	100
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	500	2000	124
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	200	600	110
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	---	---	<2.5
18	Turbidity	N.T.U	APHA (24th Edition), 2130B	1	5	<1.0
19	pH value at 25 deg C	None	APHA 24 th Edition, 2023.4500.H+B	6.5-8.5	No Relaxation	6.55

Checked by:-

For Mitra S. K. Private Limited

Authorized Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000002011F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2023-24/4EED6D

Date :

07/02/2024

Sample No. :

MSKNB/FD/2023-24/01/BET21Q

Date of receipt of sample:

05/01/2024

Date(s) of performance:

05/01/2024 - 15/01/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results.

1. Group	Water & Residue in Water
2. Description of sample	SURFACE WATER
3. Unique Identification of sample(if any)	NA
4. Date of sampling	04/01/2024
5. Place of sampling	BBL-4364 Palasa (kha) Village Pond Water
6. Environmental conditions during sampling & Transport	(2 - 5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS 17614 (P-23) 2021
8. Identification of the personnel performing sampling by MSK	Akash Kr Sethi,Pratik Kr. Mantri

Report No. : MSKPL/FD/2023-24/4EED6D**Sample No. :** MSKNB/FD/2023-24/01/BET21Q

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Result
1	Arsenic as As	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
2	Boron as B	mg/l	IS 3025 (Part 2)	BDL(DL:0.25)
3	Cadmium as Cd	mg/l	IS 3025 (Part 2)	BDL(DL:0.001)
4	Colour	Hazen	IS 3025 (Part 4)	BDL(DL:1.0)
5	Copper as Cu	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
6	Cyanide as CN	mg/l	IS 3025 (Part 27) Sec1	BDL(DL:0.02)
7	Fluoride as F	mg/l	IS 3025 (Part 60)	1.27
8	Hexavalent Chromium (as Cr+6)	mg/l	IS 3025 (Part 52) Sec2	BDL(DL:0.01)
9	Lead as Pb	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
10	Manganese as Mn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
11	Mercury as Hg	mg/l	IS 3025 (Part 48)	BDL(DL:0.0002)
12	Nitrate as NO3	mg/l	APHA (24th EDITION) 4500-NO3- B	0.91
13	Zinc as Zn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)

Opinion : NA**Statement of Conformity** NA

----- END -----

Reviewed By:

Signature

Name : Ms. Arunee Saha, Mr. Piali Ganguly

Designation : Sr. Exec. Chemist, Executive Chemist

Authorized Signatory:

Signature

Name

Designation

Dr. Soumyadeep Mukherjee
Lab In charge

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
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West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000002011F

Reviewed By:

Signature

Name : Ms. Anayee Saha, Ms. Piali Ganguly

Designation : Sr. Exe. Chemist, Executive Chemist

Authorized Signatory:

Signature

Name : Dr. Soumyadeep Mukhopadhyay

Designation : Lab in charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Solid, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Seawater, Sealed food) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.



Anacon Laboratories

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🌐 https://www.anaconlaboratories.com

Test Report

Test Report No. : ALPL/30112023/1-23A

dated 30/11/2023

Page 1 of 3

Issued To : M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)		Sample Inward No. ALPL/22112023/ENV-283-4	Analysis Start 23/11/2023
		Inward Date 22/11/2023	Analysis End 29/11/2023
		Reference W.O.- 4700098928/962	Report Issue Date 30/11/2023
		Reference Date 22.03.2022	Sample Category Water
Sample Name Drinking Water	Sample Source Inlet Water	Sample Particulars Sample Code-DW-4	Sample Condition Sealed & Ice Preserved
		Quantity Received 5.0 Ltr & 250 ml	
Sample Collected By Anacon Representative		Sampling Date 16/11/2023	Sampling Time 11.45am to 2.50 pm
		Sampling Location Bamebari WTP Inlet	

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Result
				Acceptable Limit	Permissible Limit #	
I	Biological Testing I. Water					
1	Escherichia coli	Per 100 ml	IS 15189 : 2016	Absent	Absent	Absent
II	Chemical Testing I. Water					
2	Alkalinity (as CaCO ₃)	mg/l	IS 3025 (Part 23) : 1986	200	600	32.84
3	Anionic surface active agents (as MBAS)	mg/l	IS 13428 : (Annex K); 2005	0.2	1.0	BDL (DL – 0.01)
4	Colour	Hazen units	IS 3025 (Part 4) : 2021	5	15	1
5	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	No relaxation	BDL (DL – 0.005)
6	Chloride (as Cl)	mg/l	IS 3025 (Part 32):1988	250	1000	21.46
7	Calcium (as Ca)	mg/l	IS 3025 (Part 40) : 1991	75	200	17.91
8	Free residual chlorine	mg/l	IS 3025 (Part 26) : 2021	Min. 0.2	1	BDL (DL – 0.1)
9	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.0	1.5	BDL (DL – 0.1)
10	Magnesium (as Mg)	mg/l	IS 3025 (Part 46) : 1994	30	100	5.81
11	Nitrate (as NO ₃)	mg/l	APHA method 23rd edition: 2017	45	No relaxation	BDL(DL-2)
12	Odour	-	IS 3025 (Part 5) : 2018	Agreeable	Agreeable	Agreeable
13	pH	-	IS 3025 (Part 11) : 2022	6.5 to 8.5	No relaxation	6.83 at 25°C
14	Phenolic compounds (as C ₆ H ₅ OH)	mg/l	IS 3025 (Part 43) : 2022	0.001	0.002	BDL (DL – 0.001)
15	Sulphate (as SO ₄)	mg/l	IS 3025 (Part 24) : 2022	200	400	6.28
16	Taste	-	IS 3025 (Part 8) : 1984	Agreeable	Agreeable	Agreeable
17	Total dissolved solids	mg/l	IS 3025 (Part 16) : 1984	500	2000	294
18	Turbidity	NTU	IS 3025 (Part 10) : 1984	1	5	0.3
19	Total hardness (as CaCO ₃)	mg/l	IS 3025 (Part 21) : 2009	200	600	68.63

Please refer last Page for Note and Remarks.

Verified By

Snehal Raut
Deputy Technical Manager

Authorized Signatories

Pooja Kathane
Technical Manager

Dr. (Mrs.) S.D. Garway
Quality Manager

Thank you for instilling your trust and faith in our services. We cherish our relationship with you, and we put in a lot of hard work in making sure that you get a seamless experience at every stage of your interaction with us. In our constant endeavor towards ensuring that your next experience will be significantly better than the current one, we welcome your feedback on feedback@anacon.in.





Anacon Laboratories

Anacon Laboratories Pvt. Ltd. Nagpur Lab

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Test Report

Test Report No. : ALPL/30112023/1-23A

dated 30/11/2023

Page 2 of 3

Issued To : M/s Bamehari Iron & Manganese Mine (M/s TATA Steel Limited)		Sample Inward No. ALPL/22112023/ENV-283-4	Analysis Start 23/11/2023
		Inward Date 22/11/2023	Analysis End 29/11/2023
		Reference W.O.- 4700098928/962	Report Issue Date 30/11/2023
		Reference Date 22.03.2022	Sample Category Water
Sample Name Drinking Water	Sample Source Inlet Water	Sample Particulars Sample Code-DW-4	Sample Condition Sealed & Ice Preserved
		Quantity Received 5.0 Ltr & 250 ml	
Sample Collected By Anacon Representative		Sampling Date 16/11/2023	Sampling Time 11.45am to 2.50 pm
		Sampling Location Bamehari WTP Inlet	

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Result
				Acceptable Limit	Permissible Limit #	
II	Chemical Testing					
	2. Residues In Water:					
20	Arsenic (as As)	mg/l	IS 3025 (Part 37) : 2022	0.01	No relaxation	BDL (DL - 0.01)
21	Aluminium (as Al)	mg/l	IS 3025 (Part 2) : 2019	0.03	0.2	BDL (DL - 0.01)
22	Barium (as Ba)	mg/l	IS 3025 (Part 2) : 2019	0.7	No relaxation	BDL (DL - 0.01)
23	Boron (as B)	mg/l	IS 3025 (Part 2) : 2019	0.5	2.4	BDL (DL - 0.1)
24	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	0.05	1.5	BDL (DL - 0.03)
25	Cadmium (as Cd)	mg/l	IS 3025 (Part 2) : 2019	0.003	No relaxation	BDL (DL - 0.001)
26	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	1.0	No relaxation	0.07
27	Lead (as Pb)	mg/l	IS 3025 (Part 2) : 2019	0.01	No relaxation	BDL (DL - 0.001)
28	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	0.1	0.3	BDL (DL - 0.05)
29	Mercury (as Hg)	mg/l	IS 3025 (Part 48) : 1994	0.001	No relaxation	BDL (DL - 0.0005)
30	Selenium (as Se)	mg/l	IS 3025 (Part 56) : 2003	0.01	No relaxation	BDL (DL - 0.001)
31	Total Chromium (as Cr)	mg/l	IS 3025 (Part 2) : 2019	0.05	No relaxation	BDL (DL - 0.03)
32	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	5	15	BDL (DL - 0.1)
33	Polynuclear aromatic hydrocarbon (PAH)	µg/l	ANtr/7.2/RES/01: 2018	0.1	No relaxation	BDL(DL-0.03)
34	Mineral Oil	mg/l	ANtr/7.2/RES/06: 2018	1	No relaxation	BDL (DL - 0.001)

Please refer last Page for Note and Remarks.

Verified By

Nidhi Dubey
Deputy Technical Manager

Swati Gondhalekar
Deputy Technical Manager

Authorized Signatory

Dr. (Mrs.) S.D. Garway
Quality Manager





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Test Report

Test Report No. : ALPL/30112023/1-23A

dated 30/11/2023

Page 3 of 3

Issued To : M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)		Sample Inward No. ALPL/22112023/INV-283-4	Analysis Start 23/11/2023
		Inward Date 22/11/2023	Analysis End 29/11/2023
		Reference W.O. - 4700098928/962	Report Issue Date 30/11/2023
		Reference Date 22.03.2022	Sample Category Water
Sample Name Drinking Water	Sample Source Inlet Water	Sample Particulars Sample Code-DW-4	Sample Condition Sealed & Ice Preserved
Sample Collected By Anacon Representative		Sampling Date 16/11/2023	Sampling Time 11.45am to 2.50 pm
		Quantity Received 5.0 Ltr & 250 ml	
		Sampling Location Bamebari WTP Inlet	

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Result
				Acceptable Limit	Permissible Limit #	
35	Pesticide Residues Organochlorine					
i	Alpha-HCH	µg/l	ANtr/7.2/RES/01: 2018	0.01	No relaxation	BDL (DL - 0.01)
ii	Beta HCH	µg/l	ANtr/7.2/RES/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
iii	Gamma - HCH (Lindane)	µg/l	ANtr/7.2/RES/01: 2018	2	No relaxation	BDL (DL - 0.03)
iv	Delta- HCH	µg/l	ANtr/7.2/RES/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
v	Alachlor	µg/l	ANtr/7.2/RES/01: 2018	20	No relaxation	BDL (DL - 0.03)
vi	Aldrin	µg/l	ANtr/7.2/RES/01: 2018	0.03	No relaxation	BDL (DL - 0.03)
vii	Dieldrin	µg/l	ANtr/7.2/RES/01: 2018	0.03	No relaxation	BDL (DL - 0.03)
viii	Butachlor	µg/l	ANtr/7.2/RES/01: 2018	125	No relaxation	BDL (DL - 0.03)
ix	p,p'-DDE	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
x	o,p'-DDE	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xi	p,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xii	o,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiii	o,p'-DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiv	p,p'-DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xv	Monocrotophos	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xvi	Atrazine	µg/l	ANtr/7.2/RES/01: 2018	2	No relaxation	BDL (DL - 0.03)
xvii	Parathion methyl	µg/l	ANtr/7.2/RES/01: 2018	0.3	No relaxation	BDL (DL - 0.03)
xviii	Paraaxon methyl	µg/l	ANtr/7.2/RES/01: 2018	-	-	BDL (DL - 0.03)
xix	Malathion	µg/l	ANtr/7.2/RES/01: 2018	190	No relaxation	BDL (DL - 0.03)
xx	Malaoxon	µg/l	ANtr/7.2/RES/01: 2018	-	-	BDL (DL - 0.03)
xxi	Ethion	µg/l	ANtr/7.2/RES/01: 2018	3	No relaxation	BDL (DL - 0.03)
xxii	Chlorpyrifos	µg/l	ANtr/7.2/RES/01: 2018	30	No relaxation	BDL (DL - 0.03)

NOTE: ● Please see watermark "Original Test Report" to confirm the authenticity of this report. ● Results shall be referred to tested sample(s) and applicable to tested parameters only. ● Test report shall not be reproduced except in full without prior written approval of Anacon Labs. ● Liability of Anacon Labs is limited to invoiced amount only. ● Non-perishable and perishable sample(s) shall be disposed off after 30 days and 15 days respectively from the date of issue of Test Report, unless specified otherwise. ● #Permissible limit in absence of an alternate source for drinking water. ● 'mg/l' is equivalent to 'ppm'. ● 'µg/l' is equivalent to 'ppb'. ● BDL- Below detection limit. ● DL- DL Indicates detection limit of instrument /method and shall be considered as 'absent'. ● Result for test no. 11 is not relevant. ● ANtr/7.2/RES-01, :- Inhouse validated method. ● NT indicates not Tested as sample failed to establish safety concerns.

REMARKS: As requested by the client, sample was tested for above parameters only. Sample complies with IS:10500:2012, for tests conducted Only.

Verified By

Swati

Swati Gondhalékar
Deputy Technical Manager

Authorized Signatory

Dr. S.D. Garway

Dr. (Mrs.) S.D. Garway
Quality Manager

—End of Report—



Thank you for instilling your trust and faith in our services. We cherish our relationship with you, and we put in a lot of hard work in making sure that you get a seamless experience at every stage of your interaction with us. In our constant endeavor towards ensuring that your next experience will be significantly better than the current one, we welcome your feedback on feedback@anacon.in.



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Test Report

Test Report No. : ALPL/30112023/1-24A

dated 30/11/2023

Page 1 of 3

Issued To : M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)		Sample Inward No.	ALPL/22112023/ENV-283-5	Analysis Start	23/11/2023
		Inward Date	22/11/2023	Analysis End	29/11/2023
		Reference	W.O.- 4700098928/962	Report Issue Date	30/11/2023
		Reference Date	22.03.2022	Sample Category	Water
Sample Name	Sample Source	Sample Particulars	Sample Condition	Quantity Received	
Drinking Water	Outlet Water	Sample Code-DW-5	Sealed & Ice Preserved	5.0 Ltr & 250 ml	
Sample Collected By Anacon Representative		Sampling Date	Sampling Time	Sampling Location	
		16/11/2023	11.45am to 2.50 pm	Bamebari WTP Outlet	

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Result
				Acceptable Limit	Permissible Limit #	
I	Biological Testing 1. Water					
1	<i>Escherichia coli</i>	Per 100 ml	IS 15185 : 2016	Absent	Absent	Absent
II	Chemical Testing 1. Water					
2	Alkalinity (as CaCO ₃)	mg/l	IS 3025 (Part 23) : 1986	200	600	26.43
3	Anionic surface active agents (as MBAS)	mg/l	IS 13428 : (Annex K): 2005	0.2	1.0	BDL (DL – 0.01)
4	Colour	Hazen units	IS 3025 (Part 4) : 2021	5	15	1
5	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	No relaxation	BDL (DL – 0.005)
6	Chloride (as Cl)	mg/l	IS 3025 (Part 32) :1988	250	1000	14.93
7	Calcium (as Ca)	mg/l	IS 3025 (Part 40) : 1991	75	200	19.32
8	Free residual chlorine	mg/l	IS 3025 (Part 26) : 2021	Min. 0.2	1	BDL (DL – 0.1)
9	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.0	1.5	BDL (DL – 0.1)
10	Magnesium (as Mg)	mg/l	IS 3025 (Part 46) : 1994	30	100	3.19
11	Nitrate (as NO ₃)	mg/l	APHA method 23rd edition: 2017	45	No relaxation	BDL(DL-2)
12	Odour	-	IS 3025 (Part 5) : 2018	Agreeable	Agreeable	Agreeable
13	pH	-	IS 3025 (Part 11) : 2022	6.5 to 8.5	No relaxation	7.24 at 25°C
14	Phenolic compounds (as C ₆ H ₅ OH)	mg/l	IS 3025 (Part 43) : 2022	0.001	0.002	BDL (DL – 0.001)
15	Sulphate (as SO ₄)	mg/l	IS 3025 (Part 24) : 2022	200	400	3.87
16	Taste	-	IS 3025 (Part 8) : 1984	Agreeable	Agreeable	Agreeable
17	Total dissolved solids	mg/l	IS 3025 (Part 16) : 1984	500	2000	291
18	Turbidity	NTU	IS 3025 (Part 10) : 1984	1	5	0.3
19	Total hardness (as CaCO ₃)	mg/l	IS 3025 (Part 21) : 2009	200	600	61.40

☐ Please refer last Page for Note and Remarks.

Verified By

Snehal Raut
 Deputy Technical Manager

Authorized Signatories

Pooja Kathane
 Technical Manager

Dr. (Mrs.) S.D. Garway
 Quality Manager





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Test Report

Test Report No. : ALPL/30112023/1-24A

dated 30/11/2023

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Issued To : M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)		Sample Inward No. ALPL/22112023/ENV-283-5	Analysis Start 23/11/2023
		Inward Date 22/11/2023	Analysis End 29/11/2023
		Reference W.O.- 4700098928/962	Report Issue Date 30/11/2023
		Reference Date 22.03.2022	Sample Category Water
Sample Name Drinking Water	Sample Source Outlet Water	Sample Particulars Sample Code-DW-5	Sample Condition Sealed & Ice Preserved
Sample Collected By Anacon Representative		Sampling Date 16/11/2023	Sampling Time 11.45am to 2.50 pm
		Quantity Received 5.0 Lit & 250 ml	
		Sampling Location Bamebari WTP Outlet	

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Result
				Acceptable Limit	Permissible Limit #	
II	Chemical Testing					
	2. Residues In Water					
20	Arsenic (as As)	mg/l	IS 3025 (Part 37) : 2022	0.01	No relaxation	BDL (DL - 0.01)
21	Aluminium (as Al)	mg/l	IS 3025 (Part 2) : 2019	0.03	0.2	BDL (DL - 0.01)
22	Barium (as Ba)	mg/l	IS 3025 (Part 2) : 2019	0.7	No relaxation	BDL (DL - 0.01)
23	Boron (as B)	mg/l	IS 3025 (Part 2) : 2019	0.5	2.4	BDL (DL - 0.1)
24	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	0.05	1.5	BDL (DL - 0.03)
25	Cadmium (as Cd)	mg/l	IS 3025 (Part 2) : 2019	0.003	No relaxation	BDL (DL - 0.001)
26	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	1.0	No relaxation	0.06
27	Lead (as Pb)	mg/l	IS 3025 (Part 2) : 2019	0.01	No relaxation	BDL (DL - 0.001)
28	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	0.1	0.3	BDL (DL - 0.05)
29	Mercury (as Hg)	mg/l	IS 3025 (Part 48) : 1994	0.001	No relaxation	BDL (DL - 0.0005)
30	Selenium (as Se)	mg/l	IS 3025 (Part 56) : 2003	0.01	No relaxation	BDL (DL - 0.001)
31	Total Chromium (as Cr)	mg/l	IS 3025 (Part 2) : 2019	0.05	No relaxation	BDL (DL - 0.03)
32	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	5	15	BDL (DL - 0.1)
33	Polynuclear aromatic hydrocarbon (PAH)	µg/l	ANtr/7.2/RES/01: 2018	0.1	No relaxation	BDL (DL - 0.03)
34	Mineral Oil	mg/l	ANtr/7.2/RES/06: 2018	1	No relaxation	BDL (DL - 0.001)

Please refer last Page for Note and Remarks.

Verified By

Nidhi Dubey
Deputy Technical Manager

Swati Gondhalekar
Deputy Technical Manager

Authorized Signatory

Dr. (Mrs.) S.D. Garway
Quality Manager





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Test Report

Test Report No. : ALPL/30112023/1-24A

dated 30/11/2023

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Issued To : M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)		Sample Inward No. ALPL/22112023/ENV-283-5	Analysis Start 23/11/2023
		Inward Date 22/11/2023	Analysis End 29/11/2023
		Reference W.O.- 4700098928/962	Report Issue Date 30/11/2023
		Reference Date 22.03.2022	Sample Category Water
Sample Name Drinking Water	Sample Source Outlet Water	Sample Particulars Sample Code-DW-5	Sample Condition Sealed & Ice Preserved
		Quantity Received 5.0 Ltr & 250 ml	
Sample Collected By Anacon Representative		Sampling Date 16/11/2023	Sampling Time 11.45am to 2.50 pm
		Sampling Location Bamebari WTP Outlet	

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Result
				Acceptable Limit	Permissible Limit #	
35	Pesticide Residues Organochlorine					
i	Alpha-HCH	µg/l	ANtr/7.2/RES/01: 2018	0.01	No relaxation	BDL (DL - 0.01)
ii	Beta HCH	µg/l	ANtr/7.2/RES/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
iii	Gamma - HCH (Lindane)	µg/l	ANtr/7.2/RES/01: 2018	2	No relaxation	BDL (DL - 0.03)
iv	Delta- HCH	µg/l	ANtr/7.2/RES/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
v	Alachlor	µg/l	ANtr/7.2/RES/01: 2018	20	No relaxation	BDL (DL - 0.03)
vi	Aldrin	µg/l	ANtr/7.2/RES/01: 2018	0.03	No relaxation	BDL (DL - 0.03)
vii	Dieldrin	µg/l	ANtr/7.2/RES/01: 2018	0.03	No relaxation	BDL (DL - 0.03)
viii	Butachlor	µg/l	ANtr/7.2/RES/01: 2018	125	No relaxation	BDL (DL - 0.03)
ix	p,p'-DDE	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
x	o,p'-DDE	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xi	p,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xii	o,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiii	o,p'-DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiv	p,p'-DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xv	Monocrotophos	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xvi	Atrazine	µg/l	ANtr/7.2/RES/01: 2018	2	No relaxation	BDL (DL - 0.03)
xvii	Parathion methyl	µg/l	ANtr/7.2/RES/01: 2018	0.3	No relaxation	BDL (DL - 0.03)
xviii	Paraaxon methyl	µg/l	ANtr/7.2/RES/01: 2018	-	-	BDL (DL - 0.03)
xix	Malathion	µg/l	ANtr/7.2/RES/01: 2018	190	No relaxation	BDL (DL - 0.03)
xx	Malaoxon	µg/l	ANtr/7.2/RES/01: 2018	-	-	BDL (DL - 0.03)
xxi	Ethion	µg/l	ANtr/7.2/RES/01: 2018	3	No relaxation	BDL (DL - 0.03)
xxii	Chlorpyrifos	µg/l	ANtr/7.2/RES/01: 2018	30	No relaxation	BDL (DL - 0.03)

NOTE: • Please see watermark "Original Test Report" to confirm the authenticity of this report • Results shall be referred to tested sample(s) and applicable to tested parameters only • Test report shall not be reproduced except in full without prior written approval of Anacon Labs. • Liability of Anacon Labs is limited to invoiced amount only • Non-perishable and perishable sample(s) shall be disposed off after 30 days and 15 days respectively from the date of issue of Test Report, unless specified otherwise. • #Permissible limit in absence of an alternate source for drinking water • "mg/l" is equivalent to "ppm" • "µg/l" is equivalent to "ppb" • BDL- Below detection limit. • DL- DL indicates detection limit of instrument /method and shall be considered as 'absent'. • Result for test no: 11 is not relevant. • ANtr/7.2/RES-01, is Inhouse validated method. • NT indicates not Tested as sample failed to establish safety concerns.

REMARKS: As requested by the client, sample was tested for above parameters only. Sample complies with IS:10500:2012, for tests conducted Only.

Verified By

Swati

Swati Gondhalekar
Deputy Technical Manager

Authorized Signatory

S.D. Garway

Dr. (Mrs.) S.D. Garway
Quality Manager

—End of Report—

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Test Report

Test Report No. : ALPL/30112023/1-25A

dated 30/11/2023

Page 1 of 3

Issued To : M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)		Sample Inward No. ALPL/22112023/ENV-283-6	Analysis Start 23/11/2023
		Inward Date 22/11/2023	Analysis End 29/11/2023
		Reference W.O.- 4700098928/962	Report Issue Date 30/11/2023
		Reference Date 22.03.2022	Sample Category Water
Sample Name Drinking Water	Sample Source R.O Water	Sample Particulars Sample Code-DW-6	Sample Condition Sealed & Ice Preserved
		Quantity Received 5.0 Ltr & 250 ml	
Sample Collected By Anacon Representative		Sampling Date 16/11/2023	Sampling Time 11.45am to 2.50 pm
		Sampling Location Bamebari Canteen RO	

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Result
				Acceptable Limit	Permissible Limit #	
I	Biological Testing I. Water					
1	Escherichia coli	Per 100 ml	IS 15185 : 2016	Absent	Absent	Absent
II	Chemical Testing I. Water					
2	Alkalinity (as CaCO ₃)	mg/l	IS 3025 (Part 23) : 1986	200	600	43.26
3	Anionic surface active agents (as MBAS)	mg/l	IS 13428 : (Annex K) : 2005	0.2	1.0	BDL (DL – 0.01)
4	Colour	Hazen units	IS 3025 (Part 4) : 2021	5	15	1
5	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	No relaxation	BDL (DL – 0.005)
6	Chloride (as Cl)	mg/l	IS 3025 (Part 32) : 1988	250	1000	19.32
7	Calcium (as Ca)	mg/l	IS 3025 (Part 40) : 1991	75	200	26.43
8	Free residual chlorine	mg/l	IS 3025 (Part 26) : 2021	Min. 0.2	1	BDL (DL – 0.1)
9	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.0	1.5	BDL (DL – 0.1)
10	Magnesium (as Mg)	mg/l	IS 3025 (Part 46) : 1994	30	100	5.17
11	Nitrate (as NO ₃)	mg/l	APHA method 23rd edition: 2017	45	No relaxation	BDL(DL-2)
12	Odour	-	IS 3025 (Part 5) : 2018	Agreeable	Agreeable	Agreeable
13	pH	-	IS 3025 (Part 11) : 2022	6.5 to 8.5	No relaxation	6.83 at 25°C
14	Phenolic compounds (as C ₆ H ₅ OH)	mg/l	IS 3025 (Part 43) : 2022	0.001	0.002	BDL (DL – 0.001)
15	Sulphate (as SO ₄)	mg/l	IS 3025 (Part 24) : 2022	200	400	7.26
16	Taste	-	IS 3025 (Part 8) : 1984	Agreeable	Agreeable	Agreeable
17	Total dissolved solids	mg/l	IS 3025 (Part 16) : 1984	500	2000	264
18	Turbidity	NTU	IS 3025 (Part 10) : 1984	1	5	0.2
19	Total hardness (as CaCO ₃)	mg/l	IS 3025 (Part 21) : 2009	200	600	87.30

☐ Please refer last Page for Note and Remarks.

Verified By

Snehal Raut
Deputy Technical Manager

Authorized Signatories

Pooja Kathane
Technical Manager

Dr. (Mrs.) S.D. Garway
Quality Manager

Thank you for instilling your trust and faith in our services. We cherish our relationship with you, and we put in a lot of hard work in making sure that you get a seamless experience at every stage of your interaction with us. In our constant endeavor towards ensuring that your next experience will be significantly better than the current one, we welcome your feedback on feedback@anacon.in.





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Test Report

Test Report No. : ALPL/30112023/1-25A

dated 30/11/2023

Page 2 of 3

Issued To : M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)		Sample Inward No. ALPL/22112023/ENV-283-6	Analysis Start 23/11/2023
		Inward Date 22/11/2023	Analysis End 29/11/2023
		Reference W.O.- 4700098928/962	Report Issue Date 30/11/2023
		Reference Date 22.03.2022	Sample Category Water
Sample Name Drinking Water	Sample Source R.O Water	Sample Particulars Sample Code-DW-6	Sample Condition Sealed & Ice Preserved
Quantity Received 5.0 Ltr & 250 ml			
Sample Collected By Anacon Representative		Sampling Date 16/11/2023	Sampling Time 11.45am to 2.50 pm
		Sampling Location Bamebari Canteen RO	

TEST RESULTS

TEST RESULTS						
S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Result
				Acceptable Limit	Permissible Limit #	
II	Chemical Testing					
	2. Residues In Water					
20	Arsenic (as As)	mg/l	IS 3025 (Part 37) : 2022	0.01	No relaxation	BDL (DL - 0.01)
21	Aluminium (as Al)	mg/l	IS 3025 (Part 2) : 2019	0.03	0.2	BDL (DL - 0.01)
22	Barium (as Ba)	mg/l	IS 3025 (Part 2) : 2019	0.7	No relaxation	BDL (DL - 0.01)
23	Boron (as B)	mg/l	IS 3025 (Part 2) : 2019	0.5	2.4	BDL (DL - 0.1)
24	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	0.05	1.5	BDL (DL - 0.03)
25	Cadmium (as Cd)	mg/l	IS 3025 (Part 2) : 2019	0.003	No relaxation	BDL (DL - 0.001)
26	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	1.0	No relaxation	0.07
27	Lead (as Pb)	mg/l	IS 3025 (Part 2) : 2019	0.01	No relaxation	BDL (DL - 0.001)
28	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	0.1	0.3	BDL (DL - 0.05)
29	Mercury (as Hg)	mg/l	IS 3025 (Part 48) : 1994	0.001	No relaxation	BDL (DL - 0.0005)
30	Selenium (as Se)	mg/l	IS 3025 (Part 56) : 2003	0.01	No relaxation	BDL (DL - 0.001)
31	Total Chromium (as Cr)	mg/l	IS 3025 (Part 2) : 2019	0.05	No relaxation	BDL (DL - 0.03)
32	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	5	15	BDL (DL - 0.1)
33	Polynuclear aromatic hydrocarbon (PAH)	µg/l	ANtr/7.2/RES/01 : 2018	0.1	No relaxation	BDL(DL-0.03)
34	Mineral Oil	mg/l	ANtr/7.2/RES/06: 2018	1	No relaxation	BDL (DL - 0.001)

☐ Please refer last Page for Note and Remarks.

Verified By

Nidhi Dubey
Deputy Technical Manager

Swati Gondhalekar
Deputy Technical Manager

Authorized Signatory

Dr. (Mrs.) S.D. Garway
Quality Manager

Thank you for instilling your trust and faith in our services. We cherish our relationship with you, and we put in a lot of hard work in making sure that you get a seamless experience at every stage of your interaction with us. In our constant endeavor towards ensuring that your next experience will be significantly better than the current one, we welcome your feedback on feedback@anacon.in.





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Test Report

Test Report No. : ALPL/30112023/1-25A

dated 30/11/2023

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Issued To : M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)		Sample Inward No.	ALPL/22112023/ENV-283-6	Analysis Start	23/11/2023
		Inward Date	22/11/2023	Analysis End	29/11/2023
		Reference	W.D.- 4700098928/962	Report Issue Date	30/11/2023
		Reference Date	22.03.2022	Sample Category	Water
Sample Name	Sample Source	Sample Particulars	Sample Condition	Quantity Received	
Drinking Water	R.O Water	Sample Code-DW-6	Sealed & Ice Preserved	3.0 Lit & 250 ml	
Sample Collected By Anacon Representative		Sampling Date	Sampling Time	Sampling Location	
		16/11/2023	11.45am to 2.50 pm	Bamebari Canteen RO	

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Result
				Acceptable Limit	Permissible Limit #	
35	Pesticide Residues Organochlorine					
i	Alpha-HCH	µg/l	ANtr/7.2/RES/01: 2018	0.01	No relaxation	BDL (DL - 0.01)
ii	Beta HCH	µg/l	ANtr/7.2/RES/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
iii	Gamma - HCH (Lindane)	µg/l	ANtr/7.2/RES/01: 2018	2	No relaxation	BDL (DL - 0.03)
iv	Delta- HCH	µg/l	ANtr/7.2/RES/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
v	Alachlor	µg/l	ANtr/7.2/RES/01: 2018	20	No relaxation	BDL (DL - 0.03)
vi	Aldrin	µg/l	ANtr/7.2/RES/01: 2018	0.03	No relaxation	BDL (DL - 0.03)
vii	Dieldrin	µg/l	ANtr/7.2/RES/01: 2018	0.03	No relaxation	BDL (DL - 0.03)
viii	Butachlor	µg/l	ANtr/7.2/RES/01: 2018	125	No relaxation	BDL (DL - 0.03)
ix	p,p'-DDE	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
x	o,p'-DDE	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xi	p,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xii	o,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiii	o,p'-DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiv	p,p'-DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xv	Monocrotophos	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xvi	Atrazine	µg/l	ANtr/7.2/RES/01: 2018	2	No relaxation	BDL (DL - 0.03)
xvii	Parathion methyl	µg/l	ANtr/7.2/RES/01: 2018	0.3	No relaxation	BDL (DL - 0.03)
xviii	Paraoxon methyl	µg/l	ANtr/7.2/RES/01: 2018	-	-	BDL (DL - 0.03)
xix	Malathion	µg/l	ANtr/7.2/RES/01: 2018	190	No relaxation	BDL (DL - 0.03)
xx	Malaoxon	µg/l	ANtr/7.2/RES/01: 2018	-	-	BDL (DL - 0.03)
xxi	Ethion	µg/l	ANtr/7.2/RES/01: 2018	3	No relaxation	BDL (DL - 0.03)
xxii	Chlorpyrifos	µg/l	ANtr/7.2/RES/01: 2018	30	No relaxation	BDL (DL - 0.03)

NOTE: ● Please see watermark "Original Test Report" to confirm the authenticity of this report. ● Results shall be referred to tested sample(s) and applicable to tested parameters only. ● Test report shall not be reproduced except in full without prior written approval of Anacon Labs. ● Liability of Anacon Labs is limited to invoiced amount only. ● Non-perishable and perishable sample(s) shall be disposed off after 30 days and 15 days respectively from the date of issue of Test Report, unless specified otherwise. ● #Permissible limit in absence of an alternate source for drinking water. ● "mg/l" is equivalent to "ppm". ● "µg/l" is equivalent to "ppb". ● BDL- Below detection limit. ● DL- DL Indicates detection limit of instrument /method and shall be considered as 'absent'. ● Result for test no. 8 is not relevant. ● ANtr/7.2/RES-01, : Inhouse validated method. ● NT indicates not Tested as sample failed to establish safety concerns.

REMARKS: As requested by the client, sample was tested for above parameters only. Sample complies with IS:10500:2012, for tests conducted Only.

Verified By

Swati

Swati Gondhalekar
Deputy Technical Manager

Authorized Signatory

Dr. (Mrs.) S.D. Garway

Dr. (Mrs.) S.D. Garway
Quality Manager

—End of Report—





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Test Report

Test Report No. : ALPL/30112023/1-29A

dated 30/11/2023

Page 1 of 3

Issued To : M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)		Sample Inward No. ALPL/22112023/ENV-283-GW-4	Analysis Start 23/11/2023
		Inward Date 22/11/2023	Analysis End 29/11/2023
		Reference W.O.- 4700098928/962	Report Issue Date 30/11/2023
		Reference Date 22.03.2022	Sample Category Water
Sample Name Ground Water	Sample Source Borewell	Sample Particulars Sample Code-GW-4	Sample Condition Sealed & Ice Preserved
		Quantity Received 5.0 Ltr & 250 ml	
Sample Collected By Anacon Representative		Sampling Date 18/11/2023	Sampling Time 11:30 am to 4:10 pm
		Sampling Location Borewell Near Nana Hotel (Joribari)	

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Result
				Acceptable Limit	Permissible Limit #	
I	Biological Testing I. Water					
1	Escherichia coli	Per 100 ml	IS 15185 : 2016	Absent	Absent	Absent
II	Chemical Testing I. Water					
2	Alkalinity (as CaCO ₃)	mg/l	IS 3025 (Part 23) : 1986	200	600	176.39
3	Anionic surface active agents (as MBAS)	mg/l	IS 13428 : (Annex K); 2005	0.2	1.0	BDL (DL – 0.01)
4	Colour	Hazen units	IS 3025 (Part 4) : 2021	5	15	1
5	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	No relaxation	BDL (DL – 0.005)
6	Chloride (as Cl)	mg/l	IS 3025 (Part 32) : 1988	250	1000	32.58
7	Calcium (as Ca)	mg/l	IS 3025 (Part 40) : 1991	75	200	47.39
8	Free residual chlorine	mg/l	IS 3025 (Part 26) : 2021	Min. 0.2	1	BDL (DL – 0.1)
9	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.0	1.5	0.26
10	Magnesium (as Mg)	mg/l	IS 3025 (Part 46) : 1994	30	100	13.82
11	Nitrate (as NO ₃)	mg/l	APHA method 23rd edition; 2017	45	No relaxation	4.71
12	Odour	-	IS 3025 (Part 5) : 2018	Agreeable	Agreeable	Agreeable
13	pH	-	IS 3025 (Part 11) : 2022	6.5 to 8.5	No relaxation	7.24 at 25°C
14	Phenolic compounds (as C ₆ H ₅ OH)	mg/l	IS 3025 (Part 43) : 2022	0.001	0.002	BDL (DL – 0.001)
15	Sulphate (as SO ₄)	mg/l	IS 3025 (Part 24) : 2022	200	400	26.98
16	Taste	-	IS 3025 (Part 8) : 1984	Agreeable	Agreeable	Agreeable
17	Total dissolved solids	mg/l	IS 3025 (Part 16) : 2023	500	2000	462
18	Turbidity	NTU	IS 3025 (Part 10) : 1984	1	5	0.3
19	Total hardness (as CaCO ₃)	mg/l	IS 3025 (Part 21) : 2009	200	600	175.23

☐ Please refer last Page for Note and Remarks.

Verified By

Snehal Raut
Deputy Technical Manager

Authorized Signatories

Pooja Kathane
Technical Manager

Dr. (Mrs.) S.D. Garway
Quality Manager

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Test Report

Test Report No. : ALPL/30112023/1-29A

dated 30/11/2023

Page 2 of 3

Issued To : M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)		Sample Inward No. ALPL/22112023/ENV-283-GW-4	Analysis Start 23/11/2023
		Inward Date 22/11/2023	Analysis End 29/11/2023
		Reference W.O.- 4700098928/962	Report Issue Date 30/11/2023
		Reference Date 22.03.2022	Sample Category Water
Sample Name Ground Water	Sample Source Borewell	Sample Particulars Sample Code-GW-4	Quantity Received 5.0 Ltr & 250 ml
Sample Collected By Anacon Representative		Sampling Date 18/11/2023	Sampling Time 11.30 am to 4.10 pm
		Sampling Location Borewell Near Nara Hotel (Joribar)	

TEST RESULTS

TEST RESULTS						
S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Result
				Acceptable Limit	Permissible Limit #	
11	Chemical Testing 2. Residues In Water					
20	Arsenic (as As)	mg/l	IS 3025 (Part 37) : 2022	0.01	No relaxation	BDL (DL - 0.01)
21	Aluminium (as Al)	mg/l	IS 3025 (Part 2) : 2019	0.03	0.2	BDL (DL - 0.01)
22	Boron (as B)	mg/l	IS 3025 (Part 2) : 2019	0.5	2.4	BDL (DL - 0.1)
23	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	0.05	1.5	BDL (DL - 0.03)
24	Cadmium (as Cd)	mg/l	IS 3025 (Part 2) : 2019	0.003	No relaxation	BDL (DL - 0.001)
25	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	1.0	No relaxation	0.21
26	Lead (as Pb)	mg/l	IS 3025 (Part 2) : 2019	0.01	No relaxation	BDL (DL - 0.001)
27	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	0.1	0.3	BDL (DL - 0.05)
28	Mercury (as Hg)	mg/l	IS 3025 (Part 48) : 1994	0.001	No relaxation	BDL (DL - 0.0005)
29	Selenium (as Se)	mg/l	IS 3025 (Part 56) : 2003	0.01	No relaxation	BDL (DL - 0.001)
30	Total Chromium (as Cr)	mg/l	IS 3025 (Part 2) : 2019	0.05	No relaxation	BDL (DL - 0.03)
31	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	5	15	BDL (DL - 0.1)
32	Polynuclear aromatic hydrocarbon (PAH)	µg/l	ANtr/7.2/RES/01: 2018	0.1	No relaxation	BDL(DL-0.03)
33	Mineral Oil	mg/l	ANtr/7.2/RES/06	1	No relaxation	BDL (DL - 0.1)

Please refer last Page for Note and Remarks.

Verified By

Nidhi Dubey
Deputy Technical Manager

Swati Gondhalekar
Deputy Technical Manager

Authorized Signatory

Dr. (Mrs.) S.D. Garway
Quality Manager





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Test Report

Test Report No. : ALPL/30112023/1-29A

dated 30/11/2023

Page 3 of 3

Issued To : M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)		Sample Inward No. ALPL/22112023/ENV-283-GW-4	Analysis Start 23/11/2023
		Inward Date 22/11/2023	Analysis End 29/11/2023
		Reference W.O.- 4700098928/962	Report Issue Date 30/11/2023
		Reference Date 22.03.2022	Sample Category Water
Sample Name Ground Water	Sample Source Borewell	Sample Particulars Sample Code-GW-4	Sample Condition Sealed & Ice Preserved
Sample Collected By Anacon Representative		Sampling Date 18/11/2023	Sampling Time 11.30 am to 4.10 pm
		Quantity Received 5.0 Ltr & 250 ml	
		Sampling Location Borewell Near Nana Hotel (Joribar)	

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Result
				Acceptable Limit	Permissible Limit #	
34	Pesticide Residues Organochlorine					
i	Alpha-HCH	µg/l	ANtr/7.2/RES/01: 2018	0.01	No relaxation	BDL (DL - 0.01)
ii	Beta HCH	µg/l	ANtr/7.2/RES/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
iii	Gamma - HCH (Lindane)	µg/l	ANtr/7.2/RES/01: 2018	2	No relaxation	BDL (DL - 0.03)
iv	Delta- HCH	µg/l	ANtr/7.2/RES/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
v	Alachlor	µg/l	ANtr/7.2/RES/01: 2018	20	No relaxation	BDL (DL - 0.03)
vi	Aldrin	µg/l	ANtr/7.2/RES/01: 2018	0.03	No relaxation	BDL (DL - 0.03)
vii	Dieldrin	µg/l	ANtr/7.2/RES/01: 2018	0.03	No relaxation	BDL (DL - 0.03)
viii	Butachlor	µg/l	ANtr/7.2/RES/01: 2018	125	No relaxation	BDL (DL - 0.03)
ix	p,p'-DDE	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
x	o,p'-DDE	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xi	p,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xii	o,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiii	o,p'-DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiv	p,p'-DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xv	Monocrotophos	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xvi	Atrazine	µg/l	ANtr/7.2/RES/01: 2018	2	No relaxation	BDL (DL - 0.03)
xvii	Parathion methyl	µg/l	ANtr/7.2/RES/01: 2018	0.3	No relaxation	BDL (DL - 0.03)
xviii	Paraaxon methyl	µg/l	ANtr/7.2/RES/01: 2018	-	-	BDL (DL - 0.03)
xix	Malathion	µg/l	ANtr/7.2/RES/01: 2018	190	No relaxation	BDL (DL - 0.03)
xx	Malaaxon	µg/l	ANtr/7.2/RES/01: 2018	-	-	BDL (DL - 0.03)
xxi	Ethion	µg/l	ANtr/7.2/RES/01: 2018	3	No relaxation	BDL (DL - 0.03)
xxii	Chlorpyrifos	µg/l	ANtr/7.2/RES/01: 2018	30	No relaxation	BDL (DL - 0.03)

NOTE: ● Please see watermark "Original Test Report" to confirm the authenticity of this report. ● Results shall be referred to tested sample(s) and applicable to tested parameters only. ● Test report shall not be reproduced except in full without prior written approval of Anacon Labs. ● Liability of Anacon Labs is limited to invoiced amount only. ● Non-perishable and perishable sample(s) shall be disposed off after 30 days and 15 days respectively from the date of issue of Test Report, unless specified otherwise. ● #Permissible limit in absence of an alternate source for drinking water. ● 'mg/l' is equivalent to 'ppm'. ● 'µg/l' is equivalent to 'ppb'. ● BDL- Below detection limit. ● DL- DL Indicates detection limit of instrument/method and shall be considered as 'absent'. ● Result for test no. 8 is not relevant. ● ANtr/7.2/RES-01,06; Inhouse validated method. ● NT indicates not Tested as sample failed to establish safety concerns.

REMARKS: As requested by the client, sample was tested for above parameters only. Sample complies with IS:10500:2012, for tests conducted Only.

Verified By

Swati

Swati Gondhalekar
Deputy Technical Manager

Authorized Signatory

Dr. (Mrs.) S.D. Garway

Dr. (Mrs.) S.D. Garway
Quality Manager

—End of Report—

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Test Report

Test Report No. : ALPL/30112023/1-30A

dated 30/11/2023

Page 1 of 3

Issued To : M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)		Sample Inward No. ALPL/22112023/ENV-283-GW-5	Analysis Start 23/11/2023
		Inward Date 22/11/2023	Analysis End 29/11/2023
		Reference W.O.- 4700098928/962	Report Issue Date 30/11/2023
		Reference Date 22.03.2022	Sample Category Water
Sample Name Ground Water	Sample Source Borewell	Sample Particulars Sample Code-GW-5	Sample Condition Sealed & Ice Preserved
Quantity Received 5.0 Ltr & 250 ml			
Sample Collected By Anacon Representative		Sampling Date 18/11/2023	Sampling Time 11.30 am to 4.10 pm
		Sampling Location Bamebari Borewell No-2 (Near Jagannath Temple)	

TEST RESULTS

TEST RESULTS						
S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Result
				Acceptable Limit	Permissible Limit #	
I	Biological Testing I. Water					
1	Escherichia coli	Per 100 ml	IS 15185 : 2016	Absent	Absent	Absent
II	Chemical Testing I. Water					
2	Alkalinity (as CaCO ₃)	mg/l	IS 3025 (Part 23) : 1986	200	600	176.29
3	Anionic surface active agents (as MBAS)	mg/l	IS 13428 : (Annex K): 2005	0.2	1.0	BDL (DL – 0.01)
4	Colour	Hazen units	IS 3025 (Part 4) : 2021	5	15	1
5	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	No relaxation	BDL (DL – 0.005)
6	Chloride (as Cl)	mg/l	IS 3025 (Part 32) : 1988	250	1000	18.72
7	Calcium (as Ca)	mg/l	IS 3025 (Part 40) : 1991	75	200	53.61
8	Free residual chlorine	mg/l	IS 3025 (Part 26) : 2021	Min. 0.2	1	BDL (DL – 0.1)
9	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.0	1.5	0.17
10	Magnesium (as Mg)	mg/l	IS 3025 (Part 46) : 1994	30	100	14.38
11	Nitrate (as NO ₃)	mg/l	APHA method 23rd edition: 2017	45	No relaxation	6.94
12	Odour	-	IS 3025 (Part 5) : 2018	Agreeable	Agreeable	Agreeable
13	pH	-	IS 3025 (Part 11) : 2022	6.5 to 8.5	No relaxation	8.21 at 25°C
14	Phenolic compounds (as C ₆ H ₅ OH)	mg/l	IS 3025 (Part 43) : 2022	0.001	0.002	BDL (DL – 0.001)
15	Sulphate (as SO ₄)	mg/l	IS 3025 (Part 24) : 2022	200	400	26.81
16	Taste	-	IS 3025 (Part 8) : 1984	Agreeable	Agreeable	Agreeable
17	Total dissolved solids	mg/l	IS 3025 (Part 16) : 2023	500	2000	467
18	Turbidity	NTU	IS 3025 (Part 10) : 1984	1	5	0.3
19	Total hardness (as CaCO ₃)	mg/l	IS 3025 (Part 21) : 2009	200	600	193.08

Please refer last Page for Note and Remarks.

Verified By

Snehal Raut
Deputy Technical Manager

Authorized Signatories

Pooja Kathane
Technical Manager

Dr. (Mrs.) S.D. Garway
Quality Manager

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Test Report

Test Report No. : ALPL/30112023/I-30A

dated 30/11/2023

Page 2 of 3

Issued To : M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)		Sample Inward No. ALPL/22112023/ENV-283-GW-5	Analysis Start 23/11/2023
		Inward Date 22/11/2023	Analysis End 29/11/2023
		Reference W.O. - 4700098928/962	Report Issue Date 30/11/2023
		Reference Date 22.03.2022	Sample Category Water
Sample Name Ground Water	Sample Source Borewell	Sample Particulars Sample Code-GW-5	Sample Condition Sealed & Ice Preserved
Quantity Received 5.0 Ltr & 250 ml			
Sample Collected By Anacon Representative		Sampling Date 18/11/2023	Sampling Time 11.30 am to 4.10 pm
		Sampling Location Bamebari Borewell No-2 (Near Jagannath Temple)	

TEST RESULTS

TEST RESULTS						
S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Result
				Acceptable Limit	Permissible Limit #	
II	Chemical Testing 2. Residues In Water					
20	Arsenic (as As)	mg/l	IS 3025 (Part 37) : 2022	0.01	No relaxation	BDL (DL - 0.01)
21	Aluminium (as Al)	mg/l	IS 3025 (Part 2) : 2019	0.03	0.2	BDL (DL - 0.01)
22	Boron (as B)	mg/l	IS 3025 (Part 2) : 2019	0.5	2.4	BDL (DL - 0.1)
23	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	0.05	1.5	BDL (DL - 0.03)
24	Cadmium (as Cd)	mg/l	IS 3025 (Part 2) : 2019	0.003	No relaxation	BDL (DL - 0.001)
25	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	1.0	No relaxation	0.27
26	Lead (as Pb)	mg/l	IS 3025 (Part 2) : 2019	0.01	No relaxation	BDL (DL - 0.001)
27	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	0.1	0.3	BDL (DL - 0.05)
28	Mercury (as Hg)	mg/l	IS 3025 (Part 48) : 1994	0.001	No relaxation	BDL (DL - 0.0005)
29	Selenium (as Se)	mg/l	IS 3025 (Part 56) : 2003	0.01	No relaxation	BDL (DL - 0.001)
30	Total Chromium (as Cr)	mg/l	IS 3025 (Part 2) : 2019	0.05	No relaxation	BDL (DL - 0.03)
31	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	5	15	BDL (DL - 0.1)
32	Polynuclear aromatic hydrocarbon (PAH)	µg/l	ANtr/7.2/RES/01; 2018	0.1	No relaxation	BDL (DL - 0.03)
33	Mineral Oil	mg/l	ANtr/7.2/RES/06	1	No relaxation	BDL (DL - 0.1)

Please refer last Page for Note and Remarks.

Verified By

Nidhi Dubey
Deputy Technical Manager

Swati Gondhalekar
Deputy Technical Manager

Authorized Signatory

Dr. (Mrs.) S.D. Garway
Quality Manager





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Test Report

Test Report No. : ALPL/30112023/1-30A

dated 30/11/2023

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Issued To : M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)		Sample Inward No.	ALPL/22112023/ENV-283-GW-5	Analysis Start	23/11/2023
		Inward Date	22/11/2023	Analysis End	29/11/2023
		Reference	W.O.- 4700098928/962	Report Issue Date	30/11/2023
		Reference Date	22.03.2022	Sample Category	Water
Sample Name Ground Water	Sample Source Borewell	Sample Particulars Sample Code-GW-5	Sample Condition Sealed & Ice Preserved	Quantity Received 5.0 Ltr & 250 ml	
Sample Collected By Anacon Representative		Sampling Date 18/11/2023	Sampling Time 11.30 am to 4.10 pm	Sampling Location Bamebari Borewell No-2 (Near Jagannath Temple)	

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Result
				Acceptable Limit	Permissible Limit #	
34	Pesticide Residues Organochlorine					
i	Alpha-HCH	µg/l	ANtr/7.2/RES/01: 2018	0.01	No relaxation	BDL (DL - 0.01)
ii	Beta HCH	µg/l	ANtr/7.2/RES/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
iii	Gamma - HCH (Lindane)	µg/l	ANtr/7.2/RES/01: 2018	2	No relaxation	BDL (DL - 0.03)
iv	Delta- HCH	µg/l	ANtr/7.2/RES/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
v	Alachlor	µg/l	ANtr/7.2/RES/01: 2018	20	No relaxation	BDL (DL - 0.03)
vi	Aldrin	µg/l	ANtr/7.2/RES/01: 2018	0.03	No relaxation	BDL (DL - 0.03)
vii	Dieldrin	µg/l	ANtr/7.2/RES/01: 2018	0.03	No relaxation	BDL (DL - 0.03)
viii	Butachlor	µg/l	ANtr/7.2/RES/01: 2018	125	No relaxation	BDL (DL - 0.03)
ix	p,p'-DDE	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
x	o,p'-DDE	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xi	p,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xii	o,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiii	o,p'- DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiv	p,p'- DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xv	Monocrotophos	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xvi	Atrazine	µg/l	ANtr/7.2/RES/01: 2018	2	No relaxation	BDL (DL - 0.03)
xvii	Parathion methyl	µg/l	ANtr/7.2/RES/01: 2018	0.3	No relaxation	BDL (DL - 0.03)
xviii	Paraoxon methyl	µg/l	ANtr/7.2/RES/01: 2018	-	-	BDL (DL - 0.03)
xix	Malathion	µg/l	ANtr/7.2/RES/01: 2018	190	No relaxation	BDL (DL - 0.03)
xx	Malaoxon	µg/l	ANtr/7.2/RES/01: 2018	-	-	BDL (DL - 0.03)
xxi	Ethion	µg/l	ANtr/7.2/RES/01: 2018	3	No relaxation	BDL (DL - 0.03)
xxii	Chlorpyrifos	µg/l	ANtr/7.2/RES/01: 2018	30	No relaxation	BDL (DL - 0.03)

NOTE: ● Please see watermark "Original Test Report" to confirm the authenticity of this report. ● Results shall be referred to tested sample(s) and applicable to tested parameters only. ● Test report shall not be reproduced except in full without prior written approval of Anacon Labs. ● Liability of Anacon Labs is limited to invoiced amount only. ● Non-perishable and perishable sample(s) shall be disposed off after 30 days and 15 days respectively from the date of issue of Test Report, unless specified otherwise. ● #Permissible limit in absence of an alternate source for drinking water. ● 'mg/l' is equivalent to 'ppm'. ● 'µg/l' is equivalent to 'ppb'. ● BDL- Below detection limit. ● DL- DL indicates detection limit of instrument /method and shall be considered as 'absent'. ● Result for test no. 8 is not relevant. ● ANtr/7.2/RES-01,06; Inhouse validated method. ● NT indicates not Tested as sample failed to establish safety concerns.

REMARKS: As requested by the client, sample was tested for above parameters only. Sample complies with IS:10500:2012, for tests conducted Only.

Verified By

Swati Gondhalekar
Deputy Technical Manager

Authorized Signatory

Dr. (Mrs.) S.D. Garway
Quality Manager

—End of Report—



Thank you for instilling your trust and faith in our services. We cherish our relationship with you, and we put in a lot of hard work in making sure that you get a seamless experience at every stage of your interaction with us. In our constant endeavor towards ensuring that your next experience will be significantly better than the current one, we welcome your feedback on feedback@anacon.in.



Test Report

Test Report No. : ALPL/30112023/1-31A

dated 30/11/2023

Page 1 of 3

Issued To : M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)		Sample Inward No. ALPL/22112023/ENV-283-GW-6	Analysis Start 23/11/2023
		Inward Date 22/11/2023	Analysis End 29/11/2023
		Reference W.O.- 4700098928/962	Report Issue Date 30/11/2023
		Reference Date 22.03.2022	Sample Category Water
Sample Name Ground Water	Sample Source Borewell	Sample Particulars Sample Code-GW-6	Sample Condition Sealed & Ice Preserved
			Quantity Received 5.0 Ltr & 250 ml
Sample Collected By Anacon Representative		Sampling Date 18/11/2023	Sampling Time 11.30 am to 4.10 pm
			Sampling Location Bamebari Borewell No-1 (Near Club House)

TEST RESULTS

TEST RESULTS						
S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Result
				Acceptable Limit	Permissible Limit #	
I	Biological Testing I. Water					
1	<i>Escherichia coli</i>	Per 100 ml	IS 15185 : 2016	Absent	Absent	Absent
II	Chemical Testing I. Water					
2	Alkalinity (as CaCO ₃)	mg/l	IS 3025 (Part 23) : 1986	200	600	182.63
3	Anionic surface active agents (as MBAS)	mg/l	IS 13428 : (Annex K); 2005	0.2	1.0	BDL (DL – 0.01)
4	Colour	Hazen units	IS 3025 (Part 4) : 2021	5	15	1
5	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	No relaxation	BDL (DL – 0.005)
6	Chloride (as Cl)	mg/l	IS 3025 (Part 32) : 1988	250	1000	31.64
7	Calcium (as Ca)	mg/l	IS 3025 (Part 40) : 1991	75	200	47.36
8	Free residual chlorine	mg/l	IS 3025 (Part 26) : 2021	Min. 0.2	1	BDL (DL – 0.1)
9	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.0	1.5	0.18
10	Magnesium (as Mg)	mg/l	IS 3025 (Part 46) : 1994	30	100	11.92
11	Nitrate (as NO ₃)	mg/l	APHA method 23rd edition: 2017	45	No relaxation	6.73
12	Odour	-	IS 3025 (Part 5) : 2018	Agreeable	Agreeable	Agreeable
13	pH	-	IS 3025 (Part 11) : 2022	6.5 to 8.5	No relaxation	7.92 at 25°C
14	Phenolic compounds (as C ₆ H ₅ OH)	mg/l	IS 3025 (Part 43) : 2022	0.001	0.002	BDL (DL – 0.001)
15	Sulphate (as SO ₄)	mg/l	IS 3025 (Part 24) : 2022	200	400	26.43
16	Taste	-	IS 3025 (Part 8) : 1984	Agreeable	Agreeable	Agreeable
17	Total dissolved solids	mg/l	IS 3025 (Part 16) : 2023	500	2000	481
18	Turbidity	NTU	IS 3025 (Part 10) : 1984	1	5	0.3
19	Total hardness (as CaCO ₃)	mg/l	IS 3025 (Part 21) : 2009	200	600	167.35

☐ Please refer last Page for Note and Remarks.

Verified By

Snehal Raut
Deputy Technical Manager

Authorized Signatories

Pooja Kathane
Technical Manager

Dr. (Mrs.) S.D. Garway
Quality Manager





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Test Report

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Issued To : M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)		Sample Inward No. ALPL/22112023/ENV-283-GW-6	Analysis Start 23/11/2023
		Inward Date 22/11/2023	Analysis End 29/11/2023
		Reference W.O. - 4700098928/962	Report Issue Date 30/11/2023
		Reference Date 22.03.2022	Sample Category Water
Sample Name Ground Water	Sample Source Borewell	Sample Particulars Sample Code-GW-6	Sample Condition Sealed & Ice Preserved
		Quantity Received 5.0 Ltr & 250 ml	
Sample Collected By Anacon Representative		Sampling Date 18/11/2023	Sampling Time 11.30 am to 4.10 pm
		Sampling Location Bamebari Borewell No-1 (Near Club House)	

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Result
				Acceptable Limit	Permissible Limit #	
II	Chemical Testing 2. Residues In Water					
20	Arsenic (as As)	mg/l	IS 3025 (Part 37) : 2022	0.01	No relaxation	BDL (DL - 0.01)
21	Aluminium (as Al)	mg/l	IS 3025 (Part 2) : 2019	0.03	0.2	BDL (DL - 0.01)
22	Boron (as B)	mg/l	IS 3025 (Part 2) : 2019	0.5	2.4	BDL (DL - 0.1)
23	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	0.05	1.5	BDL (DL - 0.03)
24	Cadmium (as Cd)	mg/l	IS 3025 (Part 2) : 2019	0.003	No relaxation	BDL (DL - 0.001)
25	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	1.0	No relaxation	0.28
26	Lead (as Pb)	mg/l	IS 3025 (Part 2) : 2019	0.01	No relaxation	BDL (DL - 0.001)
27	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	0.1	0.3	BDL (DL - 0.05)
28	Mercury (as Hg)	mg/l	IS 3025 (Part 48) : 1994	0.001	No relaxation	BDL (DL - 0.0005)
29	Selenium (as Se)	mg/l	IS 3025 (Part 56) : 2003	0.01	No relaxation	BDL (DL - 0.001)
30	Total Chromium (as Cr)	mg/l	IS 3025 (Part 2) : 2019	0.05	No relaxation	BDL (DL - 0.03)
31	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	5	15	BDL (DL - 0.1)
32	Polynuclear aromatic hydrocarbon (PAH)	µg/l	ANtr/7.2/RES/01 : 2018	0.1	No relaxation	BDL(DL-0.03)
33	Mineral Oil	mg/l	ANtr/7.2/RES/06	1	No relaxation	BDL (DL - 0.1)

□ Please refer last Page for Note and Remarks.

Verified By

Nidhi Dubey
Deputy Technical Manager

Swati Gondhalekar
Deputy Technical Manager

Authorized Signatory

Dr. (Mrs.) S.D. Garway
Quality Manager

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Test Report

Test Report No. : ALPL/30112023/1-31A

dated 30/11/2023

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Issued To : M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)		Sample Inward No. ALPL/22112023/ENV-283-GW-6	Analysis Start 23/11/2023
		Inward Date 22/11/2023	Analysis End 29/11/2023
		Reference W.O.- 4700098928/962	Report Issue Date 30/11/2023
		Reference Date 22.03.2022	Sample Category Water
Sample Name Ground Water	Sample Source Borewell	Sample Particulars Sample Code-GW-6	Sample Condition Sealed & Ice Preserved
Quantity Received 5.0 Ltr & 250 ml			
Sample Collected By Anacon Representative		Sampling Date 18/11/2023	Sampling Time 11.30 am to 4.10 pm
		Sampling Location Bamebari Borewell No-1 (Near Club House)	

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Result
				Acceptable Limit	Permissible Limit #	
34	Pesticide Residues Organochlorine					
i	Alpha-HCH	µg/l	ANtr/7.2/RES/01: 2018	0.01	No relaxation	BDL (DL - 0.01)
ii	Beta HCH	µg/l	ANtr/7.2/RES/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
iii	Gamma - HCH (Lindane)	µg/l	ANtr/7.2/RES/01: 2018	2	No relaxation	BDL (DL - 0.03)
iv	Delta- HCH	µg/l	ANtr/7.2/RES/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
v	Alachlor	µg/l	ANtr/7.2/RES/01: 2018	20	No relaxation	BDL (DL - 0.03)
vi	Aldrin	µg/l	ANtr/7.2/RES/01: 2018	0.03	No relaxation	BDL (DL - 0.03)
vii	Dieldrin	µg/l	ANtr/7.2/RES/01: 2018	0.03	No relaxation	BDL (DL - 0.03)
viii	Butachlor	µg/l	ANtr/7.2/RES/01: 2018	125	No relaxation	BDL (DL - 0.03)
ix	p,p'-DDE	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
x	o,p'-DDE	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xi	p,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xii	o,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiii	o,p'-DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiv	p,p'-DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xv	Monocrotophos	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xvi	Atrazine	µg/l	ANtr/7.2/RES/01: 2018	2	No relaxation	BDL (DL - 0.03)
xvii	Parathion methyl	µg/l	ANtr/7.2/RES/01: 2018	0.3	No relaxation	BDL (DL - 0.03)
xviii	Paraaxon methyl	µg/l	ANtr/7.2/RES/01: 2018	-	-	BDL (DL - 0.03)
xix	Malathion	µg/l	ANtr/7.2/RES/01: 2018	190	No relaxation	BDL (DL - 0.03)
xx	Malaoxon	µg/l	ANtr/7.2/RES/01: 2018	-	-	BDL (DL - 0.03)
xxi	Ethion	µg/l	ANtr/7.2/RES/01: 2018	3	No relaxation	BDL (DL - 0.03)
xxii	Chlorpyrifos	µg/l	ANtr/7.2/RES/01: 2018	30	No relaxation	BDL (DL - 0.03)

NOTE: • Please see watermark "Original Test Report" to confirm the authenticity of this report. • Results shall be referred to tested sample(s) and applicable to tested parameters only.
• Test report shall not be reproduced except in full without prior written approval of Anacon Labs. • Liability of Anacon Labs is limited to invoiced amount only. • Non-perishable and perishable sample(s) shall be disposed off after 30 days and 15 days respectively from the date of issue of Test Report, unless specified otherwise. • #Permissible limit in absence of an alternate source for drinking water. • 'mg/l' is equivalent to 'ppm'. • 'µg/l' is equivalent to 'ppb'. • BDL- Below detection limit. • DL- DL indicates detection limit of instrument /method and shall be considered as 'absent'. • Result for test no. 11 is not relevant. • ANtr/7.2/RES-01.06, Inhouse validated method. • NP indicates not Tested as sample failed to establish safety concerns.

REMARKS: As requested by the client, sample was tested for above parameters only. Sample complies with IS:10500:2012, for tests conducted Only.

Verified By

Swati

Swati Gondhalekar
Deputy Technical Manager

Authorized Signatory

S.D. Garway

Dr. (Mrs.) S.D. Garway
Quality Manager

—End of Report—

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Test Report

Test Report No. : ALPL/30112023/1-32A

dated 30/11/2023

Page 1 of 3

Issued To : M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)		Sample Inward No. ALPL/22112023/ENV-283-GW-7	Analysis Start 23/11/2023
		Inward Date 22/11/2023	Analysis End 29/11/2023
		Reference W.O.- 4700098928/962	Report Issue Date 30/11/2023
		Reference Date 22.03.2022	Sample Category Water
Sample Name Ground Water	Sample Source Dugwell	Sample Particulars Sample Code-GW-7	Sample Condition Sealed & Ice Preserved
Quantity Received 5.0 Ltr & 250 ml			
Sample Collected By Anacon Representative		Sampling Date 18/11/2023	Sampling Time 11.30 am to 4.10 pm
		Sampling Location Open Dugwell Near Jaroli High School (Jurudi)	

TEST RESULTS

TEST RESULTS						
S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Result
				Acceptable Limit	Permissible Limit #	
I	Biological Testing 1. Water					
1	<i>Escherichia coli</i>	Per 100 ml	IS 15185 : 2016	Absent	Absent	Absent
II	Chemical Testing 1. Water					
2	Alkalinity (as CaCO ₃)	mg/l	IS 3025 (Part 23) : 1986	200	600	197.46
3	Anionic surface active agents (as MBAS)	mg/l	IS 13428 : (Annex K): 2005	0.2	1.0	BDL (DL – 0.01)
4	Colour	Hazen units	IS 3025 (Part 4) : 2021	5	15	1
5	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	No relaxation	BDL (DL – 0.005)
6	Chloride (as Cl)	mg/l	IS 3025 (Part 32) : 1988	250	1000	31.46
7	Calcium (as Ca)	mg/l	IS 3025 (Part 40) : 1991	75	200	46.39
8	Free residual chlorine	mg/l	IS 3025 (Part 26) : 2021	Min. 0.2	1	BDL (DL – 0.1)
9	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.0	1.5	0.28
10	Magnesium (as Mg)	mg/l	IS 3025 (Part 46) : 1994	30	100	12.64
11	Nitrate (as NO ₃)	mg/l	APHA method 23rd edition: 2017	45	No relaxation	6.37
12	Odour	-	IS 3025 (Part 5) : 2018	Agreeable	Agreeable	Agreeable
13	pH	-	IS 3025 (Part 11) : 2022	6.5 to 8.5	No relaxation	8.14 at 25°C
14	Phenolic compounds (as C ₆ H ₅ OH)	mg/l	IS 3025 (Part 43) : 2022	0.001	0.002	BDL (DL – 0.001)
15	Sulphate (as SO ₄)	mg/l	IS 3025 (Part 24) : 2022	200	400	24.37
16	Taste	-	IS 3025 (Part 8) : 1984	Agreeable	Agreeable	Agreeable
17	Total dissolved solids	mg/l	IS 3025 (Part 16) : 2023	500	2000	461
18	Turbidity	NTU	IS 3025 (Part 10) : 1984	1	5	0.3
19	Total hardness (as CaCO ₃)	mg/l	IS 3025 (Part 21) : 2009	200	600	167.88

Please refer last Page for Note and Remarks.

Verified By

Snehal Raut
Deputy Technical Manager

Authorized Signatories

Pooja Kathane
Technical Manager

Dr. (Mrs.) S.D. Garway
Quality Manager

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Test Report

Test Report No. : ALPL/3011/2023/1-32A

dated 30/11/2023

Page 2 of 3

Issued To : M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)		Sample Inward No. ALPL/2211/2023/ENV-283-GW-7	Analysis Start 23/11/2023
		Inward Date 22/11/2023	Analysis End 29/11/2023
		Reference W.O.- 4700098928/962	Report Issue Date 30/11/2023
		Reference Date 22.03.2022	Sample Category Water
Sample Name Ground Water	Sample Source Dugwell	Sample Particulars Sample Code-GW-7	Sample Condition Sealed & Ice Preserved
Quantity Received 5.0 Ltr & 250 ml			
Sample Collected By Anacon Representative		Sampling Date 18/11/2023	Sampling Time 11.30 am to 4.10 pm
		Sampling Location Open Dugwell Near Jaroli High School (Jurudi)	

TEST RESULTS

TEST RESULTS						
S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Result
				Acceptable Limit	Permissible Limit #	
II	Chemical Testing 2. Residues In Water					
20	Arsenic (as As)	mg/l	IS 3025 (Part 37) : 2022	0.01	No relaxation	BDL (DL - 0.01)
21	Aluminium (as Al)	mg/l	IS 3025 (Part 2) : 2019	0.03	0.2	BDL (DL - 0.01)
22	Boron (as B)	mg/l	IS 3025 (Part 2) : 2019	0.5	2.4	BDL (DL - 0.1)
23	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	0.05	1.5	BDL (DL - 0.03)
24	Cadmium (as Cd)	mg/l	IS 3025 (Part 2) : 2019	0.003	No relaxation	BDL (DL - 0.001)
25	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	1.0	No relaxation	0.24
26	Lead (as Pb)	mg/l	IS 3025 (Part 2) : 2019	0.01	No relaxation	BDL (DL - 0.001)
27	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	0.1	0.3	BDL (DL - 0.05)
28	Mercury (as Hg)	mg/l	IS 3025 (Part 48) : 1994	0.001	No relaxation	BDL (DL - 0.0005)
29	Selenium (as Se)	mg/l	IS 3025 (Part 56) : 2003	0.01	No relaxation	BDL (DL - 0.001)
30	Total Chromium (as Cr)	mg/l	IS 3025 (Part 2) : 2019	0.05	No relaxation	BDL (DL - 0.03)
31	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	5	15	BDL (DL - 0.1)
32	Polynuclear aromatic hydrocarbon (PAH)	µg/l	ANtr/7.2/RES/01: 2018	0.1	No relaxation	BDL(DL-0.03)
33	Mineral Oil	mg/l	ANtr/7.2/RES/06	1	No relaxation	BDL (DL - 0.1)

Please refer last Page for Note and Remarks.

Verified By

Nidhi Dubey
Deputy Technical Manager

Swati Gondhalekar
Deputy Technical Manager

Authorized Signatory

Dr. (Mrs.) S.D. Garway
Quality Manager





Test Report

Test Report No. : ALPL/30112023/1-32A

dated 30/11/2023

Page 3 of 3

Issued To : M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)		Sample Inward No. ALPL/22112023/ENV-283-GW-7	Analysis Start 23/11/2023
		Inward Date 22/11/2023	Analysis End 29/11/2023
		Reference W.O.- 4700098928/962	Report Issue Date 30/11/2023
		Reference Date 22.03.2022	Sample Category Water
Sample Name Ground Water	Sample Source Dugwell	Sample Particulars Sample Code-GW-7	Sample Condition Sealed & Ice Preserved
		Quantity Received 3.0 Lit & 250 ml	
Sample Collected By Anacon Representative		Sampling Date 18/11/2023	Sampling Time 11.30 am to 4.10 pm
		Sampling Location Open Dugwell Near Jaroli High School (Jurudi)	

TEST RESULTS

TEST RESULTS						
S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Result
				Acceptable Limit	Permissible Limit #	
34	Pesticide Residues Organochlorine					
i	Alpha-HCH	µg/l	ANtr/7.2/RES/01: 2018	0.01	No relaxation	BDL (DL - 0.01)
ii	Beta HCH	µg/l	ANtr/7.2/RES/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
iii	Gamma - HCH (Lindane)	µg/l	ANtr/7.2/RES/01: 2018	2	No relaxation	BDL (DL - 0.03)
iv	Delta- HCH	µg/l	ANtr/7.2/RES/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
v	Alachlor	µg/l	ANtr/7.2/RES/01: 2018	20	No relaxation	BDL (DL - 0.03)
vi	Aldrin	µg/l	ANtr/7.2/RES/01: 2018	0.03	No relaxation	BDL (DL - 0.03)
vii	Dieldrin	µg/l	ANtr/7.2/RES/01: 2018	0.03	No relaxation	BDL (DL - 0.03)
viii	Butachlor	µg/l	ANtr/7.2/RES/01: 2018	125	No relaxation	BDL (DL - 0.03)
ix	p,p'-DDE	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
x	o,p'-DDE	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xi	p,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xii	o,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiii	o,p'-DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiv	p,p'- DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xv	Monocrotophos	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xvi	Atrazine	µg/l	ANtr/7.2/RES/01: 2018	2	No relaxation	BDL (DL - 0.03)
xvii	Parathion methyl	µg/l	ANtr/7.2/RES/01: 2018	0.3	No relaxation	BDL (DL - 0.03)
xviii	Paraoxon methyl	µg/l	ANtr/7.2/RES/01: 2018	-	-	BDL (DL - 0.03)
xix	Malathion	µg/l	ANtr/7.2/RES/01: 2018	190	No relaxation	BDL (DL - 0.03)
xx	Malaoxon	µg/l	ANtr/7.2/RES/01: 2018	-	-	BDL (DL - 0.03)
xxi	Ethion	µg/l	ANtr/7.2/RES/01: 2018	3	No relaxation	BDL (DL - 0.03)
xxii	Chlorpyrifos	µg/l	ANtr/7.2/RES/01: 2018	30	No relaxation	BDL (DL - 0.03)

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REMARKS: As requested by the client, sample was tested for above parameters only. Sample complies with IS:10500:2012, for tests conducted Only.

Verified By

Swati

Swati Gondhalekar
Deputy Technical Manager

Authorized Signatory

Dr. (Mrs.) S.D. Garway

Dr. (Mrs.) S.D. Garway
Quality Manager

—End of Report—





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Test Report

Test Report No. : ALPL/30112023/1-35

dated 30/11/2023

Page 1 of 1

Issued To : M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)		Sample Inward No.	ALPL/22112023/ENV-283-SW-5	Analysis Start	23/11/2023
		Inward Date	22/11/2023	Analysis End	29/11/2023
		Reference	W.O.- 4700098928/962	Report Issue Date	30/11/2023
		Reference Date	22.03.2022	Sample Category	Water
Sample Name	Sample Source	Sample Particulars	Sample Condition	Quantity Received	
Surface Water	River	Sample Code-SW-5	Sealed & Ice Preserved	2.0 Ltr & 250 ml each	
Sample Collected By Anacon Representative		Sampling Date	Sampling Time	Sampling Location	
		17/11/2023	11.55 am to 4.25 pm	5. Gurubeda Baitarani River-SW-5	

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Standards as per IS 2296:1992 Class C	Test Result
I	Biological Testing - 1.Water				SW-5
1	Coliform	MPN/100ml	IS 1622 : 1981	5000	BDL(DL-2)
II	Chemical Testing - 1.Water				
2	pH value	-	IS 3025 (Part 11) : 2022	6.0 to 9.0	8.26 at 25°C
3	Colour	Hazen units	IS 3025 (Part 4) : 2021	300	12
4	Dissolved Oxygen	mg/l	IS 3025 (Part 38) : 1989	4.0	6.1
5	Total Suspended Solid (as TSS)	mg/l	IS 3025 (Part 17) : 2022	-	32
6	BOD (3 days at 27°C)	mg/l	IS 3025 (Part 44) : 1993	3.0	2.17
7	Chemical oxygen demand	mg/l	IS 3025 (Part 58) : 2006	-	6.59
8	Total Dissolved Solids (TDS)	mg/l	IS 3025 (Part 16) : 1984	1500	1164
9	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	1.5	0.06
10	Chloride (as Cl)	mg/l	IS 3025 (Part 32) : 1988	600	32.81
11	Sulphate (as SO ₄)	mg/l	IS 3025 (Part 24) : 2022	400	64.29
12	Nitrate (as NO ₃)	mg/l	IS 3025 (Part 34) : 1988	50	17.34
13	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.5	0.32
14	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	BDL(DL-0.005)
15	Phenolic compounds (as C ₆ H ₅ OH)	mg/l	IS 3025 (Part 43) : 1001	0.005	BDL(DL-0.001)
16	Anionic Detergent	mg/l	IS 13428 : 2005 Annex K	1.0	BDL(DL-0.01)
	Chemical Testing - 2. Residues In Water				
17	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	0.5	0.43
18	Cadmium (as Cd)	mg/l	IS 3025 (Part 41) : 1992	0.01	BDL(DL-0.1)
19	Selenium (as Se)	mg/l	IS 3025 (Part 56) : 2003	0.05	BDL(DL-0.1)
20	Arsenic (as As)	mg/l	IS 3025 (Part 37) : 2022	0.2	BDL(DL-0.05)
21	Lead (as Pb)	mg/l	IS 3025 (Part 47) : 2003	0.1	BDL(DL-0.1)
22	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	15	BDL(DL-0.1)
23	Hexa Chromium (as Cr ^{VI})	mg/l	IS 3025 (Part 2) : 2019	0.05	BDL(DL-0.1)
24	Mercury (as Hg)	mg/l	IS : 3025 (Part 48) : 1994	-	BDL(DL-0.01)
25	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	-	BDL(DL-0.1)

NOTES: ● Please see watermark "Original Test Report" to confirm the authenticity of this report. ● Results shall be referred to tested sample(s) and applicable to tested parameters only. ● Test report shall not be reproduced except in full without prior written approval of Anacon Labs. ● Liability of Anacon Labs is limited to invoiced amount only. ● Non-perishable and perishable sample(s) shall be disposed off after 30 days and 15 days respectively from the date of issue of Test Report, unless specified otherwise. ● mg/l is equivalent to ppm. ● BDL- Below detection limit. ● DL- Indicates detection limit of instrument/method and shall be considered as "absent".

REMARKS : As requested by the client, sample was tested for above parameters only.

Verified By

Authorized Signatories

Nidhi Dubey
Deputy Technical Manager

Snehal Raut
Deputy Technical Manager

Pooja Kathane
Technical Manager

Dr. (Mrs.) S.D. Garway
Quality Manager

—End of Report—

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Test Report

Test Report No. : ALPL/30112023/1-36

dated 30/11/2023

Page 1 of 1

Issued To : M/s Bamehari Iron & Manganese Mine (M/s TATA Steel Limited)		Sample Inward No. ALPL/22112023/ENV-283-SW-6 & 7	Analysis Start 23/11/2023
Inward Date 22/11/2023		Reference W.O. - 4700098928/962	Analysis End 29/11/2023
Reference Date 22.03.2022			Report Issue Date 30/11/2023
			Sample Category Water
Sample Name Surface Water	Sample Source 1. Upstream 2. Downstream	Sample Particulars Sample Code-SW-6 & 7	Sample Condition Sealed & Ice Preserved
Quantity Received 2.0 Lit & 250 ml each			
Sample Collected By Anacon Representative	Sampling Date 17/11/2023	Sampling Time 11.55 am to 4.25 pm	Sampling Location 1. Tindharia Upstream (Baitarani River)-SW-6 2. Tindharia Downstream (Baitarani River)-SW-7

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Standards as per IS 2296:1992 Class C	Test Result	
					SW-6	SW-7
I	Biological Testing 1.Water					
1	Coliform	MPN/100ml	IS 1622 : 1981	5000	BDL(DL-2)	BDL(DL-2)
II	Chemical Testing 1.Water					
2	pH value	-	IS 3025 (Part 11) : 2022	6.0 to 9.0	8.21 at 25°C	8.14 at 25°C
3	Colour	Hazen units	IS 3025 (Part 4) : 2021	300	14	12
4	Dissolved Oxygen	mg/l	IS 3025 (Part 38) : 1989	4.0	6.4	6.2
5	Total Suspended Solid (as TSS)	mg/l	IS 3025 (Part 17) : 2022	—	32	28
6	BOD (3 days at 27°C)	mg/l	IS 3025 (Part 44) : 1993	3.0	2.47	2.31
7	Chemical oxygen demand	mg/l	IS 3025 (Part 58) : 2006	—	6.59	5.97
8	Total Dissolved Solids (TDS)	mg/l	IS 3025 (Part 16) : 1984	1500	1462	1381
9	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	1.5	0.07	0.06
10	Chloride (as Cl)	mg/l	IS 3025 (Part 32) : 1988	600	46.38	43.51
11	Sulphate (as SO ₄)	mg/l	IS 3025 (Part 24) : 2022	400	67.29	58.64
12	Nitrate (as NO ₃)	mg/l	IS 3025 (Part 34) : 1988	50	17.32	16.81
13	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.5	0.47	0.38
14	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	BDL(DL-0.005)	BDL(DL-0.005)
15	Phenolic compounds (as C ₆ H ₅ OH)	mg/l	IS 3025 (Part 43) : 1001	0.005	BDL(DL-0.001)	BDL(DL-0.001)
16	Anionic Detergent	mg/l	IS 13428 : 2005 Annex K	1.0	BDL(DL-0.01)	BDL(DL-0.01)
	Chemical Testing 2. Residues In Water					
17	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	0.5	0.43	0.41
18	Cadmium (as Cd)	mg/l	IS 3025 (Part 41) : 1992	0.01	BDL(DL-0.1)	BDL(DL-0.1)
19	Selenium (as Se)	mg/l	IS 3025 (Part 56) : 2003	0.05	BDL(DL-0.1)	BDL(DL-0.1)
20	Arsenic (as As)	mg/l	IS 3025 (Part 37) : 2022	0.2	BDL(DL-0.05)	BDL(DL-0.05)
21	Lead (as Pb)	mg/l	IS 3025 (Part 47) : 2003	0.1	BDL(DL-0.1)	BDL(DL-0.1)
22	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	15	BDL(DL-0.1)	BDL(DL-0.1)
23	Hexa Chromium (as Cr ⁶⁺)	mg/l	IS 3025 (Part 2) : 2019	0.05	BDL(DL-0.1)	BDL(DL-0.1)
24	Mercury (as Hg)	mg/l	IS 3025 (Part 48) : 1994	—	BDL(DL-0.01)	BDL(DL-0.01)
25	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	—	BDL(DL-0.1)	BDL(DL-0.1)

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REMARKS : As requested by the client, sample was tested for above parameters only.

Verified By

Authorized Signatories

Nidhi Dubey
Deputy Technical Manager

Snehal Raut
Deputy Technical Manager

Pooja Kathane
Technical Manager

Dr. (Mrs.) S.D. Garway
Quality Manager

—End of Report—

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Test Report

Test Report No. : ALPL/30112023/1-41A

dated 30/11/2023

Page 1 of 3

Issued To : M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)	Sample Inward No.	ALPL/22112023/ENV-283-WW-1&2	Analysis Start	23/11/2023
	Inward Date	22/11/2023	Analysis End	29/11/2023
	Reference	W.O.- 4700098928/962	Report Issue Date	30/11/2023
	Reference Date	22.03.2022	Sample Category	Water
Sample Name Effluent Water	Sample Particulars Sample Code-WW-1 & WW-2		Sample Condition Sealed & Ice Preserved	Quantity Received 5.0 Ltr & 250 ml
Sample Collected By Anacon Representative		Sampling Date 16/11/2023	Sampling Time 10.20 am to 11.45 am	Sampling Location WW-1 Bamebari STP-INLET WW-2-BAMEBARI OIL-WATER SEPARATION (Near Garage)

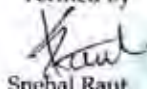
TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Standards (In Land Surface Water)	Test Result	
					WW-1	WW-2
1	Chemical Testing Pollution & Environment					
1	pH value	-	IS 3025 (Part 11) : 2022	5.5 to 9.0	7.31 at 25°C	6.92 at 25°C
2	Oil & Grease	mg/l	IS 3025 (Part 39) : 1991	10	BDL(DL-4)	BDL(DL-4)
3	Total Suspended Solid (TSS)	mg/l	IS 3025 (Part 17) : 1984	100	43	51
4	Ammonical Nitrogen (as N)	mg/l	IS 3025 (Part 34) : 1988	50	12.64	11.81
5	Total Kjeldahl Nitrogen (as N)	mg/l	IS 3025 (Part 34) : 1988	100	16.28	15.94
6	BOD (3 days at 27°C)	mg/l	IS 3025 (Part 44) : 1993	30	24	21
7	Chemical Oxygen Demand	mg/l	IS 3025 (Part 58) : 2006	250	68	56
8	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.2	BDL(DL-0.1)	BDL(DL-0.1)
9	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	IS 3025 (Part 43) : 2022	1.0	BDL(DL-0.1)	BDL(DL-0.1)

NOTES: ● Please see watermark "Original Test Report" to confirm the authenticity of this report. ● Results shall be referred to tested sample(s) and applicable to tested parameters only. ● Test report shall not be reproduced except in full without prior written approval of Anacon Labs. ● Liability of Anacon Labs is limited to invoiced amount only. ● Non-perishable and perishable sample(s) shall be disposed off after 30 days and 15 days respectively from the date of issue of Test Report, unless specified otherwise. ● "mg/l" is equivalent to "ppm". ● BDL- Below detection limit ● DL- Indicates detection limit of instrument/method and shall be considered as "absent".

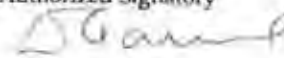
REMARKS : As requested by the client, sample was tested for above parameters only.

Verified by


Snehal Raut

Deputy Technical Manager

Authorized Signatory



Dr. (Mrs.) S. D. Garway
Quality Manager

---End of Report---





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Test Report

Test Report No. : ALPL/30112023/1-41A

dated 30/11/2023

Page 2 of 3

Issued To : M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)	Sample Inward No.	ALPL/22112023/ENV-383-WW-1&2	Analysis Start	23/11/2023
	Inward Date	22/11/2023	Analysis End	29/11/2023
	Reference	W.O.- 4700098928/962	Report Issue Date	30/11/2023
	Reference Date	22.03.2022	Sample Category	Water
Sample Name Effluent Water	Sample Particulars Sample Code-WW-1 & WW-2	Sample Condition Sealed & Ice Preserved	Quantity Received 5.0 Ltr & 250 ml	
Sample Collected By Anacon Representative	Sampling Date 16/11/2023	Sampling Time 10.20 am to 11.45 am	Sampling Location WW-1 Bamebari STP-INLET WW-2-BAMEBARI OIL-WATER SEPARATION (Near Garage)	

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Standards (In Land Surface Water)	Test Result	
					WW-1	WW-2
11	Chemical Testing 2. Residues In Water					
10	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	3.0	1.16	0.73
11	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	3.0	BDL(DL-5)	BDL(DL-5)
12	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	2.0	BDL(DL-0.1)	BDL(DL-0.1)
13	Mercury (as Hg)	mg/l	IS : 3025 (Part 48) : 1994	0.01	BDL(DL-0.01)	BDL(DL-0.01)
14	Cadmium (as Cd)	mg/l	IS : 3025 (Part 41) : 1992	2.0	BDL(DL-0.1)	BDL(DL-0.1)
15	Selenium (as Se)	mg/l	IS : 3025 (Part 56) : 2003	0.05	BDL(DL-0.1)	BDL(DL-0.1)
16	Lead (as Pb)	mg/l	IS 3025 (Part 47) : 2003	0.1	BDL(DL-0.1)	BDL(DL-0.1)
17	Arsenic (as As)	mg/l	IS : 3025 (Part 37) : 2022	0.2	BDL(DL-0.05)	BDL(DL-0.05)
18	Nickel (as Ni)	mg/l	IS:13428 : 2005(Annexure L)	3.0	BDL(DL-0.1)	BDL(DL-0.1)
19	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	5.0	BDL(DL-5)	BDL(DL-0.1)
20	Total Chromium (as Cr)	mg/l	IS 3025 (Part 2) : 2019	2.0	BDL(DL-0.1)	BDL(DL-0.1)
21	Vanadium (as V)	mg/l	IS 3025 (Part 2) : 2019	0.2	BDL(DL-0.1)	BDL(DL-0.1)

NOTES: ● Please see watermark "Original Test Report" to confirm the authenticity of this report. ● Results shall be referred to tested sample(s) and applicable to tested parameters only. ● Test report shall not be reproduced except in full without prior written approval of Anacon Labs. ● Liability of Anacon Labs is limited to invoiced amount only. ● Non-perishable and perishable sample(s) shall be disposed off after 30 days and 15 days respectively from the date of issue of Test Report, unless specified otherwise. ● 'mg/l' is equivalent to 'ppm'. ● BDL- Below detection limit ● DL- Indicates detection limit of instrument/method and shall be considered as 'absent'.

REMARKS : As requested by the client, sample was tested for above parameters only.

Verified By

Nidhi Dubey
Deputy Technical Manager

Authorized Signatory

Dr. (Mrs.) S.D. Garway
Quality Manager

—End of Report—

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Test Report

Test Report No. : ALPL/30112023/1-41A

dated 30/11/2023

Page 3 of 3

Issued To : M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)	Sample Inward No.	ALPL/22112023/ENV-283-WW-1&2	Analysis Start	23/11/2023
	Inward Date	22/11/2023	Analysis End	29/11/2023
	Reference	W.O.- 4700098928/962	Report Issue Date	30/11/2023
	Reference Date	22.03.2022	Sample Category	Water
Sample Name Effluent Water	Sample Particulars Sample Code-WW-1 & WW-2	Sample Condition Sealed & Ice Preserved	Quantity Received 5.0 Lit & 250 ml	
Sample Collected By Anacon Representative	Sampling Date 16/11/2023	Sampling Time 10.20 am to 11.45 am	Sampling Location WW-1 Bamebari STP-INLET WW-2-BAMEBARI OIL-WATER SEPARATION (Near Garage)	

TEST RESULTS

TEST RESULTS						
S.N.	Test Parameter	Measurement Unit	Test Method	Standards (In Land Surface Water)	Test Result	
					WW-1	WW-2
I	Biological Testing I.Water					
1	Faecal coliform	MPN/100 ml	IS 1622 : 1981	–	38	26
II	Chemical Testing Pollution & Environment					
2	Colour	Hazen units	IS 3025 (Part 4) : 2021	Colourless	2	0 (Colourless)
3	Odour	-	IS 3025 (Part 5) : 2018	Odourless	Disagreeable	Agreeable
4	Temperature	°C	APHA Method	Shall not exceed 5°C above the receiving water temperature	25°C	25°C
5	Free residual chlorine	mg/l	IS 3025 (Part 26) : 2021	1.0	BDL(DL-0.1)	BDL(DL-0.1)
6	Particulate size of SS		Gravimetric Method	Shall pass 850 micron IS Sieve	<850	<850
7	Free Ammonia (as NH ₃)	mg/l	APHA Method	5	BDL(DL-0.1)	BDL(DL-0.1)
8	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	2.0	0.26	BDL(DL-0.1)
9	Sulphide (as S)	mg/l	IS 3025 (Part 29) : 1986	2.0	BDL(DL-0.03)	BDL(DL-0.03)
10	Nitrate Nitrogen	mg/l	APHA Method	10	2.71	BDL(DL-2)
11	Bio Assay Test	%	APHA 22nd Edition	90% Survival of fish after 96 hours in 100% effluent	76%	92%
12	Hexavalent Chromium (as Cr ⁶⁺)	mg/l	Lab-SOP	0.1	BDL(DL-0.01)	BDL(DL-0.01)
13	Dissolved Phosphate (as P)	mg/l	IS 3025 (Part 31) : 1988	5.0	BDL(DL-0.1)	BDL(DL-0.1)

NOTES: • Please see watermark "Original Test Report" to confirm the authenticity of this report. • Results shall be referred to tested sample(s) and applicable to tested parameters only. • Test report shall not be reproduced except in full without prior written approval of Anacon Labs. • Liability of Anacon Labs is limited to invoiced amount only. • Non-perishable and perishable sample(s) shall be disposed off after 10 days and 15 days respectively from the date of issue of Test Report, unless specified otherwise. • 'mg/l' is equivalent to 'ppm'. • Result for test no. 3 is not relevant. • BDL- Below detection limit • DL- Indicates detection limit of instrument/method and shall be considered as 'absent'.

REMARKS: As requested by the client, sample was tested for above parameters only.

Verified By

Nidhi Dubey
Deputy Technical Manager

Snehal Raut
Deputy Technical Manager

Authorized Signatories

Pooja Kathina
Technical Manager

Dr. (Mrs.) S.D. Garway
Quality Manager

—End of Report—

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Test Report

Test Report No. : ALPL/31102023/I-23A

dated 31/10/2023

Page 1 of 3

Issued To : M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)		Sample Inward No. ALPL/23102023/ENV-261-4	Analysis Start 23/10/2023
		Inward Date 23/10/2023	Analysis End 30/10/2023
		Reference W.O.-4700098928/962	Report Issue Date 31/10/2023
		Reference Date 22.03.2022	Sample Category Water
Sample Name Drinking Water	Sample Source Inlet Water	Sample Particulars Sample Code-DW-4	Sample Condition Sealed & Ice Preserved
Sample Collected By Anacon Representative		Sampling Date 18/10/2023	Sampling Time 10.15am to 3.40 pm
		Quantity Received 5.0 Ltr & 250 ml	
		Sampling Location Bamebari WTP Inlet	

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Result
				Acceptable Limit	Permissible Limit #	
I	Biological Testing 1. Water					
1	Escherichia coli	Per 100 ml	IS 15185 : 2016	Absent	Absent	Absent
II	Chemical Testing 1. Water					
2	Alkalinity (as CaCO ₃)	mg/l	IS 3025 (Part 23) : 1986	200	600	42.16
3	Anionic surface active agents (as MBAS)	mg/l	IS 13428 : (Annex K) : 2005	0.2	1.0	BDL (DL – 0.01)
4	Colour	Hazen units	IS 3025 (Part 4) : 2021	5	15	1
5	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	No relaxation	BDL (DL – 0.005)
6	Chloride (as Cl)	mg/l	IS 3025 (Part 32) : 1988	250	1000	15.46
7	Calcium (as Ca)	mg/l	IS 3025 (Part 40) : 1991	75	200	21.37
8	Free residual chlorine	mg/l	IS 3025 (Part 26) : 2021	Min. 0.2	1	BDL (DL – 0.1)
9	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.0	1.5	BDL (DL – 0.1)
10	Magnesium (as Mg)	mg/l	IS 3025 (Part 46) : 1994	30	100	6.39
11	Nitrate (as NO ₃)	mg/l	APHA method 23rd edition: 2017	45	No relaxation	BDL (DL-2)
12	Odour	-	IS 3025 (Part 5) : 2018	Agreeable	Agreeable	Agreeable
13	pH	-	IS 3025 (Part 11) : 2022	6.5 to 8.5	No relaxation	7.37 at 25°C
14	Phenolic compounds (as C ₆ H ₅ OH)	mg/l	IS 3025 (Part 43) : 2022	0.001	0.002	BDL (DL – 0.001)
15	Sulphate (as SO ₄)	mg/l	IS 3025 (Part 24) : 2022	200	400	6.23
16	Taste	-	IS 3025 (Part 8) : 1984	Agreeable	Agreeable	Agreeable
17	Total dissolved solids	mg/l	IS 3025 (Part 16) : 1984	500	2000	307
18	Turbidity	NTU	IS 3025 (Part 10) : 1984	1	5	0.2
19	Total hardness (as CaCO ₃)	mg/l	IS 3025 (Part 21) : 2009	200	600	79.66

☞ Please refer last Page for Note and Remarks.

Verified By

Snehal Raut
 Deputy Technical Manager

Authorized Signatories

Pooja Kathane
 Technical Manager

Dr. (Mrs.) S.D. Garway
 Quality Manager

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Test Report

Test Report No. : ALPL/31102023/I-23A

dated 31/10/2023

Page 2 of 3

Issued To : M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)		Sample Inward No. ALPL/23102023/ENV-261-4		Analysis Start 23/10/2023
		Inward Date 23/10/2023		Analysis End 30/10/2023
		Reference W.O.- 4700098928/962		Report Issue Date 31/10/2023
		Reference Date 22.03.2022		Sample Category Water
Sample Name Drinking Water	Sample Source Inlet Water	Sample Particulars Sample Code-DW-4	Sample Condition Scaled & Ice Preserved	Quantity Received 5.0 Ltr & 250 ml
Sample Collected By Anacon Representative		Sampling Date 18/10/2023	Sampling Time 10.15am to 3.40 pm	Sampling Location Bamebari WTP Inlet

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Result
				Acceptable Limit	Permissible Limit #	
II	Chemical Testing					
	2. Residues In Water					
20	Arsenic (as As)	mg/l	IS 3025 (Part 37) : 2022	0.01	No relaxation	BDL (DL - 0.01)
21	Aluminium (as Al)	mg/l	IS 3025 (Part 2) : 2019	0.03	0.2	BDL (DL - 0.01)
22	Barium (as Ba)	mg/l	IS 3025 (Part 2) : 2019	0.7	No relaxation	BDL (DL - 0.01)
23	Boron (as B)	mg/l	IS 3025 (Part 2) : 2019	0.5	2.4	BDL (DL - 0.1)
24	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	0.05	1.5	BDL (DL - 0.03)
25	Cadmium (as Cd)	mg/l	IS 3025 (Part 2) : 2019	0.003	No relaxation	BDL (DL - 0.001)
26	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	1.0	No relaxation	0.09
27	Lead (as Pb)	mg/l	IS 3025 (Part 2) : 2019	0.01	No relaxation	BDL (DL - 0.001)
28	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	0.1	0.3	BDL (DL - 0.05)
29	Mercury (as Hg)	mg/l	IS 3025 (Part 48) : 1994	0.001	No relaxation	BDL (DL - 0.0005)
30	Selenium (as Se)	mg/l	IS 3025 (Part 56) : 2003	0.01	No relaxation	BDL (DL - 0.001)
31	Total Chromium (as Cr)	mg/l	IS 3025 (Part 2) : 2019	0.05	No relaxation	BDL (DL - 0.03)
32	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	5	15	BDL (DL - 0.1)
33	Polynuclear aromatic hydrocarbon (PAH)	µg/l	ANtr/7.2/RES/01: 2018	0.1	No relaxation	BDL(DL-0.03)
34	Mineral Oil	mg/l	ANtr/7.2/RES/06: 2018	1	No relaxation	BDL (DL - 0.001)

□ Please refer last Page for Note and Remarks.

Verified By

Nidhi Dubey
Deputy Technical Manager

Swati Gondhalekar
Deputy Technical Manager

Authorized Signatory

Dr. (Mrs.) S.D. Garway
Quality Manager





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Test Report

Test Report No. : ALPL/31102023/1-23A

dated 31/10/2023

Page 3 of 3

Issued To : M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)		Sample Inward No.	ALPL/23102023/ENV-261-4	Analysis Start	23/10/2023
		Inward Date	23/10/2023	Analysis End	30/10/2023
		Reference	W.O.- 4700098928/962	Report Issue Date	31/10/2023
		Reference Date	22.03.2022	Sample Category	Water
Sample Name Drinking Water	Sample Source Inlet Water	Sample Particulars Sample Code-DW-4	Sample Condition Sealed & Ice Preserved	Quantity Received 5.0 Ltr & 250 ml	
Sample Collected By Anacon Representative		Sampling Date 18/10/2023	Sampling Time 10.15am to 3.40 pm	Sampling Location Bamebari WTP Inlet	

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Result
				Acceptable Limit	Permissible Limit #	
35	Pesticide Residues Organochlorine					
i	Alpha-HCH	µg/l	ANtr/7.2/RES/01: 2018	0.01	No relaxation	BDL (DL - 0.01)
ii	Beta HCH	µg/l	ANtr/7.2/RES/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
iii	Gamma - HCH (Lindane)	µg/l	ANtr/7.2/RES/01: 2018	2	No relaxation	BDL (DL - 0.03)
iv	Delta- HCH	µg/l	ANtr/7.2/RES/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
v	Alachlor	µg/l	ANtr/7.2/RES/01: 2018	20	No relaxation	BDL (DL - 0.03)
vi	Aldrin	µg/l	ANtr/7.2/RES/01: 2018	0.03	No relaxation	BDL (DL - 0.03)
vii	Dieldrin	µg/l	ANtr/7.2/RES/01: 2018	0.03	No relaxation	BDL (DL - 0.03)
viii	Butachlor	µg/l	ANtr/7.2/RES/01: 2018	125	No relaxation	BDL (DL - 0.03)
ix	p,p'-DDE	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
x	o,p'-DDE	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xi	p,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xii	o,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiii	o,p'-DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiv	p,p'-DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xv	Monocrotophos	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xvi	Atrazine	µg/l	ANtr/7.2/RES/01: 2018	2	No relaxation	BDL (DL - 0.03)
xvii	Parathion methyl	µg/l	ANtr/7.2/RES/01: 2018	0.3	No relaxation	BDL (DL - 0.03)
xviii	Paraoxon methyl	µg/l	ANtr/7.2/RES/01: 2018	-	-	BDL (DL - 0.03)
xix	Malathion	µg/l	ANtr/7.2/RES/01: 2018	190	No relaxation	BDL (DL - 0.03)
xx	Malaoxon	µg/l	ANtr/7.2/RES/01: 2018	-	-	BDL (DL - 0.03)
xxi	Ethion	µg/l	ANtr/7.2/RES/01: 2018	3	No relaxation	BDL (DL - 0.03)
xxii	Chlorpyrifos	µg/l	ANtr/7.2/RES/01: 2018	30	No relaxation	BDL (DL - 0.03)

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REMARKS: As requested by the client, sample was tested for above parameters only. Sample complies with IS:10500:2012, for tests conducted only.

Verified By

Swati

Swati Gondhalekar
Deputy Technical Manager

Authorized Signatory

Dr. (Mrs.) S.D. Garway

Dr. (Mrs.) S.D. Garway
Quality Manager

—End of Report—





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Test Report

Test Report No. : ALPL/31102023/1-24A

dated 31/10/2023

Page 1 of 3

Issued To : M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)		Sample Inward No. ALPL/23102023/ENV-261-5	Analysis Start 23/10/2023
		Inward Date 23/10/2023	Analysis End 30/10/2023
		Reference W.O.-4700098928/962	Report Issue Date 31/10/2023
		Reference Date 22.03.2022	Sample Category Water
Sample Name Drinking Water	Sample Source Outlet Water	Sample Particulars Sample Code-DW-5	Sample Condition Sealed & ice Preserved
		Quantity Received 5.0 Ltr & 250 ml	
Sample Collected By Anacon Representative		Sampling Date 18/10/2023	Sampling Time 10.15am to 3.40 pm
		Sampling Location Bamebari WTP Outlet	

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Result
				Acceptable Limit	Permissible Limit #	
I	Biological Testing I. Water					
1	Escherichia coli	Pcr 100 ml	IS 15185 : 2016	Absent	Absent	Absent
II	Chemical Testing I. Water					
2	Alkalinity (as CaCO ₃)	mg/l	IS 3025 (Part 23) : 1986	200	600	38.46
3	Anionic surface active agents (as MBAS)	mg/l	IS 13428 : (Annex K): 2005	0.2	1.0	BDL (DL – 0.01)
4	Colour	Hazen units	IS 3025 (Part 4) : 2021	5	15	1
5	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	No relaxation	BDL (DL – 0.005)
6	Chloride (as Cl)	mg/l	IS 3025 (Part 32):1988	250	1000	21.52
7	Calcium (as Ca)	mg/l	IS 3025 (Part 40) : 1991	75	200	16.71
8	Free residual chlorine	mg/l	IS 3025 (Part 26) : 2021	Min. 0.2	1	BDL (DL – 0.1)
9	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.0	1.5	BDL (DL – 0.1)
10	Magnesium (as Mg)	mg/l	IS 3025 (Part 46) : 1994	30	100	3.81
11	Nitrate (as NO ₃)	mg/l	APHA method 23rd edition: 2017	45	No relaxation	BDL(DL-2)
12	Odour	-	IS 3025 (Part 5) : 2018	Agreeable	Agreeable	Agreeable
13	pH	-	IS 3025 (Part 11) : 2022	6.5 to 8.5	No relaxation	6.92 at 25°C
14	Phenolic compounds (as C ₆ H ₅ OH)	mg/l	IS 3025 (Part 43) : 2022	0.001	0.002	BDL (DL – 0.001)
15	Sulphate (as SO ₄)	mg/l	IS 3025 (Part 24) : 2022	200	400	5.17
16	Taste	-	IS 3025 (Part 8) : 1984	Agreeable	Agreeable	Agreeable
17	Total dissolved solids	mg/l	IS 3025 (Part 16) : 1984	500	2000	294
18	Turbidity	NTU	IS 3025 (Part 10) : 1984	1	5	0.2
19	Total hardness (as CaCO ₃)	mg/l	IS 3025 (Part 21) : 2009	200	600	57.42

Please refer last Page for Note and Remarks.

Verified By

Snehal Raut
 Deputy Technical Manager

Authorized Signatories

Pooja Kathane
 Technical Manager

Dr. (Mrs.) S.D. Garway
 Quality Manager

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Test Report

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dated 31/10/2023

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Issued To : M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)		Sample Inward No. ALPL/23102023/ENV-261-5	Analysis Start 23/10/2023
		Inward Date 23/10/2023	Analysis End 30/10/2023
		Reference W.O.- 4700098928/962	Report Issue Date 31/10/2023
		Reference Date 22.03.2022	Sample Category Water
Sample Name Drinking Water	Sample Source Outlet Water	Sample Particulars Sample Code-DW-5	Sample Condition Sealed & Ice Preserved
		Quantity Received 5.0 Ltr & 250 ml	
Sample Collected By Anacon Representative		Sampling Date 18/10/2023	Sampling Time 10.15am to 3.40 pm
		Sampling Location Bamebari WTP Outlet	

TEST RESULTS

TEST RESULTS						
S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Result
				Acceptable Limit	Permissible Limit #	
II	Chemical Testing 2. Residues In Water					
20	Arsenic (as As)	mg/l	IS 3025 (Part 37) : 2022	0.01	No relaxation	BDL (DL - 0.01)
21	Aluminium (as Al)	mg/l	IS 3025 (Part 2) : 2019	0.03	0.2	BDL (DL - 0.01)
22	Barium (as Ba)	mg/l	IS 3025 (Part 2) : 2019	0.7	No relaxation	BDL (DL - 0.01)
23	Boron (as B)	mg/l	IS 3025 (Part 2) : 2019	0.5	2.4	BDL (DL - 0.1)
24	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	0.05	1.5	BDL (DL - 0.03)
25	Cadmium (as Cd)	mg/l	IS 3025 (Part 2) : 2019	0.003	No relaxation	BDL (DL - 0.001)
26	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	1.0	No relaxation	0.09
27	Lead (as Pb)	mg/l	IS 3025 (Part 2) : 2019	0.01	No relaxation	BDL (DL - 0.001)
28	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	0.1	0.3	BDL (DL - 0.05)
29	Mercury (as Hg)	mg/l	IS 3025 (Part 48) : 1994	0.001	No relaxation	BDL (DL - 0.0005)
30	Selenium (as Se)	mg/l	IS 3025 (Part 56) : 2003	0.01	No relaxation	BDL (DL - 0.001)
31	Total Chromium (as Cr)	mg/l	IS 3025 (Part 2) : 2019	0.05	No relaxation	BDL (DL - 0.03)
32	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	5	15	BDL (DL - 0.1)
33	Polynuclear aromatic hydrocarbon (PAH)	µg/l	ANtr/7.2/RES/01: 2018	0.1	No relaxation	BDL (DL - 0.03)
34	Mineral Oil	mg/l	ANtr/7.2/RES/06: 2018	1	No relaxation	BDL (DL - 0.001)

Please refer last Page for Note and Remarks.

Verified By

Nidhi Dubey
Deputy Technical Manager

Swati Gondhalekar
Deputy Technical Manager

Authorized Signatory

Dr. (Mrs.) S.D. Garway
Quality Manager





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Test Report

Test Report No. : ALPL/31102023/1-24A

dated 31/10/2023

Page 3 of 3

Issued To : M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)		Sample Inward No. ALPL/23102023/ENV-261-5	Analysis Start 23/10/2023
		Inward Date 23/10/2023	Analysis End 30/10/2023
		Reference W.O.- 4700098928/962	Report Issue Date 31/10/2023
		Reference Date 22.03.2022	Sample Category Water
Sample Name Drinking Water	Sample Source Outlet Water	Sample Particulars Sample Code-DW-5	Sample Condition Sealed & Ice Preserved
Sample Collected By Anacon Representative		Sampling Date 18/10/2023	Sampling Time 10.15am to 3.40 pm
		Quantity Received 5.0 Ltr & 250 ml	
		Sampling Location Bamebari WTP Outlet	

TEST RESULTS

TEST RESULTS						
S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Result
				Acceptable Limit	Permissible Limit #	
35	Pesticide Residues Organochlorine					
i	Alpha-HCH	µg/l	ANtr/7.2/RES/01: 2018	0.01	No relaxation	BDL (DL - 0.01)
ii	Beta HCH	µg/l	ANtr/7.2/RES/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
iii	Gamma - HCH (Lindane)	µg/l	ANtr/7.2/RES/01: 2018	2	No relaxation	BDL (DL - 0.03)
iv	Delta- HCH	µg/l	ANtr/7.2/RES/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
v	Alachlor	µg/l	ANtr/7.2/RES/01: 2018	20	No relaxation	BDL (DL - 0.03)
vi	Aldrin	µg/l	ANtr/7.2/RES/01: 2018	0.03	No relaxation	BDL (DL - 0.03)
vii	Dieldrin	µg/l	ANtr/7.2/RES/01: 2018	0.03	No relaxation	BDL (DL - 0.03)
viii	Butachlor	µg/l	ANtr/7.2/RES/01: 2018	125	No relaxation	BDL (DL - 0.03)
ix	p,p'-DDE	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
x	o,p'-DDE	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xi	p,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xii	o,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiii	o,p'-DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiv	p,p'-DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xv	Monocrotophos	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xvi	Atrazine	µg/l	ANtr/7.2/RES/01: 2018	2	No relaxation	BDL (DL - 0.03)
xvii	Parathion methyl	µg/l	ANtr/7.2/RES/01: 2018	0.3	No relaxation	BDL (DL - 0.03)
xviii	Paraaxon methyl	µg/l	ANtr/7.2/RES/01: 2018	-	-	BDL (DL - 0.03)
xix	Malathion	µg/l	ANtr/7.2/RES/01: 2018	190	No relaxation	BDL (DL - 0.03)
xx	Malaoxon	µg/l	ANtr/7.2/RES/01: 2018	-	-	BDL (DL - 0.03)
xxi	Ethion	µg/l	ANtr/7.2/RES/01: 2018	3	No relaxation	BDL (DL - 0.03)
xxii	Chlorpyrifos	µg/l	ANtr/7.2/RES/01: 2018	30	No relaxation	BDL (DL - 0.03)

NOTE: ● Please see watermark "Original Test Report" to confirm the authenticity of this report. ● Results shall be referred to tested sample(s) and applicable to tested parameters only.
● Test report shall not be reproduced except in full without prior written approval of Anacon Labs. ● Liability of Anacon Labs is limited to invoiced amount only. ● Non-perishable and perishable sample(s) shall be disposed off after 30 days and 15 days respectively from the date of issue of Test Report, unless specified otherwise. ● Permissible limit in absence of an alternate source for drinking water. ● "mg/l" is equivalent to "ppm", ● "µg/l" is equivalent to "ppb". ● BDL- Below detection limit. ● DL- DL Indicates detection limit of instrument/method and shall be considered as 'absent'. ● Result for test no. 11 is not relevant. ● ANtr/7.2/RES-01, is inhouse validated method. ● NT indicates not Tested as sample failed to establish safety concerns.

REMARKS: As requested by the client, sample was tested for above parameters only. Sample complies with IS:10500:2012, for tests conducted only.

Verified By

Swati

Swati Gondhalekar
Deputy Technical Manager

Authorized Signatory

S.D. Garway

Dr. (Mrs.) S.D. Garway
Quality Manager

—End of Report—





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Test Report

Test Report No. : ALPL/31102023/1-25A

dated 31/10/2023

Page 1 of 3

Issued To : M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)		Sample Inward No. ALPL/23102023/INV-261-6	Analysis Start 23/10/2023
		Inward Date 23/10/2023	Analysis End 30/10/2023
		Reference W.O.- 4700098928/962	Report Issue Date 31/10/2023
		Reference Date 22.03.2022	Sample Category Water
Sample Name Drinking Water	Sample Source R.O Water	Sample Particulars Sample Code-DW-6	Sample Condition Sealed & Ice Preserved
		Quantity Received 5.0 Ltr & 250 ml	
Sample Collected By Anacon Representative		Sampling Date 18/10/2023	Sampling Time 10.15am to 3.40 pm
		Sampling Location Bamebari Canteen RO	

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Result
				Acceptable Limit	Permissible Limit #	
I	Biological Testing I. Water					
1	Escherichia coli	Per 100 ml	IS 15185 : 2016	Absent	Absent	Absent
II	Chemical Testing I. Water					
2	Alkalinity (as CaCO ₃)	mg/l	IS 3025 (Part 23) : 1986	200	600	47.59
3	Anionic surface active agents (as MBAS)	mg/l	IS 13428 : (Annex K) : 2005	0.2	1.0	BDL (DL – 0.01)
4	Colour	Hazen units	IS 3025 (Part 4) : 2021	5	15	1
5	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	No relaxation	BDL (DL – 0.005)
6	Chloride (as Cl)	mg/l	IS 3025 (Part 32) : 1988	250	1000	21.46
7	Calcium (as Ca)	mg/l	IS 3025 (Part 40) : 1991	75	200	17.34
8	Free residual chlorine	mg/l	IS 3025 (Part 26) : 2021	Min. 0.2	1	BDL (DL – 0.1)
9	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.0	1.5	BDL (DL – 0.1)
10	Magnesium (as Mg)	mg/l	IS 3025 (Part 46) : 1994	30	100	5.16
11	Nitrate (as NO ₃)	mg/l	APHA method 23rd edition: 2017	45	No relaxation	BDL (DL-2)
12	Odour	-	IS 3025 (Part 5) : 2018	Agreeable	Agreeable	Agreeable
13	pH	-	IS 3025 (Part 11) : 2022	6.5 to 8.5	No relaxation	7.21 at 25°C
14	Phenolic compounds (as C ₆ H ₅ OH)	mg/l	IS 3025 (Part 43) : 2022	0.001	0.002	BDL (DL – 0.001)
15	Sulphate (as SO ₄)	mg/l	IS 3025 (Part 24) : 2022	200	400	6.29
16	Taste	-	IS 3025 (Part 8) : 1984	Agreeable	Agreeable	Agreeable
17	Total dissolved solids	mg/l	IS 3025 (Part 16) : 1984	500	2000	316
18	Turbidity	NTU	IS 3025 (Part 10) : 1984	1	5	0.3
19	Total hardness (as CaCO ₃)	mg/l	IS 3025 (Part 21) : 2009	200	600	64.53

Please refer last Page for Note and Remarks.

Verified By

Snehal Raut
 Deputy Technical Manager

Authorized Signatories

Pooja Kathade
 Technical Manager

Dr. (Mrs.) S.D. Garway
 Quality Manager





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Issued To : M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)		Sample Inward No.: ALPL/23102023/ENV-261-6	Analysis Start 23/10/2023
		Inward Date 23/10/2023	Analysis End 30/10/2023
		Reference W.O.- 4700098928/962	Report Issue Date 31/10/2023
		Reference Date 22.03.2022	Sample Category Water
Sample Name Drinking Water	Sample Source R.O Water	Sample Particulars Sample Code-DW-6	Sample Condition Sealed & Ice Preserved
		Quantity Received 5.0 Ltr & 250 ml	
Sample Collected By Anacon Representative		Sampling Date 18/10/2023	Sampling Time 10.15am to 3.40 pm
		Sampling Location Bamebari Canteen RO	

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Result
				Acceptable Limit	Permissible Limit #	
II	Chemical Testing 2. Residues In Water					
20	Arsenic (as As)	mg/l	IS 3025 (Part 37) : 2022	0.01	No relaxation	BDL (DL - 0.01)
21	Aluminium (as Al)	mg/l	IS 3025 (Part 2) : 2019	0.03	0.2	BDL (DL - 0.01)
22	Barium (as Ba)	mg/l	IS 3025 (Part 2) : 2019	0.7	No relaxation	BDL (DL - 0.01)
23	Boron (as B)	mg/l	IS 3025 (Part 2) : 2019	0.5	2.4	BDL (DL - 0.1)
24	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	0.05	1.5	BDL (DL - 0.03)
25	Cadmium (as Cd)	mg/l	IS 3025 (Part 2) : 2019	0.003	No relaxation	BDL (DL - 0.001)
26	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	1.0	No relaxation	0.06
27	Lead (as Pb)	mg/l	IS 3025 (Part 2) : 2019	0.01	No relaxation	BDL (DL - 0.001)
28	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	0.1	0.3	BDL (DL - 0.05)
29	Mercury (as Hg)	mg/l	IS 3025 (Part 48) : 1994	0.001	No relaxation	BDL (DL - 0.0005)
30	Selenium (as Se)	mg/l	IS 3025 (Part 56) : 2003	0.01	No relaxation	BDL (DL - 0.001)
31	Total Chromium (as Cr)	mg/l	IS 3025 (Part 2) : 2019	0.05	No relaxation	BDL (DL - 0.03)
32	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	5	15	BDL (DL - 0.1)
33	Polynuclear aromatic hydrocarbon (PAH)	µg/l	ANtr/7.2/RES/01: 2018	0.1	No relaxation	BDL (DL-0.03)
34	Mineral Oil	mg/l	ANtr/7.2/RES/06: 2018	1	No relaxation	BDL (DL - 0.001)

Please refer last Page for Note and Remarks.

Verified By

Nidhi Dubey
Deputy Technical Manager

Swati Gondhulekar
Deputy Technical Manager

Authorized Signatory

Dr. (Mrs.) S.D. Garway
Quality Manager





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Issued To : M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)		Sample Inward No. ALPL/23102023/ENV-261-6	Analysis Start 23/10/2023
		Inward Date 23/10/2023	Analysis End 30/10/2023
		Reference W.O.- 4700098928/962	Report Issue Date 31/10/2023
		Reference Date 22.03.2022	Sample Category Water
Sample Name Drinking Water	Sample Source R.O Water	Sample Particulars Sample Code-DW-6	Sample Condition Sealed & Ice Preserved
		Quantity Received 5.0 Ltr & 250 ml	
Sample Collected By Anacon Representative		Sampling Date 18/10/2023	Sampling Time 10.15am to 3.40 pm
		Sampling Location Bamebari Canteen RO	

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Result
				Acceptable Limit	Permissible Limit #	
35	Pesticide Residues Organochlorine					
i	Alpha-HCH	µg/l	ANtr/7.2/RES/01: 2018	0.01	No relaxation	BDL (DL - 0.01)
ii	Beta HCH	µg/l	ANtr/7.2/RFS/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
iii	Gamma - HCH (Lindane)	µg/l	ANtr/7.2/RES/01: 2018	2	No relaxation	BDL (DL - 0.03)
iv	Delta- HCH	µg/l	ANtr/7.2/RES/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
v	Alachlor	µg/l	ANtr/7.2/RES/01: 2018	20	No relaxation	BDL (DL - 0.03)
vi	Aldrin	µg/l	ANtr/7.2/RES/01: 2018	0.03	No relaxation	BDL (DL - 0.03)
vii	Dieldrin	µg/l	ANtr/7.2/RES/01: 2018	0.03	No relaxation	BDL (DL - 0.03)
viii	Butachlor	µg/l	ANtr/7.2/RES/01: 2018	125	No relaxation	BDL (DL - 0.03)
ix	p,p'-DDE	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
x	o,p'-DDE	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xi	p,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xii	o,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiii	o,p'- DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiv	p,p'- DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xv	Monocrotophos	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xvi	Atrazine	µg/l	ANtr/7.2/RES/01: 2018	2	No relaxation	BDL (DL - 0.03)
xvii	Parathion methyl	µg/l	ANtr/7.2/RES/01: 2018	0.3	No relaxation	BDL (DL - 0.03)
xviii	Paraoxon methyl	µg/l	ANtr/7.2/RES/01: 2018	-	-	BDL (DL - 0.03)
xix	Malathion	µg/l	ANtr/7.2/RES/01: 2018	190	No relaxation	BDL (DL - 0.03)
xx	Malaoxon	µg/l	ANtr/7.2/RES/01: 2018	-	-	BDL (DL - 0.03)
xxi	Ethion	µg/l	ANtr/7.2/RES/01: 2018	3	No relaxation	BDL (DL - 0.03)
xxii	Chlorpyrifos	µg/l	ANtr/7.2/RES/01: 2018	30	No relaxation	BDL (DL - 0.03)

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REMARKS: As requested by the client, sample was tested for above parameters only. Sample complies with IS:10500:2012, for tests conducted only.

Verified By

Swati

Swati Gondhalekar
Deputy Technical Manager

Authorized Signatory

Dr. (Mrs.) S.D. Garway

Dr. (Mrs.) S.D. Garway
Quality Manager

—End of Report—

Thank you for instilling your trust and faith in our services. We cherish our relationship with you, and we put in a lot of hard work in making sure that you get a seamless experience at every stage of your interaction with us. In our constant endeavor towards ensuring that your next experience will be significantly better than the current one, we welcome your feedback on feedback@anacon.in.





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Test Report

Test Report No. : ALPL/30092023/1-31A

dated 30/09/2023

Page 1 of 3

Issued To : M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)	Sample Inward No.	ALPL/25092023/ENV-235-WW-1&2	Analysis Start	25/09/2023
	Inward Date	25/09/2023	Analysis End	30/09/2023
	Reference	W.O.- 4700098928/962	Report Issue Date	30/09/2023
	Reference Date	22.03.2022	Sample Category	Water
Sample Name Effluent Water	Sample Particulars Sample Code-WW-1 & WW-2		Sample Condition Sealed & Ice Preserved	Quantity Received 5.0 Lit & 250 ml
Sample Collected By Anacon Representative		Sampling Date 21/09/2023	Sampling Time 10.35 am to 11.45 am	Sampling Location WW-1 Bamebari STP-INLET WW-2-BAMEBARI OIL-WATER SEPARATION (Near Garage)

TEST RESULTS

TEST RESULTS						
S.N.	Test Parameter	Measurement Unit	Test Method	Standards (In Land Surface Water)	Test Result	
					WW-1	WW-2
1	Chemical Testing Pollution & Environment					
1	pH value	-	IS 3025 (Part 11) : 2022	5.5 to 9.0	6.46 at 25°C	6.72 at 25°C
2	Oil & Grease	mg/l	IS 3025 (Part 39) : 1991	10	BDL(DL-4)	BDL(DL-4)
3	Total Suspended Solid (TSS)	mg/l	IS 3025 (Part 17) : 1984	100	82	38
4	Ammonical Nitrogen (as N)	mg/l	IS 3025 (Part 34) :1988	50	6.72	5.94
5	Total Kjeldahl Nitrogen (as N)	mg/l	IS 3025 (Part 34) : 1988	100	14.36	12.91
6	BOD (3 days at 27°C)	mg/l	IS 3025 (Part 44) :1993	30	24	16
7	Chemical Oxygen Demand	mg/l	IS 3025 (Part 58) :2006	250	73	41
8	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.2	BDL(DL-0.1)	BDL(DL-0.1)
9	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	IS 3025 (Part 43) : 2022	1.0	BDL(DL-0.1)	BDL(DL-0.1)

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REMARKS : As requested by the client, sample was tested for above parameters only.

Verified by

Snehal Raut

Snehal Raut

Deputy Technical Manager

Authorized Signatory

Dr. (Mrs.) S. D. Garway

Dr. (Mrs.) S. D. Garway
Quality Manager

---End of Report---





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Test Report

Test Report No. : ALPL/30092023/1-31A

dated 30/09/2023

Page 2 of 3

Issued To : M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)	Sample Inward No.	ALPL/25092023/ENV-235-WW-1&2	Analysis Start	25/09/2023
	Inward Date	25/09/2023	Analysis End	30/09/2023
	Reference	W.O.- 4700098928/962	Report Issue Date	30/09/2023
	Reference Date	22.03.2022	Sample Category	Water
Sample Name Effluent Water	Sample Particulars Sample Code-WW-1 & WW-2	Sample Condition Sealed & Ice Preserved	Quantity Received 5.0 Ltr & 250 ml	
Sample Collected By Anacon Representative		Sampling Date 21/09/2023	Sampling Time 10.35 am to 11.45 am	Sampling Location WW-1 Bamebari STP-INLET WW-2-BAMEBARI OIL-WATER SEPARATION (New Garage)

TEST RESULTS

TEST RESULTS						
S.N.	Test Parameter	Measurement Unit	Test Method	Standards (In Land Surface Water)	Test Result	
					WW-1	WW-2
II	Chemical Testing 2. Residues In Water					
10	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	3.0	1.17	0.52
11	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	3.0	BDL(DL-5)	BDL(DL-5)
12	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	2.0	BDL(DL-0.1)	BDL(DL-0.1)
13	Mercury (as Hg)	mg/l	IS : 3025 (Part 48) : 1994	0.01	BDL(DL-0.01)	BDL(DL-0.01)
14	Cadmium (as Cd)	mg/l	IS : 3025 (Part 41) : 1992	2.0	BDL(DL-0.1)	BDL(DL-0.1)
15	Selenium (as Se)	mg/l	IS : 3025 (Part 56) : 2003	0.05	BDL(DL-0.1)	BDL(DL-0.1)
16	Lead (as Pb)	mg/l	IS 3025 (Part 47) : 2003	0.1	BDL(DL-0.1)	BDL(DL-0.1)
17	Arsenic (as As)	mg/l	IS : 3025 (Part 37) : 2022	0.2	BDL(DL-0.05)	BDL(DL-0.05)
18	Nickel (as Ni)	mg/l	IS:13428 : 2005(Annexure L)	3.0	BDL(DL-0.1)	BDL(DL-0.1)
19	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	5.0	BDL(DL-5)	BDL(DL-0.1)
20	Total Chromium (as Cr)	mg/l	IS 3025 (Part 2) : 2019	2.0	BDL(DL-0.1)	BDL(DL-0.1)
21	Vanadium (as V)	mg/l	IS 3025 (Part 2) : 2019	0.2	BDL(DL-0.1)	BDL(DL-0.1)

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REMARKS : As requested by the client, sample was tested for above parameters only.

Verified By

Nidhi Dubey
 Deputy Technical Manager

Authorized Signatory

Dr. (Mrs.) S.D. Garway
 Quality Manager

—End of Report—





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Test Report No. : ALPL/30092023/1-31A

dated 30/09/2023

Page 3 of 3

Issued To : M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)	Sample Inward No.	ALPL/25092023/ENV-235-WW-1&2	Analysis Start	25/09/2023
	Inward Date	25/09/2023	Analysis End	30/09/2023
	Reference	W.O.- 4700098928/962	Report Issue Date	30/09/2023
	Reference Date	22.03.2022	Sample Category	Water
Sample Name Effluent Water	Sample Particulars Sample Code-WW-1 & WW-2	Sample Condition Sealed & Ice Preserved	Quantity Received 5.0 Ltr & 250 ml	
Sample Collected By Anacon Representative	Sampling Date 21/09/2023	Sampling Time 10.35 am to 11.45 am	Sampling Location WW-1 Bamebari STP-INLET WW-2-BAMEBARI OIL-WATER SEPARATION (Near Garage)	

TEST RESULTS

TEST RESULTS						
S.N.	Test Parameter	Measurement Unit	Test Method	Standards (In Land Surface Water)	Test Result	
					WW-1	WW-2
I	Biological Testing I.Water					
1	Faecal coliform	MPN/100 ml	IS 1622 : 1981	--	42	33
II	Chemical Testing Pollution & Environment					
2	Colour	Hazen units	IS 3025 (Part 4) : 2021	Colourless	2	0 (Colourless)
3	Odour	-	IS 3025 (Part 5) : 2018	Odourless	Disagreeable	Agreeable
4	Temperature	°C	APHA Method	* Shall not exceed 5°C above the receiving water temperature	25°C	25°C
5	Free residual chlorine	mg/l	IS 3025 (Part 26) : 2021	1.0	BDL(DL-0.1)	BDL(DL-0.1)
6	Particulate size of SS		Gravimetric Method	Shall pass 850 micron IS Sieve	<850	<850
7	Free Ammonia (as NH ₃)	mg/l	APHA Method	5	BDL(DL-0.1)	BDL(DL-0.1)
8	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	2.0	0.36	BDL(DL-0.1)
9	Sulphide (as S)	mg/l	IS 3025 (Part 29) : 1986	2.0	BDL(DL-0.03)	BDL(DL-0.03)
10	Nitrate Nitrogen	mg/l	APHA Method	10	3.57	BDL(DL-2)
11	Bio Assay Test	%	APHA 22nd Edition	90% Survival of fish after 96 hours in 100% effluent	82%	92%
12	Hexavalent Chromium (as Cr ⁺⁶)	mg/l	Lab-SOP	0.1	BDL(DL-0.01)	BDL(DL-0.01)
13	Dissolved Phosphate (as P)	mg/l	IS 3025 (Part 31) : 1988	5.0	BDL(DL-0.1)	BDL(DL-0.1)

NOTES: • Please see watermark "Original Test Report" to confirm the authenticity of this report. • Results shall be referred to tested sample(s) and applicable to tested parameters only. • Test report shall not be reproduced except in full without prior written approval of Anacon Labs. • Liability of Anacon Labs is limited to invoiced amount only. • Non-perishable and perishable sample(s) shall be disposed off after 30 days and 15 days respectively from the date of issue of Test Report, unless specified otherwise. • *mg/l* is equivalent to *ppm*. • Result for test no. 5 is not relevant. • BDL - Below detection limit • DL - Indicates detection limit of instrument/method and shall be considered as 'absent'.

REMARKS : As requested by the client, sample was tested for above parameters only.

Verified By

Nidhi Dubey
Deputy Technical Manager

Snehal Raut
Deputy Technical Manager

Authorized Signatories

Pooja Kathane
Technical Manager

Dr. (Mrs.) S.D. Garway
Quality Manager

—End of Report—

Thank you for instilling your trust and faith in our services. We cherish our relationship with you, and we put in a lot of hard work in making sure that you get a seamless experience at every stage of your interaction with us. In our constant endeavor towards ensuring that your next experience will be significantly better than the current one, we welcome your feedback on feedback@anacon.in.





BY REGD. POST WITH AD

STATE POLLUTION CONTROL BOARD, ODISHA

A/118, Nilakantha Nagar, Unit-VIII, Bhubaneswar-751012

Phone-2561909, Fax: 2562822, 2560955 E-mail: paribesh1@ospcboard.org, Website: www.ospcboard.org

CONSENT ORDER

No. 544 / IND-I-CON-189

Dt. 07.01.2022

CONSENT ORDER NO. 117

Sub : **Consent for discharge of sewage and trade effluent under section 25/26 of Water (PCP) Act, 1974 and for existing / new operation of the plant under section 21 of Air (PCP) Act, 1981.**

Ref: Your online application No. 3237698, Dated 20.12.2020 and Letter No. MGM/P & E/289/21 dated 22.09.2021, Letter No. MGM/P&E/305/21 dated 31.12.2021

Consent to operate is hereby granted under section 25/26 of Water (Prevention & Control of Pollution) Act, 1974 and under section 21 of Air (Prevention & Control of Pollution) Act, 1981 and rules framed thereunder to

Name of the Industry: BAMEBARI MANGANESE MINE OF M/S. TATA STEEL LTD.

Name of the Occupier & Designation SRI AWNISH KUMAR, CHIEF AND AGENT

Address: AT/ PO: BAMEBARI, VIA: JODA, DIST: KEONJHAR

This consent order is valid for the period up to 31/03/2025 from the date of issue of this order.

This consent order supersedes the earlier consent order issued vide letter No. 3623 dated 10.03.2021.

Details of Products Manufactured

Sl. No	Product	Quantity
01.	Manganese Ore	0.083 MTPA

Details of Mineral Handling Plants /Units

01	Operation of mobile screening plant 1 X 75 TPH
----	--

This consent order is valid for the specified outlets, discharge quantity and quality, specified chimney/stack, emission quantity and quality of emissions as specified below. This consent is granted subject to the general and special conditions stipulated therein.

A. Discharge permitted through the following outlet subject to the standard

Outlet No.	Description of outlet	Point of discharge	Quantity of discharge KL/hr	Pre-scribed Standard				
				pH	TSS (mg/l)	Oil & Grease (mg/l)	BOD (mg/l)	Fecal Coliform (MPN/100ml)
01	Outlet of STP (Domestic effluent)	Used for plantation	100 KLD	5.5-9.0	200	--	100	<1000
02	Mine drainage water/ surface runoff/other wastewater	On land / inland surface water body.	12,954 kl/hr (max)	5.5-9.0	100 (Rainy day)	10	-	--
					50 (Non-Rainy day)			

B. Emission permitted through the following stack subject to the prescribed standard

Chimney Stack No.	Description of Stack	Stack height (m)	Quantity of emission	Prescribed Standard			
				PM (mg/Nm ³)	SO ₂	NO _x	
					--	--	

C. Disposal of solid waste permitted in the following manner

Sl. No.	Type of Solid waste	Quantity generated (TPD)	Quantity to be reused on site (TPD)	Quantity to be reused off site (TPD)	Quantity disposed off (TPD)	Description of disposal site.
01	Top soil & over burden	As per approved mining plan	--	--	--	As per approved mining plan

0. GENERAL CONDITIONS FOR ALL UNITS

1. The consent is given by the Board in consideration of the particulars given in the application. Any change or alternation or deviation made in actual practice from the particulars furnished in the application will also be the ground liable for review/variation/revocation of the consent order under section 27 of the Act of Water (Prevention & Control of Pollution) Act, 1974 and section 21 of Air (Prevention & Control of Pollution) Act, 1981 and to make such variations as deemed fit for the purpose of the Acts.
2. The industry would immediately submit revised application for consent to operate to this Board in the event of any change in the quantity and quality of raw material / and products / manufacturing process or quantity /quality of the effluent rate of emission / air pollution control equipment / system etc.
3. The applicant shall not change or alter either the quality or quantity or the rate of discharge or temperature or the route of discharge without the previous written permission of the Board.
4. The application shall comply with and carry out the directives/orders issued by the Board in this consent order and at all subsequent times without any negligence on his part. In case of non-compliance of any order/directives issued at any time and/or violation of the terms and conditions of this consent order, the applicant shall be liable for legal action as per the provisions of the Law/Act.
5. The applicant shall make an application for grant of fresh consent at least 90 days before the date of expiry of this consent order.
6. The issuance of this consent does not convey any property right in either real or personal property or any exclusive privileges nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Central, State laws or regulation.
7. This consent does not authorize or approve the construction of any physical structure or facilities or the undertaking of any work in any natural water course.
8. The applicant shall display this consent granted to him in a prominent place for perusal of the public and inspecting officers of this Board.
9. An inspection book shall be opened and made available to Board's Officers during the visit to the factory.
10. The applicant shall furnish to the visiting officer of the Board any information regarding the construction, installation or operation of the plant or of effluent treatment system / air pollution control system / stack monitoring system any other particulars as may be pertinent to preventing and controlling pollution of Water / Air.
11. Meters must be affixed at the entrance of the water supply connection so that such meters are easily accessible for inspection and maintenance and for other purposes of the Act provided that the place where it is affixed shall in no case be at a point before which water has been tapped by the consumer for utilization for any purposes whatsoever.
12. Separate meters with necessary pipe-line for assessing the quantity of water used for each of the purposes mentioned below:
 - a) Industrial cooling, spraying in mine pits or boiler feed.
 - b) Domestic purpose
 - c) Process
13. The applicant shall display suitable caution board at the place where the effluent is entering into any water-body or any other place to be indicated by the Board, indicating therein that the area into which the effluents are being discharged is not fit for the domestic use/bathing.
14. Storm water shall not be allowed to mix with the trade and/or domestic effluent on the upstream of the terminal manholes where the flow measuring devices will be installed.
15. The applicant shall maintain good house-keeping both within the factory and the premises. All pipes, valves, sewers and drains shall be leak-proof. Floor washing shall be admitted into the effluent collection system only and shall not be allowed to find their way in storm drains or open areas.
16. The applicant shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems install or used by him to achieve with the term(s) and conditions of the consent.
17. Care should be taken to keep the anaerobic lagoons, if any, biologically active and not utilized as mere stagnation ponds. The anaerobic lagoons should be fed with the required nutrients for effective digestion. Lagoons should be constructed with sides and bottom made impervious.
18. The utilization of treated effluent on factory's own land, if any, should be completed and there should be no possibility of the effluent gaining access into any drainage channel or other water courses either directly or by overflow.
19. The effluent disposal on land, if any, should be done without creating any nuisance to the surroundings or inundation of the lands at any time.
20. If at any time the disposal of treated effluent on land becomes incomplete or unsatisfactory or create any problem or becomes a matter of dispute, the industry must adopt alternate satisfactory treatment and disposal measures.
21. The sludge from treatment units shall be dried in sludge drying beds and the drained liquid shall be taken to equalization tank.
22. The effluent treatment units and disposal measures shall become operative at the time of commencement of production.
23. The applicant shall provide port holes for sampling the emissions and access platform for carrying out stack sampling and provide electrical outlet points and other arrangements for chimneys/stacks and other sources of emissions so as to collect samples of emission by the Board or the applicant at any time in accordance with the provision of the Act or Rules made therein.
24. The applicant shall provide all facilities and render required assistance to the Board staff for collection of samples / stack monitoring / inspection.
25. The applicant shall not change or alter either the quality or quantity or rate of emission or install, replace or alter the air pollution control equipment or change the raw material or manufacturing process resulting in any change in quality and/or quantity of emissions, without the previous written permission of the Board.



CONSENT ORDER
RAMEBARI MANGANESE MINE OF M/S. TATA STEEL LTD

Page

26. No control equipments or chimney shall be altered or replaced or as the case may be erected or re-erected except with the previous approval of the Board.
27. The liquid effluent arising out of the operation of the air pollution control equipment shall be treated in the manner and to the standards prescribed by the Board in accordance with the provisions of Water (Prevention and Control of Pollution) Act, 1974 (as amended).
28. The stack monitoring system employed by the applicant shall be opened for inspection to this Board at any time.
29. There shall not be any fugitive or episodal discharge from the premises.
30. In case of such episodal discharge/emissions the industry shall take immediate action to bring down the emission within the limits prescribed by the Board in conditions/stop the operation of the plant. Report of such accidental discharge /emission shall be brought to the notice of the Board within 24 hours of occurrence.
31. The applicant shall keep the premises of the industrial plant and air pollution control equipments clean and make all hoods, pipes, valves, stacks/chimneys leak proof. The air pollution control equipments, location, inspection chambers, sampling port holes shall be made easily accessible at all times.
32. Any upset condition in any of the plant/plants of the factory which is likely to result in increased effluent discharge/emission of air pollutants and / or result in violation of the standards mentioned above shall be reported to the Headquarters and Regional Office of the Board by fax / speed post within 24 hours of its occurrence.
33. The industry has to ensure that minimum three varieties of trees are planted at the density of not less than 1000 trees per acre. The trees may be planted along boundaries of the industries or industrial premises. This plantation is stipulated over and above the bulk plantation of trees in that area.
34. The solid waste such as sweeping, wastage packages, empty containers residues, sludge including that from air pollution control equipments collected within the premises of the industrial plants shall be disposed off scientifically to the satisfaction of the Board, so as not to cause fugitive emission, dust problems through leaching etc., of any kind.
35. All solid wastes arising in the premises shall be properly classified and disposed off to the satisfaction of the Board by :
 - i) Land fill in case of inert material, care being taken to ensure that the material does not give rise to leachate which may percolate into ground water or carried away with storm run-off.
 - ii) Controlled incineration, wherever possible in case of combustible organic material.
 - iii) Composting, in case of bio-degradable material.
36. Any toxic material shall be detoxicated if possible, otherwise be sealed in steel drums and buried in protected areas after obtaining approval of this Board in writing. The detoxication or sealing and burying shall be carried out in the presence of Board's authorized persons only. Letter of authorization shall be obtained for handling and disposal of hazardous wastes.
37. If due to any technological improvement or otherwise this Board is of opinion that all or any of the conditions referred to above requires variation (including the change of any control equipment either in whole or in part) this Board shall after giving the applicant an opportunity of being heard, vary all or any of such condition and thereupon the applicant shall be bound to comply with the conditions so varied.
38. The applicant, his/heirs/legal representatives or assignees shall have no claim whatsoever to the condition or renewal of this consent after the expiry period of this consent.
39. The Board reserves the right to review, impose additional conditions or condition, revoke change or alter the terms and conditions of this consent.
40. Notwithstanding anything contained in this conditional letter of consent, the Board hereby reserves to it the right and power under section 27(2) of the Water (Prevention & Control of Pollution) Act, 1974 to review any and/or all the conditions imposed herein above and to make such variations as deemed fit for the purpose of the Act by the Board.
41. The conditions imposed as above shall continue to be in force until revoked under section 27(2) of the Water (Prevention & Control of Pollution) Act, 1974 and section 21 A of Air (Prevention & Control of Pollution) Act, 1981.
42. In case the consent fee is revised upward during this period, the industry shall pay the differential fees to the Board (for the remaining years) to keep the consent order in force. If they fail to pay the amount within the period stipulated by the Board the consent order will be revoked without prior notice.
43. The Board reserves the right to revoke/refuse consent to operate at any time during period for which consent is granted in case any violation is observed and to modify/ stipulate additional conditions as deemed appropriate.
44. Grant of consent order is subject to grant of Forest Clearance under Forest (Conservation) Act, 1980.

GENERAL CONDITIONS FOR UNITS WITH INVESTMENT OF MORE THAN Rs 50 CRORES, AND 17 CATEGORIES OF HIGHLY POLLUTING INDUSTRIES (RED A).

1. The applicant shall analyse the emissions every month for the parameters indicated in TABLE B & C as mentioned in this order and shall furnish the report thereof to the Board by the 10th of the succeeding month.
2. The applicant shall provide and maintain at his own cost three ambient air quality monitoring stations for monitoring Suspended Particulate Matter, Sulphur Dioxide, Oxides of Nitrogen, Hydro-Carbon, Carbon-Monoxide and monitor the same once in a day/week/fortnight/month. The data collected shall be maintained in a register and a monthly extract be furnished to the Board.
3. The applicant shall provide and maintain at his own cost a meteorological station to collect the data on wind velocity, direction, temperature, humidity, rainfall, etc. and the daily reading shall be recorded and the extract sent to the Board once in a month.
4. The applicant shall forward the following information to the Member Secretary, State Pollution Control Board, Odisha, Bhubaneswar regularly.
 - a. Report of analysis of stack monitoring, ambient air quality monitoring meteorological data as required every month.
 - b. Progress on planting of trees quarterly.

5. The applicant shall install mechanical composite sampling equipment and continuous flow measuring / recording devices on the effluent drains of trade as well as domestic effluent. A record of daily discharge shall be maintained.
6. The following information shall be forwarded to the Member Secretary on or before 10th of every month.
 - a. Performance / progress of the treatment plant.
 - b. Monthly statement of daily discharge of domestic and/or trade effluent.

7. Non-compliance with effluent limitations

- a) If for any reason the applicant does not comply with or is unable to comply with any effluent limitations specified in this consent, the applicant shall immediately notify the consent issuing authority by telephone and provide the consent issuing authority with the following information in writing within 5 days of such notification.
 - i) Causes of non-compliance
 - ii) A description of the non-compliance discharge including its impact on the receiving waters.
 - iii) Anticipated time of continuance of non-compliance if expected to continue or if such condition has been corrected the duration or period of non-compliance.
 - iv) Steps taken by the applicant to reduce and eliminate the non-complying discharge and
 - v) Steps to be taken by the applicant too prevent the condition of non-compliance.
- b) The applicant shall take all reasonable steps to minimize any adverse impact to natural waters resulting from non-compliance with any effluent limitation specified in this consent including such accelerated or additional monitoring as necessary to determine the nature and impact of the non-complying discharge.
- c) Nothing in this consent shall be construed to relieve the applicant from civil or criminal penalties for non-compliance whether or not such non-compliance is due to factors beyond his control, such as break-down, electric failure, accident or natural disaster.

8. The applicant shall at his own cost get the effluent samples collected both before and after treatment and get them analysed at an approval laboratory every month for the parameters indicated in Part-D and shall submit in duplicate the report thereof to the Board.

9. The addition of various treatment chemicals should be done only with mechanical dosers and proper equipment for regulation of correct dosages determined daily and for proper uniform feeding. Crude practices such as dumping of chemicals in drains or sumps or trickling of acids or alkalies arbitrarily and utilizing poles for stirring etc. should not be resorted to.

10. In the disposal of treated effluent on land for irrigation, the industry shall keep in view of the need for;

Rotation of crops

Change of point of application of effluent on land

A portion of land kept fallow.

11. The adoption of these would avoid soil becoming sick or slate, the industry may ensure this in consultation with the Agriculture Department.
12. It is the sole responsibility of the industry to ensure that there are no complaints at any time from the royats in the surrounding areas as a result of discharge of sewage or trade effluent if any.
13. Proper housekeeping shall be maintained by a dedicated team.
14. The industry must constitute a team of responsible and technically qualified personnel who will ensure continuous operation of all pollution control devices round the clock (including night hours) and should be in a position to explain the status of operation of the pollution control measures to the inspecting officers of the Board at any point of time. The name of these persons with their contact telephone numbers shall be intimated to the concerned Regional Officer and Head Office of the Board and in case of any change in the team it shall be intimated to the Board immediately.



E. SPECIAL CONDITIONS :

- 1) This consent order is subject to compliance of orders of the Hon'ble Supreme Court of India in the matter of W. P. (Civil) 114/2014.
- 2) This consent order is subject to permission from MoEF & CC, Govt. of India and Steel and Mines Department, Government of Odisha for continuing of mining operation.
- 3) Mining operation is subject to availability of all other statutory clearances.
- 4) Drills shall either be operated with dust extractors or equipped with water injection system to minimize dust generation in the work environment.
- 5) Controlled blasting shall be practiced to minimize generation of dust and fly rocks.
- 6) Regular water sprinkling shall be carried out in critical areas prone to air pollution such as around crushing and screening plant. Water sprinkling shall also be carried out on haul roads at frequent interval so that it should always remain in wet condition. Haulage roads shall be devoid of ruts and potholes and shall be maintained properly to avoid generation of dust during movement of vehicles.
- 7) Dust suppression measures preferably dry fog system shall be provided at all appropriate places of mineral handling plants (screening plant). Loading the unloading areas including all the transfer points shall also have efficient dust suppression arrangements (dry fog system). These shall be properly maintained and operated.
- 8) Mechanized wheel washing facility for the ore transport vehicles shall be provided at the exit point of the mine. The wheel washing facility shall be integrated with complete recirculation system.
- 9) The vehicles carrying ore for transportation from the mine shall be covered with tarpaulin (both bottom & top).
- 10) Regular water sprinkling on mineral transportation roads passing through the habitation area as well as other strategic point on the National Highway shall be done jointly by the mining lessees in consultation with the Regional Officer.
- 11) Atleast four Ambient Air Quality Monitoring Stations shall be established in core zone and buffer zone for monitoring of ambient air quality at the locations of the stations as decided in consultation with the Regional Officer, State Pollution Control

Board based on the metrological data, topographical features and environmentally and ecologically sensitive targets

- 12) The monitoring of ambient air quality shall be carried out twice in a week (24 hourly) at a particular site and the consolidated data shall be submitted to the State Pollution Control Board, once in a year.
- 13) The ambient air quality shall remain within prescribed national ambient air quality standards.
- 14) The top soil generated shall be stored at earmarked site (s) only and stabilized with plantation or shall be used for land reclamation and plantation.
- 15) The over burden generated during the course of mining shall be stacked at earmarked dump site (s) and stabilized with plantation or used for reclamation of excavated land followed by plantation.
- 16) The project proponent shall ensure that no natural watercourse and / or water resources are obstructed due to any mining operations.
- 17) Check dams and check weirs shall be constructed at appropriate places of the mine lease area to prevent direct flow of runoff to nearby water bodies. The surface runoff water from the existing runoff management system shall meet the prescribed standards as stated in Part A (SI No. 2) of the consent order.
- 18) Retention wall shall be constructed at the toe of topsoil dump and OB dump. Garland drain shall be constructed around topsoil dumps, over burden dumps and mineral stack yards terminating at settling pit to prevent direct disposal of runoff to nearby water bodies.
- 19) Garland drain and sedimentation pit shall be de-silted after monsoon or as and when required. The runoff discharge quality from runoff management system shall meet the prescribed standards as stated in Part A (SI No. 2) of the consent order.
- 20) Domestic effluents shall be treated in a sewage treatment plant (STP) and or shall be discharged to soak pit via septic tank constructed as BIS specification.
- 21) ETP shall be operated at all time for workshop and wastewater generated during mining operation, if any. The quality of the treated wastewater shall conform to the prescribed standard as stated in Part A (SI No. 2) of the consent order.



CONSENT ORDER
BAMEBARI MANGANESE MINE OF M/S. TATA STEEL LTD

P.

- 22) Regular monitoring of water quality of upstream and downstream of surface water bodies existed if any within 5 Km shall be carried out once in every month and record shall be maintained and submitted to the State Pollution Control Board once in every year. Monitoring shall be carried out through MoEF & CC accredited laboratory.
- 23) Regular monitoring of ground water level and quality should be carried out by establishing a network of existing wells. The monitoring should be done four times a year in pre-monsoon (April/May), monsoon (August), post-monsoon (November) and winter (January) seasons. Data thus collected should be submitted to the Board quarterly.
- 24) The mine shall take necessary action for compliance with the air and water quality standards as stipulated in this order.
- 25) Adequate measures shall be taken for control of noise levels in the work environment of mine area so that noise levels at the boundary line of mining lease area shall not exceed 75 dB(A) during day time (6.00 AM to 9.00 PM) and 70 dB(A) during night time (9.00 PM to 6 AM).
- 26) Adequate noise barriers shall be provided surrounding the crushing and screening plants to control noise pollution and avoid impact on wildlife due to operation of crushing and screening plants during night hours.
- 27) Online noise monitoring system shall be installed to monitor noise level during night hours.
- 28) Protective barriers shall be provided for the lights to prevent illumination towards the forest area during night hours.
- 29) Ambient air quality monitoring data, noise monitoring data and water / wastewater quality monitoring data shall be electronically displayed at the entry point of the mine or at a suitable location of the mine.
- 30) Plantation of trees shall be undertaken in the colony/ township, over top soil dumps, OB dumps, along the side of haul road and in other areas of the mines not being utilized for mining activities. The mine shall take up avenue plantation and plantation in nearby village areas in consultation with DFO/Horticulture Department. The annual plantation details shall be submitted to the Board by 30th April every year.

- 1) A copy of the annual return (annual return submitted to IBM, Govt. of India/ Directorate of Mines, Govt. of Odisha) shall be submitted to this Board every year.
- 32) The environmental statement report for the financial year ending 31st March shall be submitted to the Board in Form -V on or before 30th September every year.


MEMBER SECRETARY

STATE POLLUTION CONTROL BOARD, ODISHA

To,

**SRI AWNISH KUMAR, CHIEF AND AGENT,
BAMEBARI MANGANESE MINE,
M/S TATA STEEL LTD.,
AT/PO: BAMEBARI, VIA: JODA,
DIST: KEONJHAR. PIN-758034.**

Memo No. _____ /Dt. _____ /

Copy forwarded to :

- i) Regional Officer, State Pollution Control Board, Keonjhar.
- ii) District Collector, Keonjhar
- iii) Director of Mines, Govt. of Odisha, Bhubaneswar
- iv) Director, Environment-cum-Special Secretary, F & E. Dept. Govt. of Odisha, Bhubaneswar.
- v) D.F.O, Keonjhar
- vi) Deputy Director of Mines, Joda
- vii) Additional Chief Env. Engineer, Central Lab. SPCB, Bhubaneswar
- viii) Additional Chief Env. Engineer, (Hazardous waste management cell)
- ix) Consent Register


CHIEF ENV. ENGINEER (M)
STATE POLLUTION CONTROL BOARD, ODISHA



CONSENT ORDER
BAMEBARI MANGANESE MINE OF M/S. TATA STEEL LTD

**GENERAL STANDARDS FOR DISCHARGE OF
ENVIRONMENTAL POLLUTANTS**

**GENERAL STANDARDS FOR DISCHARGE OF
ENVIRONMENTAL POLLUTANTS PART –A : EFFLUENTS**

Sl.No.	Parameters	Standards			
		Inland surface	Public sewers	Land for irrigation	Marine Costal Areas
		(a)	(b)	(c)	(d)
1.	Colour&odour	Colourless/Odourless as far as practicable	-----	See 6 of Annex-1	See 6 of Annex-1
2.	Suspended Solids (mg/l)	100	600	200	For process wastewater – 100 b. For cooling water effluent 10% above total suspended matter of influent.
3.	Particular size of SS	Shall pass 850	-----	-----	
5.	pH value	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0
6.	Temperature	Shall not exceed 5°C above the receiving water temperature	-----	-----	Shall not exceed 5°C above the receiving water temperature
7.	Oil & Grease mg/l max.	10	20	10	20
8.	Total residual chlorine	1.0	----	-----	1.0
9.	Ammonical nitrogen (as N) mg/l max.	50	50	-----	50
10.	Total Kjeldahl nitrogen (as NH ₃) mg/1 max.	100	----	-----	100
11.	Free ammonia (as NH ₃) mg/1 max.	5.0	----	-----	5.0
12.	Biochemical Oxygen Demand (5 days at (20°C) mg/1 max.	30	350	100	100
13.	Chemical Oxygen Demand, mg/1 max.	250	----	-----	250
14.	Arsenic (as As) mg/1 max.	0.2	0.2	0.2	0.2
15.	Mercury (as Hg) mg/1 max.	0.01	0.01	-----	0.001
16.	Lead (as pb) mg/1 max.	01.	1.0	-----	2.0



CONSENT ORDER
BAMEBARI MANGANESE MINE OF M/S. TATA STEEL LTD

17.	Cadmium (as Cd) mg/l max.	2.0	1.0	-----	2.0
18.	Hexavalent Chromium (as Cr + 6) mg/l max.	0.1	2.0	-----	1.0
19.	Total Chromium (as Cr) mg/l max.	2.0	2.0	-----	2.0
20.	Copper (as Cu) mg/l max.	3.0	3.0	-----	3.0
21.	Zinc (as Zn) mg/l max.	5.0	15	-----	15
22.	Selenium (as Se) mg/l max.	0.05	0.05	-----	0.05
23.	Nickel (as Ni) mg/l max.	3.0	3.0	-----	5.0
24.	Cyanide (as CN) mg/l max.	0.2	2.0	0.2	0.02
25.	Fluoride (as F) mg/l max.	2.0	15	-----	15
26.	Dissolved Phosphates (as P) mg/l max.	5.0	-----	-----	-----
27.	Sulphide (as S) mg/l max.	2.0	-----	-----	5.0
28.	Phenolic compounds as (C ₆ H ₅ OH) mg/l max.	1.0	5.0	-----	5.0
29.	Radioactive materials a. Alpha emitter micro curie/ml. b. Beta emitter micro curie/ml.	10 ⁷ 10 ⁶	10 ⁷ 10 ⁶	10 ⁸ 10 ⁷	10 ⁷ 10 ⁶
30.	Bio-assay test	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent
31.	Manganese (as Mn)	2 mg/l	2 mg/l	-----	2 mg/l
32.	Iron (Fe)	3 mg/l	3 mg/l	-----	3 mg/l
33.	Vanadium (as V)	0.2 mg/l	0.2 mg/l	-----	0.2 mg/l
34.	Nitrate Nitrogen	10 mg/l	-----	-----	20 mg/l

NATIONAL AMBIENT AIR QUALITY STANDARDS

Sl. No.	Pollutants	Time Weighed Average	Concentrate of Ambient Air		
			Industrial Residential, Rural and other Area	Ecologically Sensitive Area (notified by Central Government)	Methods of Measurement
(1)	(2)	(3)	(4)	(5)	(6)
1.	Sulphur Dioxide (SO ₂), µg/m ³	Annual *	50	20	-Improved west and Gaeke
		24 Hours **	80	80	- Ultraviolet fluorescence
2.	Nitrogen Dioxide (NO ₂), µg/m ³	Annual *	40	30	- Modified Jacob &Hochheiser (Na-Arsenite)
		24 Hours **	80	80	- Chemiluminescence
3.	Particulate Matter (size less than 10µm) or PM ₁₀ µg/m ³	Annual *	60	60	-Gravimetric
		24 Hours **	100	100	- TOEM - Beta Attenuation
4.	Particulate Matter (size less than 2.5µm) or PM _{2.5} µg/m ³	Annual *	40	40	-Gravimetric
		24 Hours **	60	60	- TOEM - Beta Attenuation
5.	Ozone (O ₃) µg/m ³	8 Hours **	100	100	- UV Photometric
		1 Hours **	180	180	- Chemiluminescence - Chemical Method
6.	Lead (Pb) µg/m ³	Annual *	0.50	0.50	-AAS/ICP method after sampling on EMP 2000 or equivalent filter paper.
		24 Hours **	1.0	1.0	- ED-XRF using Teflon filter
7.	Carbon Monoxide (CO) mg/m ³	8 Hours **	02	02	- Non Dispersive Infra Red (NDIR)
		1 Hours **	04	04	Spectroscopy
8.	Ammonia (NH ₃) µg/m ³	Annual*	100	100	-Chemiluminescence
		24 Hours**	400	400	- Indophenol Blue Method
9.	Benzene (C ₆ H ₆) µg/m ³	Annual *	05	05	-Gas Chromatography based continuous analyzer
					- Adsorption and Desorption followed by GC analysis
10.	Benzo (a) Pyrene (BaP)-Particulate phase only, ng/m ³	Annual*	01	01	-Solvent extraction followed by HPLC/GC analysis
11.	Arsenic (As), ng/m ³	Annual*	06	06	-AAS/ICP method after sampling on EPM 2000 or equivalent filter paper
12.	Nickel (Ni),ng/m ³	Annual*	20	20	-AAS/ICP method after sampling on EPM 2000 or equivalent filter paper

** Annual arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

** 24 hourly or 08 hourly or 01 hourly monitored values, as applicable, shall be complied with 98% of the time in a year, 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

OFFICE OF THE PRINCIPAL CHIEF CONSERVATOR OF FORESTS (WILDLIFE)
& CHIEF WILDLIFE WARDEN, ODISHA, BDA APARTMENT, 5TH FLOOR,
PRAKRUTI BHAWAN, NILAKANTHA NAGAR, BHUBANESWAR-12
Ph. No.0674-2564587, FAX No.0674-2565062
(Website:odishawildlife.org, E. mail: odishawildlife@gmail.com)

Memo No. 7743 /1 WL-SSP-01/2015 Dated, Bhubaneswar, the 1st Sept 2015
Aug, 2015

To

The Principal Chief Conservator of Forests, Odisha,
Bhubaneswar

**Sub: Approval of Site Specific Wildlife Conservation Plan in respect of
Bamebari Manganese Mines of TATA Steel Ltd. in Keonjhar Forest
Division**

It is to inform you that M/s TATA Steel Ltd. has to implement a Site Specific Wildlife Conservation Plan for its Bamebari Manganese mines in Keonjhar district in compliance to Specific Condition No.(xvi) stipulated in the Environment Clearance granted by Govt. of India, MoEF vide their letter No. J-11015/85/2003-IA.II(M) dated 17.11.2005 and condition No.(xi) of the Forest Clearance granted by Govt. of India, MoEF vide their letter F.No. 8-72/2004-FC dated 25.1.2007.

2. The Site Specific Wildlife Conservation Plan in respect of the above project has been approved by the undersigned with financial forecast of **₹635.91 lakh** (Rupees six crore thirty-five lakh ninety-one thousand) only for the following activities.

a.	For activities to be implemented by the user agency in project area	₹166.10 lakh
b.	For activities to be implemented by DFO, Keonjhar Division in project impact area	₹469.81 lakh
Grand Total:		₹635.91 lakh

3. Various activities in the lease hold area will be executed by the Project proponent under the guidance of the Divisional Forest Officer, Keonjhar Division. A sum of ₹469.81 lakh only may be deposited in the CAMPA fund meant for the purpose for implementation of various activities within the project impact area by the Forest Deptt. as envisaged in the plan.


4. The User Agency may be advised to note the following conditions for future compliance.

- This Plan may be revisited after 5 years and the User Agency will give undertaking to contribute towards the revised cost of the conservation plan till the project period, if any.

P.T.O.

- The project proponent has to prepare and submit the Conservation Plan for the next 10 years of their lease period (balance period for which forest land remains diverted) at least one year before the expiry of the present Conservation Plan and deposit the outlay amount upon its approval. In case of delay, it will be dealt as per law for violations of Forest Conservation Act, 1980 and Environment (Protection) Act, 1986.
- The project proponent has to give an undertaking to bear the differential cost in case of enhancement of wage rate during the time of implementation of this plan.

**Encl: 2 copies of approved
site specific WL Conservation Plan**


**Principal Chief Conservator of Forests (WL)
& Chief Wildlife Warden, Odisha**

Memo No. 7749 /date 01-09-2015

Copy forwarded for information and necessary action to –

1. Special Secretary to Govt. of Odisha, F&E Deptt., Bhubaneswar
2. Regional Chief Conservator of Forests, Rourkela Circle with reference to memo No.5701 dt 16.7.2015 of the DFO, Keonjhar Division
3. Divisional Forest Officer, Keonjhar Division with reference to his memo No.5700 dt 16.7.2015 alongwith a copy of the approved site specific wildlife conservation plan
- ✓ 4. The Head, M/s Bamebari Manganese Mines (TATA Steel Ltd.), At/PO- Joda, Dist. – Keonjhar alongwith a copy of the approved site specific wildlife conservation plan

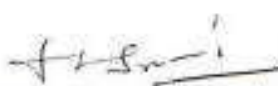
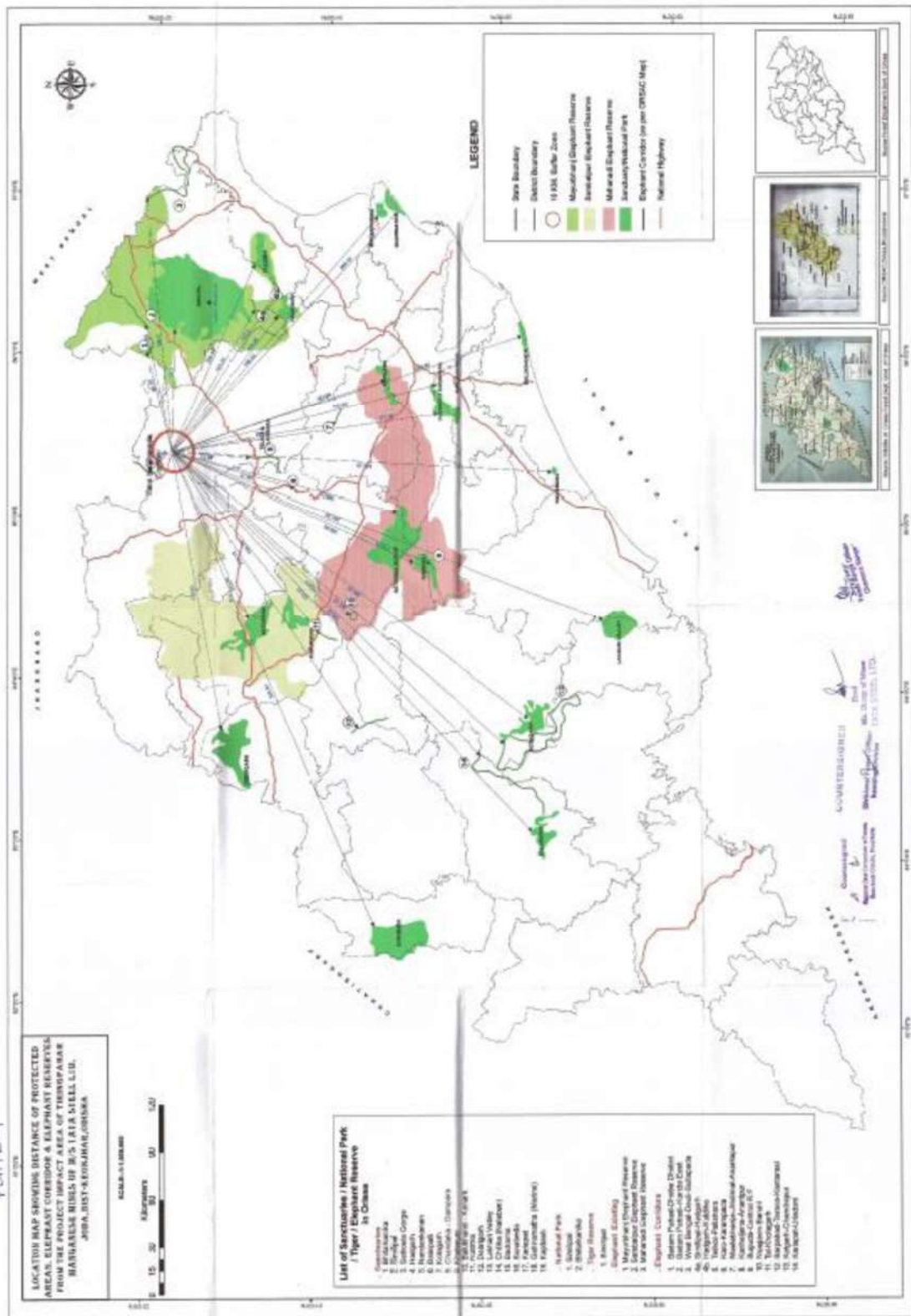

**Principal Chief Conservator of Forests (WL)
& Chief Wildlife Warden, Odisha**

PLATE-4



AMBIENT AIR MONITORING REPORT

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel.: +91 7044038120
Email: udayanlab@mitrask.com



TC-6950



Scan for Portal

ULR: TC-695024000004877F

**Name & Address of Customer :**

Tata Steel Ltd.(MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

TEST REPORT

Report No. :

MSKPL/ED/2023-24/T1517U

Date :

20/03/2024

Sample No. :

MSKNB/ED/2023-24/03/YW148K

Date of receipt of sample:

11/03/2024

Date(s) of performance:

11/03/2024 - 20/03/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	07/03/2024
5. Place of sampling	Joribar Shorting Yard
6. Environmental conditions during sampling & Transport	1) Temperature : 14-27 deg C 2) Barometric Pressure: 713 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	LALIN NAYAK
9. Field Equipments Used	MSK/BBL/FIELD/RDS-12

Report No. : MSKPL/ED/2023-24/T1517U

Sample No. : MSKNB/ED/2023-24/03/YW148K

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.13
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature:

Name: Dr. Devottam Banerjee

Designation: Technical in Charge

Authorized Signatory

Signature:

Name: Dr. Devottam Banerjee

Designation: Technical in Charge

The results relate only to the item(s) tested.

This Test Report shall not be reproduced except in full, without the permission of Mitra S.K. Private Limited.

The reserved part of sample(s) for chemical analysis (Non-perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days on the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report. The reserved part of sample(s) for Microbiological analysis (Non-perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shree's Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel.: 91 33 40143000 / 22650001 Fax: 91 33 22650308
Email: info@mitrask.com Website: www.mitrask.com



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM) Joda West

Al/Po. - Joda, Dist. - Keonjhar, Orissa - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/005410

Date :

21/03/2024

Sample No. :

MSKGL/ED/2023-24/03/00331

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines (BIMM)
4. Date of sampling	07/03/2024
5. Place of sampling	Near Shorting Yard BIMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/005410

Sample No. : MSKGL/ED/2023-24/03/00331

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	15.7
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.50
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	19.8
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL-20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	186
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24),2019 (O)	80 24 HR.	89
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	6.7

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Head Office:

Shreeji Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel. : 91 33 40143000 / 22650007 Fax : 91 33 22650006
Email : info@mitrask.com Website : www.mitrask.com

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel : +91 7044036120
Email: udayanlab@mitrask.com



TC-8950



Scan for Portal

ULR: TC-69502400004675F

Name & Address of Customer :

Tata Steel Ltd (MGM) Joda West

Al/Pe. - Joda, Dist. - Keonjhar, Odisha - 758034 India

TEST REPORT

Report No. :

Date :

Sample No. :

Date of receipt of sample:

Date(s) of performance:

Location of performance of

Reference No. & Date :

Discipline:

MSKPL/ED/2023-24/X1517C

20/03/2024

MSKNB/ED/2023-24/03/NA144A

11/03/2024

11/03/2024 - 20/03/2024

Permanent Facility

3000156017/056, Date - 16/09/2023

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	07/03/2024
5. Place of sampling	Bamebari Backfilling yard
6. Environmental conditions during sampling & Transport	1) Temperature : 14-27 deg C 2) Barometric Pressure: 712 mm of Hg 3) Rain fall No & Cold Chain Maintained
7. Sampling Plan & Method used	IS 5182(P-11, 12) & USEPA
8. Identification of the personnel performing sampling by MSK	LALIN NAYAK
9. Field Equipments Used	MSK/BBU/FIELD/RDS-17

Report No. : MSKPL/ED/2023-24/X1517C

Sample No. : MSKNB/ED/2023-24/03/NA144A

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.10
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

----- END -----

Reviewed By:

Signature:

Name : Dr. Devottam Banerjee

Designation : Technical in Charge

Authorized Signatory

Signature:

Name : Dr. Devottam Banerjee

Designation : Technical in Charge

The results relate only to the item(s) tested.
This Test Report shall not be reproduced except in full, without the permission of Mitra S.K. Private Limited.
The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days on the date of issue of the Test Report.
The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.
The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: 5th Floor, 74B A J.C. Bose Road, Kolkata - 700015, West Bengal, India
Tel : 91 33 40143000 / 22650007 Fax : 91 33 22650009
Email: info@mitrask.com Website: www.mitrask.com



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

At/Po. - Joda; Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

Date :

Sample No. :

Reference No. & Date :

MSKGL/ED/2023-24/005409

21/03/2024

MSKGL/ED/2023-24/03/00327

3000158017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines (BIMM)
4. Date of sampling	07/03/2024
5. Place of sampling	Near Back Filling Yard Bamebari
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/005409

Sample No. : MSKGL/ED/2023-24/03/00327

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	14.8
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.58
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	18.5
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL:20.0)
5	Particulate Matter (<10µm)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	179
6	Particulate Matter (<2.5µm)	micro gm/m ³	IS 5182 (PT-24),2018 (O)	60 24 HR.	85
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	60 24 HR.	6.6

END

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Address of Laboratory :

Building No. P-48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel : +91 7044036120
Email: udayanlab@mitrask.com



TC-8950



Scan for Portal



ULR: TC-595024000004673F

Name & Address of Customer :

Tata Steel Ltd. (MGM) Joda West

AVPo. - Joda, Dist. - Keonjhar, Odisha - 758034 India

TEST REPORT

Report No. :

Date :

Sample No. :

Date of receipt of sample:

Date(s) of performance:

Location of performance of

Reference No. & Date :

Discipline:

MSKPL/ED/2023-24/E15170

20/03/2024

MSKNB/ED/2023-24/03/7S141H

11/03/2024

11/03/2024 - 20/03/2024

Permanent Facility

3000156017/056, Date - 16/09/2023

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	07/03/2024
5. Place of sampling	Joribar Weigh Bridge
6. Environmental conditions during sampling & Transport	1) Temperature : 14-28 deg C 2) Barometric Pressure: 712 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	LALIN NAYAK
9. Field Equipments Used	MSK/BBU/FIELD/RDS-11

Report No. : MSKPL/ED/2023-24/E15170

Sample No. : MSKNB/ED/2023-24/03/7S141H

RESULT

Chemical

SI No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-ID 3.4, June	5 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-ID 3.4, June	1 (24 Hours)	0.02
5	Manganese as Mn	micro gm/m3	USEPA-ID 3.4, June	Not Specified	0.47
6	Nickel as Ni	ng/m3	USEPA-ID 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

----- END -----

Reviewed By:

Signature:

Name: Dr. Devottam Banerjee

Designation: Technical in Charge

Authorized Signatory:

Signature:

Name: Dr. Devottam Banerjee

Designation: Technical in Charge

The results relate only to the item(s) tested.

This Test Report shall not be reproduced except in full, without the permission of Mitra S.K. Private Limited.

The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report. The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed Food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Ghachi Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700015, West Bengal, India.
Tel : 91 33 40143000 / 22650007 Fax : 91 33 22650006
Email : info@mitrask.com Website : www.mitrask.com



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

At/Po : Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

Date :

Sample No. :

Reference No. & Date :

MSKGL/ED/2023-24/005420

21/03/2024

MSKGL/ED/2023-24/03/00330

3000158017/066, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines (BIMM)
4. Date of sampling	07/03/2024
5. Place of sampling	Near Weigh Bridge BIMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/005420

Sample No. : MSKGL/ED/2023-24/03/00330

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	16.4
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.55
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	19.8
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL:20.0)
5	Particulate Matter (<10µm)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	199
6	Particulate Matter (<2.5µm)	micro gm/m ³	IS 5182 (PT-24), 2019 (O)	60 24 HR.	102
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	7.7

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Head Office:

Branch Office (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India
Tel : 91 33 40143000 / 22650007 Fax : 91 33 22650006
Email : info@mitrask.com Website : www.mitrask.com

Page 1 of 1

Address of Laboratory :

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3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044038120
Email: udayanlab@mitrask.com



TC-8950



Scan for Portal

ULR: TC-895024000004672F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

Al/Pe. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/C1517X

Date :

20/03/2024

Sample No. :

MSKNB/ED/2023-24/03/3X142G

Date of receipt of sample:

11/03/2024

Date(s) of performance:

11/03/2024 - 20/03/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	07/03/2024
5. Place of sampling	Bamebari Project Office
6. Environmental conditions during sampling & Transport	1) Temperature : 14-28 deg C 2) Barometric Pressure: 712 mm of Hg 3) Rain fall : No & Gold Chain Maintained
7. Sampling Plan & Method used	IS-5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	LALIN NAYAK
9. Field Equipments Used	MSK/BBL/FIELD/RDS-5

Report No. : MSKPL/ED/2023-24/C1517X**Sample No. :** MSKNB/ED/2023-24/03/3X142G

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	5 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.23
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

END

Reviewed By:

Signature:

Name: Dr. Devottam Banerjee

Designation: Technical in Charge

Authorized Signatory:

Signature:

Name: Dr. Devottam Banerjee

Designation: Technical in Charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days on the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report. The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Bhadracharya (5th Floor), 748, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India
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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM) Joda West

At/Po. - Joda, Dist. - Koonjhar, Orissa - 758034 India Pin

Report No. :

Date :

Sample No. :

Reference No. & Date :

MSKGL/ED/2023-24/005405

21/03/2024

MSKGL/ED/2023-24/03/00329

3000156017/050, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamabari Iron & Mn. Mines (BIMM)
4. Date of sampling	07/03/2024
5. Place of sampling	Near Project Office BIMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/005405

Sample No. : MSKGL/ED/2023-24/03/00329

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	15.4
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 BHR.	0.53
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	23.7
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL:20.0)
5	Particulate Matter (<10µm)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	210
6	Particulate Matter (<2.5µm)	micro gm/m ³	IS 5182 (PT-24), 2019 (O)	60 24 HR.	102
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 21) (O)	80 24 HR.	8.1

END

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Head Office:

Service Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India
Tel. : 91 33 49143000 / 22650001 Fax : 91 33 22650006
Email : info@mitrask.com Website : www.mitrask.com

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrasak.com



TC-8950



Scan for Portal

ULR: TC-89502400004684F

Name & Address of Customer :

Tata Steel Ltd.(MGM)-Joda West

A/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

TEST REPORT

Report No. :

Date :

Sample No. :

Date of receipt of sample:

Date(s) of performance:

Location of performance of

Reference No. & Date :

Discipline:

MSKPL/ED/2023-24/41517U

20/03/2024

MSKNB/ED/2023-24/03/WF147R

11/03/2024

11/03/2024 - 20/03/2024

Permanent Facility

3000156017/056, Date - 16/09/2023

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	08/03/2024
5. Place of sampling	Near Shorting Yard BIMM
6. Environmental conditions during sampling & Transport	1) Temperature : 15-32 deg C 2) Barometric Pressure: 713 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pranab Setti, Mukesh Highburu
9. Field Equipments Used	MSK/BBL/FIELD/RDS-12

Report No. : MSKPL/ED/2023-24/41517U

Sample No. : MSKNB/ED/2023-24/03/WF147R

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL:(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL:(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL:(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL:(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.14
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL:(DL:5.0)

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality.

Statement of Conformity NA

— END —

Reviewed By:

Signature:

Name: Dr. Devottam Banerjee

Designation: Technical in Charge

Authorized Signatory:

Signature:

Name: Dr. Devottam Banerjee

Designation: Technical in Charge

The results relate only to the item(s) tested.

This Test Report shall not be reproduced except in full, without the permission of Mitra S.K. Private Limited.

The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office:

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Email : sirchi@mitrasak.com Website : www.mitrasak.com



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

Date :

Sample No. :

Reference No. & Date :

MSKGL/ED/2023-24/005417

21/03/2024

MSKGL/ED/2023-24/03/00338

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Air
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines (BIMM)
4. Date of sampling	08/03/2024
5. Place of sampling	Near Shorting Yard BIMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/005417

Sample No. : MSKGL/ED/2023-24/03/00338

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	16.7
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.49
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 8) (O)	80 24 HR.	21.3
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL-20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	194
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24),2019 (O)	60 24 HR.	96
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	7.2

END

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Address of Laboratory :

Building No. P-48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel.: +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000004683F



TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

AI/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/H1517L

Date :

20/03/2024

Sample No. :

MSKNB/ED/2023-24/03/SQ144M

Date of receipt of sample:

11/03/2024

Date(s) of performance:

11/03/2024 - 20/03/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/055, Date - 10/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	08/03/2024
5. Place of sampling	Near Weigh Bridge BIMM
6. Environmental conditions during sampling & Transport	1) Temperature : 15-32 deg C 2) Barometric Pressure: 713 mm of Hg 3) Rain fall No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11, 12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pranab Selli, Mukesh Highburu
9. Field Equipments Used	MSK/BBL/FIELD/RDS-11

Report No. : MSKPL/ED/2023-24/H1517L

Sample No. : MSKNB/ED/2023-24/03/SQ144M

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	5 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	BDL(DL:0.01)
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

----- END -----

Reviewed By:

Signature

Name : Dr. Devottam Banerjee

Designation : Technical In Charge

Authorized Signatory:

Signature

Name : Dr. Devottam Banerjee

Designation : Technical In Charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non-perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Wastes) shall be retained for 15 days as per CPCB guidelines & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non-perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: 33rd Floor, 74B, A.J.C. Bose Road, Kolkata - 700015, West Bengal, India
Tel.: 91 33 40143000 / 22650007 Fax: 91 33 22650070
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Mitra S. K. Private Limited

Address of Branch :

P.O. Barbil Dt Keonjhar Orissa 758 035



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Name & Address of Customer :

Tata Steel Ltd. (MGM) Joda West

At/Po.:- Joda, Dist.:- Keonjhar, Odisha - 758034 India Pin

TEST REPORT

Report No. :

Date :

Sample No. :

Reference No. & Date :

MSKGL/ED/2023-24/005412

21/03/2024

MSKGL/ED/2023-24/03/00337

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Barabari Iron & Mn. Mines (BIMM)
4. Date of sampling	08/03/2024
5. Place of sampling	Near Weigh Bridge BIMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/005412

Sample No. : MSKGL/ED/2023-24/03/00337

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	15.5
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.56
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	21.6
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(UL:20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	212
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24),2019 (O)	60 24 HR.	112
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	8.0

END

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Head Office: Shree Sri Centre (3rd Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel. : 91 33 40143000 / 22650007 Fax : 91 33 22650008
Email : info@mitrask.com Website : www.mitrask.com

Page 1 of 1

Address of Laboratory :

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3, Pagledanga Road, Kolkata 700015
West Bengal
Tel : +91 7044038120
Email: udayanlab@mitrask.com



TC-8950



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ULR: TC-895024000004682F



Name & Address of Customer :

Tata Steel Ltd. (MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

TEST REPORT

Report No. :

Date :

Sample No. :

Date of receipt of sample:

Date(s) of performance:

Location of performance of

Reference No. & Date :

Discipline:

MSKPL/ED/2023-24/G1517N

20/03/2024

MSKNB/ED/2023-24/03/JQ146M

11/03/2024

11/03/2024 - 20/03/2024

Permanent Facility

3000156017/056, Date - 16/09/2023

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	08/03/2024
5. Place of sampling	Near Project Office BIMM
6. Environmental conditions during sampling & Transport	1) Temperature : 15-32 deg C 2) Barometric Pressure: 713 mm of Hg 3) Rain fall: No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pranab Selli, Mukesh Highbura
9. Field Equipments Used	MSK/BBL/FIELD/RDS-5

Report No. : MSKPL/ED/2023-24/G1517N

Sample No. : MSKNB/ED/2023-24/03/JQ146M

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL 1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL 4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL 0.5)
4	Lead as Pb	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL 0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.10
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL 5.0)

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

----- END -----

Reviewed By:

Signature:

Name: Dr. Devottam Banerjee

Designation: Technical in Charge

Authorized Signatory

Signature:

Name: Dr. Devottam Banerjee

Designation: Technical in Charge

The results relate only to the item(s) tested

This Test Report shall not be reproduced except in full, without the permission of Mitra S.K. Private Limited

The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shyachi Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India
Tel : 91 33 40143000 / 22650007 Fax : 91 33 22650000
Email : info@mitrask.com Website : www.mitrask.com



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM) Joda West

AI/PO, - Joda, Dist. - Keonjhar, Orissa - 758034 - India Pin

Report No. :

Date :

Sample No. :

Reference No. & Date :

MSKGL/ED/2023-24/005407

21/03/2024

MSKGL/ED/2023-24/03/00336

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines (BIMM)
4. Date of sampling	08/03/2024
5. Place of sampling	Near Project Office BIMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/005407

Sample No. : MSKGL/ED/2023-24/03/00336

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	16.1
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.47
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	22.4
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL-20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	204
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24), 2019 (O)	60 24 HR.	97
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 21) (O)	80 24 HR.	7.8

END

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel : +91 7044036120
Email: udayanlab@mitraskl.com



TC-6950



Scan for Portal

ULR: TC-695024000004680F

Name & Address of Customer :

Tata Steel Ltd. (MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

TEST REPORT

Report No. :

Date :

Sample No. :

Date of receipt of sample:

Date(s) of performance:

Location of performance of

Reference No. & Date :

Discipline:

MSKPL/ED/2023-24/21517Y

20/03/2024

MSKNB/ED/2023-24/03/A6143Z

11/03/2024

11/03/2024 - 20/03/2024

Permanent Facility

3000156017/056, Date - 16/09/2023

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample (if any)	NA
4. Date of sampling	08/03/2024
5. Place of sampling	Near Back Filling Yard Bamebari
6. Environmental conditions during sampling & Transport	1) Temperature : 15-32 deg C 2) Barometric Pressure: 713 mm of Hg 3) Rain fall No & Cold Chain Maintained
7. Sampling Plan & Method used	IS: 5182 (P-11, 12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pranab Setti, Mukesh Highburo
9. Field Equipments Used	MSK/BBL/FIELD/RDS-17

Report No. : MSKPL/ED/2023-24/21517Y

Sample No. : MSKNB/ED/2023-24/03/A6143Z

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL (DL: 1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL (DL: 4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL (DL: 0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	0.06
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.47
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	12.1

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

----- END -----

Reviewed By:

Signature:

Name: Dr. Devottam Banerjee

Designation: Technical in Charge

Authorized Signatory:

Signature:

Name: Dr. Devottam Banerjee

Designation: Technical in Charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days on the date of issue of the Test Report.

The reserved part of sample(s) for microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed Food) shall be retained for 15 days from the date of issue of the Test Report.

lead Office: Shuchi Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India
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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM) Joda West

AI/PO, - Joda, Dist - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/005406

Date :

21/03/2024

Sample No. :

MSKGL/ED/2023-24/03/00334

Reference No. & Date :

3000156017/058, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Barnebari Iron & Mn. Mines (BIMM)
4. Date of sampling	08/03/2024
5. Place of sampling	Near Back Filling Yard Barnebari
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/005406

Sample No. : MSKGL/ED/2023-24/03/00334

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	15.1
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10)_(O)	2 8HR.	0.60
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6)_(O)	80 24 HR.	19.7
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(UL-20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23)_(O)	100 24 HRL	198
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24),2019_(O)	80 24 HR.	92
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2)_(O)	80 24 HR.	8.5

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Mitra S. K. Private Limited

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950

Doc No.: MSK/GEN/H007



Scan for Portal

ULR: TC-696024000005201F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM), Joda West

A/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

Date :

Sample No. :

Date of receipt of sample:

Date(s) of performance:

Location of performance of

Reference No. & Date :

Discipline:

MSKPL/ED/2023-24/X16046

26/03/2024

MSKNB/ED/2023-24/03/G82513

18/03/2024

18/03/2024 - 26/03/2024

Permanent Facility

3000156017/056, Date - 16/09/2023

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	14/03/2024
5. Place of sampling	Near Joribar Shorting Yard (BIMM)
6. Environmental conditions during sampling & Transport	1) Temperature :19-34 deg C 2) Barometric Pressure: 709 mm of Hg 3) Rain fall - No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Akash Kumar Setti
9. Field Equipments Used	MSK/BBU/FIELD/RDS-12

Report No. : MSKPL/ED/2023-24/X16046

Sample No. : MSKNB/ED/2023-24/03/G82513

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.13
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

----- END -----

Reviewed By:

Signature

Name

Designation

Mr. P. Ganguly

Executive Chemist

Authorized Signatory:

Signature

Name

Designation

Dr. Soumyadeep Mukhopadhyay

Lab in charge

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is reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days

is the date of issue of the Test Report:

is reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

is reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Baked Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office:

Shree Chakra (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.

Tel. : 91 33 40143000 / 22950007 Fax : 91 33 22950008

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Mitra S. K. Private Limited

Address of Branch :

P.O. Barhili Dt Keonjhar Orissa 758 035



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 Joda P.H.

Report No. :

Date :

Sample No. :

Reference No. & Date :

MSKGL/ED/2023-24/005567

27/03/2024

MSKGL/ED/2023-24/03/00614

3000158017/058, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Water
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines (BIMM)
4. Date of sampling	14/03/2024
5. Place of sampling	Near Joribar Shoring Yard (BIMM)
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/005567

Sample No. : MSKGL/ED/2023-24/03/00614

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	15.0
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.48
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	21.8
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL 20.0)
5	Particulate Matter (<10 _{um})	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	192
6	Particulate Matter (<2.5 _{um})	micro gm/m ³	IS 5182 (PT-24), 2019 (O)	60 24 HR.	92
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	7.3

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Head Office: Shreeji Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel : 91 33 40143000 / 22950001 Fax : 91 33 22950003
Email : info@mitrasrk.com Website : www.mitrasrk.com

Page 1 of 1

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pogliadanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitraak.com



YC-6950



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ULR: TC-595024000005200F



TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM)_Joda West

At/Po. : Joda, Dist. : Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/C16049

Date :

26/03/2024

Sample No. :

MSKNB/ED/2023-24/03/9U24B9

Date of receipt of sample:

18/03/2024

Date(s) of performance:

18/03/2024 - 25/03/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 15/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	14/03/2024
5. Place of sampling	Near Jonbar Weigh Bridge (BIMM)
6. Environmental conditions during sampling & Transport	1) Temperature :19-34 deg C 2) Barometric Pressure: 709 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS-5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Akash Kumar Sethi
9. Field Equipments Used	MSK/BBL/FIELD/RDS-11

Report No. : MSKPL/ED/2023-24/C16049**Sample No. :** MSKNB/ED/2023-24/03/9U24B9

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	8 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	0.03
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.40
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	20.8

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

----- END -----

Reviewed By:**Signature****Name** : Ms. Pooi Ganguly**Designation** : Executive Chemist**Authorized Signatory:****Signature****Name****Designation** : Lab In charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guidelines & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office:

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Email : info@mitraak.com Website : www.mitraak.com



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/005566

Date :

27/03/2024

Sample No. :

MSKGL/ED/2023-24/03/00613

Reference No. & Date :

3000158017/058, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Water
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines (BIMM)
4. Date of sampling	14/03/2024
5. Place of sampling	Near Jonbar Weigh Bridge (BIMM)
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/005566

Sample No. : MSKGL/ED/2023-24/03/00613

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	15.2
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.53
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	20.5
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL 20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	194
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24) 2019 (O)	60 24 HR.	95
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	7.8

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Address of Laboratory :

Building No. P- 46, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel : +91 7044036120
Email: udayanlab@mitrask.com



TC-8950



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ULR: TC-895024000005189F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/B1604W

Date :

26/03/2024

Sample No. :

MSKNB/ED/2023-24/03/6G24EC

Date of receipt of sample:

18/03/2024

Date(s) of performance:

18/03/2024 - 26/03/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	14/03/2024
5. Place of sampling	Near Project Office (BIMM)
6. Environmental conditions during sampling & Transport	1) Temperature : 19-34 deg C 2) Barometric Pressure: 709 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS-5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Akash Kumar Selli
9. Field Equipments Used	MSK/BBL/FIELD/RDS-14

Report No. : MSKPL/ED/2023-24/B1604W

Sample No. : MSKNB/ED/2023-24/03/6G24EC

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.24
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

----- END -----

Reviewed By:**Signature****Name**

Mr. Piali Ganguly

Designation

Executive Chemist

Authorized Signatory:**Signature****Name**

Dr. Subhaschandra Mukherjee

Designation

Lab In charge

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 7 days from the date of issue of the Test Report.

The reserved part of sample(s) for microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office:

Shrachi Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel : 91 33 40143000 / 22550007 Fax : 91 33 22680006
Email : info@mitrask.com Website : www.mitrask.com



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

At/Po. : Joda, Dist. - Koonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/005563

Date :

27/03/2024

Sample No. :

MSKGL/ED/2023-24/03/00612

Reference No. & Date :

3000158017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Water
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines (BIMM)
4. Date of sampling	14/03/2024
5. Place of sampling	Near Project Office (BIMM)
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/005563

Sample No. : MSKGL/ED/2023-24/03/00612

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	14.7
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.48
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	24.4
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL-20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	215
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24), 2018 (O)	80 24 HR.	106
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	6.4

END

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Address of Laboratory :

Building No. P. 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel : +91 7044036120
Email: udayanlab@mitrask.com



TC-8950



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ULR: TC-695024000005205F

Name & Address of Customer :

Tata Steel Ltd (MGM), Joda West

At/Po.: Joda, Dist. - Keonjhar, Odisha - 758034 India

TEST REPORT

Report No. :

Date :

Sample No. :

Date of receipt of sample:

Date(s) of performance:

Location of performance of

Reference No. & Date :

Discipline:

MSKPL/ED/2023-24/616042

26/03/2024

MSKNB/ED/2023-24/03/U524FN

18/03/2024

18/03/2024 - 26/03/2024

Permanent Facility

3000156017/056, Date - 16/09/2023

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	14/03/2024
5. Place of sampling	Near Back Filling Yard Bamebari (BIMM)
6. Environmental conditions during sampling & Transport	1) Temperature : 19-34 deg C 2) Barometric Pressure: 709 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5152(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Akash Kumar Selti
9. Field Equipments Used	MSK/BBU/FIELD/RDS-17

Report No. : MSKPL/ED/2023-24/616042

Sample No. : MSKNB/ED/2023-24/03/U524FN

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5152 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5152 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.10
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion : Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

----- END -----

Reviewed By:

Signature :

Name : Ms. P. Ganguly

Designation : Executive Chemist

Authorized Signatory:

Signature :

Name :

Designation : Lab in charge

Dr. Saumyadeep Mukhopadhyay

The results relate only to the item(s) tested.
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The reserved part of sample(s) for chemical analysis (Non - purchasable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 02 days from the date of issue of the Test Report.
The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.
The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Bhadrak Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India
Tel : 91 33 40143000 / 22650007 Fax : 91 33 22650008
Email: info@mitrask.com Website: www.mitrask.com

Address of Branch :

P.O. Barhili Dt Keonjhar Orissa 758 035



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/005570

Date :

27/03/2024

Sample No. :

MSKGL/ED/2023-24/03/00616

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Water
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines (BIMM)
4. Date of sampling	14/03/2024
5. Place of sampling	Near Back Filling Yard Bamebari (BIMM)
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/005570

Sample No. : MSKGL/ED/2023-24/03/00616

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH3)	micro gm/m3	IS 5182 (Part 25)	400 24 HR.	14.7
2	Carbon Monoxide (CO)	mg/m3	IS: 5182 (Part 10) (O)	2 8HR.	0.62
3	Nitrogen Dioxide (NO2)	micro gm/m3	IS: 5182 (Part 6) (O)	80 24 HR.	20.1
4	Ozone (O3)	micro gm/m3	IS 5182 (Part 9)	180 1 HR.	BDL(DL 20.0)
5	Particulate Matter (<10um)	micro gm/m3	IS: 5182 (Part 23) (O)	100 24 HR.	185
6	Particulate Matter (<2.5um)	micro gm/m3	IS 5182 (P1-24),2019 (O)	60 24 HR.	89
7	Sulphur Dioxide (SO2)	micro gm/m3	IS: 5182 (Part 2) (O)	80 24 HR.	7.1

— END —

Report Verified By

For Mitra S. K. Private Limited

 Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000005208F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM), Joda West

At/ Po. : Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/P1604R

Date :

26/03/2024

Sample No. :

MSKNB/ED/2023-24/03/C924ET

Date of receipt of sample:

18/03/2024

Date(s) of performance:

18/03/2024 - 26/03/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000166017/056, Date - 18/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	15/03/2024
5. Place of sampling	Near Joribar Shorting Yard (BIMM)
6. Environmental conditions during sampling & Transport	1) Temperature :18-33 deg C 2) Barometric Pressure: 711 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS-5162(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Lalin Kumar Naik
9. Field Equipments Used	MSK/BBU/FIELD/RDS-12

Report No. : MSKPL/ED/2023-24/P1604R

Sample No. : MSKNB/ED/2023-24/03/C924ET

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	0.02
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.13
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature

P. Ganguly

Name

Ms. Priat Ganguly

Designation

Executive Chemist

Authorized Signatory

Signature

Dr. Soumyadeep Mukhopadhyay

Name

Designation

Lab In charge

The results relate only to the item(s) tested.

This Test Report shall not be reproduced except in full, without the permission of Mitra S.K. Private Limited.

The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 3 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report. The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shreech Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel. : 91 33 40143000 / 22050007 Fax : 91 33 22680008
Email : info@mitrask.com Website : www.mitrask.com



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

M/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

Date :

Sample No. :

Reference No. & Date :

MSKGL/ED/2023-24/005561

27/03/2024

MSKGL/ED/2023-24/03/00621

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Water
3. Unique Identification of sample(if any)	Bamboori Iron & Mtn. Mines (BIMM)
4. Date of sampling	15/03/2024
5. Place of sampling	Near Joribari Shoring Yard (BIMM)
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/005561

Sample No. : MSKGL/ED/2023-24/03/00621

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	15.6
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.51
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	21.4
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL 200 D)
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	197
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24),2019 (O)	60 24 HR.	95
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	7.6

END

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Address of Laboratory :

Building No. P-48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



Scan for Portal



ULR: TC-695024000006207F

Name & Address of Customer :

Tata Steel Ltd.(MGM)_India West

At/Po. :-Joda, Dist. :-Keonjhar, Odisha -758034 India

TEST REPORT

Report No. :

Date :

Sample No. :

Date of receipt of sample:

Date(s) of performance:

Location of performance of

Reference No. & Date :

Discipline:

MSKPL/ED/2023-24/51604D

26/03/2024

MSKNB/ED/2023-24/03/BE251S

18/03/2024

18/03/2024 - 26/03/2024

Permanent Facility

3000156017/056, Date - 16/09/2023

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	15/03/2024
5. Place of sampling	Near Jonibar Weigh Bridge (BIMM)
6. Environmental conditions during sampling & Transport	1) Temperature :18-33 deg C 2) Baromet/c Pressure: 711 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS 5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Lalin Kumar Naik
9. Field Equipments Used	MSK/BBL/FIELD/RDS-11

Report No. : MSKPL/ED/2023-24/51604D

Sample No. : MSKNB/ED/2023-24/03/BE251S

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	0.05
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.28
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	34.2

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name

Designation

Ms. Priti Ganguly
Executive Chemist

Authorized Signatory:

Signature

Name

Designation

Dr. Somnath Mukhopadhyay
Lab in charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Vial, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: 6th Floor, 7th Floor, 74B, A.J.C. Bose Road, Kolkata - 700015, West Bengal, India
Tel : 91 33 40143000 / 22650007 Fax : 91 33 22650000
Email : info@mitrask.com Website : www.mitrask.com



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM) Joda West

A/Po. - Joda Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/005560

Date :

27/03/2024

Sample No. :

MSKGL/ED/2023-24/03/00620

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Water
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines (BIMM)
4. Date of sampling	15/03/2024
5. Place of sampling	Near Joribar Weigh Bridge (BIMM)
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA


Report No. : MSKGL/ED/2023-24/005560**Sample No. :** MSKGL/ED/2023-24/03/00620

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	15.8
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.56
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	22.3
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL-20.0)
5	Particulate Matter (<10µm)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	202
6	Particulate Matter (<2.5µm)	micro gm/m ³	IS 5182 (PT-24), 2018 (O)	60 24 HR.	98
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	60 24 HR.	7.9

— END —

Report Verified By**For Mitra S. K. Private Limited**
Authorised Signatory

Mitra S. K. Private Limited

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel : +91 7044036120
Email: udayanlab@mitrask.com



TC-8950

Doc No.: MSK/GEN/16/07



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ULR: TC-895024000005206F

Name & Address of Customer :

Tata Steel Ltd. (MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

TEST REPORT

Report No. :

Date :

Sample No. :

Date of receipt of sample:

Date(s) of performance:

Location of performance of

Reference No. & Date :

Discipline:

MSKPL/ED/2023-24/M1604P

28/03/2024

MSKNB/ED/2023-24/03/5M24FL

18/03/2024

18/03/2024 - 26/03/2024

Permanent Facility

3000156017/056, Date - 16/09/2023

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	15/03/2024
5. Place of sampling	Near Project Office (BIMM)
6. Environmental conditions during sampling & Transport	1) Temperature :18-33 deg C 2) Barometric Pressure: 711 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS 5182(P-11, 12) & USEPA
8. Identification of the personnel performing sampling by MSK	Lalin Kumar Naik
9. Field Equipments Used	MSK/BBU/FIELD/RDS-5

Report No. : MSKPL/ED/2023-24/M1604P

Sample No. : MSKNB/ED/2023-24/03/5M24FL

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	0.04
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.23
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	9.9

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature : P. Ganguly

Name : Ms. Piali Ganguly

Designation : Executive Chemist

Authorized Signatory:

Signature :

Name :

Dr. Soumyadeep Mukhopadhyay

Designation : Lab In charge

The results relate only to the item(s) tested.

This Test Report shall not be reproduced except in full, without the permission of Mitra S.K. Private Limited.

The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shreech Chandra (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel : 91 33 40143000 / 22650007 Fax : 91 33 22650000
Email : info@mitrask.com Website : www.mitrask.com



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd (MGM) Joda West

AI/PO, - Joda, Dist. - Keonjhar, Odisha - 758034 (India Pin)

Report No. :

Date :

Sample No. :

Reference No. & Date :

MSKGL/ED/2023-24/005571

27/03/2024

MSKGL/ED/2023-24/03/00619

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamabari Iron & Mn. Mines (BIMM)
4. Date of sampling	15/03/2024
5. Place of sampling	Near Project Office (BIMM)
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/005571

Sample No. : MSKGL/ED/2023-24/03/00619

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH3)	micro gm/m3	IS 5182 (Part 25)	400 24 HR.	15.8
2	Carbon Monoxide (CO)	mg/m3	IS: 5182 (Part 10) (O)	2 8HR.	0.51
3	Nitrogen Dioxide (NO2)	micro gm/m3	IS: 5182 (Part 6) (O)	80 24 HR.	23.1
4	Ozone (O3)	micro gm/m3	IS 5182 (Part 9)	180 1 HR.	BOL(DL-20.0)
5	Particulate Matter (<10um)	micro gm/m3	IS: 5182 (Part 23) (O)	100 24 HR.	226
6	Particulate Matter (<2.5um)	micro gm/m3	IS 5182 (PT-24),2019 (O)	60 24 HR.	109
7	Sulphur Dioxide (SO2)	micro gm/m3	IS: 5182 (Part 2) (O)	80 24 HR.	8.2

END

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel : +91 7044038120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000005212F

TEST REPORT**Name & Address of Customer :**

Tata Steel Ltd. (MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/91604S

Date :

26/03/2024

Sample No. :

MSKNB/ED/2023-24/03/R6250L

Date of receipt of sample:

18/03/2024

Date(s) of performance:

18/03/2024 - 26/03/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 18/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	15/03/2024
5. Place of sampling	Near Back Filling Yard Barnabari (BIMM)
6. Environmental conditions during sampling & Transport	1) Temperature :18-33 deg C 2) Barometric Pressure: 711 mm of Hg 3) Rain fall
7. Sampling Plan & Method used	No & Cold Chain Maintained
8. Identification of the personnel performing sampling by MSK	IS-5182(P-11,12) & USEPA
9. Field Equipments Used	Lalin Kumar Naik
	MSK/BBL/FIELD/RDS-17

Report No. : MSKPL/ED/2023-24/91604S**Sample No. :** MSKNB/ED/2023-24/03/R6250L**RESULT****Chemical**

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.10
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

----- END -----

Reviewed By:

Signature: P. Ganguly

Name: Mr. Pull Ganguly

Designation: Executive Chemist

Authorized Signatory

Signature:

Name: Dr. Soumyajit Mukherjee

Designation: Lab In charge

The results relate only to the item(s) tested.

This Test Report shall not be reproduced except in full, without the permission of Mitra S.K. Private Limited.

The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office:

Shree Centre (5th Floor), 74B, A J C. Bose Road, Kolkata - 700015, West Bengal, India.

Tel : 91 33 40143000 / 22650007 Fax : 91 33 22650005

Email : info@mitrask.com Website : www.mitrask.com

Address of Branch :

P.O. Barbil Dt Keonjhar Orissa 758 035



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd, (MGM) Joda West

AVPo, - Joda, Dist - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/005562

Date :

27/03/2024

Sample No. :

MSKGL/ED/2023-24/03/00625

Reference No. & Date :

3000156017/056, Date - 16/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Water
3. Unique Identification of sample(if any)	Bamabari Iron & Mn. Mines (BIMM)
4. Date of sampling	15/03/2024
5. Place of sampling	Near Back Filling Yard Bamabari (BIMM)
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/005562

Sample No. : MSKGL/ED/2023-24/03/00625

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	14.8
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.57
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	20.6
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL 20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	182
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24), 2019 (O)	60 24 HR.	67
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	7.5

— END —

Report Verified By 

For Mitra S. K. Private Limited


Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044038120
Email: udayanlab@mitrask.com



TC-6950



Scan for Portal

ULR: TC-695024000005980F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM), Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPU/ED/2024-25/72L22M

Date :

03/04/2024

Sample No. :

MSKNB/ED/2023-24/03/V036DF

Date of receipt of sample:

26/03/2024

Date(s) of performance:

26/03/2024 - 03/04/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	21/03/2024
5. Place of sampling	Near Back Filling Yard Bamebari (B/MM)
6. Environmental conditions during sampling & Transport	1) Temperature : 19-31 deg C 2) Barometric Pressure: 712 mm of Hg 3) Rain fall - No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Mukesh Highburi
9. Field Equipments Used	MSK/BBU/FIELD/RDS-17

Report No. : MSKPU/ED/2024-25/72L22M

Sample No. : MSKNB/ED/2023-24/03/V036DF

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.10
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion :

Limit as per GPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name

Designation

Mr. Pail Ganguly
Executive Chemist

Authorized Signatory:

Signature

Name

Designation

Dr. Soumyajit Mukhopadhyay

Lab in charge

The results relate only to the item(s) tested

This Test Report shall not be reproduced except in full, without the permission of Mitra S.K. Private Limited.

The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per GPCB guideline & (Air) 1 month from the date of issue of the Test Report. The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Service Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India
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Address of Branch :

P.O. Bartil Di Keonjhar Onessa 758 035



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGN), Joda West

Al/Pu, - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/005635

Date :

30/03/2024

Sample No. :

MSKGL/ED/2023-24/03/00886

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample (if any)	Bamebari Iron & Mn. Mines (BIMM)
4. Date of sampling	22/03/2024
5. Place of sampling	Back Filling Yard Bamebari (BIMM)
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/005635

Sample No. : MSKGL/ED/2023-24/03/00886

RESULT

Analysis Result of Ambient Air

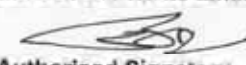
Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	14.3
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.58
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	21.2
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL-20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	187
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24), 2019 (O)	60 24 HR.	90
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 21) (O)	80 24 HR.	5.0

— END —

Report Verified By



For Mitra S. K. Private Limited


 Authorised Signatory

Address of Laboratory :

Building No. P-48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-8960



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ULR: TC-695024000005976F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd (MGM)_Joda West

A/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2024-25/KAL22S

Date :

03/04/2024

Sample No. :

MSKNB/ED/2023-24/03/9236EB

Date of receipt of sample:

26/03/2024

Date(s) of performance:

26/03/2024 - 03/04/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000166017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	21/03/2024
5. Place of sampling	Near Joribar Shorting Yard (BIMM)
6. Environmental conditions during sampling & Transport	1) Temperature : 19-31 deg C 2) Barometric Pressure: 712 mm of Hg 3) Rain fall No & Cold Chain Maintained
7. Sampling Plan & Method used	IS-5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Mukesh Highburi
9. Field Equipments Used	MSK/BBL/FIELD/RDS-12

Report No. : MSKPL/ED/2024-25/KAL22S

Sample No. : MSKNB/ED/2023-24/03/9236EB

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.13
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	7.2

Opinion : Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

END

Reviewed By:

Signature:

Name: Ms. Priya Ganguly

Designation: Executive Chemist

Authorized Signatory:

Signature:

Name: Dr. Soumyajit Mukhopadhyay

Designation: Lab In charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report. The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM), Joda West

AVPo. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/005633

Date :

30/03/2024

Sample No. :

MSKGL/ED/2023-24/03/00875

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample (if any)	Bamabari Iron & Mn. Mines (BIMM)
4. Date of sampling	21/03/2024
5. Place of sampling	Near Joribar Shoring Yard (BIMM)
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/005633

Sample No. : MSKGL/ED/2023-24/03/00875

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	16.2
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.53
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	22.1
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL-20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	243
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24), 2019 (O)	60 24 HR.	132
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	9.0

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000005975F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

AVPo. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2024-25/GVF22A

Date :

03/04/2024

Sample No. :

MSKNB/ED/2023-24/03/3C369C

Date of receipt of sample:

26/03/2024

Date(s) of performance:

26/03/2024 - 03/04/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	21/03/2024
5. Place of sampling	Near Jonbar Weigh Bridge (BIMM)
6. Environmental conditions during sampling & Transport	1) Temperature : 18-31 deg C 2) Barometric Pressure: 712 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Mukesh Highburi
9. Field Equipments Used	MSK/BBU/FIELD/RDS-11

Report No. : MSKPL/ED/2024-25/GVF22A

Sample No. : MSKNB/ED/2023-24/03/3C369C

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	0.02
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.40
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name

Designation

Ms. Priya Ganguly

Executive Chemist

Authorized Signatory:

Signature

Name

Designation : Lab In charge

Dr. Soumya Bose Mukhopadhyay

The results relate only to the item(s) tested.

This Test Report shall not be reproduced except in full, without the permission of Mitra S.K. Private Limited.

The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 7 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Wastes) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report. The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

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TEST REPORT**Name & Address of Customer :**

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034, India Pin

Report No. :

MSKGL/ED/2023-24/005632

Date :

30/03/2024

Sample No. :

MSKGL/ED/2023-24/03/00874

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines (BIMM)
4. Date of sampling	21/03/2024
5. Place of sampling	Near Joribar Weigh Bridge (BIMM)
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/005632**Sample No. :** MSKGL/ED/2023-24/03/00874**RESULT****Analysis Result of Ambient Air**

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	15.8
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.59
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	22.6
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL:20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	206
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24).2019 (O)	80 24 HR.	99
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	8.1

— END —

Report Verified By



For Mitra S. K. Private Limited


Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel : +91 7044036120
Email: udayanlab@mitrasrk.com



TC-6950



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URL: TC-69502400005974F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM) Joda West

A/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2024-25/SW622W

Date :

03/04/2024

Sample No. :

MSKNB/ED/2023-24/03/2336A4

Date of receipt of sample:

26/03/2024

Date(s) of performance:

26/03/2024 - 03/04/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000158017/058, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	21/03/2024
5. Place of sampling	Near Project Office (BIMM)
6. Environmental conditions during sampling & Transport	1) Temperature : 19-31 deg C 2) Barometric Pressure: 712 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS: 5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Mukesh Highburu
9. Field Equipments Used	MSK/BBU/FIELD/RDS-5

Report No. : MSKPL/ED/2024-25/SW622W

Sample No. : MSKNB/ED/2023-24/03/2336A4

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	5 (Annual)	BDL(DL-1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL-4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL-0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL-0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.27
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL-5.0)

Opinion : Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

----- END -----

Reviewed By:

Signature

Name

Designation

Mr. P. Ganguly

Executive Chemist

Authorized Signatory:

Signature

Name

Designation : Lab in charge

Dr. Soumen Deep Mukhopadhyay

The results relate only to the item(s) tested.

This Test Report shall not be reproduced except in full, without the permission of Mitra S.K. Private Limited.

The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Toxic, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 4 month from the date of issue of the Test Report. The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Service Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700015, West Bengal, India
Tel : 91 33 40143000 / 22660007 Fax : 91 33 22660008
Email : info@mitrasrk.com Website : www.mitrasrk.com

Address of Branch :

P.O. Barbil Dist. Keonjhar Orissa 758 035



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM), Joda West

Al/Pu, - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/005627

Date :

30/03/2024

Sample No. :

MSKGL/ED/2023-24/03/00173

Reference No. & Date :

3000158017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:-

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines (BIMM)
4. Date of sampling	21/03/2024
5. Place of sampling	Near Project Office (BIMM)
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/005627

Sample No. : MSKGL/ED/2023-24/03/00873

RESULT**Analysis Result of Ambient Air**

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HRL	15.7
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HRL	0.53
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HRL	24.2
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HRL	BOL(DL:20/g)
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HRL	222
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24).2019 (O)	60 24 HRL	120
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HRL	7.9

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Head Office:

 Shree Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India
 Tel. : 91 33 40143000 / 22650007 Fax : 91 33 22650058
 Email : info@mitrask.com Website : www.mitrask.com

Page 1 of 1

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitraak.com



TC-6950



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ULR: TC-695024000005987F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po : Joda, Dist. : Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2024-25/FV1222

Date :

03/04/2024

Sample No. :

MSKNB/ED/2023-24/03/TY36E9

Date of receipt of sample:

26/03/2024

Date(s) of performance:

26/03/2024 - 03/04/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	22/03/2024
5. Place of sampling	Near Back Filling Yard Barabari (BIMM)
6. Environmental conditions during sampling & Transport	1) Temperature :18-31 deg C 2) Barometric Pressure: 713 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pratik Kr Mantri
9. Field Equipments Used	MSK/BBL/FIELD/RDS-17

Report No. : MSKPL/ED/2024-25/FV1222

Sample No. : MSKNB/ED/2023-24/03/TY36E9

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.13
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion : Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

----- END -----

Reviewed By:

Signature

Name

Designation

Ms. Priat Ganguly
Executive Chemist

Authorized Signatory:

Signature

Name

Designation

Dr. Soumyadeep Mukhopadhyay
Lab in charge

This results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 3 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed Food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shreeji Centre (5th Floor), T4B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.

Tel. : 91 33 40143000 / 22650007 Fax : 91 33 22650008

Email : info@mitraak.com Website : www.mitraak.com

Address of Branch :

P. O. Barhal Di Keonjhar Orissa 758 035



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGML) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/005631

Date :

30/03/2024

Sample No. :

MSKGL/ED/2023-24/03/00880

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique identification of sample(if any)	Bamebari Iron & Mn. Mines (BIMM)
4. Date of sampling	22/03/2024
5. Place of sampling	Back Filling Yard Bamebari (BIMM)
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/005631

Sample No. : MSKGL/ED/2023-24/03/00880

RESULT

Analysis Result of Ambient Air

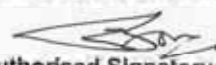
Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	14.8
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.63
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	20.7
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BOL(DL 20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	178
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24), 2019 (O)	60 24 HR.	94
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	<6.0

— END —

Report Verified By



For Mitra S. K. Private Limited


 Authorised Signatory

Address of Laboratory :

Building No. P-48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6960



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ULR: TC-695024000005983F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

A/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2024-25/AWF229

Date :

03/04/2024

Sample No. :

MSKNB/ED/2023-24/03/9V36BP

Date of receipt of sample:

26/03/2024

Date(s) of performance:

26/03/2024 - 03/04/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000158017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	22/03/2024
5. Place of sampling	Near Joribar Shorting Yard (BIMM)
6. Environmental conditions during sampling & Transport	1) Temperature :18-31 deg C 2) Barometric Pressure: 713 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pratik Kr Mantri
9. Field Equipments Used	MSK/SBL/FIELD/RDS-12

Report No. : MSKPL/ED/2024-25/AWF229

Sample No. : MSKNB/ED/2023-24/03/9V36BP

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	0.03
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.16
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	21.4

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

----- END -----

Reviewed By:

Signature

Name : Mr. Prati Ganguly

Designation : Executive Chemist

Authorized Signatory:

Signature

Name : Dr. Soumyadeep Mondal

Designation : Lab in charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report. The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Service Centre (5th Floor, 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India
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Email: info@mitrask.com Website: www.mitrask.com



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TEST REPORT**Name & Address of Customer :**

Tata Steel Ltd. (MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/005624

Date :

30/03/2024

Sample No. :

MSKGL/ED/2023-24/03/00882

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample (if any)	Banebari Iron & Mn. Mines (BIMM)
4. Date of sampling	22/03/2024
5. Place of sampling	Near Joribar Shoring Yard (BIMM)
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/005624**Sample No. :** MSKGL/ED/2023-24/03/00882**RESULT****Analysis Result of Ambient Air**

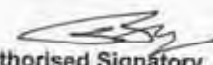
Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	15.3
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.54
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	22.7
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	100 1 HR.	BDL (DL 20.0)
5	Particulate Matter (<10µm)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	198
6	Particulate Matter (<2.5µm)	micro gm/m ³	IS 5182 (PT-24) 2019 (O)	60 24 HR.	84
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	6.9

— END —

Report Verified By



For Mitra S. K. Private Limited



 Authorised Signatory

Address of Laboratory :

Building No. P-48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



Scan for Portal

ULR: TC-695024000005982F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

A/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2024-25/TG222W

Date :

03/04/2024

Sample No. :

MSKNB/ED/2023-24/03/6A369Z

Date of receipt of sample:

26/03/2024

Date(s) of performance:

26/03/2024 - 03/04/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000158017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	22/03/2024
5. Place of sampling	Near Joribar Weigh Bridge (BIMM)
6. Environmental conditions during sampling & Transport	1) Temperature :16-31 deg C 2) Barometric Pressure: 713 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pratik Kr Mantri
9. Field Equipments Used	MSK/BBL/FIELD/RDS-11

Report No. : MSKPL/ED/2024-25/TG222W

Sample No. : MSKNB/ED/2023-24/03/6A369Z

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	0.04
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.33
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	9.3

Opinion : Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

----- END -----

Reviewed By:

Signature

Name Ms. Priya Ganguly

Designation Executive Chemist

Authorized Signatory:

Signature

Name Dr. Soumyadeep Mukhopadhyay

Designation Lab In charge

The results relate only to the item(s) tested.

This Test Report shall not be reproduced except in full, without the permission of Mitra S.K. Private Limited.

The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report. The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Bhadrachal Centre (5th Floor), 748, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India
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Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/ Po. - Joda. Dist - Keonjhar, Odisha - 758034 - India Pin

TEST REPORT

Report No. :

MSKGL/ED/2023-24/005634

Date :

30/03/2024

Sample No. :

MSKGL/ED/2023-24/03/00881

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines (BIMM)
4. Date of sampling	22/03/2024
5. Place of sampling	Near Joribar Weigh Bridge (BIMM)
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/005634

Sample No. : MSKGL/ED/2023-24/03/00881

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH3)	micro gm/m3	IS 5182 (Part 25)	400 24 HR.	16.2
2	Carbon Monoxide (CO)	mg/m3	IS: 5182 (Part 10) (O)	2 8HR.	0.55
3	Nitrogen Dioxide (NO2)	micro gm/m3	IS: 5182 (Part 6) (O)	80 24 HR.	21.4
4	Ozone (O3)	micro gm/m3	IS 5182 (Part 9)	160 1 HR.	BDL(DL:20.0)
5	Particulate Matter (<10um)	micro gm/m3	IS: 5182 (Part 23) (O)	100 24 HR.	207
6	Particulate Matter (<2.5um)	micro gm/m3	IS 5182 (PT-24).2019 (O)	60 24 HR.	130
7	Sulphur Dioxide (SO2)	micro gm/m3	IS: 5182 (Part 2) (O)	80 24 HR.	8.0

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Address of Laboratory :

Building No. P-48, Udayan Industrial Estate,
3, Enkladanga Road, Kolkata 700015
West Bengal
Tel : +91 7044036120
Email: udayanlab@mitrask.com



TC-5950



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ULR: TC-695024000005961F

TEST REPORT**Name & Address of Customer :**

Tata Steel Ltd.(MGM)_Joda West

AMPO - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2024-25/16C22H

Date :

03/04/2024

Sample No. :

MSKNB/ED/2023-24/03/0L36FC

Date of receipt of sample:

26/03/2024

Date(s) of performance:

26/03/2024 - 03/04/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	22/03/2024
5. Place of sampling	Near Project Office (BIMM)
6. Environmental conditions during sampling & Transport	1) Temperature : 18-31 deg C 2) Barometric Pressure: 713 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pratik Kr Mantri
9. Field Equipments Used	MSK/BBL/FIELD/RDS-5

Report No. : MSKPL/ED/2024-25/16C22H

Sample No. : MSKNB/ED/2023-24/03/0L36FC

RESULT**Chemical**

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	0.02
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.20
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion : Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

----- END -----

Reviewed By:

Signature

Name

Designation

Ms. Priya Ganguly

Executive Chemist

Authorized Signatory:

Signature

Name

Designation : Lab in charge

Dr. Soumyajit Mishra

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report. The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Disinfectant, Bactericidal food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shree Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India
Tel : 91 33 40143000 / 22050007 Fax : 91 33 22690006
Email : info@mitrask.com Website : www.mitrask.com



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TEST REPORT**Name & Address of Customer :**

Tata Steel Ltd.(MGM) ,Jwda West

At/Po. : Jwda, Dist. - Koorijhar, Odisha - 758034 - India Pin

Report No. :

MSKGL/ED/2023-24/005626

Date :

30/03/2024

Sample No. :

MSKGL/ED/2023-24/03/00879

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique identification of sample(if any)	Bamebari Iron & Mn. Mines (BIMM)
4. Date of sampling	22/03/2024
5. Place of sampling	Near Project Office (BIMM)
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/005626**Sample No. :** MSKGL/ED/2023-24/03/00879**RESULT****Analysis Result of Ambient Air**

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	15.2
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 16) (O)	2 8HR.	0.51
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	23.6
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL 20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	218
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24),2019 (O)	60 24 HR.	104
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	8.1

— END —

Report Verified By**For Mitra S. K. Private Limited****Authorised Signatory**

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000004686F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM) Joda West

AI/PO - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/515176

Date :

20/03/2024

Sample No. :

MSKNB/ED/2023-24/03/LL1460

Date of receipt of sample:

11/03/2024

Date(s) of performance:

11/03/2024 - 20/03/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	09/03/2024
5. Place of sampling	Jaroli High School
6. Environmental conditions during sampling & Transport	1) Temperature : 15-32 deg C 2) Barometric Pressure: 713 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS 5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pratik Mantri
9. Field Equipments Used	MSK/BBL/FIELD/RDS-14

Report No. : MSKPL/ED/2023-24/515176

Sample No. : MSKNB/ED/2023-24/03/LL1460

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	0.02
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.30
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion : Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name : Dr. Devottam Banerjee

Designation : Technical In Charge

Authorized Signatory

Signature

Name : Dr. Devottam Banerjee

Designation : Technical In Charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 3 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shree Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel. : 91 33 40143000 / 22650007 Fax: 91 33 22660008
Email : info@mitrask.com Website : www.mitrask.com



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/005419

Date :

21/03/2024

Sample No. :

MSKGL/ED/2023-24/03/00340

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamabari Iron & Mn. Mines (BIMM)
4. Date of sampling	08/03/2024
5. Place of sampling	Jaroli High School
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/005419**Sample No. :** MSKGL/ED/2023-24/03/00340

RESULT

Analysis Result of Ambient Air


Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	BDL(DL:10.0)
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.31
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	15.9
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL:20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	153
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24) 2019 (O)	60 24 HR.	55
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	BDL(DL:8.0)

— END —

Report Verified By



For Mitra S. K. Private Limited


Authorised Signatory**Head Office:**3/Resda Corral (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India
Tel : 81 33 80143000 / 26660001 / Fax : 81 33 22650005
Email : info@msk.com Website : www.mitrask.com

Page 1 of 1

Address of Laboratory :

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West Bengal
Tel : +91 7044038120
Email: udayanlab@mitraskl.com



TC-6950



Scan for Portal

ULR: TC-69502400004685F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

A/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/U1517P

Date :

20/03/2024

Sample No. :

MSKNB/ED/2023-24/03/38145F

Date of receipt of sample:

11/03/2024

Date(s) of performance:

11/03/2024 - 20/03/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/058, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	09/03/2024
5. Place of sampling	Jajang High School
6. Environmental conditions during sampling & Transport	1) Temperature : 15-32 deg C 2) Barometric Pressure: 713 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5162(P-11, 12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pratik Mantri
9. Field Equipments Used	MSK/BBL/FIELD/RDS-9

Report No. : MSKPL/ED/2023-24/U1517P

Sample No. : MSKNB/ED/2023-24/03/38145F

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.10
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion : Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

END

Reviewed By:

Signature

Name : Dr. Devdham Banerjee

Designation : Technical In Charge

Authorized Signatory:

Signature

Name : Dr. Devdham Banerjee

Designation : Technical In Charge

The results relate only to the item(s) tested

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 3 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report. The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shree Ganga (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Orissa - 758034 India Pin

Report No. :

Date :

Sample No. :

Reference No. & Date :

MSKGL/ED/2023-24/005416

21/03/2024

MSKGL/ED/2023-24/03/00339

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample (if any)	Bamebar Iron & Mn. Mines (BIMM)
4. Date of sampling	09/03/2024
5. Place of sampling	Jajiang High School
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/005416

Sample No. : MSKGL/ED/2023-24/03/00339

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	BDL(DL:10.)
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 16) (O)	2 8HR.	0.28
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	15.2
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL:20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	167
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24) 2019 (O)	80 24 HR.	71
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	BDL(DL:6.0)

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000005988F



TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

Al/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2024-25/KW9228

Date :

03/04/2024

Sample No. :

MSKNB/ED/2023-24/03/8G3692

Date of receipt of sample:

26/03/2024

Date(s) of performance:

26/03/2024 - 03/04/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique identification of sample(if any)	NA
4. Date of sampling	23/03/2024
5. Place of sampling	Barabari SSVN School
6. Environmental conditions during sampling & Transport	1) Temperature :19-33 deg C 2) Barometric Pressure: 712 mm of Hg 3) Rain fall: No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11, 12) & USEPA
8. Identification of the personnel performing sampling by MSK	Dhambudhar Das
9. Field Equipments Used	MSK/BBL/FIELD/RDS-13

Report No. : MSKPL/ED/2024-25/KW9228

Sample No. : MSKNB/ED/2023-24/03/8G3692

RESULT

Chemical					
Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.17
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:3.0)

Opinion : Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

END

Reviewed By:

Signature

Name Mr. Piali Ganguly

Designation Executive Chemist

Authorized Signatory:

Signature

Name Dr. Soumyadip Mukhopadhyay

Designation Lab In charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 7 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shri Krishna Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
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Email : info@mitrask.com Website : www.mitrask.com

Address of Branch :

P.O. Barbil Dt.Kaonjhar Orissa 755 035



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM), Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/005630

Date :

30/03/2024

Sample No. :

MSKGL/ED/2023-24/03/00887

Reference No. & Date :

3000158017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique identification of sample(if any)	Bamebari Iron & Mn. Mines (BIMM)
4. Date of sampling	23/03/2024
5. Place of sampling	Bamebari SSVM School
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/005630

Sample No. : MSKGL/ED/2023-24/03/00887

RESULT

Analysis Result of Ambient Air


Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	BDL(DL:10.)
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.59
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	18.1
4	Ozone (O ₃)	micro gm/m ³	IS:5182 (Part 9)	180 1 HR.	BDL(UL:20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	221
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24),2019 (O)	60 24 HR.	124
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	BDL(DL:6.0)

— END —

Report Verified By



For Mitra S. K. Private Limited


 Authorised Signatory

Address of Laboratory :

Building No. P-48, Udayan Industrial Estate
3 Pagladanga Road, Kolkata 700015
West Bengal
Tel : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000006285F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd (MGM), Joda West
JALPO - Joda Dist - Keonjhar, Odisha - 758034, India

Report No. :

MSKPL/ED/2024-25/KV152V

Date :

06/04/2024

Sample No. :

MSKNB/ED/2023-24/03/VL494H

Date of receipt of sample:

31/03/2024

Date(s) of performance:

01/04/2024 - 05/04/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	30/03/2024
5. Place of sampling	Near Back Filling Yard Bamebari (BIMM)
6. Environmental conditions during sampling & Transport	1) Temperature: 20-35 deg C 2) Barometric Pressure: 113 mm of Hg 3) Rain fall: No & Cold Chain Maintained
7. Sampling Plan & Method used	IS 5182(P-11, 12) & USEPA
8. Identification of the personnel performing sampling by MSK	Dhambrodtar Das
9. Field Equipments Used	MSK/BBL/FIELD/RDS-17

Report No. : MSKPL/ED/2024-25/KV152V

Sample No. : MSKNB/ED/2023-24/03/VL494H

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	5 (Annual)	BDL(DL: 1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL: 2)
3	Benz(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL: 0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL: 0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.10
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL: 0.5)

Opinion: Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

----- END -----

Reviewed By

Signature

Name: Mr. Pab Ganguly

Designation: Executive Chemist

Authorized Signatory

Signature

Name

Designation

Dr. Sumanjit Bhattacharya
Lab in charge

This result is only valid to the extent stated.

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The retained part of sample(s) for chemical analysis (Non-perishable sample(s): Soil, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The retained part of sample(s) for chemical analysis (Soil: Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 4 months from the date of issue of the Test Report.

The retained part of sample(s) for Microbiological analysis (Non-perishable sample(s): Food, Treated Water, Sewage) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Greentown (Hill Park), 74B, A-2 C, Bose Road, Kolkata - 700015, West Bengal, India
Tel: +91 33 49143000 / 22950007 Fax: +91 33 22550009
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Mitra S. K. Private Limited

Address of Branch :

P.O. Barbil Dt Keonjhar Orissa 758 035



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

At/ Po. : Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

Date :

Sample No. :

Reference No. & Date :

MSKGL/ED/2024-25/000023

03/04/2024

MSKGL/ED/2023-24/03/01181

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Barnabari Iron & Mn. Mines (BIMM)
4. Date of sampling	30/03/2024
5. Place of sampling	Near Back Filling Yard Barnabari (BIMM)
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2024-25/000023

Sample No. : MSKGL/ED/2023-24/03/01181

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	14.7
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.51
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	21.3
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL:20.0)
5	Particulate Matter (<10µm)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	188
6	Particulate Matter (<2.5µm)	micro gm/m ³	IS 5182 (PT-24),2019 (O)	80 24 HR.	90
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	7.8

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Head Office: Branch Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700012, West Bengal, India.
Tel. : 91 33 40143000 / 22550007 Fax : 91 33 22550003
Email : info@mitras.com Website : www.mitrask.com

Page 1 of 1



Address of Laboratory :

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3, Paaladanga Road, Kolkata 700015
West Bengal
Tel : +91 7044035120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000006281F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd (MGM) Joda West

At/Po : Joda, Dist : Keonjhar Odisha - 758004 India

Report No. :

MSKPL/ED/2024-25/1RH52C

Date :

06/04/2024

Sample No. :

MSKNB/ED/2023-24/03/A94960

Date of receipt of sample:

01/04/2024

Date(s) of performance:

01/04/2024 - 06/04/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000158017/055 Date : 18/08/2022

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	30/03/2024
5. Place of sampling	Near Jorbar Shoring Yard (BIMM)
6. Environmental conditions during sampling & Transport	1) Temperature: 20-35 deg C 2) Barometric Pressure: 713 mm of Hg 3) Rain fall: No & Cold Chain Maintained
7. Sampling Plan & Method used	IS 5182(P-11, 12) & USEPA
8. Identification of the personnel performing sampling by MSK	Chandrabudhar Das
9. Field Equipments Used	MSK/BBL/FIELD/ROS-12

Report No. : MSKPL/ED/2024-25/1RH52C

Sample No. : MSKNB/ED/2023-24/03/A94962

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.10
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion : Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

----- END -----

Reviewed By:

Signature

Name

Designation

P. Ganguly
Mr. Pabi Ganguly
Executive Chemist

Authorized Signatory

Signature

Name

Designation

Dr. Chandrabudhar Das
Dr. Chandrabudhar Das
Lab in charge

This results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s): Food, Water) shall be retained for 15 days from the date of issue of the Test Report. The sample(s) shall be retained 12 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Non - Solid & Liquid Vessel) shall be retained for 15 days as per CPCB guideline & (A)/1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s): Food, Sealed Water, Sealed Food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office:

Satyam Centre (4th Floor), 74B, A J C Bose Road, Kolkata - 700015, West Bengal, India
Tel : 91 33 40143000 / 22550007 Fax : 91 33 22650006
Email: info@mitrask.com Website: www.mitrask.com

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Address of Branch :

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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

A/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2024-25/000027

Date :

03/04/2024

Sample No. :

MSKGL/ED/2023-24/03/01177

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:-

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines (BIMM)
4. Date of sampling	30/03/2024
5. Place of sampling	Near Joribar Shoring Yard (BIMM)
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2024-25/000027

Sample No. : MSKGL/ED/2023-24/03/01177

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	16.2
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.55
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	23.5
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL 20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	212
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24), 2019 (O)	60 24 HR.	104
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	8.2

— END —

Report Verified By

For Mitra S. K. Private Limited


Authorised Signatory



Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel : +91 7044036120
Email : udayanlab@msk.com



TC-6950



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ULR: TC-695024000006280F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd (MGM) Joda West

45/Po - Joda, Dist - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2024-25/00E520

Date :

06/04/2024

Sample No. :

MSKNB/ED/2023-24/03/7K495C

Date of receipt of sample:

01/04/2024

Date(s) of performance:

01/04/2024 - 06/04/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	30/03/2024
5. Place of sampling	Near Jorbar Weigh Bridge (BIMM)
6. Environmental conditions during sampling & Transport	1) Temperature 20-35 deg C 2) Barometric Pressure: 713 mm of Hg 3) Rain fall No. & Cold Chain Maintained
7. Sampling Plan & Method used	IS 5182(P-11, 12) & USEPA
8. Identification of the personnel performing sampling by MSK	Dhambudhar Das
9. Field Equipments Used	MSK/BBLFIELD/RO5-11

Report No. : MSKPL/ED/2024-25/00E520

Sample No. : MSKNB/ED/2023-24/03/7K495C

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL-1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL-4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL-0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	0.04
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.30
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	8.1

Opinion : Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality.

Statement of Conformity : NA

----- END -----

Reviewed By

Signature

Name

Designation

P. Ganguly
Ms. P. Ganguly
Executive Chemist

Authorized Signatory

Signature

Name

Designation

Dr. Soumitra Nath
Dr. Soumitra Nath
Lab in charge

The results made only to the items tested.

This Test Report shall not be reproduced or copied in full, without the permission of Mitra S.K. Private Limited.

The reserved part of sample(s) for chemical analysis (Non-perishable sample(s): Food, Water) shall be retained for 15 days from the date of issue of the Test Report. The sample(s) shall be retained 5 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Bio: Solid & Liquid Vessels) shall be retained for 15 days as per CPCB guideline & (Aerobic) from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non-perishable sample(s): Food, Sewage Water, Stained food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: 19/19, Central Park, Floor 7th, A & C, Road Road, Kolkata - 700015, West Bengal, India
Tel : 91 33 40143000 / 22550007 Fax : 91 33 22550008
Email : info@msk.com, Website : www.msk.com

Address of Branch :

P.O. Barbil Dt Keonjhar Orissa 755 035



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

At/Po:- Joda, Dist.:- Keonjhar, Odisha - 755034 India Pin

Report No. :-

MSKGL/ED/2024-25/000029

Date :

03/04/2024

Sample No. :

MSKGL/ED/2023-24/03/01176

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines (BIMM)
4. Date of sampling	30/03/2024
5. Place of sampling	Near Jonbar Weigh Bridge (BIMM)
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2024-25/000029

Sample No. : MSKGL/ED/2023-24/03/01176

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	15.9
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.52
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	22.6
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(PL:20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	214
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24), 2019 (O)	60 24 HR.	104
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	8.0

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Address of Branch :

P.O. Barbil Dt Keonjhar Orissa 758 035



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd (MGM), Joda West

A/Po. - Joda, Dist - Keonjhar, Orissa - 758034 India Pin

Report No. :

MSKGL/ED/2024-25/000026

Date :

03/04/2024

Sample No. :

MSKGL/ED/2023-24/03/01175

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample (if any)	Banebari Iron & Mn. Mines (BIMM)
4. Date of sampling	30/03/2024
5. Place of sampling	Near Project Office (BIMM)
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2024-25/000026

Sample No. : MSKGL/ED/2023-24/03/01175

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	15.8
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.54
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	23.4
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL (DL-20.0)
5	Particulate Matter (<10µm)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	221
6	Particulate Matter (<2.5µm)	micro gm/m ³	IS 5182 (PT-24), 2019 (O)	60 24 HR.	107
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	8.1

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorized Signatory

Address of Laboratory :

Building No. P-48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel : +91 7044038120
Email: udayanlab@mitrask.com



TC-6950



Scan for Portal

ULR: TC-69502400006278F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd (MGML) Joda West

At/Po : Joda, Dist : Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2024-25/DKJ52L

Date :

06/04/2024

Sample No. :

MSKNB/ED/2023-24/03/TZ494A

Date of receipt of sample:

01/04/2024

Date(s) of performance:

01/04/2024 - 06/04/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results.

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	29/03/2024
5. Place of sampling	Near Back Filing Yard Barabani (BIMM)
6. Environmental conditions during sampling & Transport	1) Temperature: 20-35 deg C 2) Barometric Pressure: 713 mm of Hg 3) Rain fall: No & Cold Chain Maintained
7. Sampling Plan & Method used	IS 5182(P-11, 12) & USEPA
8. Identification of the personnel performing sampling by MSK	Lalini K. Naha
9. Field Equipments Used	MSK/BBL/FIELD/RDS-17

Report No. : MSKPL/ED/2024-25/DKJ52L

Sample No. : MSKNB/ED/2023-24/03/TZ494A

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL 1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	6 (Annual)	BDL(DL 4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL 0.5)
4	Lead as Pb	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL 0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.10
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL 5.0)

Opinion : Limit as per GPCB notification, New Delhi: 18th November 2009, for Ambient air quality

Statement of Conformity : NA

----- END -----

Reviewed By

Signature

Name

Designation

P. Ganguly
Mr. P. Ganguly
Executive Chemist

Authorized Signatory

Signature

Name

Designation

S. Ganguly
Dr. Soumyadip Mukherjee
Lab in charge

The results relate only to the item(s) tested.

This Test Report shall not be reproduced except in full, without the permission of Mitra S. K. Private Limited.

The reserved part of sample(s) for chemical analysis (Non - perishable sample(s)) Food, Water shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Solid, Semi & Liquid Waste) shall be retained for 15 days as per GPCB guidelines & upto 1 month from the date of issue of the Test Report. The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s)) Food, Sealed Water, Sealed Food shall be retained for 15 days from the date of issue of the Test Report.

Head Office:
Srikrishna Centre, 10th Floor, T48, A.P.C. Bore Road, Kolkata - 700016, West Bengal, India
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Mitra S. K. Private Limited

Address of Branch :

P.O. Barbel Di Keonjhar Orissa 758 035



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM) Joda West

At/ Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2024-25/000025

Date :

03/04/2024

Sample No. :

MSKGL/ED/2023-24/03/01174

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample (if any)	Bamebari Iron & Mn. Mines (BIMM)
4. Date of sampling	29/03/2024
5. Place of sampling	Near Back Filling Yard Bamebari (BIMM)
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2024-25/000025

Sample No. : MSKGL/ED/2023-24/03/01174

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	14.8
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.56
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	21.5
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BOL(DL-20.0)
5	Particulate Matter (<10µm)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	191
6	Particulate Matter (<2.5µm)	micro gm/m ³	IS 5182 (PT-24) 2019 (O)	60 24 HR.	93
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	7.2

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Head Office: Shreeji Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel : 91 33 40143000 / 22000007 Fax : 91 33 22650000
Email : info@mitrask.com Website : www.mitrask.com

Page 1 of 1

Address of Laboratory :

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West Bengal
Tel : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-69502400006274F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd (MGN) Joda West

At/To : Joda, Dist : Keonjhar, Odisha - 758034 India

Report No. :

Date :

Sample No. :

Date of receipt of sample:

Date(s) of performance:

Location of performance of

Reference No. & Date :

Discipline:

MSKPL/ED/2024-25/F6/W52Q

06/04/2024

MSKNB/ED/2023-24/03/ES492A

01/04/2024

01/04/2024 - 06/04/2024

Permanent Facility

3000156017/056, Date : 16/09/2023

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	29/03/2024
5. Place of sampling	Near Joribar Shoring Yard (BIMM)
6. Environmental conditions during sampling & Transport	1) Temperature :20-35 deg C 2) Barometric Pressure : 713 mm of Hg 3) Rain fall No & Cold Chain Maintained
7. Sampling Plan & Method used	IS 5182(P-11, 12) & USEPA
8. Identification of the personnel performing sampling by MSK	Lalit Kr Naik
9. Field Equipments Used	MSK/BBL/FIELD/RDS-12

Report No. : MSKPL/ED/2024-25/F6/W52Q

Sample No. : MSKNB/ED/2023-24/03/ES492A

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	5 (Annual)	BDL(DL 1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL 4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL 0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL 0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.13
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL 5.0)

Opinion : Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

----- END -----

Reviewed By

Signature

Name

Designation

P. Ganguly

Mr. Pali Ganguly

Executive Chemist

Authorized Signatory

Signature

Name

Designation

Dr. Soumitra Majumdar

Dr. Soumitra Majumdar

Lab in charge

The results relate only to the item(s) tested

This Test Report shall not be reproduced either in full, without the permission of Mitra S. K. Private Limited.

The reserved part of sample(s) for chemical analysis (Non-perishable samples) Forw. Wt. shall be retained for 15 days from the date of issue of the Test Report. Perishable samples shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Bio, Soil & Liquid Waste) shall be retained for 15 days as per CPCB guidelines & (Air) 1 hour from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non-perishable samples) Forw. Wt. shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shree Centre (5th Floor) 74B, A-2 C, Block Road, Kolkata - 700016, West Bengal, India
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Mitra S. K. Private Limited

Address of Branch :

P.O. Barbil Dt Koorghar Orissa 758 035



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Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

AirPo. - Joda Dist - Keonjhar, Odisha - 758034 India Pin

TEST REPORT

Report No. :

Date :

Sample No. :

Reference No. & Date :

MSKGL/ED/2024-25/000020

03/04/2024

MSKGL/ED/2023-24/03/01170

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines (BIMM)
4. Date of sampling	29/03/2024
5. Place of sampling	Near Joribar Shoring Yard (BIMM)
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2024-25/000020

Sample No. : MSKGL/ED/2023-24/03/01170

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS:5182 (Part 25)	400 24 HR.	15.8
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 16) (O)	2 8HR.	0.56
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	23.1
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL:20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	209
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24),2019 (O)	60 24 HR.	100
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	7.9

END

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Head Office: Shree Centre (5th Floor), 748, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel : 91 33 40143000 / 22650007 Fax : 81 33 22650008
Email : info@mtsk.com Website : www.mtsk.com

Page 1 of 1



Address of Laboratory :

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West Bengal
Tel: +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000066273F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

At/Plc : Joda, Dist : Keonjhar, Odisha - 756034 India

Report No. :

MSKPL/ED/2024-25/5GG521

Date :

06/04/2024

Sample No. :

MSKNB/ED/2023-24/03/18495D

Date of receipt of sample:

01/04/2024

Date(s) of performance:

01/04/2024 - 06/04/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/036 Date : 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	29/03/2024
5. Place of sampling	Near Jonbar Weigh Bridge (B/MM)
6. Environmental conditions during sampling & Transport	1) Temperature :20-35 deg C 2) Barometric Pressure :713 mm of Hg 3) Rain fall No & Cold Chain Maintained
7. Sampling Plan & Method used	IS 5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Lalin Kr Naik
9. Field Equipments Used	MSK/BBL/FIELD/RDS-11

Report No. : MSKPL/ED/2024-25/5GG521

Sample No. : MSKNB/ED/2023-24/03/18495D

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BOL(DL 1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BOL(DL 4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BOL(DL 0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	0.02
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.37
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	6.1

Opinion : Limit as per CPCB notification, New Delhi, 16th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By

Signature

Name

Designation

Mx. Paul Ganguly

Executive Chemist

Authorized Signatory

Signature

Name

Designation

Dr. Soumyajit Mukherjee

Lab In charge

The results relate only to the item(s) tested.
This Test Report shall not be reproduced except in full, without the permission of Mitra S.K. Private Limited.
The reserved part of sample(s) for chemical analysis (Non-potable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Microbiological sample(s) shall be retained 2 days from the date of issue of the Test Report.
The reserved part of sample(s) for chemical analysis (Non-potable sample(s) Food, Sealed Water, Sealed food) shall be retained for 10 days from the date of issue of the Test Report.
The reserved part of sample(s) for Microbiological analysis (Non-potable sample(s) Food, Sealed Water, Sealed food) shall be retained for 10 days from the date of issue of the Test Report.

Head Office:

Siksha Centre (24 Floor, 7th A/C) Bala Road, Kolkata - 700016, West Bengal, India
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Email: info@mitrask.com Website: www.mitrask.com

Mitra S. K. Private Limited

Address of Branch :

P.O. Barbil Dt Keonjhar Orissa 758 035



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM) Joda West

At/Po. : Joda, Dist. : Keonjhar, Odisha - 758034 India Pin

Report No. :

Date :

Sample No. :

Reference No. & Date :

MSKGL/ED/2024-25/000028

03/04/2024

MSKGL/ED/2023-24/03/01169

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample (if any)	Bamebari Iron & Mn. Mines (BIMM)
4. Date of sampling	29/03/2024
5. Place of sampling	Near Joribar Wagon Bridge (BIMM)
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2024-25/000028

Sample No. : MSKGL/ED/2023-24/03/01169

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	16.1
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.58
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 8) (O)	80 24 HR.	22.1
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	80L(DL-20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	211
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24), 2019 (O)	60 24 HR.	103
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	6.2

END

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Head Office:

Branch Centre (2nd Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel : 91 33 46143000 / 22620007 Fax : 91 33 22650000
Email : info@mitraske.com Website : www.mitrask.com

Mitra S. K. Private Limited

Dir. No. MSKGEN/1407



Address of Laboratory :

Building No. 3A-4A, Udayan Industrial Estate
3, Pajladanga Road, Kolkata 700015
West Bengal
Tel : +91 7044036120
Email: udayantab@mitrask.com



TC-6950



Scan for Portal

ULR: TC-69502400006272F

TEST REPORT

Name & Address of Customer :

Fala Steel Ltd (MGM), Joda West

At/Po - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2024-25/5BY52A

Date :

06/04/2024

Sample No. :

MSKNB/ED/2023-24/03/17490E

Date of receipt of sample :

01/04/2024

Date(s) of performance :

01/04/2024 - 06/04/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000159017/056, Date : 16/09/2023

Discipline :

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	29/03/2024
5. Place of sampling	Near Project Office (BIMM)
6. Environmental conditions during sampling & Transport	1) Temperature: 20-35 deg C 2) Barometric Pressure: 713 mm of Hg 3) Rain: 1 No. & Cold Chain Maintained
7. Sampling Plan & Method used	IS 5182(P-11, 12) & USEPA
8. Identification of the personnel performing sampling by MSK	Lalit Kr Naik
9. Field Equipments Used	MSK/BBL/FIELD/RDS-6

Report No. : MSKPL/ED/2024-25/5BY52A

Sample No. : MSKNB/ED/2023-24/03/17490E

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4 June	5 (Annual)	BDL(DL 1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL 4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	5 (Annual)	BDL(DL 0.5)
4	Lead as (Pb)	micro gm/m3	USEPA-IO 3.4 June	1 (24 Hours)	BDL(DL 0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4 June	Not Specified	0.24
6	Nickel as Ni	ng/m3	USEPA-IO 3.4 June	20 (Annual)	BDL(DL 5.0)

Opinion : Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

----- END -----

Reviewed By

Signature

Name Mr. Pankaj Ganguly

Designation Executive Chemist

Authorized Signatory

Signature

Name Dr. Sourabjit Mondal

Designation Lab in charge

The results relate only to the items stated.
This Test Report shall not be reproduced except in full, without the permission of Mitra S. K. Private Limited.
The reserved part of samples for microbiological analysis (Non-potable samples) Food, Water shall be retained for 15 days from the date of issue of the (ed) Report. For chemical samples shall be retained 2 days from the date of issue of the Test Report.
The reserved part of samples for chemical analysis (Drinking & Liquid Water) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.
The reserved part of samples for microbiological analysis (Non-potable samples) Food, Seawater, Saline liquid shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Dhruv Centre (5th Floor) 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
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Page 1 of 1

Mitra S. K. Private Limited

Address of Branch :

P.O. Barbil Dt Keonjhar Orissa 758 035



Scan for Portal

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

Al/PO. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

TEST REPORT

Report No. :

Date :

Sample No. :

Reference No. & Date :

MSKGL/ED/2024-25/000017

03/04/2024

MSKGL/ED/2023-24/03/01168

3000158017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:-

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamobari Iron & Mn. Mines (BIMM)
4. Date of sampling	29/03/2024
5. Place of sampling	Near Project Office (BIMM)
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2024-25/000017

Sample No. : MSKGL/ED/2023-24/03/01168

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH3)	micro gm/m3	IS 5182 (Part 25)	400 24 HR.	15.6
2	Carbon Monoxide (CO)	mg/m3	IS: 5182 (Part 10) (O)	2 8HR.	0.56
3	Nitrogen Dioxide (NO2)	micro gm/m3	IS: 5182 (Part 6) (O)	80 24 HR.	22.9
4	Ozone (O3)	micro gm/m3	IS 5182 (Part 9)	180 1 HR.	BDL(0.20.0)
5	Particulate Matter (<10um)	micro gm/m3	IS: 5182 (Part 23) (O)	100 24 HR.	224
6	Particulate Matter (<2.5um)	micro gm/m3	IS 5182 (PT-24) 2018 (O)	60 24 HR.	109
7	Sulphur Dioxide (SO2)	micro gm/m3	IS: 5182 (Part 2) (O)	80 24 HR.	8.2

END

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Head Office:

Silvercity Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel. : 91 33 49143000 / 22650007 Fax : 91 33 22650060
Email : info@mitras.com Website : www.mitrask.com

Page 1 of 1



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM) Joda West

At/Po. - Joda Dist - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2024-25/000002

Date :

02/04/2024

Sample No. :

MSKGL/ED/2023-24/03/00888

Reference No. & Date :

3000158017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Fugitive Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines (BIMM)
4. Date of sampling	23/03/2024
5. Place of sampling	Jonbar Weigh Bridge
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2024-25/000002

Sample No. : MSKGL/ED/2023-24/03/00888

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Nitrogen Dioxides (as NO ₂)	micro gm/m ³	IS: 5182 (Part 6)_(O)		23.1
2	PM10/RPM	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012)_(O)		258
3	PM2.5	micro gm/m ³	IS 5182 (Part 24)		125
4	Respirable Suspended Particulate Matter (RSPM)	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012)_(O)		258
5	Sulphur Dioxide (as SO ₂)	micro gm/m ³	IS 5182: Part 2_(O)		8.1
6	Suspended Particulate Matter (SPM)	micro gm/m ³	IS 5182: Part 4:1999 (Reaff. 2014)_(O)		476

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

AMBIENT AIR QUALITY MONITORING REPORT

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000003065F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

A/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/J1311B

Date :

27/02/2024

Sample No. :

MSKNB/ED/2023-24/02/V91D0Q

Date of receipt of sample:

15/02/2024

Date(s) of performance:

15/02/2024 - 27/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	12/02/2024
5. Place of sampling	Near Back Filling Yard Bamebari
6. Environmental conditions during sampling & Transport	1) Temperature :13-26 deg C 2) Barometric Pressure: 706 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Lalin Naik, Dhambudhar Das
9. Field Equipments Used	MSK/BBL/FIELD/RDS-13

Report No. : MSKPL/ED/2023-24/J1311B

Sample No. : MSKNB/ED/2023-24/02/V91D0Q

RESULT

Chemical					
Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.16
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion : Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name Ms. Piali Genguly

Designation Executive Chemist

Authorized Signatory:

Signature

Name Dr. Soumyadip Mukhopadhyay

Designation Lab in charge

The results relate only to the item(s) tested

This Test Report shall not be reproduced except in full, without the permission of Mitra S.K. Private Limited.

The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Gharchi Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India
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Address of Branch :

P.O. Barbil Dt Keonjhar Orissa 758 035



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/004931

Date :

22/02/2024

Sample No. :

MSKGL/ED/2023-24/02/00499

Reference No. & Date :

3000158017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Min. Mines
4. Date of sampling	12/02/2024
5. Place of sampling	Near Back Filling Yard Bamebari
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004931

Sample No. : MSKGL/ED/2023-24/02/00499

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	17.6
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.71
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	18.6
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	<20.0
5	Particulate Matter (<10µm)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	221
6	Particulate Matter (<2.5µm)	micro gm/m ³	IS 5182 (PT-24),2019 (O)	60 24 HR.	107
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	6.9

— END —

Report Verified By

For Mitra S. K. Private Limited

 Authorised Signatory

Head Office:

 Strachey Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
 Tel. : 91 33 40143000 / 22590007 Fax : 91 33 22650008
 Email : info@mitrask.com Website : www.mitrask.com

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000003061F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/S13112

Date :

27/02/2024

Sample No. :

MSKNB/ED/2023-24/02/D11CBA

Date of receipt of sample:

15/02/2024

Date(s) of performance:

15/02/2024 - 27/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	12/02/2024
5. Place of sampling	Near Shorting Yard BIMM
6. Environmental conditions during sampling & Transport	1) Temperature : 13-26 deg C 2) Barometric Pressure: 706 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS: 5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Lalin Naik, Dhambrudhar Das
9. Field Equipments Used	MSK/BBL/FIELD/RDS-12

Report No. : MSKPL/ED/2023-24/S13112

Sample No. : MSKNB/ED/2023-24/02/D11CBA

RESULT

Chemical					
Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	0.02
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.57
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion : Limit as per CPCB notification, New Delhi, 16th November 2009, for Ambient air quality

Statement of Conformity NA

END

Reviewed By

Signature

Name: Ms. Piali Ganguly

Designation: Executive Chemist

Authorized Signatory

Signature

Name: Dr. Soumyadeep Mukhopadhyay

Designation: Lab in charge

This results relate only to the item(s) tested.

This Test Report shall not be reproduced except in full, without the permission of Mitra S.K. Private Limited.

The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shyachi Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.

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Email : info@mitrask.com Website : www.mitrask.com

Address of Branch :

P.O. Barbil Dt Keonjhar Orissa 758 035



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd, (MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/004930

Date :

22/02/2024

Sample No. :

MSKGL/ED/2023-24/02/00495

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines
4. Date of sampling	12/02/2024
5. Place of sampling	Near Shorting Yard BIMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004930

Sample No. : MSKGL/ED/2023-24/02/00495

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	17.6
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.52
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	25.4
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	<20.0
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	115
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24),2019 (O)	80 24 HR.	56
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	7.2

— END —

Report Verified By

For Mitra S. K. Private Limited

 Authorised Signatory

Head Office:

 Shreechi Centre (5th Floor), 748, A.J.C. Bose Road, Kolkata - 700018, West Bengal, India.
 Tel. : 91 33 40143000 / 22550007 Fax : 91 33 22550008
 Email : info@mrsk.com Website : www.mrsk.com

Address of Laboratory :

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3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000003060F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/S1311S

Date :

27/02/2024

Sample No. :

MSKNB/ED/2023-24/02/9F1D1R

Date of receipt of sample:

15/02/2024

Date(s) of performance:

15/02/2024 - 27/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	12/02/2024
5. Place of sampling	Near Weight Bridge BIMM
6. Environmental conditions during sampling & Transport	1) Temperature :13-26 deg C 2) Barometric Pressure: 706 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Lalin Nalk, Dhambrudhar Das
9. Field Equipments Used	MSK/BBU/FIELD/RDS-11

Report No. : MSKPL/ED/2023-24/S1311S

Sample No. : MSKNB/ED/2023-24/02/9F1D1R

RESULT

Chemical

SI No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	0.03
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.50
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	9.7

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

END

Reviewed By

Signature

Name

Designation

Ms. Piali Ganguly

Executive Chemist

Authorized Signatory:

Signature

Name

Designation

Dr. Soumyadip Mukherjee

Lab in charge

The results relate only to the item(s) tested.

This Test Report shall not be reproduced except in full, without the permission of Mitra S.K. Private Limited.

The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report. The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office:

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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/004928

Date :

22/02/2024

Sample No. :

MSKGL/ED/2023-24/02/00494

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines
4. Date of sampling	12/02/2024
5. Place of sampling	Near Weight Bridge BIMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004928**Sample No. :** MSKGL/ED/2023-24/02/00494

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH3)	micro gm/m3	IS 5182 (Part 25)	400 24 HR.	12.7
2	Carbon Monoxide (CO)	mg/m3	IS: 5182 (Part 10)_(O)	2 8HR.	0.58
3	Nitrogen Dioxide (NO2)	micro gm/m3	IS: 5182 (Part 6)_(O)	80 24 HR.	20.1
4	Ozone (O3)	micro gm/m3	IS 5182 (Part 9)	180 1 HR.	<20.0
5	Particulate Matter (<10um)	micro gm/m3	IS: 5182 (Part 23)_(O)	100 24 HR.	128
6	Particulate Matter (<2.5um)	micro gm/m3	IS 5182 (PT-24),2019_(O)	60 24 HR.	78
7	Sulphur Dioxide (SO2)	micro gm/m3	IS: 5182 (Part 2)_(O)	80 24 HR.	7.5

— END —

Report Verified By**For Mitra S. K. Private Limited****Authorised Signatory**

Mitra S. K. Private Limited

Doc No.: MSKGEN/19/07

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044038120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000003059F

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist - Keonjhar, Odisha - 758034 India

TEST REPORT

Report No. :

Date :

Sample No. :

Date of receipt of sample:

Date(s) of performance:

Location of performance of

Reference No. & Date :

Discipline:

MSKPL/ED/2023-24/E13115

27/02/2024

MSKNB/ED/2023-24/02/1H1CD7

15/02/2024

15/02/2024 - 27/02/2024

Permanent Facility

3000156017/056, Date - 16/09/2023

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	12/02/2024
5. Place of sampling	Near Project Office BIMM
6. Environmental conditions during sampling & Transport	1) Temperature :13-26 deg C 2) Barometric Pressure: 706 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11, 12) & USEPA
8. Identification of the personnel performing sampling by MSK	Lalin Naik, Dhambudhar Das
9. Field Equipments Used	MSK/BBL/FIELD/RDS-5

Report No. : MSKPL/ED/2023-24/E13115

Sample No. : MSKNB/ED/2023-24/02/1H1CD7

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	5 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4: June	Not Specified	0.30
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

END

Reviewed By:

Signature

Name

Designation

Ms. Pooja Ganguly

Executive Chemist

Authorized Signatory:

Signature

Name

Designation

Lab in charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Lead Office: Shreeji Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

Al/Po. -> Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/004934

Date :

22/02/2024

Sample No. :

MSKGL/ED/2023-24/02/00493

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamiebari Iron & Mn. Mines
4. Date of sampling	12/02/2024
5. Place of sampling	Near Project Office BIMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004934

Sample No. : MSKGL/ED/2023-24/02/00493

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH3)	micro gm/m3	IS 5182 (Part 25)	400 24 HR.	14.8
2	Carbon Monoxide (CO)	mg/m3	IS: 5182 (Part 10) (O)	2 8HR.	0.46
3	Nitrogen Dioxide (NO2)	micro gm/m3	IS: 5182 (Part 6) (O)	80 24 HR.	22.3
4	Ozone (O3)	micro gm/m3	IS 5182 (Part 9)	180 1 HR.	<20.0
5	Particulate Matter (<10um)	micro gm/m3	IS: 5182 (Part 23) (O)	100 24 HR.	207
6	Particulate Matter (<2.5um)	micro gm/m3	IS 5182 (PT-24),2019 (O)	60 24 HR.	101
7	Sulphur Dioxide (SO2)	micro gm/m3	IS: 5182 (Part 2) (O)	80 24 HR.	7.8

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Address of Laboratory :

Building No. P-48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044038120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000003066F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Pa. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/U1311D

Date :

27/02/2024

Sample No. :

MSKNB/ED/2023-24/02/741F3C

Date of receipt of sample:

15/02/2024

Date(s) of performance:

15/02/2024 - 27/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	13/02/2024
5. Place of sampling	Near Project Office BIMM
6. Environmental conditions during sampling & Transport	1) Temperature :16-29 deg C 2) Barometric Pressure: 712 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Akash Kr. Setty Pratick Kr. Mantri
9. Field Equipments Used	MSK/BBL/FIELD/FDS-5

Report No. : MSKPL/ED/2023-24/U1311D

Sample No. : MSKNB/ED/2023-24/02/741F3C

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4: June	Not Specified	0.16
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion : Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name Ms. Piali Ganguly

Designation Executive Chemist

Authorized Signatory:

Signature

Name Dr. Souryadeep Mukhopadhyay

Designation Lab in charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

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Address of Branch :

P.O. Barbil Dt Keonjhar Orissa 758 035



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/004923

Date :

22/02/2024

Sample No. :

MSKGL/ED/2023-24/02/00500

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines
4. Date of sampling	13/02/2024
5. Place of sampling	Near Project Office BIMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004923

Sample No. : MSKGL/ED/2023-24/02/00500

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	15.2
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.42
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	21.4
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	<20.0
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	218
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24),2019 (O)	60 24 HR.	107
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	8.2

— END —

Report Verified By



For Mitra S. K. Private Limited



Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel : +91 7044036120
Email: udayanlab@mitrask.com



TC-8950



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ULR: TC-695024000003067F



TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/113116

Date :

27/02/2024

Sample No. :

MSKNB/ED/2023-24/02/8H1EFT

Date of receipt of sample:

15/02/2024

Date(s) of performance:

15/02/2024 - 27/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	13/02/2024
5. Place of sampling	Near Weight Bridge BIMM
6. Environmental conditions during sampling & Transport	1) Temperature : 16-29 deg C 2) Barometric Pressure: 712 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Akash Kr. Setty Pratick Kr. Mantri
9. Field Equipments Used	MSK/BBL/FIELD/RDS-11

Report No. : MSKPL/ED/2023-24/113116**Sample No. :** MSKNB/ED/2023-24/02/8H1EFT

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	0.06
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.46
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	11.1

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name

Designation

Ma. Piali Ganguly

Executive Chemist

Authorized Signatory:

Signature

Name

Designation

Dr. Soumyadeep Mukhopadhyay

Lab In charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report. The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

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Address of Branch :

P.O. Barbil Dt Keonjhar Orissa 758 035



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/004936

Date :

22/02/2024

Sample No. :

MSKGL/ED/2023-24/02/00501

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines
4. Date of sampling	13/02/2024
5. Place of sampling	Near Weight Bridge BIMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004936

Sample No. : MSKGL/ED/2023-24/02/00501

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	15.9
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.47
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	20.7
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	<20.0
5	Particulate Matter (<10 _{um})	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	158
6	Particulate Matter (<2.5 _{um})	micro gm/m ³	IS 5182 (PT-24).2019 (O)	60 24 HR.	78
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	7.5

— END —

Report Verified By

For Mitra S. K. Private Limited

 Authorised Signatory

Head Office:

 Shuchi Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
 Tel.: 91 33 40143000 / 22650007 Fax.: 91 33 22650008
 Email : info@mitrask.com Website : www.mitrask.com

Address of Laboratory :

Building No. P-48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000003068F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM), Joda West

AI/PO. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/51311F

Date :

27/02/2024

Sample No. :

MSKNB/ED/2023-24/02/B81F14

Date of receipt of sample:

15/02/2024

Date(s) of performance:

15/02/2024 - 27/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	13/02/2024
5. Place of sampling	Near Shorting Yard BMM
6. Environmental conditions during sampling & Transport	1) Temperature :16-29 deg C 2) Barometric Pressure: 712 mm of Hg 3) Rain fall - No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Akash Kr. Setty Pratick Kr. Mantri
9. Field Equipments Used	MSK/BBU/FIELD/FDS-12

Report No. : MSKPL/ED/2023-24/51311F

Sample No. : MSKNB/ED/2023-24/02/B81F14

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	0.02
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.13
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion : Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name

Designation

P. Ganguly
Ms. Piali Ganguly

Executive Chemist

Authorized Signatory:

Signature

Name

Designation

Dr. Soanyashree Mukhopadhyay

Lab in charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Wastes) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Bhadrachal Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700015, West Bengal, India
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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/004924

Date :

22/02/2024

Sample No. :

MSKGL/ED/2023-24/02/00502

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample (If any)	Bamebari Iron & Mn. Mines
4. Date of sampling	13/02/2024
5. Place of sampling	Near Shorting Yard BMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004924

Sample No. : MSKGL/ED/2023-24/02/00502

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	18.1
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.61
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	26.3
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	<20.0
5	Particulate Matter (<10 _{um})	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	106
6	Particulate Matter (<2.5 _{um})	micro gm/m ³	IS 5182 (PT-24), 2019 (O)	60 24 HR.	53
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	7.6

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Head Office:

Shradha Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
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Email : info@mitrask.com Website : www.mitrask.com

Address of Laboratory :

Building No, P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000003072F

**TEST REPORT****Name & Address of Customer :**

Tata Steel Ltd. (MGM)_Joda West

Al/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/J1312J

Date :

27/02/2024

Sample No. :

MSKNB/ED/2023-24/02/Q41F0H

Date of receipt of sample:

15/02/2024

Date(s) of performance:

15/02/2024 - 27/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	13/02/2024
5. Place of sampling	Near Back Filling Yard Bamebari
6. Environmental conditions during sampling & Transport	1) Temperature : 16-29 deg C 2) Barometric Pressure: 712 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS: 5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Akash Kr. Setty Pratik Kr. Mantri
9. Field Equipments Used	MSK/BBL/FIELD/FDS-13

Report No. : MSKPL/ED/2023-24/J1312J**Sample No. :** MSKNB/ED/2023-24/02/Q41F0H**RESULT**

Chemical					
Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.06
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion : Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name Ms. Piali Ganguly

Designation Executive Chemist

Authorized Signatory:

Signature

Name Dr. Soumyadeep Mukhopadhyay

Designation Lab In charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shrachi Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
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Email : info@mitrask.com Website : www.mitrask.com



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

Date :

Sample No. :

Reference No. & Date :

MSKGL/ED/2023-24/004933

22/02/2024

MSKGL/ED/2023-24/02/00506

3000156017/058, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines
4. Date of sampling	13/02/2024
5. Place of sampling	Near Back Filling Yard Bamebari
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004933

Sample No. : MSKGL/ED/2023-24/02/00506

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH3)	micro gm/m3	IS 5182 (Part 25)	400 24 HR.	18.1
2	Carbon Monoxide (CO)	mg/m3	IS: 5182 (Part 10) (O)	2 8HR.	0.68
3	Nitrogen Dioxide (NO2)	micro gm/m3	IS: 5182 (Part 6) (O)	80 24 HR.	17.4
4	Ozone (O3)	micro gm/m3	IS 5182 (Part 9)	180 1 HR.	<20.0
5	Particulate Matter (<10um)	micro gm/m3	IS: 5182 (Part 23) (O)	100 24 HR.	210
6	Particulate Matter (<2.5um)	micro gm/m3	IS 5182 (PT-24),2019 (O)	60 24 HR.	101
7	Sulphur Dioxide (SO2)	micro gm/m3	IS: 5182 (Part 2) (O)	80 24 HR.	6.6

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000003198F



TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/P13A9Y

Date :

02/03/2024

Sample No. :

MSKNB/ED/2023-24/02/YA36EE

Date of receipt of sample:

22/02/2024

Date(s) of performance:

22/02/2024 - 02/03/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	19/02/2024
5. Place of sampling	Near Back Filling Yard-BIMM
6. Environmental conditions during sampling & Transport	1) Temperature :19-30 deg C 2) Barometric Pressure: 703 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pratik Kumar Mantri
9. Field Equipments Used	MSK/BBL/FIELD/RDS-13

Report No. : MSKPL/ED/2023-24/P13A9Y

Sample No. : MSKNB/ED/2023-24/02/YA36EE

RESULT

Chemical					
Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.10
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion : Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name Dr. Devottam Banerjee

Designation Technical in charge

Authorized Signatory:

Signature

Name Dr. Devottam Banerjee

Designation Technical in charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline 5 (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Sirachi Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.

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Email : info@mitrask.com Website : www.mitrask.com



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TEST REPORT**Name & Address of Customer :**

Tata Steel Ltd.(MGM) Joda West

At/Po. - Joda, Dist - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/004956

Date :

26/02/2024

Sample No. :

MSKGL/ED/2023-24/02/00882

Reference No. & Date :

3000156017, Date - 28/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines
4. Date of sampling	19/02/2024
5. Place of sampling	Near Back Filling Yard-BIMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004956**Sample No. :** MSKGL/ED/2023-24/02/00882**RESULT****Analysis Result of Ambient Air**

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	18.3
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10)_(O)	2 8HR.	0.69
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6)_(O)	90 24 HR.	18.9
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	<20.0
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23)_(O)	100 24 HR.	149
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24),2019_(O)	60 24 HR.	72
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2)_(O)	80 24 HR.	7.2

— END —

Report Verified By

For Mitra S. K. Private Limited

 Authorised Signatory

Head Office:

 Shree Chandra (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India
 Tel. : 91 33 40143800 / 22650007 Fax : 91 33 22650006
 Email : info@mitrask.com Website : www.mitrask.com

Page 1 of 1

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000003193F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

AI/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKPL/ED/2023-24/313A9V

Date :

02/03/2024

Sample No. :

MSKNB/ED/2023-24/02/FW371C

Date of receipt of sample:

22/02/2024

Date(s) of performance:

22/02/2024 - 02/03/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	19/02/2024
5. Place of sampling	Near Weigh Bridge-BIMM
6. Environmental conditions during sampling & Transport	1) Temperature :18-27 deg C 2) Barometric Pressure: 707 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pratik Kumar Mantri
9. Field Equipments Used	MSK/BBL/FIELD/RDS-11

Report No. : MSKPL/ED/2023-24/313A9V

Sample No. : MSKNB/ED/2023-24/02/FW371C

RESULT

Chemical					
Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	0.03
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.33
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	18.32

Opinion : Limit as per CPCB notification, New Delhi, 16th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name : Dr. Devottam Banerjee

Designation : Technical in charge

Authorized Signatory

Signature

Name : Dr. Devottam Banerjee

Designation : Technical in charge

The results relate only to the item(s) tested.

This Test Report shall not be reproduced except in full, without the permission of Mitra S.K. Private Limited.

The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Bhadrachal Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700015, West Bengal, India
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Email : info@mitrask.com Website : www.mitrask.com



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

Al/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/004952

Date :

26/02/2024

Sample No. :

MSKGL/ED/2023-24/02/00877

Reference No. & Date :

3000156017, Date - 28/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines
4. Date of sampling	19/02/2024
5. Place of sampling	Near Weigh Bridge-BIMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004952**Sample No. :** MSKGL/ED/2023-24/02/00877

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	13.4
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.57
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	20.2
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	<20.0
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	222
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24),2019 (O)	60 24 HR.	105
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 21) (O)	80 24 HR.	7.6

— END —

Report Verified By**For Mitra S. K. Private Limited**
Authorised Signatory**Head Office:**Shreeji Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India
Tel. : 91 33 40143000 / 22650007 Fax : 91 33 22650009
Email : info@mitrask.com Website : www.mitrask.com

Page 1 of 1

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000003194F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/A13A9P

Date :

02/03/2024

Sample No. :

MSKNB/ED/2023-24/02/GK36DG

Date of receipt of sample:

22/02/2024

Date(s) of performance:

22/02/2024 - 02/03/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	19/02/2024
5. Place of sampling	Near Shorting Yard-BIMM
6. Environmental conditions during sampling & Transport	1) Temperature :18-27 deg C 2) Barometric Pressure: 714 mm of Hg 3) Rain fall No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pratik Kumar Mantri
9. Field Equipments Used	MSK/BBL/FIELD/RDS-9

Report No. : MSKPL/ED/2023-24/A13A9P

Sample No. : MSKNB/ED/2023-24/02/GK36DG

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.13
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion : Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name

Designation

Dr. Devottam Banerjee

Technical in charge

Authorized Signatory:

Signature

Name

Designation

Dr. Devottam Banerjee

Technical in charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shree Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700015, West Bengal, India.
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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/004958

Date :

26/02/2024

Sample No. :

MSKGL/ED/2023-24/02/00878

Reference No. & Date :

3000156017, Date - 28/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines
4. Date of sampling	19/02/2024
5. Place of sampling	Near Shorting Yard-BIMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004958**Sample No. :** MSKGL/ED/2023-24/02/00878

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	12.8
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.56
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	23.7
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	<20.0
5	Particulate Matter (<10 _{um})	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	135
6	Particulate Matter (<2.5 _{um})	micro gm/m ³	IS 5182 (PT-24),2019 (O)	60 24 HR.	65
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	7.4

— END —

Report Verified By**For Mitra S. K. Private Limited**
Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-8950



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ULR: TC-695024000003192F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

Al/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/S13A9Z

Date :

02/03/2024

Sample No. :

MSKNB/ED/2023-24/02/59370E

Date of receipt of sample:

22/02/2024

Date(s) of performance:

22/02/2024 - 02/03/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	19/02/2024
5. Place of sampling	Near Project Office-B/MM
6. Environmental conditions during sampling & Transport	1) Temperature :19-30 deg C 2) Barometric Pressure: 703 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pratik Kumar Mantri
9. Field Equipments Used	MSK/BBU/FIELD/RDS-5

Report No. : MSKPL/ED/2023-24/S13A9Z**Sample No. :** MSKNB/ED/2023-24/02/59370E

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4: June	Not Specified	0.24
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name

Designation

Dr. Devottam Banerjee

Technical in charge

Authorized Signatory:

Signature

Name

Designation

Dr. Devottam Banerjee

Technical in charge

The results relate only to the item(s) tested.

This Test Report shall not be reproduced except in full, without the permission of Mitra S.K. Private Limited.

The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report. The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office:

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Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

TEST REPORT**Report No. :****Date :****Sample No. :****Reference No. & Date :**

MSKGL/ED/2023-24/004957

26/02/2024

MSKGL/ED/2023-24/02/00876

3000156017, Date - 28/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines
4. Date of sampling	19/02/2024
5. Place of sampling	Near Project Office-BIMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004957**Sample No. :** MSKGL/ED/2023-24/02/00876**RESULT****Analysis Result of Ambient Air**

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	15.1
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.51
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	22.0
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	<20.0
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	224
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24),2019 (O)	60 24 HR.	109
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	8.1

— END —

Report Verified By**For Mitra S. K. Private Limited**
Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000003199F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/H13A9R

Date :

02/03/2024

Sample No. :

MSKNB/ED/2023-24/02/AX372T

Date of receipt of sample:

22/02/2024

Date(s) of performance:

22/02/2024 - 02/03/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	20/02/2024
5. Place of sampling	Near Project Office-BIMM
6. Environmental conditions during sampling & Transport	1) Temperature : 18-30 deg C 2) Barometric Pressure: 703 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS-5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pranab Sethi
9. Field Equipments Used	MSK/BBU/FIELD/RDS-5

Report No. : MSKPL/ED/2023-24/H13A9R

Sample No. : MSKNB/ED/2023-24/02/AX372T

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	5 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	0.03
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.20
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	7.35

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

END

Reviewed By:

Signature

Name

Designation

Dr. Devottam Banerjee

Dr. Devottam Banerjee

Technical in charge

Authorized Signatory

Signature

Name

Designation

Dr. Devottam Banerjee

Dr. Devottam Banerjee

Technical in charge

The results relate only to the item(s) tested.

This Test Report shall not be reproduced except in full, without the permission of Mitra S.K. Private Limited.

The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report. The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office:

Shraddhi Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
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Email : info@mitrask.com Website : www.mitrask.com



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TEST REPORT**Name & Address of Customer :**

Tata Steel Ltd.(MGM) Joda West

At/Po. - Joda, Dist - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/004959

Date :

27/02/2024

Sample No. :

MSKGL/ED/2023-24/02/00895

Reference No. & Date :

3000156017, Date - 28/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines
4. Date of sampling	20/02/2024
5. Place of sampling	Near Project Office-BIMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004959**Sample No. :** MSKGL/ED/2023-24/02/00895**RESULT****Analysis Result of Ambient Air**

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	15.5
2	Arsenic (As)	ng/m ³	TPM/MSK/ENV/AP/01/15 (O)	6 ANNUAL	NA
3	Benzene (C ₆ H ₆)	micro gm/m ³	IS: 5182 (Part 11) (O)	5 ANNUAL	NA
4	Benzo(a)Pyrene (BaP)	ng/m ³	IS: 5182 (Part 12) (O)	1 ANNUAL	NA
5	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.49
6	Lead (Pb)	micro gm/m ³	EPA-103.2 June, 1999 (O)	1 24 HR.	NA
7	Nickel (Ni)	ng/m ³	EPA-103.2 June, 1999 (O)	20 ANNUAL	NA
8	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	22.7
9	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	<20.0
10	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	221
11	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24).2019 (O)	60 24 HR.	106
12	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	8.3

— END —

Report Verified By



For Mitra S. K. Private Limited



 Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000003200F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/C13A9Q

Date :

02/03/2024

Sample No. :

MSKNB/ED/2023-24/02/LJ36FH

Date of receipt of sample:

22/02/2024

Date(s) of performance:

22/02/2024 - 02/03/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	20/02/2024
5. Place of sampling	Near Weigh Bridge-BIMM
6. Environmental conditions during sampling & Transport	1) Temperature : 18-29 deg C 2) Barometric Pressure: 707 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS-5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pranab Sethi
9. Field Equipments Used	MSK/BSL/FIELD/RDS-11

Report No. : MSKPL/ED/2023-24/C13A9Q

Sample No. : MSKNB/ED/2023-24/02/LJ36FH

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	0.03
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.23
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	26.52

Opinion : Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name Dr. Devottam Banerjee

Designation Technical in charge

Authorized Signatory:

Signature

Name Dr. Devottam Banerjee

Designation Technical in charge

The results relate only to the item(s) tested.

This Test Report shall not be reproduced except in full, without the permission of Mitra S. K. Private Limited.

The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shree Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
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Email : info@mitrask.com Website : www.mitrask.com



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/004965

Date :

27/02/2024

Sample No. :

MSKGL/ED/2023-24/02/00896

Reference No. & Date :

3000156017, Date - 28/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(If any)	Bamebari Iron & Mn. Mines
4. Date of sampling	20/02/2024
5. Place of sampling	Near Weigh Bridge-BIMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	

Report No. : MSKGL/ED/2023-24/004965

Sample No. : MSKGL/ED/2023-24/02/00896

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH3)	micro gm/m3	IS 5182 (Part 25)	400 24 HR.	14.2
2	Arsenic (As)	ng/m3	TPMMSK/ENV/AP/01/15 (O)	6 ANNUAL	NA
3	Benzene (C6H6)	micro gm/m3	IS: 5182 (Part 11) (O)	5 ANNUAL	NA
4	Benzo(a)Pyrene (BaP)	ng/m3	IS: 5182 (Part 12) (O)	1 ANNUAL	NA
5	Carbon Monoxide (CO)	mg/m3	IS: 5182 (Part 10) (O)	2 8HR.	0.49
6	Lead (Pb)	micro gm/m3	EPA -IO3.2 June,1999 (O)	1 24 HR	NA
7	Nickel (Ni)	ng/m3	EPA-IO3.2 -June,1999 (O)	20 ANNUAL	NA
8	Nitrogen Dioxide (NO2)	micro gm/m3	IS: 5182 (Part 6) (O)	80 24 HR.	19.8
9	Ozone (O3)	micro gm/m3	IS 5182 (Part 9)	180 1 HR.	<20.0
10	Particulate Matter (<10um)	micro gm/m3	IS: 5182 (Part 23) (O)	100 24 HR.	174
11	Particulate Matter (<2.5um)	micro gm/m3	IS 5182 (PT-24),2019 (O)	60 24 HR.	82
12	Sulphur Dioxide (SO2)	micro gm/m3	IS: 5182 (Part 2) (O)	80 24 HR.	7.9

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Address of Laboratory :

Building No. P-48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000003205F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/W13A96

Date :

02/03/2024

Sample No. :

MSKNB/ED/2023-24/02/Z736E6

Date of receipt of sample:

22/02/2024

Date(s) of performance:

22/02/2024 - 02/03/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	20/02/2024
5. Place of sampling	Near Back Filling Yard-BIMM
6. Environmental conditions during sampling & Transport	1) Temperature :18-29 deg C 2) Barometric Pressure: 703 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pranab Sethi
9. Field Equipments Used	MSK/BBL/FIELD/RDS-13

Report No. : MSKPL/ED/2023-24/W13A96

Sample No. : MSKNB/ED/2023-24/02/Z736E6

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.10
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion : Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature:

Name : Dr. Devottam Banerjee

Designation : Technical in charge

Authorized Signatory:

Signature:

Name : Dr. Devottam Banerjee

Designation : Technical in charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste(s)) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shreechi Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
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Email : info@mitrask.com Website : www.mitrask.com



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

Al/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/004960

Date :

27/02/2024

Sample No. :

MSKGL/ED/2023-24/02/00901

Reference No. & Date :

3000156017, Date - 28/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines
4. Date of sampling	20/02/2024
5. Place of sampling	Near Back Filling Yard-BIMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004960

Sample No. : MSKGL/ED/2023-24/02/00901

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH3)	micro gm/m3	IS 5182 (Part 25)	400 24 HR.	17.8
2	Arsenic (As)	ng/m3	TPM/MSK/ENV(AP)/01/15 (O)	6 ANNUAL	NA
3	Benzene (C6H6)	micro gm/m3	IS: 5182 (Part 11) (O)	5 ANNUAL	NA
4	Benzo(a)Pyrene (BaP)	ng/m3	IS: 5182 (Part 12) (O)	1 ANNUAL	NA
5	Carbon Monoxide (CO)	mg/m3	IS: 5182 (Part 10) (O)	2 8HR.	0.67
6	Lead (Pb)	micro gm/m3	EPA -IO3.2 June,1999 (O)	1 24 HR.	NA
7	Nickel (Ni)	ng/m3	EPA-IO3.2 June,1999 (O)	20 ANNUAL	NA
8	Nitrogen Dioxide (NO2)	micro gm/m3	IS: 5182 (Part 6) (O)	80 24 HR.	19.1
9	Ozone (O3)	micro gm/m3	IS 5182 (Part 9)	180 1 HR.	<20.0
10	Particulate Matter (<10um)	micro gm/m3	IS: 5182 (Part 23) (O)	100 24 HR.	168
11	Particulate Matter (<2.5um)	micro gm/m3	IS 5182 (PT-24),2019 (O)	60 24 HR.	81
12	Sulphur Dioxide (SO2)	micro gm/m3	IS: 5182 (Part 2) (O)	80 24 HR.	7.4

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-69502400003201F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM), Joda West

A/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/R13A92

Date :

02/03/2024

Sample No. :

MSKNB/ED/2023-24/02/MK3714

Date of receipt of sample:

22/02/2024

Date(s) of performance:

22/02/2024 - 02/03/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	20/02/2024
5. Place of sampling	Near Shorting Yard-BIMM
6. Environmental conditions during sampling & Transport	1) Temperature : 19-29 deg C 2) Barometric Pressure: 706 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pranab Sethi
9. Field Equipments Used	MSK/BBU/FIELD/RDS-12

Report No. : MSKPL/ED/2023-24/R13A92

Sample No. : MSKNB/ED/2023-24/02/MK3714

RESULT

Chemical

SI No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.10
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name

Designation

Dr. Devottam Banerjee
Dr. Devottam Banerjee
Technical in charge

Authorized Signatory

Signature

Name

Designation

Dr. Devottam Banerjee
Dr. Devottam Banerjee
Technical in charge

The results relate only to the item(s) tested

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shree Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
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Email : info@mitrask.com Website : www.mitrask.com



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/004961

Date :

27/02/2024

Sample No. :

MSKGL/ED/2023-24/02/00897

Reference No. & Date :

3000156017, Date - 28/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines
4. Date of sampling	20/02/2024
5. Place of sampling	Near Shorting Yard-BIMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004961

Sample No. : MSKGL/ED/2023-24/02/00897

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH3)	micro gm/m3	IS 5182 (Part 25)	400 24 HR.	12.2
2	Arsenic (As)	ng/m3	TPM/MSK/ENV(AP)/01/15_(O)	6 ANNUAL	NA
3	Benzene (C6H6)	micro gm/m3	IS: 5182 (Part 11)_(O)	5 ANNUAL	NA
4	Benzo(a)Pyrene (BaP)	ng/m3	IS: 5182 (Part 12)_(O)	1 ANNUAL	NA
5	Carbon Monoxide (CO)	mg/m3	IS: 5182 (Part 10)_(O)	2 8HR.	0.52
6	Lead (Pb)	micro gm/m3	EPA -IO3.2 June,1999_(O)	1 24 HR	NA
7	Nickel (Ni)	ng/m3	EPA-IO3.2 -June,1999_(O)	20 ANNUAL	NA
8	Nitrogen Dioxide (NO2)	micro gm/m3	IS: 5182 (Part 6)_(O)	80 24 HR.	22.6
9	Ozone (O3)	micro gm/m3	IS 5182 (Part 9)	180 1 HR.	<20.0
10	Particulate Matter (<10um)	micro gm/m3	IS: 5182 (Part 23)_(O)	100 24 HR.	108
11	Particulate Matter (<2.5um)	micro gm/m3	IS 5182 (PT-24),2019_(O)	60 24 HR.	52
12	Sulphur Dioxide (SO2)	micro gm/m3	IS: 5182 (Part 2)_(O)	80 24 HR.	7.8

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000003537F

TEST REPORT**Name & Address of Customer :**

Tata Steel Ltd.(MGM)_Joda West

AI/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/G13C0S

Date :

06/03/2024

Sample No. :

MSKNB/ED/2023-24/02/0B482P

Date of receipt of sample:

29/02/2024

Date(s) of performance:

29/02/2024 - 06/03/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	26/02/2024
5. Place of sampling	Near Project Office BIMM
6. Environmental conditions during sampling & Transport	1) Temperature :19-35 deg C 2) Barometric Pressure: 712 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Kshitish Kumar Mohanty
9. Field Equipments Used	MSK/BBL/FIELD/RDS-5

Report No. : MSKPL/ED/2023-24/G13C0S**Sample No. :** MSKNB/ED/2023-24/02/0B482P**RESULT****Chemical**

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.13
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion : Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name

Designation

Dr. Devolam Banerjee
Dr. Devolam Banerjee
Technical in Charge

Authorized Signatory

Signature

Name

Designation

Dr. Devolam Banerjee
Dr. Devolam Banerjee
Technical in Charge

The results relate only to the item(s) tested.

This Test Report shall not be reproduced except in full, without the permission of Mitra S.K. Private Limited.

The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

Head Office: Branch Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel. : 91 33 40143000 / 22650007 Fax : 91 33 22650008
Email : info@mitrask.com Website : www.mitrask.com

Address of Branch :

P.O. Barbil Dist. Keonjhar Orissa 758 035



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/005011

Date :

05/03/2024

Sample No. :

MSKGL/ED/2023-24/02/01151

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines BMM
4. Date of sampling	26/02/2024
5. Place of sampling	Near Project Office BMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/005011

Sample No. : MSKGL/ED/2023-24/02/01151

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	18.6
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.57
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	21.5
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL-20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	215
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24),2019 (O)	60 24 HR.	104
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	7.5

— END —

Report Verified By

For Mitra S. K. Private Limited

 Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000003539F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/U13C1H

Date :

06/03/2024

Sample No. :

MSKNB/ED/2023-24/02/3A4805

Date of receipt of sample:

29/02/2024

Date(s) of performance:

29/02/2024 - 06/03/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	26/02/2024
5. Place of sampling	Near Shorting Yard BMM
6. Environmental conditions during sampling & Transport	1) Temperature : 19-35 deg C 2) Barometric Pressure: 712 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Kshitish Kumar Mohanty
9. Field Equipments Used	MSK/BBL/FIELD/RDS-9

Report No. : MSKPL/ED/2023-24/U13C1H

Sample No. : MSKNB/ED/2023-24/02/3A4805

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4: June	Not Specified	0.13
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name

Designation

Dr. Devottam Banerjee
Technical In Charge

Authorized Signatory:

Signature

Name

Designation

Dr. Devottam Banerjee
Technical In Charge

The results relate only to the item(s) tested

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

Head Office:

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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/005008

Date :

02/03/2024

Sample No. :

MSKGL/ED/2023-24/02/01153

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines BIMM
4. Date of sampling	26/02/2024
5. Place of sampling	Near Shorting Yard BIMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/005008**Sample No. :** MSKGL/ED/2023-24/02/01153

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	16.0
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.54
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	18.7
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	160 1 HR.	BDL(DL-20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	215
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24),2019 (O)	60 24 HR.	106
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	7.7

— END —

Report Verified By**For Mitra S. K. Private Limited****Authorised Signatory**

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000003538F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/813C14

Date :

06/03/2024

Sample No. :

MSKNB/ED/2023-24/02/0Y47DQ

Date of receipt of sample:

29/02/2024

Date(s) of performance:

29/02/2024 - 06/03/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	26/02/2024
5. Place of sampling	Near Weigh Bridge BIMM
6. Environmental conditions during sampling & Transport	1) Temperature :19-35 deg C 2) Barometric Pressure: 712 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS-5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Kshitish Kumar Mohanty
9. Field Equipments Used	MSK/BBL/FIELD/RDS-11

Report No. : MSKPL/ED/2023-24/813C14**Sample No. :** MSKNB/ED/2023-24/02/0Y47DQ

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	5 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4: June	Not Specified	0.37
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion : Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name

Designation

Dr. Devottam Banerjee
Technical In Charge

Authorized Signatory:

Signature

Name

Designation

Dr. Devottam Banerjee
Technical In Charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

Head Office: Shreeji Centre (5th Floor), 748, A.J.C. Bose Road, Kolkata - 700015, West Bengal, India.
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Email : info@mitrask.com Website : www.mitrask.com



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TEST REPORT**Name & Address of Customer :**

Tata Steel Ltd.(MGM) Joda West

Al/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/005010

Date :

05/03/2024

Sample No. :

MSKGL/ED/2023-24/02/01152

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(If any)	Bamebari Iron & Mn.Mines (BIMM)
4. Date of sampling	26/02/2024
5. Place of sampling	Near Weigh Bridge BIMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/005010**Sample No. :** MSKGL/ED/2023-24/02/01152**RESULT****Analysis Result of Ambient Air**

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	16.0
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10)_(O)	2 8HR.	0.45
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6)_(O)	80 24 HR.	17.2
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL:20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23)_(O)	100 24 HR.	206
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24),2019_(O)	60 24 HR.	102
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2)_(O)	60 24 HR.	7.1

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Head Office:Srirachi Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel : 91 33 40143000 / 22650007 Fax : 91 33 22650008
Email : info@mitrask.com Website : www.mitrask.com

Page 1 of 1

Address of Laboratory :

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3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000003543F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/Q13C1R

Date :

06/03/2024

Sample No. :

MSKNB/ED/2023-24/02/SB47EY

Date of receipt of sample:

29/02/2024

Date(s) of performance:

29/02/2024 - 06/03/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	26/02/2024
5. Place of sampling	Near Back Filling Yard Bamebari
6. Environmental conditions during sampling & Transport	1) Temperature : 19-35 deg C 2) Barometric Pressure: 712 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Kshitish Kumar Mohanty
9. Field Equipments Used	MSK/BBL/FIELD/RDS-13

Report No. : MSKPL/ED/2023-24/Q13C1R

Sample No. : MSKNB/ED/2023-24/02/SB47EY

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4: June	Not Specified	0.10
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By

Signature

Name

Dr. Devottam Banerjee

Designation

Technical In Charge

Authorized Signatory:

Signature

Name

Dr. Devottam Banerjee

Designation

Technical In Charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

Head Office:

Shrachi Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700015, West Bengal, India.
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Email : info@mitrask.com Website : www.mitrask.com



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/005006

Date :

02/03/2024

Sample No. :

MSKGL/ED/2023-24/02/01157

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample (if any)	Bamebari Iron & Mn. Mines BMM
4. Date of sampling	26/02/2024
5. Place of sampling	Near Back Filling Yard Bamebari
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

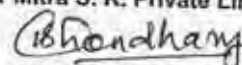
Report No. : MSKGL/ED/2023-24/005006**Sample No. :** MSKGL/ED/2023-24/02/01157

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	12.7
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.51
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	20.9
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL (DL-20.0)
5	Particulate Matter (<10 _{um})	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	179
6	Particulate Matter (<2.5 _{um})	micro gm/m ³	IS 5182 (PT-24).2019 (O)	60 24 HR.	89
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	7.5

— END —

Report Verified By**For Mitra S. K. Private Limited**
Authorised Signatory**Head Office:**Shreech/ Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel. : 91 33 40143000 / 22650007 Fax : 91 33 22650009
Email : info@mitrask.com Website : www.mitrask.com

Page 1 of 1

Address of Laboratory :

Building No. P-48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-69502400003545F

**Name & Address of Customer :**

Tata Steel Ltd. (MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

TEST REPORT

Report No. :

Date :

Sample No. :

Date of receipt of sample:

Date(s) of performance:

Location of performance of

Reference No. & Date :

Discipline:

MSKPL/ED/2023-24/713C1Z

06/03/2024

MSKNB/ED/2023-24/02/7M4924

29/02/2024

29/02/2024 - 06/03/2024

Permanent Facility

3000156017/056, Date - 16/09/2023

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	27/02/2024
5. Place of sampling	Near Weigh Bridge BJMM
6. Environmental conditions during sampling & Transport	1) Temperature : 17-29 deg C 2) Barometric Pressure: 708 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS-5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pratik Kumar Mantri
9. Field Equipments Used	MSK/BBL/FIELD/RDS-11

Report No. : MSKPL/ED/2023-24/713C1Z

Sample No. : MSKNB/ED/2023-24/02/7M4924

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3,4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3,4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3,4, June	Not Specified	0.10
6	Nickel as Ni	ng/m3	USEPA-IO 3,4, June	20 (Annual)	BDL(DL:5.0)

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature:

Name : Dr. Devottam Banerjee

Designation : Technical in Charge

Authorized Signatory

Signature:

Name : Dr. Devottam Banerjee

Designation : Technical in Charge

so results relate only to the item(s) tested.

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A reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report.

on the date of issue of the Test Report.

A reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per GPCB guideline & (Air) 1 month from the date of issue of the Test Report.

A reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed (Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shree Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India
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Email : info@mitrask.com Website : www.mitrask.com



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Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

TEST REPORT

Report No. :

Date :

Sample No. :

Reference No. & Date :

MSKGL/ED/2023-24/005017

05/03/2024

MSKGL/ED/2023-24/02/01159

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Barnebari Iron & Mn. Mines BIMM
4. Date of sampling	27/02/2024
5. Place of sampling	Near Weigh Bridge BIMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/005017

Sample No. : MSKGL/ED/2023-24/02/01159

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	15.4
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.39
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	23.0
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL:20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	189
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24),2019 (O)	60 24 HR.	83
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	6.4

— END —

Report Verified By

(Signature)

For Mitra S. K. Private Limited

(Signature)
Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000003550F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

A/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/R13C13

Date :

06/03/2024

Sample No. :

MSKNB/ED/2023-24/02/XL4939

Date of receipt of sample:

29/02/2024

Date(s) of performance:

29/02/2024 - 06/03/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	27/02/2024
5. Place of sampling	Near Back Filling Yard Bamebari
6. Environmental conditions during sampling & Transport	1) Temperature : 14-28 deg C 2) Barometric Pressure: 713 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pratik Kumar Mantri
9. Field Equipments Used	MSK/BBL/FIELD/RDS-13

Report No. : MSKPL/ED/2023-24/R13C13

Sample No. : MSKNB/ED/2023-24/02/XL4939

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	5 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.10
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature:

Name: Dr. Devottam Banerjee

Designation: Technical In Charge

Authorized Signatory:

Signature:

Name: Dr. Devottam Banerjee

Designation: Technical In Charge

The results relate only to the item(s) tested.

This Test Report shall not be reproduced except in full, without the permission of Mitra S.K. Private Limited.

The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report. The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shradhi Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel : 91 33 40143000 / 22650007 Fax : 91 33 22650008
Email : info@mitrask.com Website : www.mitrask.com



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/005007

Date :

02/03/2024

Sample No. :

MSKGL/ED/2023-24/02/01164

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines BIMM
4. Date of sampling	27/02/2024
5. Place of sampling	Near Back Filling Yard Bamebari
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/005007

Sample No. : MSKGL/ED/2023-24/02/01164

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	13.2
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.55
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	19.0
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL:20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	169
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24).2019 (O)	60 24 HR.	80
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	6.9

— END —

Report Verified By

(Signature)

For Mitra S. K. Private Limited

(Signature)

Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000003546F

Name & Address of Customer :

Tata Steel Ltd. (MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

TEST REPORT

Report No. :

Date :

Sample No. :

Date of receipt of sample:

Date(s) of performance:

Location of performance of

Reference No. & Date :

Discipline:

MSKPL/ED/2023-24/K13C1U

06/03/2024

MSKNB/ED/2023-24/02/C0490V

29/02/2024

29/02/2024 - 06/03/2024

Permanent Facility

3000156017/056, Date - 16/09/2023

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	27/02/2024
5. Place of sampling	Near Shorting Yard BIMM
6. Environmental conditions during sampling & Transport	1) Temperature : 19-29 deg C 2) Barometric Pressure: 707 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pratik Kumar Mantri
9. Field Equipments Used	MSK/BBL/FIELD/RDS-12

Report No. : MSKPL/ED/2023-24/K13C1U

Sample No. : MSKNB/ED/2023-24/02/C0490V

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.20
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

END

Reviewed By:

Signature:

Name : Dr. Devottam Banerjee

Designation : Technical in Charge

Authorized Signatory:

Signature:

Name : Dr. Devottam Banerjee

Designation : Technical in Charge

or results relate only to the item(s) tested.

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is reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report.

on the date of issue of the Test Report.

is reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

is reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office:

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Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

AI/PO. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

TEST REPORT

Report No. :

Date :

Sample No. :

Reference No. & Date :

MSKGL/ED/2023-24/005013

05/03/2024

MSKGL/ED/2023-24/02/01160

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamobari Iron & Mn. Mines BIMM
4. Date of sampling	27/02/2024
5. Place of sampling	Near Shorling Yard BIMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/005013

Sample No. : MSKGL/ED/2023-24/02/01160

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	19.6
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.48
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	23.1
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL-20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	196
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24),2019 (O)	60 24 HR.	94
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	7.8

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



Scan for Portal

ULR: TC-695024000003544F

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

TEST REPORT

Report No. :

Date :

Sample No. :

Date of receipt of sample:

Date(s) of performance:

Location of performance of

Reference No. & Date :

Discipline:

MSKPL/ED/2023-24/X13C1U

06/03/2024

MSKNB/ED/2023-24/02/1K48EQ

29/02/2024

29/02/2024 - 06/03/2024

Permanent Facility

3000156017/056, Date - 16/09/2023

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	27/02/2024
5. Place of sampling	Near Project Office BIMM
6. Environmental conditions during sampling & Transport	1) Temperature : 14-28 deg C 2) Barometric Pressure: 713 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pratik Kumar Mantri
9. Field Equipments Used	MSK/BBU/FIELD/RDS-5

Report No. : MSKPL/ED/2023-24/X13C1U

Sample No. : MSKNB/ED/2023-24/02/1K48EQ

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	5 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.13
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature:

Name: Dr. Devottam Banerjee

Designation: Technical In Charge

Authorized Signatory:

Signature:

Name: Dr. Devottam Banerjee

Designation: Technical In Charge

The results relate only to the item(s) tested.

The Test Report shall not be reproduced except in full, without the permission of Mitra S.K. Private Limited.

The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shree Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700015, West Bengal, India.
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Email : info@mitrask.com Website : www.mitrask.com

Address of Branch :
P.O. Barbil Dt Keonjhar Orissa 758 035



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/005012

Date :

05/03/2024

Sample No. :

MSKGL/ED/2023-24/02/01158

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines BIMM
4. Date of sampling	27/02/2024
5. Place of sampling	Near Project Office BIMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/005012

Sample No. : MSKGL/ED/2023-24/02/01158

RESULT

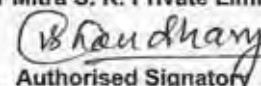
Analysis Result of Ambient Air					
Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	14.7
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.42
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	19.4
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL:20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	203
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24),2019 (O)	60 24 HR.	95
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	7.2

— END —

Report Verified By



For Mitra S. K. Private Limited



Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000003575F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd (MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

Date :

Sample No. :

Date of receipt of sample:

Date(s) of performance:

Location of performance of

Reference No. & Date :

Discipline:

MSKPL/ED/2023-24/D13C1M

06/03/2024

MSKNB/ED/2023-24/03/2U613P

02/03/2024

02/03/2024 - 06/03/2024

Permanent Facility

3000158017/056, Date - 16/09/2023

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	28/02/2024
5. Place of sampling	Near Project Office BIMM
6. Environmental conditions during sampling & Transport	1) Temperature : 17-31 deg C 2) Barometric Pressure: 706 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pranab Sathy, Pratik Mantri, Akash Sathy
9. Field Equipments Used	MSK/BBL/FIELD/RDS-5

Report No. : MSKPL/ED/2023-24/D13C1M

Sample No. : MSKNB/ED/2023-24/03/2U613P

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	0.02
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4: June	Not Specified	0.13
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion : Limit as per CPCB notification, New Delhi, 16th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name

Designation

Dr. Devottam Banerjee

Technical in Charge

Authorized Signatory:

Signature

Name

Designation

Dr. Devottam Banerjee

Technical in Charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Strachi Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.

Tel. : 91 33 40143000 / 22650007 Fax : 91 33 22650008

Email : info@mitrask.com Website : www.mitrask.com

Address of Branch :
P.O. Barbil Dt Keonjhar Orissa 758 035



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/005060

Date :

05/03/2024

Sample No. :

MSKGL/ED/2023-24/03/00001

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn Mines BIMM
4. Date of sampling	28/02/2024
5. Place of sampling	Near Project Office BIMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/005060

Sample No. : MSKGL/ED/2023-24/03/00001

RESULT

Analysis Result of Ambient Air

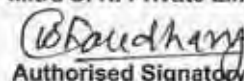
Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	16.7
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10)_(O)	2 8HR.	0.47
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6)_(O)	80 24 HR.	21.3
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23)_(O)	100 24 HR.	216
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24),2019_(O)	60 24 HR.	103
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2)_(O)	80 24 HR.	7.3

— END —

Report Verified By



For Mitra S. K. Private Limited



Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
 3, Pagladanga Road, Kolkata 700015
 West Bengal
 Tel. : +91 7044036120
 Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000003576F

TEST REPORT**Name & Address of Customer :**

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :**Date :****Sample No. :****Date of receipt of sample:****Date(s) of performance:****Location of performance of****Reference No. & Date :****Discipline:**

MSKPL/ED/2023-24/513C1L

06/03/2024

MSKNB/ED/2023-24/03/ALQ126

02/03/2024

02/03/2024 - 06/03/2024

Permanent Facility

3000156017/056, Date - 16/09/2023

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	28/02/2024
5. Place of sampling	Near Weigh Bridge BIMM
6. Environmental conditions during sampling & Transport	1) Temperature :17-21 deg C 2) Barometric Pressure: 706 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pranab Sethy, Pratik Mantri, Akash Sethy
9. Field Equipments Used	MSK/BBL/FIELD/RDS-11

Report No. : MSKPL/ED/2023-24/513C1L**Sample No. :** MSKNB/ED/2023-24/03/ALQ126**RESULT****Chemical**

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	0.02
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.37
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name

Dr. Devottam Banerjee

Designation

Technical In Charge

Authorized Signatory:

Signature

Name

Dr. Devottam Banerjee

Designation

Technical In Charge

The results relate only to the item(s) tested.

This Test Report shall not be reproduced except in full, without the permission of Mitra S.K. Private Limited.

The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office:

Strachi Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.

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Email : info@mitrask.com Website : www.mitrask.com

Address of Branch :

P.O. Barbil Dt Keonjhar Orissa 758 035



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM) Joda West

At/Po. : Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/005061

Date :

05/03/2024

Sample No. :

MSKGL/ED/2023-24/03/00002

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn Mines BIMM
4. Date of sampling	28/02/2024
5. Place of sampling	Near Weigh Bridge BIMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/005061

Sample No. : MSKGL/ED/2023-24/03/00002

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	19.1
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.43
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	20.9
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL-20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	194
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24), 2019 (O)	60 24 HR.	93
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	7.8

— END —

Report Verified By

For Mitra S. K. Private Limited

 Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000003577F



TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/113C1D

Date :

06/03/2024

Sample No. :

MSKNB/ED/2023-24/03/DZMYFN

Date of receipt of sample:

02/03/2024

Date(s) of performance:

02/03/2024 - 06/03/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	28/02/2024
5. Place of sampling	Near Shorting Yard BIMM
6. Environmental conditions during sampling & Transport	1) Temperature :17-31 deg C 2) Barometric Pressure: 706 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pranab Sethy, Pratik Mantri, Akash Sethy
9. Field Equipments Used	MSK/BBL/FIELD/RDS-12

Report No. : MSKPL/ED/2023-24/113C1D

Sample No. : MSKNB/ED/2023-24/03/DZMYFN

RESULT

Chemical					
Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.27
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion : Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name

Dr. Devotam Banerjee

Designation

Technical In Charge

Authorized Signatory:

Signature

Name

Dr. Devotam Banerjee

Designation

Technical In Charge

The results relate only to the item(s) tested.

This Test Report shall not be reproduced except in full, without the permission of Mitra S.K. Private Limited.

The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for microbiological analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office:

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Page 1 of 1

Address of Branch :
P.O. Barbil Dt Keonjhar Orissa 758 035



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West
At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

Date :

Sample No. :

Reference No. & Date :

MSKGL/ED/2023-24/005067

05/03/2024

MSKGL/ED/2023-24/03/00007

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Barnebari Iron & Mn Mines BIMM
4. Date of sampling	28/02/2024
5. Place of sampling	Near Back Filling Yard Barnebari
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/005067

Sample No. : MSKGL/ED/2023-24/03/00007

RESULT

Analysis Result of Ambient Air					
Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	12.8
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.50
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	20.5
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL:20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	174
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24).2019 (O)	60 24 HR.	88
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	7.2

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagiadanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000003588F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

Al/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/V13C6L

Date :

06/03/2024

Sample No. :

MSKNB/ED/2023-24/03/UTX127

Date of receipt of sample:

02/03/2024

Date(s) of performance:

02/03/2024 - 06/03/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	29/02/2024
5. Place of sampling	Near Back Filling Yard Bamebari
6. Environmental conditions during sampling & Transport	1) Temperature : 17-31 deg C 2) Barometric Pressure: 706 mm of Hg 3) Rain fall : No & Cold Chain Maintained.
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pranab Sethi, Akash Sethy, Damabaru Dhar Dash
9. Field Equipments Used	MSK/BBL/FIELD/RDS-13

Report No. : MSKPL/ED/2023-24/V13C6L

Sample No. : MSKNB/ED/2023-24/03/UTX127

RESULT

Chemical					
Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.09
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion : Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature:

Name: Dr. Devottam Banerjee

Designation: Technical In Charge

Authorized Signatory:

Signature:

Name: Dr. Devottam Banerjee

Designation: Technical In Charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shree Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
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Email : info@mitrask.com Website : www.mitrask.com

Address of Branch :

P.O. Barbil Dt Keonjhar Orissa 756 035



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/005065

Date :

06/03/2024

Sample No. :

MSKGL/ED/2023-24/03/00014

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn Mines BIMM
4. Date of sampling	29/02/2024
5. Place of sampling	Near Back Filling Yard Bamebari
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/005065

Sample No. : MSKGL/ED/2023-24/03/00014

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	12.7
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10)_(O)	2 8HR.	0.51
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6)_(O)	80 24 HR.	21.0
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL-20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23)_(O)	100 24 HR.	178
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24),2019_(O)	60 24 HR.	87
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2)_(O)	80 24 HR.	7.9

— END —

Report Verified By

For Mitra S. K. Private Limited

 Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000003584F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/A13C4X

Date :

06/03/2024

Sample No. :

MSKNB/ED/2023-24/03/ECD113

Date of receipt of sample:

02/03/2024

Date(s) of performance:

02/03/2024 - 06/03/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	29/02/2024
5. Place of sampling	Near Shoring Yard BMM
6. Environmental conditions during sampling & Transport	1) Temperature : 17-31 deg C 2) Barometric Pressure: 706 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11, 12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pranab Sethi, Akash Sethy, Damabaru Dhar Dash
9. Field Equipments Used	MSK/BBL/FIELD/RDS-12

Report No. : MSKPL/ED/2023-24/A13C4X

Sample No. : MSKNB/ED/2023-24/03/ECD113

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4: June	Not Specified	0.04
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion : Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name

Designation

Dr. Devottam Banerjee

Technical in Charge

Authorized Signatory

Signature

Name

Designation

Dr. Devottam Banerjee

Technical in Charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office:

Shrachi Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.

Tel. : 91 33 40143000 / 22650007 Fax : 91 33 22650009

Email : info@mitrask.com Website : www.mitrask.com

Address of Branch :

P.O. Barbil DI Keonjhar Orissa 758 035



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

Al/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/005064

Date :

06/03/2024

Sample No. :

MSKGL/ED/2023-24/03/00010

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn Mines BIMM
4. Date of sampling	29/02/2024
5. Place of sampling	Near Shorting Yard BIMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/005064

Sample No. : MSKGL/ED/2023-24/03/00010

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	17.1
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10)_(O)	2 8HR.	0.46
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6)_(O)	80 24 HR.	22.6
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL:20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23)_(O)	100 24 HR.	200
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24),2019_(O)	60 24 HR.	98
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2)_(O)	80 24 HR.	7.7

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-8950



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ULR: TC-695024000003583F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/913C4X

Date :

06/03/2024

Sample No. :

MSKNB/ED/2023-24/03/A4Z13Y

Date of receipt of sample:

02/03/2024

Date(s) of performance:

02/03/2024 - 06/03/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	29/02/2024
5. Place of sampling	Near Weigh Bridge BIMM
6. Environmental conditions during sampling & Transport	1) Temperature :19-30 deg C 2) Barometric Pressure: 713 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pranab Sethi, Akash Sethy, Damabaru Dhar Dash
9. Field Equipments Used	MSK/BBL/FIELD/RDS-11

Report No. : MSKPL/ED/2023-24/913C4X

Sample No. : MSKNB/ED/2023-24/03/A4Z13Y

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	0.02
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.38
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion : Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

END

Reviewed By:

Signature

Name : Dr. Devottam Banerjee

Designation : Technical In Charge

Authorized Signatory:

Signature

Name : Dr. Devottam Banerjee

Designation : Technical In Charge

The results relate only to the item(s) tested.

This Test Report shall not be reproduced except in full, without the permission of Mitra S.K. Private Limited.

The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shreechi Centre (5th Floor), 748, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel. : 91 33 40143000 / 22650007 Fax : 91 33 22650008
Email : info@mitrask.com Website : www.mitrask.com

Address of Laboratory :

Building No. P- 46, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000003582F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/Y13C41

Date :

06/03/2024

Sample No. :

MSKNB/ED/2023-24/03/92G2FK

Date of receipt of sample:

02/03/2024

Date(s) of performance:

02/03/2024 - 06/03/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	29/02/2024
5. Place of sampling	Near Project Office BIMM
6. Environmental conditions during sampling & Transport	1) Temperature :19-30 deg C 2) Barometric Pressure: 713 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS-5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pranab Sethi, Akash Sethy, Damabaru Dhar Dash
9. Field Equipments Used	MSK/BBU/FIELD/RDS-5

Report No. : MSKPL/ED/2023-24/Y13C41

Sample No. : MSKNB/ED/2023-24/03/92G2FK

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4: June	Not Specified	0.14
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion : Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name

Dr. Devottam Banerjee

Designation

Technical In Charge

Authorized Signatory:

Signature

Name

Dr. Devottam Banerjee

Designation

Technical In Charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shree Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700015, West Bengal, India
Tel. : 91 33 40143000 / 22650007 Fax : 91 33 22650009
Email : info@mitrask.com Website : www.mitrask.com

Address of Branch :

P.O. Barbil Dt Keonjhar Orissa 758 035



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/005066

Date :

06/03/2024

Sample No. :

MSKGL/ED/2023-24/03/00008

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamabari Iron & Mn Mines BIMM
4. Date of sampling	29/02/2024
5. Place of sampling	Near Project Office BIMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/005066

Sample No. : MSKGL/ED/2023-24/03/00008

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	18.5
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.51
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	21.4
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL:20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	223
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24) 2019 (O)	60 24 HR.	105
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	7.4

— END —

Report Verified By

For Mitra S. K. Private Limited

 Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000003536F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

A/Po. - Joda, Dist. - Keonjhar, Odisha - 756034 India Pin

Report No. :

MSKPL/ED/2023-24/T138FP

Date :

06/03/2024

Sample No. :

MSKNB/ED/2023-24/02/BY47EJ

Date of receipt of sample:

28/02/2024

Date(s) of performance:

28/02/2024 - 06/03/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	24/02/2024
5. Place of sampling	Jrouli High School
6. Environmental conditions during sampling & Transport	1) Temperature :19-30 deg C 2) Barometric Pressure: 709 mm of Hg 3) Rain fall - No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA.
8. Identification of the personnel performing sampling by MSK	Akash Kumar Setty
9. Field Equipments Used	MSK/BBL/FIELD/RDS-18

Report No. : MSKPL/ED/2023-24/T138FP

Sample No. : MSKNB/ED/2023-24/02/BY47EJ

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	5 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4: June	Not Specified	0.13
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion : Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name Dr. Devottam Banerjee

Designation Technical In Charge

Authorized Signatory:

Signature

Name Dr. Devottam Banerjee

Designation Technical In Charge

The results relate only to the item(s) tested.

This Test Report shall not be reproduced except in full, without the permission of Mitra S.K. Private Limited.

The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

Address of Branch :

P.O. Barbil Dt Keonjhar Orissa 758 035



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/004993

Date :

02/03/2024

Sample No. :

MSKGL/ED/2023-24/02/01150

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines
4. Date of sampling	24/02/2024
5. Place of sampling	Jrouli High School
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004993

Sample No. : MSKGL/ED/2023-24/02/01150

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	<10.0
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10) (O)	2 8HR.	0.28
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)	80 24 HR.	16.1
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	<20.0
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23) (O)	100 24 HR.	142
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24),2019 (O)	60 24 HR.	89
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2) (O)	80 24 HR.	<8.0

— END —

Report Verified By

For Mitra S. K. Private Limited

 Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000003535F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM), Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/G13BFX

Date :

06/03/2024

Sample No. :

MSKNB/ED/2023-24/02/8V47DH

Date of receipt of sample:

28/02/2024

Date(s) of performance:

28/02/2024 - 06/03/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	24/02/2024
5. Place of sampling	Jajang High School
6. Environmental conditions during sampling & Transport	1) Temperature : 19-30 deg C 2) Barometric Pressure: 709 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Akash Kumar Setty
9. Field Equipments Used	MSK/BBL/FIELD/RDS-16

Report No. : MSKPL/ED/2023-24/G13BFX**Sample No. :** MSKNB/ED/2023-24/02/8V47DH

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	BDL(DL:0.01)
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name

Dr. Devottam Banerjee

Designation : Technical In Charge

Authorized Signatory:

Signature

Name

Dr. Devottam Banerjee

Designation

Technical In Charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

Head Office: Strachy Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700015, West Bengal, India.
Tel. : 91 33 40143000 / 22650007 Fax : 91 33 22650008
Email : info@mitrask.com Website : www.mitrask.com

Address of Branch :

P.O. Barbil Dt Keonjhar Orissa 758 035



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

Al/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/004992

Date :

02/03/2024

Sample No. :

MSKGL/ED/2023-24/02/01149

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebar Iron & Mn. Mines
4. Date of sampling	24/02/2024
5. Place of sampling	Jajang High School
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004992

Sample No. : MSKGL/ED/2023-24/02/01149

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	<10.0
2	Carbon Monoxide (CO)	mg/m ³	IS: 5182 (Part 10)_(O)	2 8HR.	0.2
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS: 5182 (Part 6)_(O)	80 24 HR.	16.0
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	<20.0
5	Particulate Matter (<10um)	micro gm/m ³	IS: 5182 (Part 23)_(O)	100 24 HR.	166
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24),2019_(O)	60 24 HR.	78
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS: 5182 (Part 2)_(O)	80 24 HR.	<6.0

— END —

Report Verified By

For Mitra S. K. Private Limited

 Authorised Signatory

ENVIRONMENTAL MONITORING REPORT

JANUARY

2024

BAMEBARI IRON & MANGANESE MINES

At the request of :

M/s. TATA STEEL LIMITED

**Bichakundi, Joda, Dist: Keonjhar
ODISHA**

Conducted By:



M/s. MITRA S.K. PRIVATE LIMITED

At/Po – Barbil
Dist : Keonjhar, Odisha
Pin - 758 035

AMBIENT AIR QUALITY MONITORING REPORT

Address of Laboratory :

Building No. P-48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel : +91 7044036120
Email: udayanlab@mitrask.com



TC-8950



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ULR: TC-695024000001704F

Name & Address of Customer :

Tata Steel Ltd. (MGMT) Joda West

At/Po - Joda, Dist. - Keonjhar, Odisha - 758034 India

TEST REPORT

Report No. :

Date :

Sample No. :

Date of receipt of sample:

Date(s) of performance:

Location of performance of

Reference No. & Date :

Discipline:

MSKPL/ED/2023-24/Z11ECW

05/02/2024

MSKNB/ED/2023-24/01/2A208J

16/01/2024

16/01/2024 - 05/02/2024

Permanent Facility

3000166017/05G, Date - 16/09/2023

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	11/01/2024
5. Place of sampling	NEAR PROJECT OFFICE BIMM
6. Environmental conditions during sampling & Transport	1) Temperature :10-27 deg C 2) Barometric Pressure: 732 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS-5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	LALIN KUMAR NAIK, PRATIK KUMAR MANTRI
9. Field Equipments Used	MSK/BBL/FIELD/FDS-5

Report No. : MSKPL/ED/2023-24/Z11ECW

Sample No. : MSKNB/ED/2023-24/01/2A208J

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	0.02
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.34
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Option :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature: *P. Ganguly*

Name: Ms. Palli Ganguly

Designation: Executive Chemist

Authorized Signatory:

Signature: *[Signature]*

Name: Dr. Soumyadeep Mukhopadhyay

Designation: Lab in charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non-perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days on the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guidelines & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non-perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shree Ganga (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700015, West Bengal, India.

Tel : 91 33 40143000 / 26650007 Fax : 91 33 22600000

Email : info@mitrask.com Website : www.mitrask.com



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Name & Address of Customer :

Tata Steel Ltd (MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

TEST REPORT

Report No. :

MSKGL/ED/2023-24/004483

Date :

10/02/2024

Sample No. :

MSKGL/ED/2023-24/01/00553

Reference No. & Date :

3000156017, Date - 28/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Joda West Iron & Mn. Mines
4. Date of sampling	11/01/2024
5. Place of sampling	Near Project Office BIMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004483

Sample No. : MSKGL/ED/2023-24/01/00553

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	18.5
2	Carbon Monoxide (CO)	mg/m ³	IS 5182 : Part 10 : 1999 (Reaff. 2014) (NDIR) (O)	2 8HR.	0.40
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS 5182 : Part 6 : 2006 (Reaff. 2012) (O)	80 24 HR.	21.4
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL-20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS 5182 : Part 23:2006 (Reaff. 2012) (O)	100 24 HR.	139
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24),2019 (O)	60 24 HR.	67
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS 5182 : Part 2 : 2001 (Reaff. 2012) (O)	80 24 HR.	8.5

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel : +91 7044036120
Email : udayanlab@mitrask.com



TC-5850



Scan for Portal

ULR: TC-695024000001706F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

A/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/B11F9E

Date :

05/02/2024

Sample No. :

MSKNB/ED/2023-24/01/CH207P

Date of receipt of sample:

16/01/2024

Date(s) of performance:

16/01/2024 - 05/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	11/01/2024
5. Place of sampling	NEAR SORTING YARD BMM
6. Environmental conditions during sampling & Transport	1) Temperature : 10-27 deg C 2) Barometric Pressure: 732 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS 5182(P-11, 12) & USEPA
8. Identification of the personnel performing sampling by MSK	LALIN KUMAR NAIK, PRATIK KUMAR MANTRI
9. Field Equipments Used	MSK/BBL/FIELD/RDS-12

Report No. : MSKPL/ED/2023-24/B11F9E

Sample No. : MSKNB/ED/2023-24/01/CH207P

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	5 (Annual)	BDL(DL: 1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL: 4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL: 0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL: 0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.24
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL: 5.0)

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

----- END -----

Reviewed By:

Signature

Name

Designation : Executive Chemist

P. Ganguly
Ms. Palli Ganguly

Authorized Signatory

Signature

Name

Designation : Lab in charge

Dr. Souryadeep Mukhopadhyay
Dr. Souryadeep Mukhopadhyay

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shree's Cereals (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700015, West Bengal, India
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TEST REPORT**Name & Address of Customer :**

Tata Steel Ltd.(MGM) Joda West

A/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :**Date :****Sample No. :****Reference No. & Date :**

MSKGL/ED/2023-24/004476

10/02/2024

MSKGL/ED/2023-24/01/00555

3000156017, Date - 28/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(If any)	Bamebari Iron & Mn. Mines
4. Date of sampling	11/01/2024
5. Place of sampling	Near Sorting Yard BMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004476

Sample No. : MSKGL/ED/2023-24/01/00555

RESULT**Analysis Result of Ambient Air**

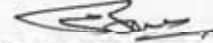
Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	14.2
2	Carbon Monoxide (CO)	mg/m ³	IS 5182 : Part 10 : 1999 (Reaff. 2014) (NDIR) (O)	2 8HR.	0.68
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS 5182 : Part 6 : 2006 (Reaff. 2012) (O)	80 24 HR.	26.8
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDI (DL-20.0)
5	Particulate Matter (<10µm)	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012) (O)	100 24 HR.	101
6	Particulate Matter (<2.5µm)	micro gm/m ³	IS 5182 (PT-24) 2019 (O)	80 24 HR.	52
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS 5182 : Part 2 : 2001 (Reaff. 2012) (O)	80 24 HR.	7.8

— END —

Report Verified By



For Mitra S. K. Private Limited



 Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



Scan for Portal

ULR: TC-695024000001705F

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

TEST REPORT

Report No. :

Date :

Sample No. :

Date of receipt of sample:

Date(s) of performance:

Location of performance of

Reference No. & Date :

Discipline:

MSKPL/ED/2023-24/H11F8D

05/02/2024

MSKNB/ED/2023-24/01/502092

16/01/2024

16/01/2024 - 05/02/2024

Permanent Facility

3000156017/058, Date - 16/09/2023

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	11/01/2024
5. Place of sampling	NEAR WEIGH BRIDGE BIMM
6. Environmental conditions during sampling & Transport	1) Temperature : 10-27 deg C 2) Barometric Pressure: 732 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	LALIN KUMAR NAIK, PRATIK KUMAR MANTRI
9. Field Equipments Used	MSK/BBL/FIELD/RDS-11

Report No. : MSKPL/ED/2023-24/H11F8D

Sample No. : MSKNB/ED/2023-24/01/502092

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	5 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	0.03
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.51
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	9.0

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

----- END -----

Reviewed By:

Signature:

Name: Mr. Paul Ganguly

Designation: Executive Chemist

Authorized Signatory:

Signature:

Name:

Designation:

Dr. Sumyashree Mahapatra

Lab in charge

The results relate only to the item(s) tested.

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A reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

A reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

A reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office:

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Email : info@mitrask.com Website : www.mitrask.com



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Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034, India Pin

TEST REPORT

Report No. :

Date :

Sample No. :

Reference No. & Date :

MSKGL/ED/2023-24/004471

10/02/2024

MSKGL/ED/2023-24/01/00554

3000156017, Date - 28/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines
4. Date of sampling	11/01/2024
5. Place of sampling	Nare Weigh Bridge BIMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004471

Sample No. : MSKGL/ED/2023-24/01/00554

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	14.7
2	Carbon Monoxide (CO)	mg/m ³	IS 5182 : Part 10 :1999 (Reaff.2014) (NDIR) (O)	2 8HR.	0.44
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS 5182 : Part 6 :2006 (Reaff.2012) (O)	80 24 HR.	20.4
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL:20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012) (O)	100 24 HR.	113
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24):2019 (O)	60 24 HR.	52
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS 5182 : Part 2 :2001 (Reaff.2012) (O)	80 24 HR.	7.5

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-8950



Scan for Portal

ULR: TC-895024000001710F

Name & Address of Customer :

Tata Steel Ltd. (MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

TEST REPORT

Report No. :

Date :

Sample No. :

Date of receipt of sample:

Date(s) of performance:

Location of performance of

Reference No. & Date :

Discipline:

MSKPL/ED/2023-24/P11FDC

05/02/2024

MSKNB/ED/2023-24/01/4W226Y

16/01/2024

16/01/2024 - 05/02/2024

Permanent Facility

3000156017/056, Date - 16/09/2023

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	12/01/2024
5. Place of sampling	NEAR PROJECT OFFICE BIMM
6. Environmental conditions during sampling & Transport	1) Temperature :10-26 deg C 2) Barometric Pressure: 733 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	LALIN KUMAR NAIK, PRATIK KUMAR MANTRI
9. Field Equipments Used	MSK/BBL/FIELD/RDS-5

Report No. : MSKPL/ED/2023-24/P11FDC

Sample No. : MSKNB/ED/2023-24/01/4W226Y

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	5 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	0.02
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.32
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name

Designation

P. Garguly
Ms. Pali Garguly

Executive Chemist

Authorized Signatory

Signature

Name

Designation

Dr. Sanyasir Mukhopadhyay
Lab in charge

No results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shree Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
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Mitra S. K. Private Limited

Address of Branch :

P.O. Barbil Dt Keonjhar Orissa 758 035



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Name & Address of Customer :

Talor Steel Ltd.(MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 - India Pin

TEST REPORT

Report No. :

MSKGL/ED/2023-24/004474

Date :

10/02/2024

Sample No. :

MSKGL/ED/2023-24/01/00559

Reference No. & Date :

3000156017, Date - 28/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines
4. Date of sampling	12/01/2024
5. Place of sampling	Near Project Office BIMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004474

Sample No. : MSKGL/ED/2023-24/01/00559

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	15.5
2	Carbon Monoxide (CO)	mg/m ³	IS 5182 : Part 10 : 1999 (Reaff.2014) (NDIR) (O)	2 8HR.	0.49
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS 5182 : Part 6 : 2006 (Reaff.2012) (O)	80 24 HR.	22.2
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL-20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012) (O)	100 24 HR.	141
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24),2019 (O)	60 24 HR.	70
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS 5182 : Part 2 : 2001 (Reaff.2012) (O)	80 24 HR.	7.5

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Head Office:

Shreeji Centre (5th Floor), 748, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel.: 91 33 40143000 / 22650007 Fax: 91 33 22650008
Email: info@mitrask.com Website: www.mitrask.com

Page 1 of 1

Address of Laboratory :

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3, Pagladanga Road, Kolkata 700015
West Bengal
Tel : +91 7044038120
Email: udayanlab@mitrasak.com



TC-6950



Scan for Portal

ULR: TC-695024000001712F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM), Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/X11FFG

Date :

05/02/2024

Sample No. :

MSKNB/ED/2023-24/01/TW223L

Date of receipt of sample:

16/01/2024

Date(s) of performance:

16/01/2024 - 05/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	12/01/2024
5. Place of sampling	NEAR SORTING YARD BMM
6. Environmental conditions during sampling & Transport	1) Temperature :10-26 deg C 2) Barometric Pressure: 733 mm of Hg 3) Rain fall: No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	LALIN KUMAR NAIK, PRATIK KUMAR MANTRI
9. Field Equipments Used	MSK/BBU/FIELD/RDS-9

Report No. : MSKPL/ED/2023-24/X11FFG

Sample No. : MSKNB/ED/2023-24/01/TW223L

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.14
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

----- END -----

Reviewed By:

Signature

Name: Mr. Pabi Ganguly

Designation : Executive Chemist

Authorized Signatory:

Signature

Name

Designation : Lab in charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be reserved 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guidelines & (Air) 1 month from the date of issue of the Test Report. The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shree's Centre (5th Floor), 74B, A J C. Road, Kolkata - 700016, West Bengal, India
Tel. : 91 33 49143000 / 22650007 Fax : 91 33 22650008
Email : info@mitrasak.com Website : www.mitrask.com



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TEST REPORT**Name & Address of Customer :**

Tata Steel Ltd (MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/004480

Date :

10/02/2024

Sample No. :

MSKGL/ED/2023-24/01/00561

Reference No. & Date :

3000156017, Date - 26/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines
4. Date of sampling	12/01/2024
5. Place of sampling	Near Sorting Yard BMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004480**Sample No. :** MSKGL/ED/2023-24/01/00561**RESULT****Analysis Result of Ambient Air**

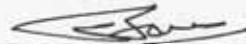
Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	16.6
2	Carbon Monoxide (CO)	mg/m ³	IS 5182 : Part 10 : 1999 (Reaff. 2014) (NDIR) (O)	2 8HR.	0.42
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS 5182 : Part 6 : 2006 (Reaff. 2012) (O)	80 24 HR.	21.5
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL 20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012) (O)	100 24 HR.	116
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24) 2019 (O)	60 24 HR.	59
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS 5182 : Part 2 : 2001 (Reaff. 2012) (O)	80 24 HR.	7.8

— END —

Report Verified By



For Mitra S. K. Private Limited


 Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-8950



Scan for Portal

ULR: TC-895024000001711F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM), Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/M11FEY

Date :

05/02/2024

Sample No. :

MSKNB/ED/2023-24/01/6Y2284

Date of receipt of sample:

16/01/2024

Date(s) of performance:

16/01/2024 - 05/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056. Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	12/01/2024
5. Place of sampling	NEAR WEIGH BRIDGE BMM
6. Environmental conditions during sampling & Transport	1) Temperature : 10-26 deg C 2) Barometric Pressure: 733 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS-5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	LALIN KUMAR NAIK, PRATIK KUMAR MANTRI
9. Field Equipments Used	MSK/BBL/FIELD/RDS-11

Report No. : MSKPL/ED/2023-24/M11FEY

Sample No. : MSKNB/ED/2023-24/01/6Y2284

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.55
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	7.0

Opinion :

Limit as per CPCB notification, New Delhi, 16th November 2008, for Ambient air quality

Statement of Conformity NA

----- END -----

Reviewed By:

Signature

Name

Designation

Mr. P. Ganguly

Executive Chemist

Authorized Signatory:

Signature

Name

Designation

Lab in charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report. The reserved part of sample(s) for microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Spoiled food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shree Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700015, West Bengal, India.
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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 - India Pin

Report No. :

MSKGL/ED/2023-24/004484

Date :

10/02/2024

Sample No. :

MSKGL/ED/2023-24/01/00560

Reference No. & Date :

3000156017, Date - 28/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:-

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Barnabar Iron & Mn. Mines
4. Date of sampling	12/01/2024
5. Place of sampling	Near Weigh Bridge BIMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004484

Sample No. : MSKGL/ED/2023-24/01/00560

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	15.5
2	Carbon Monoxide (CO)	mg/m ³	IS 5182 : Part 10 : 1999 (Reaff.2014) (NDIR) (O)	2 8HR.	0.41
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS 5182 : Part 6 : 2006 (Reaff.2012) (O)	80 24 HR.	18.8
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	160 1 HR.	BDL(DL/20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS 5182 : Part 23:2006 (Reaff. 2012) (O)	100 24 HR.	125
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT.24) 2019 (O)	60 24 HR.	62
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS 5182 : Part 2 : 2001 (Reaff.2012) (O)	80 24 HR.	8.2

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000001809F

Name & Address of Customer :

Tata Steel Ltd (MGM) Joda West

A/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

TEST REPORT

Report No. :

Date :

Sample No. :

Date of receipt of sample:

Date(s) of performance:

Location of performance of

Reference No. & Date :

Discipline:

MSKPL/ED/2023-24/K120EB

06/02/2024

MSKNB/ED/2023-24/01/1M3C7Z

24/01/2024

24/01/2024 - 06/02/2024

Permanent Facility

3000156017/056, Date - 16/09/2023

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	18/01/2024
5. Place of sampling	Near Project Office BIMM
6. Environmental conditions during sampling & Transport	1) Temperature : 18-28 deg C 2) Barometric Pressure: 733 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS 5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pratik Kr Mantri, Dnambudhar Das
9. Field Equipments Used	MSK/BBL/FIELD/RDS-5

Report No. : MSKPL/ED/2023-24/K120EB

Sample No. : MSKNB/ED/2023-24/01/1M3C7Z

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.38
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	6.4

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name

Designation

Dr. Dawitiam Banerjee

Technical in charge

Authorized Signatory:

Signature

Name

Designation

Dr. Soumyadeep Mahapatra

Lab in charge

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The reserved part of sample(s) for chemical analysis (Non-perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report.

On the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guidelines & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non-perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Lead Office:

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Name & Address of Customer :

Tata Steel Ltd, (MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

TEST REPORT

Report No. :

Date :

Sample No. :

Reference No. & Date :

MSKGL/ED/2023-24/004501

10/02/2024

MSKGL/ED/2023-24/01/00970

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Barnabari Iron & Mn. Mines
4. Date of sampling	18/01/2024
5. Place of sampling	Near Project Office BIMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004501

Sample No. : MSKGL/ED/2023-24/01/00970

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH3)	micro gm/m3	IS 5182 (Part 25)	400 24 HR.	15.5
2	Carbon Monoxide (CO)	mg/m3	IS 5182 : Part 10 :1999 (Reaff.2014) (NDIR) (O)	2 8HR.	0.54
3	Nitrogen Dioxide (NO2)	micro gm/m3	IS 5182 : Part 6 :2006 (Reaff.2012) (O)	80 24 HR.	14.5
4	Ozone (O3)	micro gm/m3	IS 5182 (Part 9)	180 1 HR.	BDL(DL:20.0)
5	Particulate Matter (<10um)	micro gm/m3	IS 5182: Part 23:2006 (Reaff. 2012) (O)	100 24 HR.	236
6	Particulate Matter (<2.5um)	micro gm/m3	IS 5182 (PT-24).2019 (O)	60 24 HR.	116
7	Sulphur Dioxide (SO2)	micro gm/m3	IS 5182 : Part 2 :2001 (Reaff.2012) (O)	80 24 HR.	7.6

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Head Office:

Sirachy Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
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Email : info@mitrask.com Website : www.mitrask.com

Address of Laboratory :

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3, Pagladanga Road, Kolkata 700015
West Bengal
Tel : +91 7044038120
Email: udayanlab@mitrask.com



TC-8950



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ULR: TC-895024000001815F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd, (MGM) Joda West

At/Po. : Joda, Dist. : Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/P1211S

Date :

06/02/2024

Sample No. :

MSKNB/ED/2023-24/01/X93C90

Date of receipt of sample:

24/01/2024

Date(s) of performance:

24/01/2024 - 06/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000150017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	18/01/2024
5. Place of sampling	Near Back Filling Yard Bamebari
6. Environmental conditions during sampling & transport	1) Temperature :18-28 deg C 2) Barometric Pressure: 733 mm of Hg 3) Rain fall No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pratik Kt Mantri, Dhambudhar Das
9. Field Equipments Used	MSK/BBL/FIELD/RDS-13

Report No. : MSKPL/ED/2023-24/P1211S

Sample No. : MSKNB/ED/2023-24/01/X93C90

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.1
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name

Designation

Dr. Devottari Banerjee

Technical in charge

Authorized Signatory:

Signature

Name

Designation

Dr. Soumyadeep Mukhopadhyay

Lab in charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Solid, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report. The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office:

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Email : info@mitrask.com Website : www.mitrask.com



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

A/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/004549

Date :

10/02/2024

Sample No. :

MSKGL/ED/2023-24/01/00976

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn Mines
4. Date of sampling	18/01/2024
5. Place of sampling	Near Back Filling Yard Bamebari
6. Environmental conditions during sampling & Transport	Cloudy
7. Sampling Plan & Method used	

Report No. : MSKGL/ED/2023-24/004549

Sample No. : MSKGL/ED/2023-24/01/00976

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	18.5
2	Carbon Monoxide (CO)	mg/m ³	IS 5182 : Part 10 :1999 (Reaff.2014) (NDIR) (O)	2 8HR.	0.30
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS 5182 : Part 6 :2006 (Reaff.2012) (O)	80 24 HR.	15.5
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL (DL-20,0)
5	Particulate Matter (<10um)	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012) (O)	100 24 HR.	211
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24):2019 (O)	60 24 HR.	114
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS 5182 : Part 2 :2001 (Reaff.2012) (O)	80 24 HR.	5.7

----- END -----

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel.: +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000001811F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/712102

Date :

06/02/2024

Sample No. :

MSKNB/ED/2023-24/01/4W3CB0

Date of receipt of sample:

24/01/2024

Date(s) of performance:

24/01/2024 - 05/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 18/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	18/01/2024
5. Place of sampling	Near Shorting Yard BMM
6. Environmental conditions during sampling & Transport	1) Temperature : 18-28 deg C 2) Barometric Pressure: 733 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS-5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pratik Kr Mantri, Dhambudhar Das
9. Field Equipments Used	MSK/BBL/FIELD/RDS-9

Report No. : MSKPL/ED/2023-24/712102

Sample No. : MSKNB/ED/2023-24/01/4W3CB0

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	5 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.2
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	11.0

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature

Dr. Devottam Banerjee
Dr. Devottam Banerjee

Name

Designation

Technical in charge

Authorized Signatory

Signature

Name

Designation

Dr. Saikat Kumar Mukherjee
Dr. Saikat Kumar Mukherjee
Lab in charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guidelines & (Air) 1 month from the date of issue of the Test Report. The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

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Name & Address of Customer :

Tata Steel Ltd (MGM), Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 (India Pin)

TEST REPORT

Report No. :

Date :

Sample No. :

Reference No. & Date :

MSKGL/ED/2023-24/004531

10/02/2024

MSKGL/ED/2023-24/01/00972

3000158017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamohari Iron & Mn Mines
4. Date of sampling	18/01/2024
5. Place of sampling	Near Shoring Yard, BMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004531

Sample No. : MSKGL/ED/2023-24/01/00972

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	18.5
2	Carbon Monoxide (CO)	mg/m ³	IS 5182 : Part 10 : 1999 (Reaff. 2014) (NDIR) (O)	2 8HR.	0.59
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS 5182 : Part 6 : 2006 (Reaff. 2012) (O)	80 24 HR.	18.4
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL (DL 20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS 5182 : Part 23:2006 (Reaff. 2012) (O)	100 24 HR.	164
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24), 2019 (O)	80 24 HR.	83
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS 5182 : Part 2 : 2001 (Reaff. 2012) (O)	80 24 HR.	8.2

— END —

Report Verified By

For Mitra S. K. Private Limited

Mitra S. K. Private Limited

Address of Laboratory :

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Email: udayanlab@mitrask.com



TC-6950

Doc No. : MSK/GEN/1907



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ULR: TC-695024000001810F

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 753034 India

TEST REPORT

Report No. :

Date :

Sample No. :

Date of receipt of sample:

Date(s) of performance:

Location of performance of

Reference No. & Date :

Discipline:

MSKPL/ED/2023-24/W120EB

06/02/2024

MSKNB/ED/2023-24/01/1S3CDJ

24/01/2024

24/01/2024 - 06/02/2024

Permanent Facility

3000156017/056, Date - 16/09/2023

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	18/01/2024
5. Place of sampling	Near Weight Bridge BIMM
6. Environmental conditions during sampling & Transport	1) Temperature : 16-28 deg C 2) Barometric Pressure: 733 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pratik Kr Mantri, Dhambudhar Das
9. Field Equipments Used	MSK/BBL/FIELD/RDS-11

Report No. : MSKPL/ED/2023-24/W120EB

Sample No. : MSKNB/ED/2023-24/01/1S3CDJ

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benz(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.5
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

----- END -----

Reviewed By:

Signature

Name Dr. Divyanshu Banerjee

Designation Technical In charge

Authorized Signatory

Signature

Name Dr. Souryadeep Mukhopadhyay

Designation Lab In charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Branch Centre (5th Floor), 74E, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India
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Email : info@mitrask.com Website : www.mitrask.com



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Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

Al/Po, - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

TEST REPORT

Report No. :

Date :

Sample No. :

Reference No. & Date :

MSKGL/ED/2023-24/004502

10/02/2024

MSKGL/ED/2023-24/01/00971

3000156017/056, Date - 15/09/2025

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines
4. Date of sampling	18/01/2024
5. Place of sampling	Near Weight Bridge BIMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004502

Sample No. : MSKGL/ED/2023-24/01/00971

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	12.6
2	Carbon Monoxide (CO)	mg/m ³	IS 5182 - Part 10 : 1999 (Reaff.2014) (NDIR) (O)	2 8HR.	0.75
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS 5182 : Part 6 : 2006 (Reaff.2012) (O)	80 24 HR.	16.7
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL:20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012) (O)	100 24 HR.	226
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24):2019 (O)	60 24 HR.	127
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS 5182 : Part 2 : 2001 (Reaff.2012) (O)	80 24 HR.	7.6

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorized Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel : +91 7044038120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000001816F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd (MGM) Joda West

A/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/51212M

Date :

06/02/2024

Sample No. :

MSKNB/ED/2023-24/01/053C7Z

Date of receipt of sample:

24/01/2024

Date(s) of performance:

24/01/2024 - 06/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	19/01/2024
5. Place of sampling	Near Project Office BIMM
6. Environmental conditions during sampling & Transport	1) Temperature :13-29 deg C 2) Barometric Pressure: 734 mm of Hg 3) Rain fall No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Dhambudhar Das, Akash Kr. Sethy
9. Field Equipments Used	MSK/BBL/FIELD/RDS-5

Report No. : MSKPL/ED/2023-24/51212M**Sample No. :** MSKNB/ED/2023-24/01/053C7Z

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.3
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	9.6

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature:

Name: Dr. Devottam Banerjee

Designation: Technical in charge

Authorized Signatory:

Signature:

Name:

Designation:

Dr. Subyudhoo Mukhopadhyay
Lab in charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Solid, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report. The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shikoni Centre (5th Floor), 74B, K.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel. : 91 33 40143000 / 22650007 Fax: 91 33 22650008
Email : info@mitrask.com Website : www.mitrask.com

Address of Branch :

P.O. Barbel Di Keonjhar Odisha 758 035



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

At/Po. - Joda Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/004550

Date :

10/02/2024

Sample No. :

MSKGL/ED/2023-24/01/00977

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamubari Iron & Mn Mines
4. Date of sampling	19/01/2024
5. Place of sampling	Near Project Office
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004550

Sample No. : MSKGL/ED/2023-24/01/00977

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	14.6
2	Carbon Monoxide (CO)	mg/m ³	IS 5182 : Part 10 :1999 (Reaff.2014) (NDIR) (O)	2 8HR.	0.46
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS 5182 : Part 6 :2006 (Reaff.2012) (O)	80 24 HR.	18.0
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL-20.0)
5	Particulate Matter (<10µm)	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012) (O)	100 24 HR.	249
6	Particulate Matter (<2.5µm)	micro gm/m ³	IS 5182 (PT-24),2019 (O)	80 24 HR.	120
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS 5182 : Part 2 :2001 (Reaff.2012) (O)	80 24 HR.	6.8

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Address of Laboratory :

Building No. P- 46, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000001818F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM) Joda West

At/Po. - Joda, Dist - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/U1212C

Date :

06/02/2024

Sample No. :

MSKNB/ED/2023-24/01/GQ3C98

Date of receipt of sample:

24/01/2024

Date(s) of performance:

24/01/2024 - 06/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/08/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	19/01/2024
5. Place of sampling	Near Shoring Yard BIMM
6. Environmental conditions during sampling & Transport	1) Temperature : 13-29 deg C 2) Barometric Pressure: 734 mm of Hg 3) Rain fall No & Cold Chain Maintained
7. Sampling Plan & Method used	IS-5182(P-11, 12) & USEPA
8. Identification of the personnel performing sampling by MSK	Dhambudhar Das, Akash Kr. Sethy, Pratik Mishra,
9. Field Equipments Used	MSK/BBL/FIELD/RDS-9

Report No. : MSKPL/ED/2023-24/U1212C

Sample No. : MSKNB/ED/2023-24/01/GQ3C98

RESULT

Chemical					
Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL-1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL-4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL-0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL-0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.2
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	12.2

Opinion : Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name Dr. Devottam Banerjee

Designation Technical in charge

Authorized Signatory:

Signature

Name Dr. Gouryachand Mukherjee

Designation Lab in charge

This result relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guidelines & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

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Email : info@mitrask.com Website : www.mitrask.com

Address of Branch :

P.O. Barbil Dt Keonjhar Orissa 758 035



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGIM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/004504

Date :

10/02/2024

Sample No. :

MSKGL/ED/2023-24/0100979

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample (if any)	Barnabari Iron & Mn Mines
4. Date of sampling	19/01/2024
5. Place of sampling	Near Shorting Yard
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004504

Sample No. : MSKGL/ED/2023-24/0100979

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	13.2
2	Carbon Monoxide (CO)	mg/m ³	IS 5182 : Part 10 :1999 (Reaff.2014) (NDIR) (O)	2 8HR.	0.69
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS 5182 : Part 6 :2006 (Reaff.2012) (O)	80 24 HR.	29.6
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL-20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012) (O)	100 24 HR.	107
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24) 2015 (O)	60 24 HR.	56
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS 5182 : Part 2 :2001 (Reaff.2012) (O)	80 24 HR.	7.6

— END —

Report Verified By



For Mitra S. K. Private Limited



Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel.: +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000001622F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd (MGM), Joda West

A/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/E1212A

Date :

06/02/2024

Sample No. :

MSKNB/ED/2023-24/01/U73CB5

Date of receipt of sample:

24/01/2024

Date(s) of performance:

24/01/2024 - 06/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000158017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	19/01/2024
5. Place of sampling	Near Back Filling Yard Bamebari
6. Environmental conditions during sampling & Transport	1) Temperature :13-29 deg C 2) Barometric Pressure: 734 mm of Hg 3) Rain fall - No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Dhambhughar Das, Akash Kr. Sethy
9. Field Equipments Used	MSK/BBU/FIELD/RDS-13

Report No. : MSKPL/ED/2023-24/E1212A

Sample No. : MSKNB/ED/2023-24/01/U73CB5

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	0.02
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4: June	Not Specified	0.21
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	11.5

Opinion : Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

----- END -----

Reviewed By:

Signature:

Name: Dr. Devottam Banerjee

Designation: Technical in charge

Authorized Signatory:

Signature:

Name: Dr. Soumyadeep Mukhopadhyay

Designation: Lab in charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Branch Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
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Email: info@mitrask.com Website: www.mitrask.com



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd (MGM) Joda West

A/Po. - Joda, Dist. - Kwonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/004540

Date :

10/02/2024

Sample No. :

MSKGL/ED/2023-24/01/00983

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample (if any)	Bamebari Iron & Mn Mines
4. Date of sampling	19/01/2024
5. Place of sampling	Near Back Filling Yard Bamebari
6. Environmental conditions during sampling & Transport	Cloudy
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004540

Sample No. : MSKGL/ED/2023-24/01/00983

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	15.5
2	Carbon Monoxide (CO)	mg/m ³	IS 5182 : Part 10 : 1999 (Reaff. 2014) (NDR) (O)	2 8HR.	0.79
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS 5182 : Part 6 : 2006 (Reaff. 2012) (O)	80 24 HR.	18.5
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL (DL-20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS 5182 : Part 23 : 2006 (Reaff. 2012) (O)	100 24 HR.	240
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24) 2019 (O)	60 24 HR.	133
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS 5182 : Part 2 : 2001 (Reaff. 2012) (O)	80 24 HR.	7.5

END

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Head Office:

Shrachi Centre (5th Floor) 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel. : 91 33 40143300 / 20550007 Fax : 91 33 22550006
Email : info@mitrask.com Website : www.mitrask.com

Page 1 of 1

Address of Laboratory :

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3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044038120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000001817F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 756034 India

Report No. :

MSKPL/ED/2023-24/912122

Date :

06/02/2024

Sample No. :

MSKNB/ED/2023-24/01/0X3CC1

Date of receipt of sample:

24/01/2024

Date(s) of performance:

24/01/2024 - 06/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/058, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique identification of sample(if any)	NA
4. Date of sampling	19/01/2024
5. Place of sampling	Near Weight Bridge BMM
6. Environmental conditions during sampling & Transport	1) Temperature: 13-29 deg C 2) Barometric Pressure: 734 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Dhambudhar Das, Akash Kr. Sethy
9. Field Equipments Used	MSK/BBU/FIELD/RDS-11

Report No. : MSKPL/ED/2023-24/912122

Sample No. : MSKNB/ED/2023-24/01/0X3CC1

RESULT

Chemical					
Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IQ 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.3
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	11.9

Opinion : Limit as per CPCB notification, New Delhi, 16th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature:

Name: Dr. Devottam Banerjee

Designation: Technical In charge

Authorized Signatory:

Signature:

Name: Dr. Soumyadeep Mukhopadhyay

Designation: Lab In charge

The results relate only to the item(s) tested

This Test Report shall not be reproduced except in full, without the permission of Mitra S.K. Private Limited.

The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Grinded Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Sitachin Centre (5th Floor), 7AB, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
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Email : info@mitrask.com Website : www.mitrask.com



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

Al/Pl. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/004555

Date :

10/02/2024

Sample No. :

MSKGL/ED/2023-24/01/00978

Reference No. & Date :

3000156017/050, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamobari Iron & Mn Mines
4. Date of sampling	19/01/2024
5. Place of sampling	Near Weight Bridge
6. Environmental conditions during sampling & Transport	Cloudy
7. Sampling Plan & Method used	

Report No. : MSKGL/ED/2023-24/004555**Sample No. :** MSKGL/ED/2023-24/01/00978

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	20.2
2	Carbon Monoxide (CO)	mg/m ³	IS 5182 : Part 10 :1999 (Reaff.2014) (NDIR) (O)	2 8HR.	0.47
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS 5182 : Part 6 :2006 (Reaff.2012) (O)	80 24 HR.	24.5
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL-20.0)
5	Particulate Matter (<10 μ m)	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012) (O)	100 24 HR.	192
6	Particulate Matter (<2.5 μ m)	micro gm/m ³	IS 5182 (PT-24).2019 (O)	80 24 HR.	100
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS 5182 : Part 2 :2001 (Reaff.2012) (O)	80 24 HR.	6.8

— END —

Report Verified By



For Mitra S. K. Private Limited



Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitra@sk.com



TC-6950



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ULR: TC-695024000001947F



TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/Q1218D

Date :

07/02/2024

Sample No. :

MSKNB/ED/2023-24/01/4Z450G

Date of receipt of sample:

29/01/2024

Date(s) of performance:

29/01/2024 - 06/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000155017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results.

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	25/01/2024
5. Place of sampling	Bamebari Project Office BIMM
6. Environmental conditions during sampling & Transport	1) Temperature :17-32 deg.C 2) Barometric Pressure: 735 mm of Hg 3) Rain fall No & Cloud Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pratik Kr.Mantri, Lalit Naik
9. Field Equipments Used	MSK/BBU/FIELD/RDS-5

Report No. : MSKPL/ED/2023-24/Q1218D**Sample No. :** MSKNB/ED/2023-24/01/4Z450G

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	0.04
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.33
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	9.7

Opinion : Limit as per CPCB notification, New Delhi, 18th November 2008, for Ambient air quality

Statement of Conformity NA

----- END -----

Reviewed By:

Signature

Name

Designation

P. Ganguly
Mr. Pasi Ganguly

Executive Chemist

Authorized Signatory

Signature

Name

Designation

Dr. Soumyadeep Mukhopadhyay
Lab in charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) + month from the date of issue of the Test Report.

The reserved part of sample(s) for microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Branch Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700015, West Bengal, India
Tel. : 91 35 40143000 / 22500007 Fax : 91 35 22560308
Email : info@mitra@sk.com Website : www.mitra@sk.com

Address of Branch :

P.O. Barbil Dt Keonjhar Orissa 758 035



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/004583

Date :

10/02/2024

Sample No. :

MSKGL/ED/2023-24/0101110

Reference No. & Date :

1000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Barnebari Iron & Mn. Mines BMM
4. Date of sampling	25/01/2024
5. Place of sampling	Near Project Office BMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004583

Sample No. : MSKGL/ED/2023-24/0101110

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	15.3
2	Carbon Monoxide (CO)	mg/m ³	IS 5182 : Part 10 : 1999 (Reaff. 2014) (NDIR) (O)	2 8HR.	0.57
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS 5182 : Part 6 : 2006 (Reaff. 2012) (O)	80 24 HR.	21.5
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL 20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012) (O)	100 24 HR.	153
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24) 2019 (O)	80 24 HR.	81
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS 5182 : Part 2 : 2001 (Reaff. 2012) (O)	80 24 HR.	7.8

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Address of Laboratory :

Building No. P-48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



Scan for Portal

ULR: TC-69502400001949F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

A/Po. : Joda, Dist. : Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/K1219E

Date :

07/02/2024

Sample No. :

MSKNB/ED/2023-24/01/EB453J

Date of receipt of sample:

29/01/2024

Date(s) of performance:

29/01/2024 - 06/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	25/01/2024
5. Place of sampling	Near Shorting Yard BIMM
6. Environmental conditions during sampling & Transport	1) Temperature : 17-32 deg C 2) Barometric Pressure: 735 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pratik Kr. Mantri, Lalit Nalik
9. Field Equipments Used	MSK/BBL/FIELD/RDS-12

Report No. : MSKPL/ED/2023-24/K1219E

Sample No. : MSKNB/ED/2023-24/01/EB453J

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	0.02
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.20
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	23.7

Opinion : Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity : NA

----- END -----

Reviewed By:

Signature:

Name:

Designation: Executive Chemist

P. Ganguly
Ms. Priti Ganguly

Authorized Signatory:

Signature:

Name:

Designation: Lab In charge

Dr. Soumyajit Mukhopadhyay
Dr. Soumyajit Mukhopadhyay

The results relate only to the item(s) tested.

This Test Report shall not be reproduced except in full, without the permission of Mitra S.K. Private Limited.

The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 3 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per GPCB guideline & (Air) 1 month from the date of issue of the Test Report. The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Bhadrach Centre (5th Floor), Y&B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel. : 91 33 40143000 / 22650007 Fax : 91 33 22650005
Email: info@mitrask.com Website: www.mitrask.com

Address of Branch :

P.O. Barhill Di Keonjhar Orissa 758 035



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/004584

Date :

10/02/2024

Sample No. :

MSKGL/ED/2023-24/01/01112

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique identification of sample(if any)	Bamebari Iron & Mn. Mines BMM
4. Date of sampling	25/01/2024
5. Place of sampling	Near Shorting Yard BMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004584

Sample No. : MSKGL/ED/2023-24/01/01112

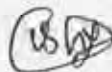
RESULT

Analysis Result of Ambient Air

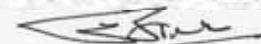
Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	12.5
2	Carbon Monoxide (CO)	mg/m ³	IS 5182 : Part 10 :1999 (Reaff.2014) (NDIR) (O)	2 8HR.	0.67
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS 5182 : Part 6 :2006 (Reaff.2012) (O)	80 24 HR.	16.9
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL:20.0)
5	Particulate Matter (<10µm)	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012) (O)	100 24 HR.	162
6	Particulate Matter (<2.5µm)	micro gm/m ³	IS 5182 (PT-24),2019 (O)	80 24 HR.	72
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS 5182 : Part 2 :2001 (Reaff.2012) (O)	80 24 HR.	5.8

----- END -----

Report Verified By



For Mitra S. K. Private Limited



Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagledanga Road, Kolkata 700015
West Bengal.
Tel : +91 7044036120
Email: udayanlab@mitrask.com



TC-8950



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ULR: TC-695024000001953F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/Z121AL

Date :

07/02/2024

Sample No. :

MSKNB/ED/2023-24/01/YY454K

Date of receipt of sample:

29/01/2024

Date(s) of performance:

29/01/2024 - 06/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	25/01/2024
5. Place of sampling	Near Back Filling Yard Bamebari
6. Environmental conditions during sampling & Transport	1) Temperature :17-32 deg C 2) Barometric Pressure: 735 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pratik Kr. Mariti, Lalit Naik
9. Field Equipments Used	MSK/BBL/FIELD/RDS-13

Report No. : MSKPL/ED/2023-24/Z121AL

Sample No. : MSKNB/ED/2023-24/01/YY454K

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.12
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	7.3

Opinion : Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

----- END -----

Reviewed By:

Signature:

Name:

Designation:

P. Ganguly

Mr. Pali Ganguly

Executive Chemist

Authorized Signatory:

Signature:

Name:

Designation: Lab In charge

Dr. Soumyadeep Mukhopadhyay

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) + month from the date of issue of the Test Report. The reserved part of sample(s) for microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Srijochi Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
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Email : info@mitrask.com Website : www.mitrask.com



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM) Joda West

AP/Co. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/004580

Date :

10/02/2024

Sample No. :

MSKGL/ED/2023-24/01/01116

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample (if any)	Bamebari Iron & Mn. Mines
4. Date of sampling	25/01/2024
5. Place of sampling	Near Back Filling Yard Bamebari
6. Environmental conditions during sampling & Transport	Clear
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004580

Sample No. : MSKGL/ED/2023-24/01/01116


RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	14.6
2	Carbon Monoxide (CO)	mg/m ³	IS 5182 : Part 10 : 1999 (Reaff. 2014) (NDIR) (O)	2 8HR.	0.74
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS 5182 : Part 6 : 2006 (Reaff. 2012) (O)	80 24 HR.	24.2
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	160 1 HR.	BDL (DL-20.0)
5	Particulate Matter (<10µm)	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012) (O)	100 24 HR.	126
6	Particulate Matter (<2.5µm)	micro gm/m ³	IS 5182 (PT.24).2019 (O)	80 24 HR.	66
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS 5182 : Part 2 : 2001 (Reaff. 2012) (O)	80 24 HR.	7.8

— END —

Report Verified By



For Mitra S. K. Private Limited


 Authorised Signatory

Address of Laboratory :

Building No. P-48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel : +91 7044038120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-69502400001948F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd (MGM) Joda West

Al/Po. : Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/61218N

Date :

07/02/2024

Sample No. :

MSKNB/ED/2023-24/01/DO4525

Date of receipt of sample:

29/01/2024

Date(s) of performance:

29/01/2024 - 06/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	25/01/2024
5. Place of sampling	Near Weight Bridge BIMM
6. Environmental conditions during sampling & Transport	1) Temperature : 17-32 deg C 2) Barometric Pressure: 735 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pratik Kr. Mantri, Lalit Naik
9. Field Equipments Used	MSK/BBL/FIELD/RDS-11

Report No. : MSKPL/ED/2023-24/61218N

Sample No. : MSKNB/ED/2023-24/01/DO4525

RESULT

Chemical					
Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL-1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL-4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL-0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	0.05
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.41
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	11.2

Opinion : Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name : Ms. Piali Ganguly

Designation : Executive Chemist

Authorized Signatory:

Signature

Name : Dr. Soumyadeep Mukherjee

Designation : Lab In charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guidelines & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shree Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.

Tel : 91 33 40143000 / 22050007 Fax : 91 33 22660009

Email : info@mitrask.com Website : www.mitrask.com



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd (MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Orissa - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/004592

Date :

10/02/2024

Sample No. :

MSKGL/ED/2023-24/0101111

Reference No. & Date :

3000156017/058, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamchari Iron & Mn. Mines BMM
4. Date of sampling	25/01/2024
5. Place of sampling	Near Weight Bridge BMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004592

Sample No. : MSKGL/ED/2023-24/0101111

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	18.5
2	Carbon Monoxide (CO)	mg/m ³	IS 5182 : Part 10 :1999 (Reaff.2014) (NDIR) (O)	2 8HR	0.53
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS 5182 : Part 6 :2006 (Reaff.2012) (O)	80 24 HR.	19.6
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL:20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012) (O)	100 24 HR.	203
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24) 2019 (O)	50 24 HR.	107
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS 5182 : Part 2 :2001 (Reaff.2012) (O)	80 24 HR.	8.8

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Address of Laboratory :

Building No. P-48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



Scan for Portal

ULR: TC-695024000001954F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Pl. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/S121AR

Date :

07/02/2024

Sample No. :

MSKNB/ED/2023-24/01/1Y455L

Date of receipt of sample:

29/01/2024

Date(s) of performance:

29/01/2024 - 06/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000166017/058, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	26/01/2024
5. Place of sampling	Near Project Office BJMM
6. Environmental conditions during sampling & Transport	1) Temperature : 17-32 deg C 2) Barometric Pressure: 734 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS 5182(P-11, 12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pratik Kr.Mantn, Lalin Nail
9. Field Equipments Used	MSK/BBL/FIELD/RDS-5

Report No. : MSKPL/ED/2023-24/S121AR

Sample No. : MSKNB/ED/2023-24/01/1Y455L

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	0.02
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.45
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	7.7

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

----- END -----

Reviewed By

Signature

P. Ganguly

Name

Ms. Poo Ganguly

Designation

Executive Chemist

Authorized Signatory

Signature

Name

Dr. Soumyajit Mukherjee

Designation

Lab In charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guidelines & (Air) 1 month from the date of issue of the Test Report. The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

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TEST REPORT**Name & Address of Customer :**

Tata Steel Ltd (MGM) Joda West

A/Pn - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/004581

Date :

10/02/2024

Sample No. :

MSKGL/ED/2023-24/01/01117

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamabari Iron & Mn. Mines BIMM
4. Date of sampling	26/01/2024
5. Place of sampling	Near Project Office BIMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004581**Sample No. :** MSKGL/ED/2023-24/01/01117**RESULT****Analysis Result of Ambient Air**


Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	13.8
2	Carbon Monoxide (CO)	mg/m ³	IS 5182 : Part 10 : 1999 (Reaff. 2014) (NDIR) (O)	2 8HR.	0.56
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS 5182 : Part 6 : 2006 (Reaff. 2012) (O)	80 24 HR.	19.8
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL<20.0)
5	Particulate Matter (<10µm)	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012) (O)	100 24 HR.	134
6	Particulate Matter (<2.5µm)	micro gm/m ³	IS 5182 (PT-24) 2019 (O)	80 24 HR.	65
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS 5182 : Part 2 : 2001 (Reaff. 2012) (O)	80 24 HR.	8.2

— END —

Report Verified By



For Mitra S. K. Private Limited


Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel : +91 7044036120
Email: udayanlab@mitrask.com



TC-8950



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ULR: TC-895024000001956F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM), Joda West

At/Plc. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/C121BQ

Date :

07/02/2024

Sample No. :

MSKNB/ED/2023-24/01/KX454B

Date of receipt of sample:

29/01/2024

Date(s) of performance:

29/01/2024 - 06/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000166017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	26/01/2024
5. Place of sampling	Near Shorting Yard BIMM
6. Environmental conditions during sampling & Transport:	1) Temperature : 17-32 deg C 2) Barometric Pressure: 734 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pratik Kr.Mantri, Lalini Naik
9. Field Equipments Used	MSK/BBL/FIELD/RDS-12

Report No. : MSKPL/ED/2023-24/C121BQ

Sample No. : MSKNB/ED/2023-24/01/KX454B

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4: June	Not Specified	0.18
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name

Mr. Pasi Gengul

Designation

Executive Chemist

Authorized Signatory:

Signature

Name

Dr. Sudhakar Mukherjee

Designation

Lab In charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report. The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd (MGM), Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/004586

Date :

10/02/2024

Sample No. :

MSKGL/ED/2023-24/01/01119

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines BMM
4. Date of sampling	26/01/2024
5. Place of sampling	Near Shorting Yard BMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004586

Sample No. : MSKGL/ED/2023-24/01/01119

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	13.8
2	Carbon Monoxide (CO)	mg/m ³	IS 5182 : Part 10 : 1999 (Reaff. 2014) (NDIR) (O)	2 8HR.	0.50
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS 5182 : Part 6 : 2006 (Reaff. 2012) (O)	80 24 HR.	24.3
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL (DL-20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012) (O)	100 24 HR.	139
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24), 2019 (O)	50 24 HR.	67
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS 5182 : Part 2 : 2001 (Reaff. 2012) (O)	80 24 HR.	8.0

— END —

Report Verified By

(Signature)

For Mitra S. K. Private Limited

(Signature)
Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel : +91 7044036120
Email: udayantab@mitrask.com



TC-6950



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ULR: TC-695024000001960F

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

At/ Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

TEST REPORT

Report No. :

Date :

Sample No. :

Date of receipt of sample:

Date(s) of performance:

Location of performance of

Reference No. & Date :

Discipline:

MSKPL/ED/2023-24/8121BE

07/02/2024

MSKNB/ED/2023-24/01/T6456V

29/01/2024

29/01/2024 - 06/02/2024

Permanent Facility

3000156017/055, Date - 16/09/2023

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	26/01/2024
5. Place of sampling	Near Back Filling Yard Bamebari
6. Environmental conditions during sampling & Transport	1) Temperature : 17-32 deg C 2) Barometric Pressure : 734 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11, 12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pratik K. Mantri, Lalit Naik
9. Field Equipments Used	MSK/BBL/FIELD/RDS-13

Report No. : MSKPL/ED/2023-24/8121BE

Sample No. : MSKNB/ED/2023-24/01/T6456V

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	0.02
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.22
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	25.5

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

----- END -----

Reviewed By:

Signature :

Name : Ms. Pooi Ganguly

Designation : Executive Chemist

Authorized Signatory:

Signature :

Name : Dr. Saumyadeep Mukhopadhyay

Designation : Lab in charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report. The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office:
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Address of Branch :

P.O. Barbil Dt Keonjhar Orissa 758 035



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

AtPo. - Joda, Dist - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/004591

Date :

10/02/2024

Sample No. :

MSKGL/ED/2023-24/01/01123

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines BMM
4. Date of sampling	26/01/2024
5. Place of sampling	Near Back Filling Yard Bamebari
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004591

Sample No. : MSKGL/ED/2023-24/01/01123

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	14.2
2	Carbon Monoxide (CO)	mg/m ³	IS 5182 : Part 10 : 1999 (Reaff. 2014) (NDIR) (O)	2 8HR.	0.37
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS 5182 : Part 6 : 2006 (Reaff. 2012) (O)	80 24 HR.	16.6
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BOL(DL-20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012) (O)	100 24 HR.	131
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24), 2019 (O)	80 24 HR.	71
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS 5182 : Part 2 : 2001 (Reaff. 2012) (O)	80 24 HR.	BOL(DL-6.0)

— END —

Report Verified By



For Mitra S. K. Private Limited



Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel : +91 7044036120
Email: udayanlab@mitrask.com



TC-8950



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ULR: TC-89502400001955F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

AI/PO. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/8121BR

Date :

07/02/2024

Sample No. :

MSKNB/ED/2023-24/01/CV453Y

Date of receipt of sample:

29/01/2024

Date(s) of performance:

29/01/2024 - 05/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000150017/050, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	28/01/2024
5. Place of sampling	Near Weight Bridge BMM
6. Environmental conditions during sampling & Transport	1) Temperature : 17-32 deg C 2) Barometric Pressure: 734 mm of Hg 3) Rain fall No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pratik Kr.Mantri, Lalit Naik
9. Field Equipments Used	MSK/BBL/FIELD/RDS-11

Report No. : MSKPL/ED/2023-24/8121BR

Sample No. : MSKNB/ED/2023-24/01/CV453Y

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL-1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL-4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL-0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	0.08
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.51
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	8.4

Opinion : Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

----- END -----

Reviewed By:

Signature

Name : Mr. Pali Ganguly

Designation : Executive Chemist

Authorized Signatory:

Signature

Name

Designation : Lab In charge

The results relate only to the item(s) tested

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Aq) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

Al/Pe. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/004582

Date :

10/02/2024

Sample No. :

MSKGL/ED/2023-24/01/01118

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mns Mines BMM
4. Date of sampling	26/01/2024
5. Place of sampling	Near Weight Bridge BMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004582**Sample No. :** MSKGL/ED/2023-24/01/01118

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	17.2
2	Carbon Monoxide (CO)	mg/m ³	IS 5182 : Part 10 : 1999 (Reaff. 2014) (NDIR) (O)	2 8HR.	0.57
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS 5182 : Part 6 : 2006 (Reaff. 2012) (O)	80 24 HR.	21.4
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL-20.0)
5	Particulate Matter (<10µm)	micro gm/m ³	IS 5182 : Part 23:2006 (Reaff. 2012) (O)	100 24 HR.	162
6	Particulate Matter (<2.5µm)	micro gm/m ³	IS 5182 (PT-24):2019 (O)	80 24 HR.	82
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS 5182 : Part 2 : 2001 (Reaff. 2012) (O)	80 24 HR.	7.3

----- END -----

Report Verified By**For Mitra S. K. Private Limited**
Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladange Road, Kolkata 700015
West Bengal
Tel. : +91 7044035120
Email: udayanlab@mitrask.com



TC-6950



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URL: TC-69502400002251F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd (MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034, India

Report No. :

MSKPL/ED/2023-24/3121BP

Date :

12/02/2024

Sample No. :

MSKNB/ED/2023-24/02/JWR57

Date of receipt of sample:

01/02/2024

Date(s) of performance:

01/02/2024 - 12/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	28/01/2024
5. Place of sampling	Near Project Office BIMM
6. Environmental conditions during sampling & Transport	1) Temperature : 18-33 deg C 2) Barometric Pressure: 735 mm of Hg 3) Rain fall No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11, 12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pranab Kr Setty
9. Field Equipments Used	MSK/BBL/FIELD/RDS-5

Report No. : MSKPL/ED/2023-24/3121BP

Sample No. : MSKNB/ED/2023-24/02/JWR57

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	0.03
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.35
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	8.4

Opinion : Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

----- END -----

Reviewed By:

Signature

P. Ganguly

Name : Mr. Pini Ganguly

Designation : Executive Chemist

Authorized Signatory:

Signature

Name : Dr. Soumyadeep Mukhopadhyay

Designation : Lab in charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guidelines & (Air) 1 month from the date of issue of the Test Report. The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shree Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700015, West Bengal, India
Tel. : 91 33 40143000 / 22650007 Fax : 91 33 22650008
Email : info@mitrask.com Website : www.mitrask.com

Address of Branch :

P.O. Barbil DL Koonjhar Orissa 758 035



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (NIGM) - Joda West

At/To :- Joda, Dist. - Koonjhar, Odisha - 758034 - India Pin

Report No. :

MSKGL/ED/2023-24/004601

Date :

10/02/2024

Sample No. :

MSKGL/ED/2023-24/02/00004

Reference No. & Date :

3000156017/058, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Air
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Barmeben Iron & Mn. Mines BMM
4. Date of sampling	29/01/2024
5. Place of sampling	Near Project Office BMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004601

Sample No. : MSKGL/ED/2023-24/02/00004

RESULT

Analysis Result of Ambient Air					
Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	15.8
2	Carbon Monoxide (CO)	mg/m ³	IS 5182 : Part 10 : 1999 (Reaff. 2014) (NDIR) (O)	2 8HR.	0.48
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS 5182 : Part 6 : 2006 (Reaff. 2012) (O)	80 24 HR.	21.2
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL-20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012) (O)	100 24 HR.	159
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24):2019 (O)	50 24 HR.	72
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS 5182 : Part 2 : 2001 (Reaff. 2012) (O)	80 24 HR.	8.4

— END —

Report Verified By

For Mitra S. K. Private Limited

 Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000002253F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd (MGM), Joda West

A/Po - Joda, Dist - Keonjhar, Odisha - 758034, India

Report No. :

MSKPL/ED/2023-24/9121B7

Date :

12/02/2024

Sample No. :

MSKNB/ED/2023-24/02/3T1S3P

Date of receipt of sample:

01/02/2024

Date(s) of performance:

01/02/2024 - 12/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	29/01/2024
5. Place of sampling	Near Shorting Yard BIMM
6. Environmental conditions during sampling & Transport	1) Temperature : 18-33 deg C 2) Barometric Pressure: 735 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used.	IS 5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK.	Pranab Kr Setty
9. Field Equipments Used	MSK/BBL/FIELD/RDS-12

Report No. : MSKPL/ED/2023-24/9121B7

Sample No. : MSKNB/ED/2023-24/02/3T1S3P

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.23
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion : Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

END

Reviewed By:

Signature

Name Ms. Pooja Ganguly

Designation Executive Chemist

Authorized Signatory:

Signature

Name Dr. Sohamyashree Mukherjee

Designation Lab In charge

The results relate only to the item(s) tested.

This Test Report shall not be reproduced except in full, without the permission of Mitra S.K. Private Limited.

The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guidelines & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shastri Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
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Email : info@mitrask.com Website : www.mitrask.com



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Orissa - 758034 India Pin

Report No. :

Date :

Sample No. :

Reference No. & Date :

MSKGL/ED/2023-24/004611

10/02/2024

MSKGL/ED/2023-24/02/00006

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample (if any)	Bamebari Iron & Mn. Mines BMM
4. Date of sampling	29/01/2024
5. Place of sampling	Near Shorting Yard BMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004611

Sample No. : MSKGL/ED/2023-24/02/00006

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	13.4
2	Carbon Monoxide (CO)	mg/m ³	IS 5182 : Part 10 : 1999 (Reaff. 2014) (NDIR) (O)	2 8HR.	0.60
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS 5182 : Part 6 : 2006 (Reaff. 2012) (O)	80 24 HR.	23.4
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL (DL 20.0)
5	Particulate Matter (<10µm)	micro gm/m ³	IS 5182 : Part 23:2006 (Reaff. 2012) (O)	100 24 HR.	118
6	Particulate Matter (<2.5µm)	micro gm/m ³	IS 5182 (Pt. 24) 2019 (O)	60 24 HR.	57
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS 5182 : Part 2 : 2001 (Reaff. 2012) (O)	80 24 HR.	7.0

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-69502400002257F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/N121BK

Date :

12/02/2024

Sample No. :

MSKNB/ED/2023-24/02/WD8H4Y

Date of receipt of sample:

01/02/2024

Date(s) of performance:

01/02/2024 - 12/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/055, Date - 15/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	29/01/2024
5. Place of sampling	Near Back Filling Yard Bamebari
6. Environmental conditions during sampling & Transport	1) Temperature : 16-33 deg C 2) Barometric Pressure: 735 mm of Hg 3) Rain fall - No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pranab Kr Setty
9. Field Equipments Used	MSK/BBU/FIELD/RDS-13

Report No. : MSKPL/ED/2023-24/N121BK

Sample No. : MSKNB/ED/2023-24/02/WD8H4Y

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benz(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.06
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name: Ms. Priya Ganguly

Designation: Executive Chemist

Authorized Signatory:

Signature

Name

Designation: Lab In charge

The results relate only to the item(s) tested.

This Test Report shall not be reproduced except in full, without the permission of Mitra S. K. Private Limited.

The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) + month from the date of issue of the Test Report. The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shree Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India
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Email : info@mitrask.com Website : www.mitrask.com

Address of Branch :

P.O. Bairali Dt Keonjhar Orissa 758 035



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd (MGMT) Joda West

A/P.O. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/004618

Date :

10/02/2024

Sample No. :

MSKGL/ED/2023-24/02/00010

Reference No. & Date :

3000156017/058, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines BMM
4. Date of sampling	29/01/2024
5. Place of sampling	Near Back Filling Yard Bamebari
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004618

Sample No. : MSKGL/ED/2023-24/02/00010

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	15.1
2	Carbon Monoxide (CO)	mg/m ³	IS 5182 : Part 10 :1999 (Reaff.2014) (NDIR) (O)	2 8HR.	0.48
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS 5182 : Part 6 :2006 (Reaff.2012) (O)	80 24 HR.	17.6
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012) (O)	100 24 HR.	215
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24):2019 (O)	60 24 HR.	102
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS 5182 : Part 2 :2001 (Reaff.2012) (O)	80 24 HR.	7.8

----- END -----

Report Verified By

For Mitra S. K. Private Limited

 Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000002252F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/0121BT

Date :

12/02/2024

Sample No. :

MSKNB/ED/2023-24/02/3EMN65

Date of receipt of sample:

01/02/2024

Date(s) of performance:

01/02/2024 - 12/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000158017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	29/01/2024
5. Place of sampling	Near Weight Bridge BIMM
6. Environmental conditions during sampling & Transport	1) Temperature :18-33 deg C 2) Barometric Pressure: 735 mm of Hg 3) Rain fall No & Cold Chain Maintained
7. Sampling Plan & Method used	IS 5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pranab Kr Setty
9. Field Equipments Used	MSK/BBL/FIELD/RDS-11

Report No. : MSKPL/ED/2023-24/0121BT

Sample No. : MSKNB/ED/2023-24/02/3EMN65

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	0.04
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.73
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	12.7

Opinion : Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature :

Name : Ms. Priya Ganguly

Designation : Executive Chemist

Authorized Signatory:

Signature :

Name : Dr. Soumyadeep Mukhopadhyay

Designation : Lab In charge

The results relate only to the item(s) tested.

This Test Report shall not be reproduced except in full, without the permission of Mitra S. K. Private Limited.

The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 10 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shradha Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India
Tel. : 91 22 40143000 / 22550007 Fax : 91 33 22550008
Email : info@mitrask.com Website : www.mitrask.com

Address of Branch :

P.O. Barbil Dt Keonjhar Orissa 758 035



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/004617

Date :

05/02/2024

Sample No. :

MSKGL/ED/2023-24/02/00005

Reference No. & Date :

3000158017/058, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines BMM
4. Date of sampling	29/01/2024
5. Place of sampling	Near Weight Bridge BMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004617

Sample No. : MSKGL/ED/2023-24/02/00005

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	10.2
2	Carbon Monoxide (CO)	mg/m ³	IS 5182 : Part 10 :1999 (Reaff.2014) (NDIR) (O)	2 8HR.	0.54
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS 5182 : Part 6 :2006 (Reaff.2012) (O)	80 24 HR.	22.1
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL:20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS 5182: Part 23:2008 (Reaff. 2012) (O)	100 24 HR.	208
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24).2018 (O)	80 24 HR.	121
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS 5182 : Part 2 :2001 (Reaff.2012) (O)	80 24 HR.	7.8

— END —

Report Verified By

For Mitra S. K. Private Limited

 Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel : +91 7044036120
Email: udayanlab@mitrask.com



TC-8950



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ULR: TC-895024000002163F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM), Joda West

Al/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/3121BN

Date :

10/02/2024

Sample No. :

MSKNB/ED/2023-24/02/25Y89J

Date of receipt of sample:

02/02/2024

Date(s) of performance:

02/02/2024 - 10/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 18/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	30/01/2024
5. Place of sampling	Near Bamebari Project Office BIMM
6. Environmental conditions during sampling & Transport	1) Temperature : 18-33 deg C 2) Barometric Pressure: 735 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS-5182(P-11, 12) & USEPA
8. Identification of the personnel performing sampling by MSK	LALIN NAIK
9. Field Equipments Used	MSK/BBL/FIELD/RDS-5

Report No. : MSKPL/ED/2023-24/3121BN

Sample No. : MSKNB/ED/2023-24/02/25Y89J

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	0.02
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.39
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature:

Name:

Mr. Priti Ganguly

Designation:

Executive Chemist

Authorized Signatory:

Signature:

Name:

Dr. Soumyadeep Mukhopadhyay

Designation:

Lab in charge

The results relate only to the item(s) tested

This Test Report shall not be reproduced except in full, without the permission of Mitra S. K. Private Limited.

The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 7 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Borehole Water, Sealed Food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shree Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India
Tel : 01 33 40143000 / 22050007 Fax : 01 33 22600009
Email : info@mitrask.com Website : www.mitrask.com



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TEST REPORT**Name & Address of Customer :**

Tata Steel Ltd.(MGM)_Joda West

Al/Pl. - Joda, Dist - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/004613

Date :

10/02/2024

Sample No. :

MSKGL/ED/2023-24/02/00011

Reference No. & Date :

3000156017/056, Date - 15/06/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines BIMM
4. Date of sampling	30/01/2024
5. Place of sampling	Near Project Office BIMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004613**Sample No. :** MSKGL/ED/2023-24/02/00011**RESULT****Analysis Result of Ambient Air**

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	14.9
2	Carbon Monoxide (CO)	mg/m ³	IS 5182 : Part 10 :1999 (Reaff.2014) - (NDIR) (O)	2 8HR.	0.41
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS 5182 : Part 6 :2006 (Reaff.2012) (O)	80 24 HR.	20.3
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL-20.0)
5	Particulate Matter (<10µm)	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012) (O)	100 24 HR.	151
6	Particulate Matter (<2.5µm)	micro gm/m ³	IS 5182 (PT-24),2019 (O)	60 24 HR.	80
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS 5182 : Part 2 :2001 (Reaff.2012) (O)	80 24 HR.	8.2

— END —

Report Verified By



For Mitra S. K. Private Limited


 Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrasrk.com



TC-6950



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ULR: TC-695024000002165F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM), Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPLED/2023-24/Z121B8

Date :

10/02/2024

Sample No. :

MSKNB/ED/2023-24/02/M4XM7Q

Date of receipt of sample:

02/02/2024

Date(s) of performance:

02/02/2024 - 10/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 18/08/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	30/01/2024
5. Place of sampling	Near Joribar Shoring Yard BMM
6. Environmental conditions during sampling & Transport	1) Temperature :18-33 deg C 2) Barometric Pressure: 735 mm of Hg 3) Rain fall: No & Cold Chain Maintained
7. Sampling Plan & Method used	IS 5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	LALIN NAIK
9. Field Equipments Used	MSK/BBL/FIELD/RDS-12

Report No. : MSKPLED/2023-24/Z121B8

Sample No. : MSKNB/ED/2023-24/02/M4XM7Q

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	0.01
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.18
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion : Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature

P. Ganguly

Name

Mr. Priti Ganguly

Designation

Executive Chemist

Authorized Signatory:

Signature

Dr. Soumyajit Mukhopadhyay

Name

Designation : Lab In charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd (MGM), Joda West

A/P.O. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

Date :

Sample No. :

Reference No. & Date :

MSKGL/ED/2023-24/004619

10/02/2024

MSKGL/ED/2023-24/02/00013

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines BMM
4. Date of sampling	30/01/2024
5. Place of sampling	Near Shortling Yard BMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004619

Sample No. : MSKGL/ED/2023-24/02/00013

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	12.9
2	Carbon Monoxide (CO)	mg/m ³	IS 5182 : Part 10 : 1999 (Reaff. 2014) (NDIR) (O)	2 8HR.	0.58
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS 5182 : Part 6 : 2006 (Reaff. 2012) (O)	80 24 HR.	22.1
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL-20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012) (O)	100 24 HR.	131
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24):2019 (O)	60 24 HR.	59
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS 5182 : Part 2 : 2001 (Reaff. 2012) (O)	80 24 HR.	8.0

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-8950



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ULR: TC-695024000002169F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/V121B1

Date :

10/02/2024

Sample No. :

MSKNB/ED/2023-24/02/ZVMSA1

Date of receipt of sample:

02/02/2024

Date(s) of performance:

02/02/2024 - 10/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/05/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	30/01/2024
5. Place of sampling	Near Back Filling Yard Bamebari
6. Environmental conditions during sampling & Transport	1) Temperature : 18-33 deg C 2) Barometric Pressure: 735 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS 5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	LALIN NAIK
9. Field Equipments Used	MSK/BBU/FIELD/RDS-13

Report No. : MSKPL/ED/2023-24/V121B1

Sample No. : MSKNB/ED/2023-24/02/ZVMSA1

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.12
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature

P. Ganguly

Name

Mr. Priy Ganguly

Designation

Executive Chemist

Authorized Signatory:

Signature

Name

Dr. Soumyadeep Mukherjee

Designation

Lab In charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 3 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report. The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

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Mitra S. K. Private Limited

Address of Branch :

P.O. Barbil Dt Keonjhar Orissa 758 035



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

At/Po. - Joda. Dist. - Keonjhar, Orissa - 758034 India Pin

Report No. :

Date :

Sample No. :

Reference No. & Date :

MSKGL/ED/2023-24/004610

10/02/2024

MSKGL/ED/2023-24/02/00017

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample (if any)	Tiringpahar Iron & Mn. Mines TIMM
4. Date of sampling	30/01/2024
5. Place of sampling	Near Back Filling Yard Bameban
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004610

Sample No. : MSKGL/ED/2023-24/02/00017

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH3)	micro gm/m3	IS 5182 (Part 25)	400 24 HR.	14.8
2	Carbon Monoxide (CO)	mg/m3	IS 5182 : Part 10 : 1999 (Reaff.2014) (NDIR) (O)	2 8HR.	0.46
3	Nitrogen Dioxide (NO2)	micro gm/m3	IS 5182 : Part 6 : 2006 (Reaff.2012) (O)	80 24 HR.	18.3
4	Ozone (O3)	micro gm/m3	IS 5182 (Part 9)	180 1 HR.	BDL (DL 20.0)
5	Particulate Matter (<10um)	micro gm/m3	IS 5182: Part 23:2006 (Reaff. 2012) (O)	100 24 HR.	248
6	Particulate Matter (<2.5um)	micro gm/m3	IS 5182 (PT-24).2019 (O)	60 24 HR.	130
7	Sulphur Dioxide (SO2)	micro gm/m3	IS 5182 : Part 2 : 2001 (Reaff.2012) (O)	80 24 HR.	6.9

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Head Office: -Strada Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
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Email : info@mitsrk.com Website : www.mitsrk.com

Page 1 of 1

Address of Laboratory :

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3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-8950



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ULR: TC-695024000002164F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM), Joda West

AI/Po. : Joda, Dist. : Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/0121B7

Date :

10/02/2024

Sample No. :

MSKNB/ED/2023-24/02/9CFN4Q

Date of receipt of sample:

02/02/2024

Date(s) of performance:

02/02/2024 - 10/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000166017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique identification of sample(if any)	NA
4. Date of sampling	30/01/2024
5. Place of sampling	Near Joribar Weight Bridge BMM
6. Environmental conditions during sampling & Transport	1) Temperature : 18-33 deg C 2) Barometric Pressure: 735 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11.12) & USEPA
8. Identification of the personnel performing sampling by MSK	LALIN NAIK
9. Field Equipments Used	MSK/BBL/FIELD/RDS-11

Report No. : MSKPL/ED/2023-24/0121B7

Sample No. : MSKNB/ED/2023-24/02/9CFN4Q

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4: June	Not Specified	0.64
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	7.7

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

----- END -----

Reviewed By:

Signature:

Name:

Designation:

P. Ganguly

Mr. Pankaj Ganguly

Executive Chemist

Authorized Signatory:

Signature:

Name:

Designation:

Dr. Sanyukta Mishra

Lab in charge

The results relate only to the item(s) tested.

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The retained part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The retained part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The retained part of sample(s) for microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

At/Po. - Joda Dist. - Keonjhar, Odisha - 758034 - India Pin

Report No. :

MSKGL/ED/2023-24/004608

Date :

10/02/2024

Sample No. :

MSKGL/ED/2023-24/02/00012

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines BMM
4. Date of sampling	30/01/2024
5. Place of sampling	Near Weight Bridge BMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004608

Sample No. : MSKGL/ED/2023-24/02/00012

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	14.6
2	Carbon Monoxide (CO)	mg/m ³	IS 5182 : Part 10 : 1999 (Reaff. 2014) (NDIR) (O)	2 8HR.	0.51
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS 5182 : Part 6 : 2006 (Reaff. 2012) (O)	80 24 HR.	21.6
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	100 1 HR.	BDL(OL.20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012) (O)	100 24 HR.	193
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24),2019 (O)	60 24 HR.	93
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS 5182 : Part 2 : 2001 (Reaff.2012) (O)	80 24 HR.	8.1

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Address of Laboratory :

Building No. P-48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000001823F



TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM) Joda West

AI/PO - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/ED/2023-24/Q1212Q

Date :

06/02/2024

Sample No. :

MSKNB/ED/2023-24/01/0N3C7F

Date of receipt of sample:

24/01/2024

Date(s) of performance:

24/01/2024 - 05/02/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/09/2023

Discipline:

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	20/01/2024
5. Place of sampling	Bamebari SSVM School
6. Environmental conditions during sampling & Transport	1) Temperature :14-30 deg C 2) Barometric Pressure: 734 mm of Hg 3) Rain fall No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Dhambudhar Des,Lalin Naik
9. Field Equipments Used	MSK/BBL/FIELD/RDS-14

Report No. : MSKPL/ED/2023-24/Q1212Q**Sample No. :** MSKNB/ED/2023-24/01/0N3C7F

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	0.03
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.28
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	5.7

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:**Signature****Name** Dr. Devottam Banerjee**Designation** Technical In charge**Authorized Signatory****Signature****Name****Designation** Lab In charge

The results relate only to the item(s) tested.

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report. The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shree Centre (5th Floor), T-48, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India
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Address of Branch :

P.O., Barbil Dt Keonjhar Orissa 758 035



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM)- Joda West

A/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/004499

Date :

10/02/2024

Sample No. :

MSKGL/ED/2023-24/01/00984

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines
4. Date of sampling	20/01/2024
5. Place of sampling	Bamebari SSVM School (Buffer Zone)
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004499

Sample No. : MSKGL/ED/2023-24/01/00984

RESULT

Analysis Result of Ambient Air


Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	BDL(DL-10)
2	Carbon Monoxide (CO)	mg/m ³	IS 5182 : Part 10 :1999 (Reaff.2014) (NDIR) (O)	2 8HR.	0.51
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS 5182 : Part 6 :2006 (Reaff.2012) (O)	80 24 HR.	16.3
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL-20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS 5182: Part.23:2006 (Reaff. 2012) (O)	100 24 HR.	206
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24),2019 (O)	60 24 HR.	97
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS 5182 : Part 2 :2001 (Reaff.2012) (O)	80 24 HR.	BDL(DL-6.0)

— END —

Report Verified By



For Mitra S. K. Private Limited


 Authorised Signatory

Address of Laboratory :

Building No. P-48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel.: +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000002170F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

Date :

Sample No. :

Date of receipt of sample:

Date(s) of performance:

Location of performance of

Reference No. & Date :

Discipline:

MSKPL/ED/2023-24/0121BC

10/02/2024

MSKNB/ED/2023-24/02/VKU74K

02/02/2024

02/02/2024 - 10/02/2024

Permanent Facility

3000158017/055, Date - 16/09/2023

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	31/01/2024
5. Place of sampling	Jarouli High School Juridi
6. Environmental conditions during sampling & Transport	1) Temperature : 18-33 deg C 2) Barometric Pressure: 735 mm of Hg 3) Rain fall : No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Dhambudhar Das
9. Field Equipments Used	MSK/BBL/FIELD/RDS-18.

Report No. : MSKPL/ED/2023-24/0121BC

Sample No. : MSKNB/ED/2023-24/02/VKU74K

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	BDL(DL:0.01)
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion : Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

----- END -----

Reviewed By:

Signature

Name

Designation

P. Ganguly

Mr. Pail Ganguly

Executive Chemist

Authorized Signatory:

Signature

Name

Designation

P. Ganguly

Mr. Pail Ganguly

Lab In charge

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The reserved part of sample(s) for chemical analysis (Non - perishable sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report. The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shree Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700015, West Bengal, India.
Tel.: 91 33 40143000 / 22650007 Fax: 91 33 22650008
Email: info@mitrask.com Website: www.mitrask.com

Address of Branch :

P.O. Barbil Dt Keonjhar Orissa 758 035



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

A/Po - Joda, Dist. - Keonjhar, Odisha - 758034 - India Pin

Report No. :

MSKGL/ED/2023-24/004616

Date :

10/02/2024

Sample No. :

MSKGL/ED/2023-24/02/00018

Reference No. & Date :

3000156017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique Identification of sample(if any)	Bamebari Iron & Mn. Mines BMM
4. Date of sampling	31/01/2024
5. Place of sampling	Jarauli High School Jaridi
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004616

Sample No. : MSKGL/ED/2023-24/02/00018

RESULT

Analysis Result of Ambient Air

Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	14.6
2	Carbon Monoxide (CO)	mg/m ³	IS 5182 : Part 10 :1999 (Reaff.2014) (NDIR) (O)	2 8HR.	0.68
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS 5182 : Part 6 :2006 (Reaff.2012) (O)	80 24 HR.	17.6
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DL:20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012) (O)	100 24 HR.	170
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24):2019 (O)	60 24 HR.	83
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS 5182 : Part 2 :2001 (Reaff.2012) (O)	80 24 HR.	8.2

— END —

Report Verified By

For Mitra S. K. Private Limited

 Authorised Signatory

Head Office:

 Shakti Cinema (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
 Tel.: 91 33 40142000 / 22650007 Fax : 91 33 22650008
 Email : info@mitrask.com Website : www.mitrask.com

Page 1 of 1

Address of Laboratory :

Building No. P- 48, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000001846F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

AP/PO - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

Date :

Sample No. :

Date of receipt of sample:

Date(s) of performance:

Location of performance of

Reference No. & Date :

Discipline:

MSKPL/ED/2023-24/M1215T

06/02/2024

MSKNB/ED/2023-24/01/Y8450A

27/01/2024

27/01/2024 - 06/02/2024

Permanent Facility

3000156017/056, Date - 16/09/2023

Chemical

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	Atmospheric Pollution
2. Description of sample	Ambient air
3. Unique Identification of sample(if any)	NA
4. Date of sampling	24/01/2024
5. Place of sampling	Palasa (kha) Village Pond
6. Environmental conditions during sampling & Transport	1) Temperature : 16-31 deg C 2) Barometric Pressure: 734 mm of Hg 3) Rain fall No & Cold Chain Maintained
7. Sampling Plan & Method used	IS:5182(P-11,12) & USEPA
8. Identification of the personnel performing sampling by MSK	Pratik Kr.Mantri, Lalit Naik
9. Field Equipments Used	MSK/BBL/FIELD/FDS-14

Report No. : MSKPL/ED/2023-24/M1215T

Sample No. : MSKNB/ED/2023-24/01/Y8450A

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Arsenic as (As)	ng/m3	USEPA-IO 3.4, June	6 (Annual)	BDL(DL:1.0)
2	Benzene	micro gm/m3	IS 5182 (Part 11)	5 (Annual)	BDL(DL:4.2)
3	Benzo(a)Pyrene	ng/m3	IS 5182 (Part 12)	1 (Annual)	BDL(DL:0.5)
4	Lead (as Pb)	micro gm/m3	USEPA-IO 3.4, June	1 (24 Hours)	BDL(DL:0.01)
5	Manganese as Mn	micro gm/m3	USEPA-IO 3.4, June	Not Specified	0.09
6	Nickel as Ni	ng/m3	USEPA-IO 3.4, June	20 (Annual)	BDL(DL:5.0)

Opinion :

Limit as per CPCB notification, New Delhi, 18th November 2009, for Ambient air quality

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name

Designation : Executive Chemist

P. Ganguly

Ms. Pail Ganguly

Authorized Signatory

Signature

Name

Designation

Dr. Soumyadeep Mukhopadhyay
Lab In charge

The results relate only to the item(s) tested

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The reserved part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Air) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (Non - perishable sample(s) Food, Sealed Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report.

Head Office: Shreechi Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.

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Address of Branch :
P.O., Barbil Dt Keonjhar Orissa 758 035



Scan for Portal

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

AuPo. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2023-24/004589

Date :

10/02/2024

Sample No. :

MSKGL/ED/2023-24/01/01109

Reference No. & Date :

3000156/017/056, Date - 15/09/2023

We hereby certify that the following sample Drawn by us has been analyzed with the following results:

1. Group	AIR
2. Description of sample	Ambient Air
3. Unique identification of sample(if any)	Tirotpahar Iron & Mn. Mines BMM
4. Date of sampling	24/01/2024
5. Place of sampling	Palasa (kha) Village Pond (Buffer Zone)
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2023-24/004589

Sample No. : MSKGL/ED/2023-24/01/01109

RESULT

Analysis Result of Ambient Air					
Sl No.	Parameter	UOM	Method	Limit	Result
1	Ammonia (NH ₃)	micro gm/m ³	IS 5182 (Part 25)	400 24 HR.	14.5
2	Carbon Monoxide (CO)	mg/m ³	IS 5182 : Part 10 :1999 (Reaff.2014) (NDIR) (O)	2 8HR.	0.32
3	Nitrogen Dioxide (NO ₂)	micro gm/m ³	IS 5182 : Part 6 :2006 (Reaff.2012) (O)	80 24 HR.	19.3
4	Ozone (O ₃)	micro gm/m ³	IS 5182 (Part 9)	180 1 HR.	BDL(DI-20.0)
5	Particulate Matter (<10um)	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012) (O)	100 24 HR.	166
6	Particulate Matter (<2.5um)	micro gm/m ³	IS 5182 (PT-24).2019 (O)	60 24 HR.	89
7	Sulphur Dioxide (SO ₂)	micro gm/m ³	IS 5182 : Part 2 :2001 (Reaff.2012) (O)	80 24 HR.	8.6

— END —

Report Verified By



For Mitra S. K. Private Limited



Authorised Signatory



Anacon Laboratories

Anacon Laboratories Pvt. Ltd. Nagpur Lab
 Q FP-34, 35, Food Park, Five Star Industrial Estate,
 MIDC Bulburi, Nagpur, Maharashtra, India - 441 122
 ☎ + 91 8045685558 ✉ Email : info@anacon.in
 🌐 https://www.anaconlaboratories.com

Test Report

Page 1 of 1

Ambient Air Quality Monitoring Report-November-2023

Report No.: AN/AAQ/TS-JEIM/2023/1-4			Date: 04/12/2023	
Name and Address of Industry:-	M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)		W. O. No.	4700098928/962
			W. O. date:	22/03/2022
Sample Description/ Type	Ambient Air Quality (Core Zone)	Sample Ref. No.:-	ALPL/22112023/ENV-283-7/JEIM-CZ/AAQMS-7 and ALPL/22112023/ENV-283-8/JEIM-CZ/AAQMS-8	
Sample Drawn By:-	Anacon Representative	Sample Inward Date:-	6,13,20,27 November-2023 & 2-December-2023	
Test Started On:-	6,13,20,27 Nov-2023 & 2-Dec-2023	Test Completed On:-	7,16,21,28 November-2023& 4-Dec-2023	
Sampling Procedure	ANtd/7.2/Mon-01			

Sr. No.	LOCATION	Date of sampling	PM ₁₀ µg/m ³ IS 5182 (Part 23)	PM _{2.5} µg/m ³ USEPA-40 (Part 50)	SO ₂ µg/m ³ IS 5182 (Part-2)	NO ₂ µg/m ³ IS 5182 (Part-6)	CO mg/m ³ IS 5182 (Part-10)
Method Reference							
AAQMS-7	Near Project Office-BIMM	03/11/2023	60.0	20.4	12.0	26.6	BDL (DL – 0.5)
		07/11/2023	52.6	18.2	10.9	17.3	BDL (DL – 0.5)
		10/11/2023	57.1	23.7	13.2	24.9	BDL (DL – 0.5)
		16/11/2023	59.9	25.8	12.7	21.8	BDL (DL – 0.5)
		18/11/2023	47.1	20.4	12.0	16.2	BDL (DL – 0.5)
		21/11/2023	57.0	21.7	10.3	21.4	BDL (DL – 0.5)
		24/11/2023	61.3	20.2	11.2	28.6	BDL (DL – 0.5)
		28/11/2023	53.6	18.8	10.0	25.8	BDL (DL – 0.5)
Monthly Average Value			56.1	21.2	11.5	22.8	BDL (DL – 0.5)
AAQMS-8	Near Weigh Bridge-BIMM	03/11/2023	62.5	23.9	11.5	29.3	BDL (DL-0.5)
		07/11/2023	68.0	27.0	14.8	33.6	BDL (DL-0.5)
		10/11/2023	64.0	23.7	12.9	28.4	BDL (DL-0.5)
		16/11/2023	61.4	25.9	13.3	28.1	BDL (DL-0.5)
		18/11/2023	52.6	21.4	10.7	25.9	BDL (DL-0.5)
		21/11/2023	67.0	23.4	13.3	31.3	BDL (DL – 0.5)
		24/11/2023	58.9	20.7	11.7	27.1	BDL (DL – 0.5)
		28/11/2023	67.1	28.2	16.5	34.0	BDL (DL-0.5)
Monthly Average Value			62.7	24.3	13.1	29.7	BDL (DL-0.5)

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Remark: - All Results are within Limit as per CPCB Standards.

Verified by

Snehal Raut

Deputy Technical Manager

Authorized Signatory

Dr. (Mrs.) S. D. Garway
Quality Manager

-----End of Report-----



Thank you for instilling your trust and faith in our services. We cherish our relationship with you, and we put in a lot of hard work in making sure that you get a seamless experience at every stage of your interaction with us. In our constant endeavor towards ensuring that your next experience will be significantly better than the current one, we welcome your feedback on feedback@anacon.in.



Test Report

Page 1 of 1

Ambient Air Quality Monitoring Report-November-2023

Report No.: AN/AAQ/TS-JEIM/2023/1-5			Date: 04/12/2023	
Name and Address of Industry:-	M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)		W. O. No.	4700098928/962
			W. O. date:	22/03/2022
Sample Description/ Type	Ambient Air Quality (Core Zone)	Sample Ref. No.:-	ALPL/22112023/ENV-283-9/JEIM-CZ/AAQMS-9 and ALPL/22112023/ENV-283-10/JEIM-CZ/AAQMS-10	
Sample Drawn By:-	Anacon Representative	Sample Inward Date:-	6,13,20,27 November-2023 & 2-December-2023	
Test Started On:-	6,13,20,27 Nov-2023 & 2-Dec-2023	Test Completed On:-	7,16,21,28 November-2023& 4-Dec-2023	
Sampling Procedure	ANtd/7.2/Mon-01			

Sr. No.	LOCATION	Date of sampling	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³
Method Reference			IS 5182 (Part 23)	USEPA-40 (Part 50)	IS 5182 (Part-2)	IS 5182 (Part-6)	IS 5182 (Part-10)
AAQMS-9	Near Sorting Yard-BIMM	04/11/2023	61.7	21.7	11.6	23.9	BDL (DL - 0.5)
		08/11/2023	57.3	16.8	9.2	18.1	BDL (DL - 0.5)
		11/11/2023	54.6	16.4	8.1	16.7	BDL (DL - 0.5)
		17/11/2023	62.4	19.2	11.3	21.6	BDL (DL - 0.5)
		22/11/2023	58.3	18.1	9.7	18.3	BDL (DL - 0.5)
		25/11/2023	54.7	16.9	8.4	17.2	BDL (DL-0.5)
		27/11/2023	57.3	17.2	7.6	16.9	BDL (DL-0.5)
		30/11/2023	61.8	19.3	9.1	18.2	BDL (DL - 0.5)
Monthly Average Value			58.5	18.2	9.4	18.9	BDL (DL - 0.5)
AAQMS-10	Bamebari Backfilling Yard	04/11/2023	64.8	21.6	11.9	23.8	BDL (DL - 0.5)
		08/11/2023	57.3	18.3	9.2	18.4	BDL (DL - 0.5)
		11/11/2023	67.1	23.8	12.6	21.6	BDL (DL - 0.5)
		17/11/2023	62.8	21.9	11.7	19.3	BDL (DL - 0.5)
		22/11/2023	56.3	18.2	8.4	16.8	BDL (DL - 0.5)
		25/11/2023	57.1	19.7	9.3	21.7	BDL (DL-0.5)
		27/11/2023	62.8	23.6	11.7	23.4	BDL (DL-0.5)
		30/11/2023	56.2	21.9	9.2	19.2	BDL (DL - 0.5)
Monthly Average Value			60.6	21.1	10.5	20.5	BDL (DL - 0.5)

NOTES: • Please see watermark "Original Test Report" to confirm the authenticity of this report. • Results shall be referred to tested sample(s) and applicable to tested parameters only. • Test report shall not be reproduced except in full without prior written approval of Anacon Labs. • BDL:- Below detection limit.

Remark:- All Results are within Limit as per CPCB Standards.

Verified by

Snehal Raut

Snehal Raut

Deputy Technical Manager

Authorized Signatory

Dr. (Mrs.) S. D. Garway

Dr. (Mrs.) S. D. Garway
Quality Manager

-----End of Report-----



Test Report

Page 1 of 1

Ambient Air Quality Monitoring Report-November-2023

Report No.: AN/AAQ/TS-JEIM/2023/1-11			Date: 04/12/2023
Name and Address of Industry:-	M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)		W. O. No.
			4700098928/962 22.03.2022
Sample Description/Type	Ambient Air Quality (Buffer Zone)	Sample Ref. No.:-	ALPL/22112023/ENV-283-21/JEIM-BZ/AAQMS-8 & ALPL/22112023/ENV-283-22/JEIM-BZ/AAQMS-9 & ALPL/22112023/ENV-283-23/JEIM-BZ/AAQMS-10
Sample Drawn By:-	Anacon Representative	Sample Inward Date:-	20-November-2023
Test Started On:-	21-November-2023	Test Completed On:-	22-November-2023
Sampling Procedure	ANtd/7.2/Mon-01		

Sr. No.	LOCATION	Date of sampling	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³
Method Reference			IS 5182 (Part 23)	USEPA-40 (Part 50)	IS:5182 (Part-2)	IS:5182 (Part-6)	IS:5182 (Part-10)
AAQMS-8	Bamebari SSVM School	18/11/2023	54.9	21.6	11.3	18.7	BDL (DL-0.5)
Monthly Average Value			54.9	21.6	11.3	18.7	BDL (DL-0.5)
AAQMS-9	Palsa Kha Village	18/11/2023	47.2	17.3	7.1	16.4	BDL (DL-0.5)
Monthly Average Value			47.2	17.3	7.1	16.4	BDL (DL-0.5)
AAQMS-10	Guruda Village	18/11/2023	53.9	18.2	9.7	21.6	BDL (DL-0.5)
Monthly Average Value			53.9	18.2	9.7	21.6	BDL (DL-0.5)
NAAQM Standard			100 (24 hrs)	60 (24 hrs)	80 (24 hrs)	80 (24 hrs)	2 (8hrs)

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Remark: - All Results are within Limit as per CPCB Standards.

Verified by

Snehal Raut

Deputy Technical Manager

Authorized Signatory

Dr. (Mrs.) S. D. Garway

Quality Manager

---End of Report---





**Anacon
Laboratories**

Anacon Laboratories Pvt. Ltd. Nagpur Lab

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MIDC Butibori, Nagpur, Maharashtra, India - 441 122
☎ +91 8045685558 ✉ Email : info@anacon.in
🌐 https://www.anaconlaboratories.com

Test Report

Fugitive Emission Monitoring Report-November-2023

Report No.: AN/FE/IS-JEIM/2023/1-14			Date: 30/11/2023
Name and Address of Industry:-	M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)		W. O. No.
			4700098928/962 22.03.2022
Sample Description/Type	Fugitive Emission	Sample Ref. No.:-	ALPL/22112023/ENV-283- /JEIM/FE-1 to 12
Sample Drawn By:-	Anacon Representative	Sample Inward Date:-	13/11/2023
Test Started On:-	17/11/2023	Test Completed On:-	17/11/2023
Sampling Procedure	ANtd/7.2/Mon-01		

Sl. No.	Location Name	Date of sampling	TSPM $\mu\text{g}/\text{m}^3$
Method Reference			IS 5182 (Part 23)
FE-1	Haul Road Joribar	07/11/2023	752
FE-2	Sorting Yard Joribar	07/11/2023	638
FE-3	Near weigh Bridge	07/11/2023	819
FE-4	Near Screen Plant	07/11/2023	427
MoEF & CC Norms:		1200 $\mu\text{g}/\text{m}^3$	

NOTES: • Please see watermark "Original Test Report" to confirm the authenticity of this report. • Results shall be referred to tested sample(s) and applicable to tested parameters only. • Test report shall not be reproduced except in full without prior written approval of Anacon Labs.

Remark: - All Results are within Limit as per CPCB Standards.

Verified by

Snehal Raut

Snehal Raut

Deputy Technical Manager

Authorized Signatory

S. D. Garway

Dr. (Mrs.) S. D. Garway
Quality Manager

---End of Report---



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Test Report

Page 1 of 1

Ambient Air Quality Monitoring Report-October-2023

Report No.: AN/AAQ/TS-JEIM/2023/1-4			Date: 03/11/2023	
Name and Address of Industry:-	M/s Bamehri Iron & Manganese Mine (M/s TATA Steel Limited)		W. O. No.	4700098928/962
			W. O. date:	22/03/2022
Sample Description/ Type	Ambient Air Quality (Core Zone)	Sample Ref. No.:-	ALPL/23102023/ENV-261-7/JEIM-CZ/AAQMS-7 and ALPL/23102023/ENV-261-8/JEIM-CZ/AAQMS-8	
Sample Drawn By:-	Anacon Representative	Sample Inward Date:-	9,16,23,30 October -2023	
Test Started On:-	9,16,23,30 October-2023	Test Completed On:-	10,17,25,31 October-2023	
Sampling Procedure	ANtd/7.2/Mon-01			

Sr. No.	LOCATION	Date of sampling	PM ₁₀ µg/m ³ IS 5182 (Part 23)	PM _{2.5} µg/m ³ USEPA-40 (Part 50)	SO ₂ µg/m ³ IS-5182 (Part-2)	NO ₂ µg/m ³ IS-5182 (Part-6)	CO mg/m ³ IS-5182 (Part-10)
Method Reference							
AAQMS-7	Near Project Office-BIMM	03/10/2023	63.2	23.4	10.3	24.4	BDL (DL - 0.5)
		06/10/2023	58.6	20.0	9.4	26.6	BDL (DL - 0.5)
		10/10/2023	62.2	21.3	10.8	23.8	BDL (DL - 0.5)
		13/10/2023	51.7	18.2	11.8	19.3	BDL (DL - 0.5)
		17/10/2023	63.6	24.7	9.6	27.2	BDL (DL - 0.5)
		20/10/2023	56.7	22.1	10.5	25.0	BDL (DL - 0.5)
		24/10/2023	51.6	17.9	11.2	16.4	BDL (DL - 0.5)
		27/10/2023	50.5	19.6	10.5	25.3	BDL (DL - 0.5)
Monthly Average Value			57.3	20.9	10.5	23.5	BDL (DL - 0.5)
AAQMS-8	Near Weigh Bridge-BIMM	03/10/2023	58.8	25.9	12.6	26.1	BDL (DL-0.5)
		06/10/2023	69.6	28.8	10.8	28.4	BDL (DL-0.5)
		10/10/2023	62.9	24.2	14.0	21.6	BDL (DL-0.5)
		13/10/2023	68.2	25.5	13.3	31.3	BDL (DL-0.5)
		17/10/2023	63.0	23.8	11.8	28.7	BDL (DL-0.5)
		20/10/2023	59.9	26.4	13.3	24.1	BDL (DL - 0.5)
		24/10/2023	54.1	20.9	14.3	29.6	BDL (DL - 0.5)
		27/10/2023	58.9	19.2	11.9	23.8	BDL (DL-0.5)
Monthly Average Value			61.9	24.3	12.8	26.7	BDL (DL-0.5)

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Remark: - All Results are within Limit as per CPCB Standards.

Verified by

Snehal Raut

Snehal Raut

Deputy Technical Manager

Authorized Signatory

S. D. Garway

Dr. (Mrs.) S. D. Garway

Quality Manager

---End of Report---





Test Report

Page 1 of 1

Ambient Air Quality Monitoring Report-October-2023

Report No.: AN/AAQ/TS-JEIM/2023/1-5			Date: 03/11/2023	
Name and Address of Industry:-	M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)		W. O. No.	4700098928/962
			W. O. date:	22/03/2022
Sample Description/ Type	Ambient Air Quality (Core Zone)	Sample Ref. No.:-	ALPI/23102023/ENV-261-9/JEIM-CZ/AAQMS-9 and ALPI/23102023/ENV-261-10/JEIM-CZ/AAQMS-10	
Sample Drawn By:-	Anacon Representative	Sample Inward Date:-	9,16,23,30 October-2023	
Test Started On:-	9,16,23,30 October-2023	Test Completed On:-	10,17,25,31 October-2023	
Sampling Procedure	ANtd/7.2/Mon-01			

Sr. No.	LOCATION	Date of sampling	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³
Method Reference:			IS 5182 (Part 23)	USEPA-40 (Part 50)	IS 5182 (Part 2)	IS 5182 (Part 6)	IS 5182 (Part 10)
AAQMS-9	Near Sorting Yard- BIMM	04/10/2023	50.4	19.2	7.9	15.0	BDL (DL - 0.5)
		07/10/2023	59.6	23.8	9.3	16.2	BDL (DL - 0.5)
		11/10/2023	66.9	25.4	10.0	18.0	BDL (DL - 0.5)
		14/10/2023	50.1	19.6	9.4	23.4	BDL (DL - 0.5)
		18/10/2023	73.4	23.8	10.7	26.1	BDL (DL - 0.5)
		21/10/2023	57.7	21.3	11.8	24.7	BDL (DL-0.5)
		25/10/2023	52.4	17.6	9.0	18.9	BDL (DL-0.5)
		28/10/2023	60.6	24.7	10.5	28.1	BDL (DL - 0.5)
Monthly Average Value			58.9	21.9	9.8	21.3	BDL (DL - 0.5)
AAQMS-10	Bamebari Backfilling Yard	04/10/2023	65.8	26.3	11.2	25.5	BDL (DL - 0.5)
		07/10/2023	64.1	23.4	11.5	19.2	BDL (DL - 0.5)
		11/10/2023	67.8	27.1	10.5	24.4	BDL (DL - 0.5)
		14/10/2023	70.6	29.7	11.1	22.8	BDL (DL - 0.5)
		18/10/2023	72.7	30.5	13.3	24.4	BDL (DL - 0.5)
		21/10/2023	68.5	27.6	11.2	25.0	BDL (DL-0.5)
		25/10/2023	57.3	33.4	12.9	18.7	BDL (DL-0.5)
		28/10/2023	63.1	24.6	10.5	26.1	BDL (DL - 0.5)
Monthly Average Value			66.2	27.8	11.5	23.3	BDL (DL - 0.5)

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Remark: - All Results are within Limit as per CPCB Standards.

Verified by

Snehal Raut

Snehal Raut

Deputy Technical Manager

Authorized Signatory

S. D. Garway

Dr. (Mrs.) S. D. Garway
Quality Manager

-----End of Report-----





Test Report

Page 1 of 1

Ambient Air Quality Monitoring Report-October-2023

Report No.: AN/AAQ/TS-JEIM/2023/1-11			Date: 03/11/2023	
Name and Address of Industry:-	M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)		W. O. No.	
			4700098928/962	
			22.03.2022	
Sample Description/Type	Ambient Air Quality (Buffer Zone)	Sample Ref. No.:-	ALPL/23102023/ENV-261-21/JEIM-BZ/AAQMS-8 & ALPL/23102023/ENV-261-22/JEIM-BZ/AAQMS-9 & ALPL/23102023/ENV-261-23/JEIM-BZ/AAQMS-10	
Sample Drawn By:-	Anacon Representative	Sample Inward Date:-	23-October-2023	
Test Started On:-	25-October-2023	Test Completed On:-	26-October-2023	
Sampling Procedure	ANtd/7.2/Mon-01			

Sr. No.	LOCATION	Date of sampling	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³
Method Reference			IS 5182 (Part 23)	USEPA-40 (Part 50)	IS:5182 (Part-2)	IS:5182 (Part-6)	IS:5182 (Part-10)
AAQMS-8	Bamebari SSVM School	21/10/2023	52.7	18.3	7.1	16.9	BDL (DL-0.5)
Monthly Average Value			52.7	18.3	7.1	16.9	BDL (DL-0.5)
AAQMS-9	Palsa Kha Village	21/10/2023	47.8	16.2	5.8	17.3	BDL (DL-0.5)
Monthly Average Value			47.8	16.2	5.8	17.3	BDL (DL-0.5)
AAQMS-10	Guruda Village	21/10/2023	56.2	21.4	9.2	23.8	BDL (DL-0.5)
Monthly Average Value			56.2	21.4	9.2	23.8	BDL (DL-0.5)
NAAQM Standard			100 (24 hrs)	60 (24 hrs)	80 (24 hrs)	80 (24 hrs)	2 (8hrs)

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Remark: - All Results are within Limit as per CPCB Standards.

Verified by

[Signature]
Snehal Raut

Deputy Technical Manager

Authorized Signatory

[Signature]

Dr. (Mrs.) S. D. Garway
Quality Manager

---End of Report---





**Anacon
Laboratories**

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MIDC Butibori, Nagpur, Maharashtra, India - 441 122
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🌐 https://www.anaconlaboratories.com

Test Report

Fugitive Emission Report-October-2023

Report No.: AN/FE/TS-JEIM/2023/1-14			Date: 31/10/2023
Name and Address of Industry:-	M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)		W. O. No.
			4700098928/962 22.03.2022
Sample Description/Type	Fugitive Emission	Sample Ref. No.:-	ALPL/23102023/ENV-261- /JEIM/FE-1 to 12
Sample Drawn By:-	Anacon Representative	Sample Inward Date:-	16/10/2023
Test Started On:-	16/10/2023	Test Completed On:-	17/10/2023
Sampling Procedure	ANtd/7.2/Mon-01		

Sl. No.	Location Name	Date of sampling	TSPM $\mu\text{g}/\text{m}^3$
Method Reference			IS 5182 (Part 23)
FE-1	Haul Road Joribar	10/10/2023	761
FE-2	Sorting Yard Joribar	10/10/2023	536
FE-3	Near weigh Bridge	10/10/2023	821
FE-4	Near Screen Plant	10/10/2023	426
MoEF & CC Norms:		1200 $\mu\text{g}/\text{m}^3$	

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Remark: - All Results are within Limit as per CPCB Standards.

Verified by

Snehal Raut

Deputy Technical Manager

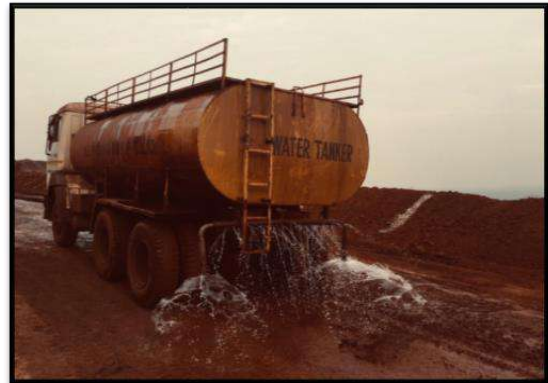
Authorized Signatory

Dr. (Mrs.) S. D. Garway
Quality Manager

---End of Report---



FUGITIVE DUST EMISSION CONTROL MEASURES AT BAMEBARI IRON & MN MINE
OF M/S TATA STEEL LIMITED



Mobile Water Tanker (Dust Control Measures)



Mobile Mist Canon



Fixed Sprinkling System-Haul Road



Automatic Wheel Wash Facility / System



Tarpaulin covering of mineral carrying trucks.

FUGITIVE DUST EMISSION CONTROL MEASURES AT BAMEBARI IRON & MN MINE
OF M/S TATA STEEL LIMITED



BCM Type closed wagons for dispatch of ore from siding and fixed sprinkling system at siding

NOISE MONITORING REPORT

At/P.O.: BARBIL Ward No-6
Dist.: Keonjhar, Odisha - 758035
CIN: U51909WB1956PTC023037

T : +91 94370 09815, 94370 09820, 94370 75269
E : barbil@mitrask.co.in
W : www.mitrask.com

Report No. MSKGL/ED/2023-24/005058

Date: 29.02.2024

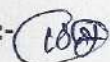
MONITORING REPORT OF AMBIENT NOISE

Name of the Client		M/s. TATA STEEL LIMITED			
Name of the Mines		BAMEBARI IRON & MANGANESE MINES (BIMM)			
SL. NO.	Monitoring Location	Date Monitoring	Noise Level in dB (A)		
			Ld	Ln	Ldn
1.	In side Garage	12/13.02.2024	56.2	48.2	54.4
2.	In Front of Admin Office	12/13.02.2024	56.5	58.8	57.5
3.	Near Weigh Bridge	12/13.02.2024	69.2	55.7	66.9
4.	Shorting Yard Rest Shelter	12/13.02.2024	58.7	51.8	52.9
5.	250 meter from Screen Plant	13/14.02.2024	69.2	55.7	66.9
6.	In Side of School Area	13/14.02.2024	65.0	53.8	62.9

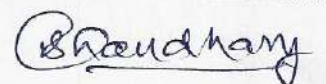
Note : Day Time : 6.00 AM -10.00 PM, Night Time: 10.00PM- 6.00AM

AMBIENT AIR QUALITY STANDARDS IN RESPECT OF NOISE AS PER CPCB GUIDELINES

AREA CODE	CATEGORY OF AREA / ZONE	LIMITS IN dB (A)	
		DAY TIME	NIGHT TIME
A	INDUSTRIAL AREA	75	70
B	COMMERCIAL AREA	65	55
C	RESIDENTIAL AREA	55	45
D	SILENE ZONE	50	40

Checked by:- 

For Mitra S. K. Private Limited


Authorised Signatory

Report No. MSKGL/ED/2023-24/004662

Date: 10.02.2024


MONITORING REPORT OF AMBIENT NOISE

Name of the Client		M/s. TATA STEEL LIMITED			
Name of the Mines		BAMEBARI IRON & MANGANESE MINES (BIMM)			
SL. NO.	Monitoring Location	Date Monitoring	Noise Level in dB (A)		
			Ld	Ln	Ldn
1.	In side Garage	19/20.01.2024	61.8	41.9	60.4
2.	In Front of Admin Office	19/20.01.2024	64.2	41.6	62.4
3.	Near Weigh Bridge	19/20.01.2024	65.4	59.3	64.1
4.	Shorting Yard Rest Shelter	19/20.01.2024	60.9	42.8	59.2
5	In Side of School Area	25/26.01.2024	49.7	38.8	48.1

Note : Day Time : 6.00 AM -10.00 PM, Night Time: 10.00PM- 6.00AM

AMBIENT AIR QUALITY STANDARDS IN RESPECT OF NOISE AS PER CPCB GUIDELINES

AREA CODE	CATEGORY OF AREA / ZONE	LIMITS IN dB (A)	
		DAY TIME	NIGHT TIME
A	INDUSTRIAL AREA	75	70
B	COMMERCIAL AREA	65	55
C	RESIDENTIAL AREA	55	45
D	SILENE ZONE	50	40

Checked by:- 

For Mitra S. K. Private Limited

Authorised Signatory



Test Report

Page 2 of 4

Noise Monitoring Report-November-2023

Report No.: AN/NE/TS-JEIM/2023/1-17			Date: 30/11/2023
Name and Address of Industry:-	M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)		W. O. No.
			4700098928/962 date: 22.03.2022
Sample Description/Type	Noise Monitoring	Sample Ref. No.:-	ALPL/22112023/ENV-283-N/JEIM/NE-7 to 12
Sample Drawn By:-	Anacon Representative	Data Inward date:-	20/11/2023
Sampling Procedure	ANtd/7.2/Mon-01	Sampling Method	IS 9989:1981(R2001)

Sampling Date: 13/11/2023 to 18/11/2023.

Sl. No.	Location Name	Results dB(A)	
		Day Time (6:00 am to 10:00pm)	Night Time (10:00 pm to 06:00am)
NE-1	Inside Garage -BIMM	63.7	43.9
NE-2	Infront of Admin Office -BIMM	51.6	42.1
NE-3	Near Weigh Bridge-BIMM	68.3	56.2
NE-4	Sorting Yard Rest Sheltor-BIMM	59.1	48.7
NE-5	250 Mtr From Screen Plant-BIMM	61.3	52.8
NE-6	School Area-BIMM	48.2	37.7
Norms:	Industrial Area	75.0	70.0
	Commercial Area	65.0	55.0
	Residential Area	55.0	45.0

NOTES: • Please see watermark "Original Test Report" to confirm the authenticity of this report. • Results shall be referred to tested sample(s) and applicable to tested parameters only. • Test report shall not be reproduced except in full without prior written approval of Anacon Labs.

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Verified by

Snehal Raut

Snehal Raut

Deputy Technical Manager

Authorized Signatory

Dr. (Mrs.) S. D. Garway

Dr. (Mrs.) S. D. Garway
Quality Manager

-----End of Report-----



Thank you for instilling your trust and faith in our services. We cherish our relationship with you, and we put in a lot of hard work in making sure that you get a seamless experience at every stage of your interaction with us. In our constant endeavor towards ensuring that your next experience will be significantly better than the current one, we welcome your feedback on feedback@anacon.in.



Test Report

Page 3 of 4

Noise Monitoring Report-November-2023

Report No.: AN/NE/TS-JEIM/2023/1-18		Date: 30/11/2023	
Name and Address of Industry:-	M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)	W. O. No.	
		4700098928/962 date: 22.03.2022	
Sample Description/Type	Noise Monitoring	Sample Ref. No.:-	ALPL/22112023/ENV-283-N/JEIM/NE-13 to 18
Sample Drawn By:-	Anacon Representative	Data Inward date:-	27/11/2023
Sampling Procedure	ANtd/7.2/Mon-01	Sampling Method	IS 9989:1981(R2001)

Sampling Date: 21/11/2023 to 25/11/2023.

Sl. No.	Location Name	Results dB(A)	
		Day Time (6:00 am to 10:00pm)	Night Time (10:00 pm to 06:00am)
NE-7	School Area – BIMM	56.4	43.9
NE-8	Inside Garage -BIMM	61.7	52.8
NE-9	Infront of Admin Office -BIMM	48.3	37.6
NE-10	Near Weighing Birdge BIMM	71.9	64.2
NE-11	Sorting Yard Rest Sheltor -BIMM	62.8	53.7
NE-12	250 Mtrs from Screen Plant -BIMM	64.2	56.1
Norms:	Industrial Area	75.0	70.0
	Commercial Area	65.0	55.0
	Residential Area	55.0	45.0

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Deputy Technical Manager

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Dr. (Mrs.) S. D. Garway
Quality Manager





Test Report

Page 2 of 4

Noise Monitoring Report-October-2023

Report No.: AN/NE/TS-JEIM/2023/1-17			Date: 31/10/2023
Name and Address of Industry:-	M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)	W. O. No.	
		4700098928/962 date: 22.03.2022	
Sample Description/Type	Noise Monitoring	Sample Ref. No.:-	ALPL/23102023/ENV-261-N/JEIM/NE-7 to 12
Sample Drawn By:-	Anacon Representative	Data Inward date:-	16/10/2023
Sampling Procedure	ANtd/7.2/Mon-01	Sampling Method	IS 9989:1981(R2001)

Sampling Date: 09/10/2023 to 12/10/2023.

Sl. No.	Location Name	Results dB(A)	
		Day Time (6:00 am to 10:00pm)	Night Time (10:00 pm to 06:00am)
NE-1	Inside Garage -BIMM	47.3	38.1
NE-2	Infront of Admin Office -BIMM	51.2	42.9
NE-3	Near Weigh Bridge-BIMM	59.1	52.8
NE-4	Sorting Yard Rest Sheltor-BIMM	64.3	57.1
NE-5	250 Mtr From Screen Plant-BIMM	72.6	64.7
NE-6	School Area-BIMM	64.9	48.2
Norms:	Industrial Area	75.0	70.0
	Commercial Area	65.0	55.0
	Residential Area	55.0	45.0

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Deputy Technical Manager

Authorized Signatory

Dr. (Mrs.) S. D. Garway
Quality Manager

-----End of Report-----





Test Report

Page 3 of 4

Noise Monitoring Report-October-2023

Report No.: AN/NE/TS-JEIM/2023/1-18		Date: 31/10/2023
Name and Address of Industry:-	M/s Bamebari Iron & Manganese Mine (M/s TATA Steel Limited)	W. O. No.
		4700098928/962 date: 22.03.2022
Sample Description/Type	Noise Monitoring	Sample Ref. No.:-
Sample Drawn By:-	Anacon Representative	Data Inward date:-
Sampling Procedure	ANtd/7.2/Mon-01	Sampling Method
		IS 9989:1981(R2001)

Sampling Date: 16/10/2023 to 20/10/2023.

Sl. No.	Location Name	Results dB(A)	
		Day Time (6:00 am to 10:00pm)	Night Time (10:00 pm to 06:00am)
NE-7	School Area – BIMM	47.3	38.1
NE-8	Inside Garage -BIMM	56.3	43.1
NE-9	Infront of Admin Office -BIMM	51.1	42.9
NE-10	Near Weighing Birdge BIMM	68.3	57.1
NE-11	Sorting Yard Rest Sheltor -BIMM	72.9	68.3
NE-12	250 Mtrs from Screen Plant -BIMM	64.7	52.8
Nor ms:	Industrial Area	75.0	70.0
	Commercial Area	65.0	55.0
	Residential Area	55.0	45.0

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Snehal Raut
Deputy Technical Manager

Authorized Signatory

Dr. (Mrs.) S. D. Garway
Quality Manager



MANGANESE TESTING

(Blood & Urine) for Mining Employees

work order by



Tata Steel Limited

MANGANESE GROUP OF MINES | FAMD

COMPREHENSIVE REPORT

Dated: 25th July 2023

Dr. Madhusudhan Reddy, PhD
Director, DRPL

Dr. Ramesh, MBBS
Consultant & Occupational Health Specialist

Dr. Raman Singh, PhD
Vice President-Grad Women in Science (USA)
TA-Research & Corporate Services, DRPL

Dr. Kuldeep Singh, MRSCMSc (IITRoorkee),
PhD (IITBombay), PostDoc (France)
TA-Research & Corporate Services, DRPL



Dr Reddys Path Labs Private Limited
Hyderabad

Background

Manganese (Mn) is a naturally occurring metal and ranks as the fourth most widely used metal globally. In humans, it plays a crucial role as an essential trace element, acting as a co-factor for important metalloenzyme activities within our cells. These metalloenzymes contribute to various vital functions, including the formation of connective tissues and bones, clotting factors, lipid and carbohydrate metabolism, and they also play a significant role in maintaining normal brain and nerve activity within the central nervous system (CNS).

A deficiency in manganese can lead to health issues related to bone, joint, and collagen functions. Conversely, excess manganese can be toxic, resulting in disorders of the nervous system, as reported in various toxicological and pathological studies.

For adults, the recommended dietary intake is 2.3 mg/day for men and 1.8 mg/day for women. To ensure safety, a Tolerable Upper Intake Level (UL) of 11 mg/day has been established for adults, based on a no-observed-adverse-effect level for Western diets. This information serves as a guideline to maintain a balanced manganese intake and avoid potential adverse effects associated with either deficiency or excessive consumption.

Manganese exposure can arise from various sources, such as diet, where it naturally occurs in water, grains, and green leafy vegetables. Additionally, air can also be a source of manganese, with contributions from both natural and man-made sources. Notably, mining and milling activities involving manganese are significant man-made sources of exposure. Another potential route of manganese exposure is through long-term parenteral nutrition, which can lead to manganese toxicity.

The body can take in manganese through enteral (oral ingestion), parenteral (injection), or inhalation routes, but for occupational relevance, ingestion and inhalation are the primary routes of concern. According to the National Institute for Occupational Safety and Health (NIOSH), the respiratory system, central nervous system, liver, and kidneys are potentially affected organs when it comes to manganese exposure.

Overall, understanding the diverse sources and routes of manganese exposure is crucial for effectively managing potential health risks associated with this essential trace element. A safety

margin exists between the daily requirement levels of manganese and the amounts that can cause damage. Excessive ingestion or inhalation of manganese beyond the daily requirements can lead to cell damage. Current evidence suggests that in large quantities, manganese increases oxidative stress within cells. Oxidative stress occurs when there is an imbalance between free radicals and antioxidants, resulting in potential harm to cells. Free radicals are unstable molecules that can react with other substances in the body, causing cell damage. This process can lead to various effects, including mitochondrial dysfunction, glutamate-mediated excitotoxicity, and protein aggregation within the cells. Understanding these mechanisms is essential for recognizing the potential risks associated with excessive manganese exposure and safeguarding against adverse health effects.

Excessive exposure to manganese is known to cause a major neurodegenerative effect called manganism. The clinical manifestations of manganism are well-documented, and its differentiation from other movement disorders, particularly idiopathic Parkinson's disease, which shares similarities, has been extensively studied. However, formal application of clinical criteria in epidemiological research is limited.

Confidence in diagnosing manganism is bolstered by the use of MRI and PET scans, as well as tests of response to dopaminomimetic drugs and EDTA chelation. Both manganism and Parkinson's disease exhibit abnormal features and pathophysiology in the basal ganglia, a brain region associated with voluntary motor control, where manganese tends to accumulate. However, in Parkinson's disease, the abnormalities are related to dopaminergic dysfunction of the nigrostriatal system, as evidenced by FDOPA uptake in PET imaging and positive response to levodopa treatment. These features are either lacking or less apparent in manganism.

Recent reports of frank manganese poisoning have become scarce, likely due to declining occupational exposures. Instead, researchers now study more subtle adverse nervous system effects using highly sensitive but non-specific psychometric tests and functional brain imaging. These effects are termed "subclinical" as they are believed to be present before overt disease symptoms appear. Researchers compare findings from these sensitive methods against a control group.

In addition to neuronal damage, extensive exposure to high levels of manganese can harm the liver and kidneys, as these organs are involved in the metabolism and excretion of manganese.

Impaired clearance of manganese from the body can also occur in cases of liver disease, leading to elevated levels of the metal in the body. Understanding these complex mechanisms is crucial for early detection and effective management of manganese-related health issues.

After removal of exposure to manganese, cognitive function is reported to improve, but motor, sensory, and mood disturbances may persist or worsen, though the specific timeframe for these events remains unclear. Therefore, the key to prevention and treatment lies in minimizing or completely ceasing exposure.

To address occupational exposure, the US National Institute for Occupational Safety and Health (NIOSH) recommends an occupational exposure limit of 1 mg/m³ as an 8-hour time-weighted average, and 3 mg/m³ for short-term exposures lasting 15 minutes or less. For the general public, the US Agency for Toxic Substances and Disease Registry (ATSDR) recommends an Inhalation Minimal Risk Level (MRL) of 0.04 µg/m³ for chronic exposure, which is considered safe for inhalation over an extended period.

Adhering to these exposure limits is essential to safeguarding the health of workers and the general population from potential adverse effects of manganese exposure. Both the US Department of Labor and a recent meta-analysis, considering individual participant data, identified the lowest observed adverse effect limit for manganese exposure to be 0.05 mg/m³. However, assessing exposure to manganese can be challenging due to variations in particle size and shape. This complexity means that adverse effects may be more likely to occur in mining environments where dust contains larger particle sizes. Careful monitoring and control of manganese exposure are crucial in such settings to protect workers from potential neurological deficits associated with this metal.

Studies dating back to the 1970s have demonstrated severe adverse health effects resulting from very high manganese exposure. Even before overt clinical manifestations of manganese toxicity resembling Parkinson's-like features, early signs of nervous system impairment may manifest as poor neurological function, as measured by neuropsychological tests like finger tapping. These effects are often referred to as 'sub-clinical,' indicating that they are at a stage where patients or workers may not yet notice them.

It is assumed that if exposure continues, these sub-clinical symptoms could progress to the stage

of diagnosable clinical manganese toxicity. However, the transition from sub-clinical to clinical disease has not been definitively established.

Motor function test performance may begin to show deterioration at mean concentrations of inhalable manganese ranging from 0.05 mg/m³ to 0.30 mg/m³. However, the relationship between airborne exposure levels, corresponding blood manganese levels, and their association with adverse health outcomes remains unclear. Further research is necessary to better understand these relationships and to establish reliable exposure guidelines to protect the health of workers and individuals at risk of manganese exposure.

Dose-dependent effects are commonly associated with exposure, implying that certain low levels may not pose significant harm. Consequently, having accurate knowledge of exposure levels that do not result in health effects is crucial for the safety and protection of workers in their workplaces. Employers and workplaces must prioritize this information to adequately safeguard their workers' well-being.

To ensure the health and safety of employees, many countries have implemented policies that enforce low occupational and environmental exposure limits for manganese. These regulations state that employers are responsible for ensuring that work-related exposure does not lead to illness among their workers. By adhering to these guidelines, we can effectively protect workers from potential adverse health effects associated with manganese exposure in the workplace.

Despite the considerable research conducted on manganese (Mn) exposure, several critical questions remain unanswered. It is still uncertain what range of health effects may arise, at which specific exposure levels, and over what duration. Additionally, the strength of these relationships is yet to be fully understood.

Furthermore, the outcome and prognosis of toxic effects from manganese exposure are influenced by various individual factors, including genetic profiles, which add complexity to the overall picture.

Finally, exposure to manganese often occurs in combination with other exposures within the same industries or due to non-occupational factors, such as liver disease or iron deficiency. These confounding factors can make it challenging to isolate the specific effects of manganese

exposure, making the assessment and interpretation of results more intricate.

To gain a comprehensive understanding of the health effects of manganese exposure, future research needs to address these uncertainties and consider the various contributing factors. Only by doing so can we develop well-informed strategies to protect individuals from the potential adverse effects of manganese exposure in various settings.

To prevent manganese exposure and safeguard workers from potential occupational diseases and disabilities, it is crucial to identify risk levels and competing factors. Additionally, clear criteria are essential to determine the occupational origin of symptoms, serving as a basis for fair financial compensation in case of exposure.

Conducting a systematic appraisal of the literature can yield valuable insights into several key aspects, including the types and nature of exposure, the health effects resulting from exposure, the influence of competing factors, and the prognosis after exposure has ceased.

By thoroughly examining these factors, we can obtain clear and well-founded findings that will aid in developing effective preventive measures and providing proper support to workers who may have been affected by manganese exposure. Such insights are essential for promoting worker safety and well-being in industries where manganese exposure is a concern.

The objectives of the study to conduct occupational surveillance of mine workers in the Manganese Group of Mines of FAMD, Tata Steel, Joda, to assess their exposure to Manganese and identify the possibility of Manganese Poisoning. We will summarize the symptoms, analyze test results, and evaluate existing evidence on the potential adverse health effects of manganese for these workers. The ultimate objective is to provide a comprehensive report detailing the available evidence related to exposure, its consequences, and potential contributing factors. Additionally, if any cases of manganese poisoning are identified, the report will include appropriate recommendations and remedial measures to address the issue effectively.

The scope of the study encompasses a wide range of aspects related to Manganese Poisoning among mine workers in the Manganese Group of Mines of FAMD. The key components include:

1. Occupational surveillance of Manganese Poisoning among mine workers in the specified

mines.

2. Analysis of symptoms and/or medical history of Manganese Poisoning in the mine workers.
3. Collection of blood and urine samples on-site for further examination.
4. Sampling criteria comprising 90% uncontrolled samples and 10% controlled samples for comparison.
5. Thorough testing and individual reports generated, along with a comprehensive overall report.
6. Recommendations for preventive and remedial measures, adhering to WHO guidelines and other Indian Standards.

By covering these diverse elements, the study aims to provide valuable insights and practical recommendations to address Manganese Poisoning effectively in the mining workforce.

To achieve our study objectives, we conducted sample collections at four specific mine locations: Joda West Iron & Manganese Mine, Bamebari Iron & Manganese Mine, Tiringpahar Iron & Manganese Mine, and Khondbond Iron & Manganese Mine. A total of 300 samples were gathered from these mine locations and categorized as uncontrolled samples. Additionally, we collected about fifteen controlled samples from employees who had minimal or no exposure to manganese mines.

To enhance the reliability of our study, we conducted an extensive review of existing literature, including meta-analyses, pertaining to manganese exposure in occupational settings. We carefully compared the data from these studies with our test results to evaluate the causal association between manganese exposure and its potential health effects. By combining evidence from various sources, we aimed to gain deeper insights into the impact of manganese exposure on health.

Methods

a) Specified a question consisting of previous illness, present disease condition, use of regular medication, symptoms, location of exposure (yard, mines and open sites) and outcome (e.g. neurological function deficits).

b) Random Sample Collection (Blood and Urine), **Uncontrolled Samples: 170 (Blood-85, Urine-85), Controlled Samples: 30 (Blood-15, Urine-15)**

Uncontrolled samples were collected from four different mine locations-

1. Joda West Iron & Manganese Mine:

- a. HQUARRY: No. of Samples: 20
 - b. GGQ: No. of Samples: 22
 - c. DQUARRY: No. of Samples: 16
2. Bamebari Iron & Manganese Mine: Joribari Block: No. of Samples: 26
 3. Tiringpahar Iron & Manganese Mine: 26
 4. Khondbond Iron & Manganese Mine: No. of Samples: 25

Participants and Comparison

Our study encompassed both male and female mine workers, as well as administrative staff of all age groups. We carefully compared the test results of blood and urine samples from mine workers who were occupationally exposed to manganese with those of the unexposed administrative staff. This allowed us to assess the potential differences in manganese exposure levels between the two groups and draw relevant conclusions from our findings.

Searching and including studies:

In our quest to gather comprehensive information, we conducted an extensive search using multiple databases and non-electronic sources, without imposing any date or language restrictions. Our thorough approach involved utilizing PubMed to develop a sensitive search, which was later translated and applied to other databases.

We focused on identifying all relevant systematic reviews and empirical studies available to date. Two independent reviewers meticulously assessed the fulfillment of inclusion criteria first by examining titles and abstracts, and later by evaluating the full text. Any disagreements that arose during the review process were resolved through constructive discussions between the reviewers. This meticulous approach ensured that we collected a comprehensive and reliable body of evidence for our research.

Gender, Age, Mine Locations, controlled and uncontrolled Subgroup analysis

Our evaluation was structured to consider the following aspects:

1. Age, gender, and the outcomes of blood and urine samples.
2. Comparison of results between controlled and uncontrolled samples of blood and urine.
3. Analysis based on mine location site, gender, age, and the outcomes of blood and urine samples.

By organizing our assessment in this manner, we aimed to gain a comprehensive understanding of the various factors that could potentially impact the results of the study and draw meaningful conclusions from the data.

Results

Our findings are organized in a clear manner, categorized by sample collection method and the location of Manganese exposure in the mines. Subsequently, we provide a comprehensive synthesis summarizing the overall study, encompassing all mine locations, ages, and genders for both sample groups. For our analysis, we employed the ICPMS test method and used the reference values for Blood (4-15 ug/L) and Urine (0.50-9.80 ug/L) in males and females.

The conclusive summary of the laboratory analysis comprised a total of 300 samples, equally split into 150 blood samples and 150 urine samples. In order to assess the significance of positive results related to manganese exposure, we employed a sampling approach that involved both controlled and uncontrolled random sampling methodologies. Out of the total samples, 270 were uncontrolled and derived from mine workers, comprising 135 blood samples and 135 urine samples. Additionally, we collected 30 controlled samples, consisting of 15 blood samples and 15 urine samples, from staff members who had no exposure to manganese.

We conducted a thorough questionnaire and discussions with both the controlled and uncontrolled groups to gather information on their previous illnesses, medication usage, and the nature of their manganese exposure (whether in mines, yards, or open sites). Additionally, we inquired about the duration and frequency of their duties in manganese mines, as well as their drinking water sources and overall water consumption patterns.

To ensure the validity of our findings, we excluded mine workers and controlled groups who had a history of consuming Gadolinium or Iodine-containing contrast media, vitamins, minerals, or herbal supplements within the 7 days leading up to the sampling, or within 96 hours (4 days) prior to the administration. This was done to eliminate any potential interference with the study results.

An encouraging discovery from our investigation was that all mining site locations maintained a high standard of cleanliness and hygiene, offering proper filtered water for drinking. Moreover, the washroom facilities for both genders in the mining sites were well-maintained and clean. For

detailed results, please refer to Annexure-A.

In our comprehensive study, we conducted age and gender-specific comparisons across all six mine locations. Our findings revealed that the Bamebari Iron & Manganese Mine, Joribari Block (n=6), had the youngest female mine workers, while the Joda West Iron & Manganese Mine, HQUARRY (n=12), had the oldest female workers. Among male mine workers, the youngest were observed in Joda West Iron & Manganese Mine, GGQ (n=6), while the oldest were in Joda West Iron & Manganese Mine, HQUARRY (n=8).

The data indicates a notable trend, with the oldest mine workers found in Joda West Iron & Manganese Mine, HQUARRY, for both genders. As a result, this specific mine location demands closer attention and regular periodic medical examinations (PME), including X-rays (Chest PA), to ensure the health and well-being of its workers. As for the controlled group, the average age was 32.70 (n=15) for males and 44.20 (n=15) for females.

The comparison of average results for the male population in blood samples revealed that the Khondbond Iron & Manganese Mine workers' values were nearly identical to those of the controlled group. Similarly, among the female mine workers from the Khondbond Iron & Manganese Mine, the blood values were also very similar to those of the controlled group. This indicates that the Khondbond Iron & Manganese Mine workers are exposed to lower levels of manganese compared to others.

It's noteworthy that no single mine worker, male or female, tested positive for manganese exposure in their blood across all six mine locations.

In the study comparing urine samples between mine workers and the controlled group for both genders, it was observed that the Joda West Iron & Manganese Mine, HQUARRY group, exhibited values close to those of the controlled group among males. On the other hand, among females in the uncontrolled group from all six mine locations, the values were also in close proximity to the controlled group.

The overall summary of results indicates that the mean blood value among male and female mine workers was 5.36 (n=135), while for urine, it was 4.25 (n=135). Comparatively, the controlled group's blood value was 2.51 (n=15), and urine value was 2.95 (n=15).

Final Conclusion & Recommendations

The overall level of evidence in our study, encompassing the data from all 300 samples from both controlled and uncontrolled groups, along with systematic reviews and meta-analyses, indicates a low likelihood of manganese exposure. Our findings provide sufficient evidence to conclude that there is no manganese contamination detected in any of the six mine locations, whether through oral intake in the yards, air circulation near open sites, or the source of drinking water.

However, despite the lack of current health effects on mine workers from manganese exposure within the established limits, we highly recommend conducting regular periodic medical examinations (PME) to continuously evaluate any potential risks over time. Such assessments could include other health function tests to ensure the well-being of the mine workers. In summary, our study suggests that the current manganese exposure limits have not impacted the health of mine workers, as evidenced by cross-sectional and data studies. Nevertheless, it is prudent to conduct ongoing evaluations to monitor and safeguard the health of these workers.

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Annexure-A

Results for the Joda West Iron & Manganese Mine:

HQUARRY:

Average Age Males (n=8): 44.5

Average Age Females (n=12): 42.75

Males Blood Samples Report Analysis Mean Value (n=8): 5.34

Females Blood Samples Report Analysis Mean Value (n=12): 7.45

Males Urine Samples Report Analysis Mean Value (n=8): 3.70

Females Urine Samples Report Analysis Mean Value (n=12): 3.44

Both Male & Female Blood Samples Report Analysis Mean Value (n=20): 6.18

Both Male & Female Urine Samples Report Analysis Mean Value (n=20): 3.60

GGQ:

Average Age Males (n=6): 32.50

Average Age Females (n=16): 38.50

Males Blood Samples Report Analysis Mean Value (n=6): 5.84

Females Blood Samples Report Analysis Mean Value (n=16): 6.64

Males Urine Samples Report Analysis Mean Value (n=6): 4.60

Females Urine Samples Report Analysis Mean Value (n=16): 4.42

Both Male & Female Blood Samples Report Analysis Mean Value (n=22): 6.42

Both Male & Female Urine Samples Report Analysis Mean Value (n=22): 4.47

DQUARRY:

Average Age Males (n=12): 37.10

Average Age Females (n=4): 39.25

Males Blood Samples Report Analysis Mean Value (n=12): 5.36

Females Blood Samples Report Analysis Mean Value (n=4): 6.61

Males Urine Samples Report Analysis Mean Value (n=12): 3.81

Females Urine Samples Report Analysis Mean Value (n=4): 2.57

Both Male & Female Blood Samples Report Analysis Mean Value (n=16): 5.56

Both Male & Female Urine Samples Report Analysis Mean Value (n=16): 3.50

Lab report analysis results for the Bamebari Iron & Manganese Mine: Joribari Block:

Average Age Males (n=20): 39.5

Average Age Females (n=6): 35.10

Males Blood Samples Report Analysis Mean Value (n=20): 5.29

Females Blood Samples Report Analysis Mean Value (n=6): 5.82

Males Urine Samples Report Analysis Mean Value (n=20): 4.81

Females Urine Samples Report Analysis Mean Value (n=6): 3.96

Both Male & Female Blood Samples Report Analysis Mean Value (n=26): 5.41

Both Male & Female Urine Samples Report Analysis Mean Value (n=26): 4.61

Lab report analysis results for the Tiringpahar Iron & Manganese Mine:

Average Age Males (n=16): 36.06

Average Age Females (n=10): 42.4

Males Blood Samples Report Analysis Mean Value (n=16): 6.31

Females Blood Samples Report Analysis Mean Value (n=10): 6.77

Males Urine Samples Report Analysis Mean Value (n=16): 4.86

Females Urine Samples Report Analysis Mean Value (n=10): 4.22

Both Male & Female Blood Samples Report Analysis Mean Value (n=26): 6.48

Both Male & Female Urine Samples Report Analysis Mean Value (n=26): 4.61

Lab report analysis results for the Khondbond Iron & Manganese Mine:

Average Age Males (n=20): 39.35

Average Age Females (n=5): 44.20

Males Blood Samples Report Analysis Mean Value (n=20): 2.51

Females Blood Samples Report Analysis Mean Value (n=5): 1.93

Males Urine Samples Report Analysis Mean Value (n=20): 4.27

Females Urine Samples Report Analysis Mean Value (n=5): 4.38

Both Male & Female Blood Samples Report Analysis Mean Value (n=25): 2.49

Both Male & Female Urine Samples Report Analysis Mean Value (n=25): 4.49

Lab report analysis results for Controlled Samples:

Average Age Males (n=15): 32.70

Average Age Females (n=15): 44.2

Males Blood Samples Report Analysis Mean Value (n=15): 2.47

Females Blood Samples Report Analysis Mean Value (n=15): 1.93

Males Urine Samples Report Analysis Mean Value (n=15): 2.90

Females Urine Samples Report Analysis Mean Value (n=15): 4.38

Both Male & Female Blood Samples Report Analysis Mean Value (n=15): 2.51

Both Male & Female Urine Samples Report Analysis Mean Value (n=15): 2.95

REPORT ON ASSESSMENT OF WHOLEBODY AND HAND ARM VIBRATION EXPOSURE AT WORKPLACE

Duration of Study: 28th April 2022- 30th April 2022
Report No.: STL/IH/E02/055/22

At
Bamebari Iron & Mn Mine
Tata Steel Limited
Joda, Odisha, India

Conducted By: Tecorfin Consultants and Startech Laboratory Pvt. Ltd.

Monitored By : Y. Raghavendra Chary (Asst. Manager, Startech Labs)

Guided By : Birendra Jena (Sr. Manager, Environment, Tata Steel Limited)



Tecorfin Consultants



1-58/7, IInd Floor, SMR Chambers, Madinaguda, Serilingampally, Hyderabad – 500 050, India.
*{Recognized Laboratory by ISO 9001-2015, OHSAS ISO 45001:2018, Directorate-General of Mines Safety,
Directorate General Factory Advice Service and Labour Institute and Drugs Control Administration, T.S}*

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1.0 ABBREVIATIONS

ACGIH	American Conference of Industrial Hygienists
ANSI	American National Standards Institute
DGMS	Directorate General of Mines and Safety
Dist.	District
EU	European Union
HEMM	Heavy Earth Moving Machineries
HAV	Hand Arm Vibration
WBV	Whole Body Vibration
ISO	International Organization for Standardization
Km	Kilometer
m/s ²	meter per second square
MTPA	Million Metric Tonnes Per Annum
MMR	Metalliferous Mines Regulations
MW	Mega Watt
NH	National Highway
OSHA	Occupational Safety and Health Administration
Pvt. Ltd.	Private Limited
TLV	threshold limit value
WD	Wheel Dozer

2.0 INTRODUCTION

ABSTRACT:

The assessment of exposures of mine workers to various forms of induced vibration during their respective occupation forms an integral part of the Occupational Health Surveillance strategies of the company. A robust management system framework and a sound safety governance structure drive our health and safety measures. To achieve our objective of Zero LTI (Loss time injury), six long-term safety strategies are being implemented across Tata Steel. Tata Steel Limited (hereinafter referred to as "The Company") has engaged M/s Tecorfin Consultants Private Limited for undertaking detailed assessment of such exposure especially for the representative sampling subjects for different types of HEMM operators deployed at the mines. M/s Tecorfin Consultants Pvt. Ltd. has collaborated with M/s Startech Laboratory Private Limited, one of the recognized laboratories by ISO 9001-2015, ISO 45001:2018, Directorate-General of Mines Safety, Directorate General Factory Advice Service and Labour Institute and Drugs Control Administration, Telengana State, etc. The Present study has been conducted for 05 HEMM operators deployed at Bamebari Iron & Mn Mine and were tested for their exposure to Whole Body Vibration as well as Hand Arm Vibration. The sampling and data collection has been carried out by Startech Laboratory using calibrated sensors and instruments. The collected data has been processed for estimating the Exposure Level and comparison has been done with applicable ISO standards. The assessment reveals that all the five identified HEMMs conforms to satisfactory Ergonomics as far as triaxial vibration exposure for both Whole Body Vibration as well as Hand Arm Vibrations are concerned. The observed values are well within the exposure action value of 2.5m/s^2 and 0.5m/s^2 for HAV and WBV respectively.

PROJECT DESCRIPTION:

About Tata Steel Limited: Tata Steel Group is among the top global steel companies with an annual crude steel capacity of 27.5 million tonnes per annum (MTPA) as on March 31, 2017. It is the world's second-most geographically diversified steel producer, with operations in 26 countries and a commercial presence in over 50 countries. The Group recorded a consolidated turnover of US \$18.12 billion (INR 117,420 crore) in FY17. Tata Steel Group is spread across five continents with an employee base of nearly 74,000. Having bagged the Deming Application Prize and Deming Grand Prize for continuous improvement in 2008 and 2012 respectively.

Tata Steel has now been recognised as the global 'Industry Leader' in 'Steel category' by Dow Jones Sustainability Index (2015). Besides being a member of the World Steel Climate Action Programme, Tata Steel has also been felicitated with several awards including the Prime Minister's Trophy for the best performing integrated steel

plant for 2013-14 (received in 2017), Best Risk Management by CNBC TV18 (2016), 'Best-in-class Manufacturing' award from TIME India (2016) and the 'Most Ethical Company' award from the Ethisphere Institute (2016), IIM Sustainability Award (2015), among several others.

Tata Steel Ltd (TSL) was established in India as Asia's first integrated private steel company in 1907. Established in 1907, the Group's vision is to be the world steel industry benchmark in "Value Creation" and "Corporate Citizenship" through the excellence of its people, its innovative approach and overall conduct. Responsible mining as a policy is the single most important reason for the sustained growth and prosperity of Tata Steel for over a century. Tata Steel's Raw Material operations are spread across India and Canada and helps the company to be self-sufficient in steel production and operating captive mines that help to maintain cost-competitiveness and production efficiencies through an uninterrupted supply of raw materials.

Tata Steels Raw Materials operations in India are mainly deals with four broad minerals - Iron ore, Chromite, Manganese and Coal. The chromite and manganese mines and associated alloy making operations have been amalgamated under the 'Ferro Alloys & Minerals Division' that acts as a separate strategic business unit. Iron-ore and coal being the two key raw materials for steel making, efficient and scientific mining operations give us a competitive edge in steel production.

With an annual production of 360,000 MT, the Ferro Alloys and Minerals Division (FAMD) is the largest non-steel business unit of Tata Steel, operating chrome and manganese ore reserves in Odisha. Manganese ore requirement of company is met from Bamebari Iron & Manganese Mine, Joda West Iron & Manganese Mine, Tiringpahar Iron & Manganese Mine, and Khondbond Iron & Manganese Mine.

The company is operating four manganese mines in the Joda Valley in the district of Keonjhar, Odisha namely Bamebari Iron & Manganese Mine, Joda West Iron & Manganese Mine, Tiringpahar Iron & Manganese Mine and Khondbond Iron & Manganese Mines. The present report is in respect of Bamebari Iron & Manganese Mine operated over mine lease area of 464.0ha. The mining history of Bamebari Mine is since 1930 when the first lease was granted by the then Maharaja of

Keonjhar. The Bamebari mining lease is located at Bamebari, Boneikela and Joribar villages at Barbil tahasil in Champua sub-division of Keonjhar district in the state of Odisha. The entire lease of 464.0 ha consists of three discrete blocks viz. Bamebari (140 ha) i.e bounded within Latitude from 21053'38.89" to 21054'44.02" & Longitude from 85025'23.37" to 85025'52.06", Boneikela (233 ha) i.e bounded within Latitude from 22002'00.42" to 22003'21.47" & Longitude from 85024'36.41" to 85025'47.40" and Joribar (91 ha) i.e bounded within Latitude from 21055'41.52" to 21056'25.84" & Longitude from 85024'10.74" to 85025'06.64". The area falls under survey of India Topo sheet Nos. 73 G/5 & 73 F/8 (New Topo sheet Nos. F 45N5 & F45N8). The location of the Bamebari Mines is indicated in the INDEX MAP as follows:

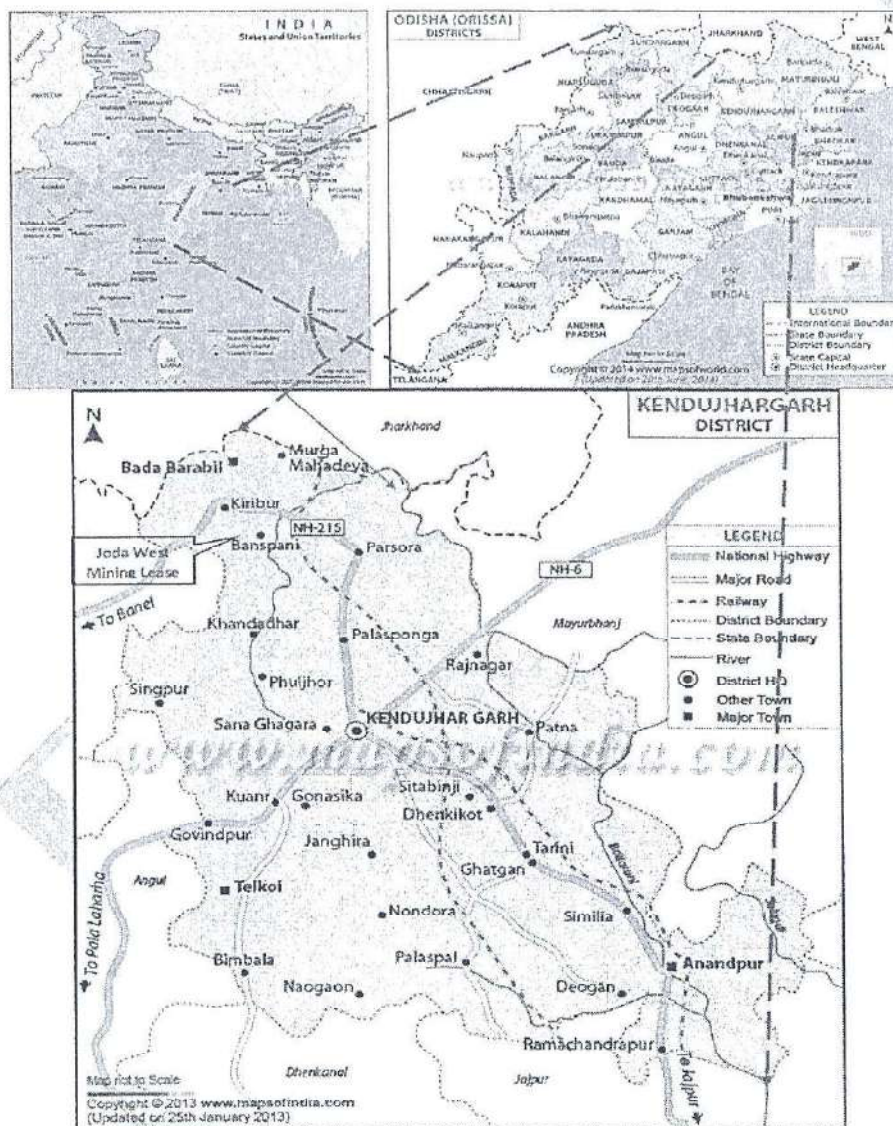


Fig.1 INDEX MAP

The Bamebari Iron & Manganese Mine is an opencast mechanised metal mine operational since 1930. The company has been producing the manganese ore from the mine by using shovel-dumper combinations which is used for the making of ferro-manganese at the Ferro Alloys Plant based at Joda which is ultimately used by the company's steel operation for the making of stainless steel. The mine at present is operated for a production capacity of 83200 Tonnes Per Annum.

Table.1: Salient Features of Bamebari Iron & Mn Mine

Project Location	
Village	Bamebari, Jadibahal, Bonekela.
Tehsil	Barbil (Champua Sub Division)
District	Kendujhar
State	Odisha
Latitude	21°53'38.89" to 21°54'44.02" North
Longitude	85°25'23.37" to 85°25'52.06" East
Elevation / Altitude	561 metres (1,841 feet) Approx.
Nearest Town	Barbil
Nearest City	<u>Kendujhar</u> Approx. 60 km
Nearest Road	Joda- Kendujhar, NH-215 Approx. 2 km
Nearest Highway	NH-215 Approx. 2 km
Nearest Railway Station	BARABIL Railway Station Approx. 9 km
Nearest Airport	Bhubaneswar Airport Approx. 285 km

Mining Operation at Bamebari Iron & Manganese Mine is governed by various environmental and social policies, applicable permits, legislations, rules, and regulations framed by the state (Odisha) and the central Government.

An Environmental Management Cell and Safety Task Force has been established for identifying various health and safety related obligations to be fulfilled by the organization. The team has been established with prime objectives of identifying the legal compliance imperatives having their genesis from different national and international legislations and /or commitments to which Tata is obliged.

The mine management keeps on monitoring all such aspects (Health & Safety) as per the statute guidelines and assess the status of compliance along with identifying the scope for continual improvement."

The Whole-body vibration monitoring and exposure assessment is carried out keeping in consideration with the governing legislations framed by Directorate General of Mines Safety, etc. and deliberated during National Safety Conference.

Statutory References to Exposure Assessment Study:

- ❖ **DGMS Tech Circular No.1 of 2018** (Standards and Safety Provisions of Diesel Equipment for using in belowground coal and Metalliferous mines) Ref. 1.4 **(Vibration)**: The vibration exposure limits of the operator and passengers shall comply with the acceptance criteria specified in ISO 2631:2014 or its revised version or any internationally accepted standards.
- ❖ **DGMS Tech Circular No.1 of 2018** (Standards and Safety Provisions of Diesel Equipment for using in belowground coal and Metalliferous mines) Ref. 1.1.9 **(Vibration)**: *The seat and it's suspension shall be so designed to reduce vibration transmitted to the operator to the lowest level that can be reasonably achieved.*
- ❖ **DGMS Standards and Safety Provisions of Diesel Equipment for using in belowground coal and Metalliferous mines (2018)** Ref. 10.7 **(Vibration)**: *Non-destructive testing of all the load carrying members of the equipments, where safety of the persons is involved, and whole body vibrations study shall be conducted for operator comfort, once in every one year conforming to any internationally accepted standards, from any Govt. approved test house or NABL accredited laboratory subject to confirmation of its ability to conduct such tests.*
- ❖ **11th National safety Council Recommendation (DGMS-Reference Clause-1.10.2)** *It is imperative for undertaking machine induced vibration and associated exposure for the dumper operators, Dozer operators, sorting yard workers, Drill Operators, and others as per their occupation.*

As stated above, the company has engaged M/s Tecorfin Consultants Pvt. Ltd. for undertaking a detailed exposure assessment of such operators engaged in various mining operations. M/s Tecorfin Consultant Pvt. Ltd (First Party) has collaborated with M/s Startech Laboratory Pvt. Ltd, having it's test house recognized by DGMS, by means of subletting provisions.

3.0 SCOPE & METHODOLOGY

The current assessment has been outsourced for a period of one year i.e for FY 2022-2023. The Assessment shall be carried out by Startech Laboratory Private Ltd. for all the four manganese leases of the company. The assessment shall be conducted in two phases at an interval of six months. Each phase of surveillance shall cover around 5 representative HEMM operators preferable selected from all the class of HEMMs deployed on site. The agency shall undertake testing of the operators for their exposure to Whole Body Vibration as well as Hand Arm Vibration induced due to operation of the Machines. The Sampling event for one person was ensured for at least 30 minutes each for WBV and HAV. The properly calibrated equipment was used and then data collected is analyzed as per ISO 2631:2014 standards for estimation of the following parameters:

- A) Daily vibration exposure, A (8) measured in terms of acceleration i.e m/s^2 ,
- B) Daily Vibration Dose Value (VDV) in $m/s^{1.75}$,

METHODOLOGY: Vibration Exposure Monitoring: Despite modern technology, many workers who operate powered hand tools or other heavy machinery are subjected to the exposure of vibration during their normal working hours. This will lead to development of injuries and/or disorders related to vibration exposure.

Vibration exposure is of two types

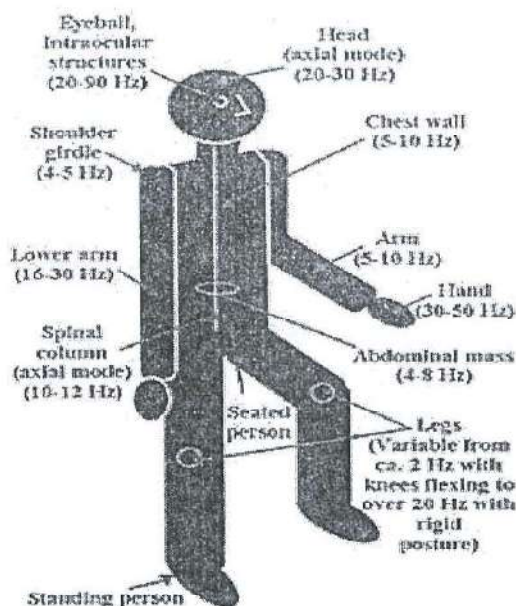
1. Hand Arm Vibration
2. Whole Body Vibration

Hand-Arm Vibration is defined as the transmission of sinusoidal vibration from a tool to a worker's hand and arm. The amount of HAV is characterized by the acceleration level of the tool when grasped by the worker and in use. The vibration is typically measured on the handle of tool while in use to determine the acceleration levels transmitted to the worker.

Whole body vibration is caused by vibration transmitted through the seat or the feet by workplace machines and vehicles. Exposure to high levels of whole-body vibration may cause risks to health and safety and are reported to cause or aggravate back injuries. The risks are greatest when the vibration magnitudes are high, the exposure durations long, frequent, and regular, and the vibration includes severe shocks or jolts.

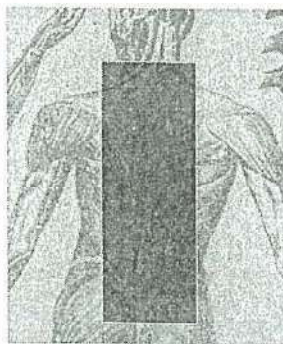
3.1 Health effects

To understand why human beings are more sensitive to some frequencies than to others, it is useful to consider the human body as having sub-systems, where each sub-system has its own resonance frequency band and the interactions between sub-systems are influenced by the body's position, for example, standing or sitting.



Each part of the human body has its own resonance frequency; therefore, it reacts differently to different frequencies. Above 100 Hz, this model is not very useful, and other more complex analyses must be used. Some of the analyses show that the skull itself has a fundamental mode of vibration in the region of 300-400 Hz with resonances for higher modes around 600-900 Hz. Regular exposure to WBV may cause low back disorders such as disc herniations, may accelerate degenerative changes in the spine, and may lead to moisture loss, bucking, and slipping of the

lumbar discs. Recent studies have indicated that female workers who become pregnant and are exposed to WBV can possibly have added risk factors such as miscarriages and other gynecological disorders. A prolonged exposure to vibration can adversely affect the comfort, efficiency, safety, health and wellbeing of employees. The fig below reflects impacts on the lower back, Vertebrae and the nervous system that surrounds it.



Other factors that can contribute to WBV injury:

The equipment mentioned above because of continuous vibration, produces high levels of vibration that can cause permanent damage to one's back. The risk of permanent damage also depends on a number of other factors. Finally, awkward postures and manual cargo handling in addition to WBV exposure tend to exacerbate low back pain misery. Some of typical patterns of induced form of vibration causing injury are as follows:

- Low frequency vibration caused by machinery.
- High frequency vibration from engine and transmission
- Shock from running into potholes or obstacles
- Poor ergonomic design of cabs, seats and controls
- Individual susceptibility - general fitness, being overweight and choice of leisure pursuits

3.2 SAMPLING SELECTION CRITERIA:

The preliminary task of identifying sampling subject was ensured with the support of Mines Managers of individual mines. All the types of fleet were considered. An attempt was made to undertake at least 10% of the different class

of HEMMs. All the identified operators of the HEMMs were briefed on the procedure of sampling especially w.r.t correct posture of installation of sensors and proper care of the same during sampling. The following list of HEMMs were identified for the purpose of first phase of sampling and the same is summarized as follows:

Table. 2: Sampling Selection Criteria

Sl.No	SELECTED HEMM/ HEMM ID	OPERATOR'S NAME GATE PASS NO.	AGE (Yrs)	WORKPLACE
01	Rock Breaker (RB-01)	Mr. Nilambar Mahanta GP- TSP/944599/0522	36	Joribar Pit
02	Shovel (VOLVO-19)	Mr. Jitendra Patra GP- TSP/905647/0322	39	Joribar Pit
03	Dumper (VOLVO-02)	Mr. Singray Lohar GP- TSP/654667/1121	45	Joribar Pit
04	Loader- OD09 K 1792	Mr. Basanta Singh GP- TSP/862802/0222	29	Joribar Pit
05	Ripper-01	Mr. Pradeepta Mahanta GP- TSP/944598/0422	30	Joribar Pit

All the above mentioned HEMM operators were assessed for their exposure to the machine induced vibrations and shocks for both HAV as well as WBV.

The vibration monitoring is done to assess the operator's exposure vibration hazard to which they are exposed during their operational activity. The effect of exposure sometimes is reflected in a later stage adding owes to their comfort and efficiency. This monitoring would help TATA Steel in assessing the present exposure level and accordingly identify areas for corrective actions. The emphasis was laid upon all types of activities such as OB Transportation, Ore Loading, Face Cutting, Ripping/Dozing, etc.

The assessment was carried out by forming a team of experts from Startech Laboratory Pvt. Ltd. in coordination with the Shift in Charge(s) and Sr. Manager Environment & Mines Manager.

Sampling Team: Mr. Y. Raghavendra Chary & Mr. G. Naveen from Startech Lab Pvt. Ltd. were engaged for sampling services on site.

4.0 INSTRUMENTATION:

The HAVPro is a compact, lightweight, fully integrated 3-channel instrument for obtaining tri-axial vibration measurements. This monitor is the ideal screening tool for quickly and simply determining the presence and magnitude of hazardous hand-arm or whole-body vibration levels. Time history data also allows insight into exposure variations over time.

The HAVPro conforms to the requirements of the latest human vibration measurement standards including the new EU Vibration Directive 2002/44/EC dated June 2002, ISO 5349-2001, ISO 2631, ISO 8041 Type 1, ANSI S3.18, ANSI S3.34, and ACGIH 2005 WBV & HAV Threshold Limit Values.

HAVPro Whole-Body Vibration Kit - Includes 072-001 HAVPro Personal Human Vibration Monitor, 072-011 3-Axis Seat Pad Accelerometer and 072-007 Sensor Cable.

Instrument	: Vibration Monitor
Make	: Quest Technologies, Inc.
Model	: HAVPro, Quest Technologies, Inc.
Serial no	: 07114, 07123 & 06011

5.0 TECHNICAL SPECIFICATIONS:

5.1 Standard Sensors

Whole Body Sensor: Part No. 072-011 voltage mode tri-axial seat pad accelerometer, 100mV/g sensitivity

W-B RMS Range: 0.001 m/s² to 500 m/s², dependent upon gain setting

W-B Peak Range: 0.2 m/s² to 700 m/s², dependent upon gain setting

5.2 Measurements:

Whole body Vibration: Arms, A_{min} , A_{max} , A_{eq} , A_{mp} , PEAK, CF_{mp} , CF, VDV, Time History

Dynamic Range: 60dB

Frequency Range: 0.5 - 3000 Hz +/- 5% 0.3 - 5000 Hz +/- 10%

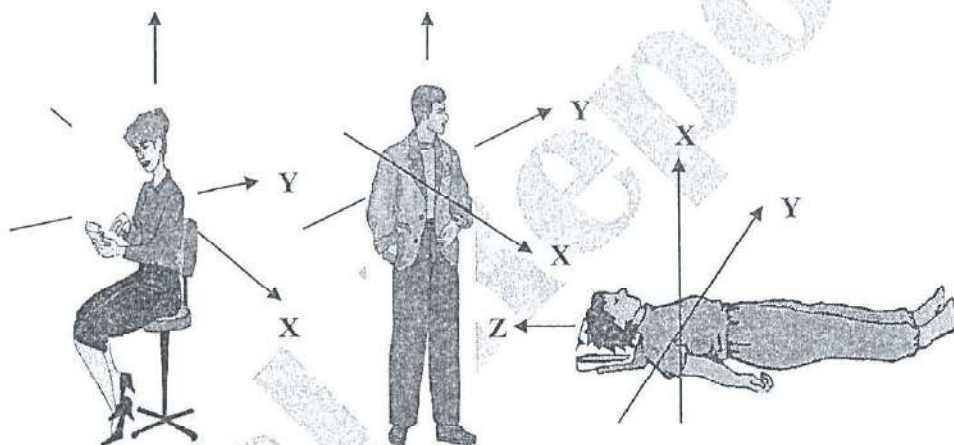
Sampling Rate: 14,400 HzF FREQUENCY WEIGHTINGS

5.3 Frequency Weighting: *Whole-Body*: Wb, Wc, Wd, We, Wg, Wj, Wk, WB

MEMORY STORAGE: Setups: Up to 10 User-defined setup files, Data Files: Up to 100 data files, Time History: Interval lengths of 1, 2, 5, 10, 20, 30 or 60 seconds. Up to 120 intervals per data file with Arms and PEAK/interval. Up to 240 intervals per data file with Arms or PEAK/interval, Size: 512 KB

5.4 Monitoring Methodology:

- Vibration is measured in tri-axial dimension.
- At a time, vibration is possible in more than one direction,
- Vibration is produced in total of three axes of potential movement



X – Axis Back to Chest
Y – Axis Right to Left
Z – Axis Foot to Head

6.0 CALIBRATION:

Calibrated on : 03rd December 2021

Calibration Due Date : 02nd December 2022

Copies of calibration certificates are attached as Annexures to this Report.

7.0 ACCEPTANCE CRITERIA:

As per ACGIH (Booklet 2010 TLVs and BEIs)

Monitoring and assessment methodology adapted as per ISO 2631

Table. 3: Applicable Standards for Vibration Exposure

8-Hr Daily Exposure Limits	Action Value	Limit Value
Hand-Arm	2.5 m/s ²	5 m/s ²
Whole-Body	0.5 m/s ²	1.15 m/s ²
Whole-Body (vibration dose)	9.1 m/s ^{1.75}	21 m/s ^{1.75}

9.0 DEFINITIONS:

EAV (Exposure Action values): A value for either a workers daily vibration exposure, $A(8)$ of 0.5m/s², or a workers daily VDV of 9.1m/s^{1.75}, above which the risks from vibration exposure must be controlled.

ELV (Exposure Limit Value): A value for either a workers daily vibration exposure, $A(8)$ of 1.15m/s², or a workers daily VDV of 21m/s^{1.75}, above which workers should not be exposed.

VDV: Vibration Dose Value. VDV has units of m/s^{1.75}.

CF: Crest Factor ratio of peak to rms should 6 or less

Aeq: Is the integration time that is from Run to Reset

Amp: Peak level of the instantaneous weighted acceleration

A(8): Daily vibration exposure, expressed in (m/s²)

BASIS OF INTERPRETATION:

For those result whose crest value are above 6, Vibration Dose Values needs to be considered. Exposure Action Limit Start at 9.1m/s^{1.75} and Exposure limit Value is 21m/s^{1.75} for Vibration Dose Value.

- 10.0 **RESULTS:** After sampling is completed, analysis of the data collected is done using HAVPro Software for estimating the parameters as defined in the sec.9.0. The summary of the readings is summarized as follows:

Table. 4: Whole Body Vibration Results:

SAMPLE ID	Location	Operator Name	Activity	Axis	Aeq m/s ²	A _{min} m/s ²	A _{max} m/s ²	A(8) m/s ² EAV:0.5	VDV m/s ^{1.75}
1	Rock Breaker (RB-01)	Mr. Nilambar Mahanta	Rock Breaker Operator	X	0.1018	0.0441	0.1886	0.0258	1.3543
				Y	0.0802	0.0420	0.1654	0.0203	1.1388
				Z	0.2362	0.0631	0.4840	0.0589	2.7343

SAMPLE ID	Location	Operator Name	Activity	Axis	Aeq m/s ²	A _{min} m/s ²	A _{max} m/s ²	A(8) m/s ² EAV-0.5	VDV m/s ^{1.75}
				SUM	0.2978	0.1512	0.5075	0.0756	2.9456
2	Shovel (V-19)	Mr. Jitendra Patra	Shovel Operator	X	0.0270	0.0063	0.1593	0.0076	0.8949
				Y	0.0170	0.0041	0.0978	0.0048	0.5866
				Z	0.0150	0.0084	0.0440	0.0042	0.2820
				SUM	0.04703	0.01357	0.2649	0.0133	1.3078
3	Dumper - 02	Mr. Singray Lohar	Dumper Operator	X	0.2041	0.0086	0.0298	0.0573	11.38
				Y	1.5632	0.0069	0.0288	0.4390	77.98
				Z	0.1176	0.0136	0.0269	0.0330	8.63
				SUM	2.2102	0.0207	0.0639	0.6207	109.195
4	Loader - 01, (OD09 K 1792)	Mr. Basanta Singh	Loader Operator	X	0.4320	0.0611	0.6235	0.1125	4.6865
				Y	0.4337	0.0476	0.6345	0.1130	4.6423
				Z	0.5321	0.0335	0.7753	0.1386	5.9636
				SUM	1.0088	1.4315	0.1210	0.2627	8.3675
5	Ripper - 01	Mr. Pradeepta Kumar Mahanta	Ripper Operator	X	0.0666	0.0081	0.3662	0.0169	2.2439
				Y	0.0656	0.0064	0.3613	0.0167	2.2137
				Z	0.0340	0.0139	0.1688	0.0086	1.0372
				SUM	0.1352	0.7394	0.0203	0.03	3.7167

Table. 5: Hand Arm Vibration Results

Case No.	Location	Operator Name	Activity	Axis	Aeq m/s ²	A _{max} m/s ²	A _{min} m/s ²	A(8) m/s ² EAV- Z.5m/s ²
1	Rock Breaker (RB-01)	Mr. Nilambar Mahanta	Rock Breaker Operator	X	0.0878	0.3763	0.0320	0.0222
				Y	0.7285	2.4972	0.0068	0.1846
				Z	0.0879	0.3768	0.0321	0.0223
				SUM	1.0310	3.555	0.057	0.2612
2	Shovel (V-19)	Mr. Jitendra Patra	Shovel Operator	X	0.0878	0.3763	0.0320	0.0222
				Y	0.7285	2.4972	0.0068	0.1846
				Z	0.0879	0.3768	0.0321	0.0223
				SUM	1.0310	3.5556	0.0577	0.2612

Case No.	Location	Operator Name	Activity	Axis	Aeq m/s ²	Amax m/s ²	Amin m/s ²	A(8) m/s ² EAV 2.5m/s ²
3	Dumper - 02	Mr. Singray Lohar	Dumper Operator	X	0.1751	0.4103	0.0399	0.0478
				Y	0.1707	0.3526	0.0380	0.0465
				Z	0.1735	0.3450	0.0311	0.0473
				SUM	0.3838	0.8151	0.0933	0.1047
4	Loader -01, (OD09 K 1792)	Mr. Basanta Singh	Loader Operator	X	0.0877	0.1277	0.0484	0.0228
				Y	0.0754	0.1131	0.0512	0.0196
				Z	0.0637	0.0981	0.0284	0.0166
				SUM	0.1740	0.2537	0.1095	0.0453
5	Ripper -01	Mr. Pradeepta Kumar Mahanta	Ripper Operator	X	0.0591	0.0813	0.0350	0.0158
				Y	0.0730	0.0986	0.0354	0.0195
				Z	0.0887	0.1449	0.0279	0.0237
				SUM	0.1587	0.1983	0.0749	0.0423

11.0 OBSERVATIONS:

11.1 CASE 1: SAMPLE ID-01

The subject sample was tested for exposure assessment to both HAV & WBV. Mr. Nilambar Mahanta, operator of Rock Breaker (RB-01) engaged in rock breaking operations at Joribar quarry of Bamebari Iron & Mn Mine was tested for estimation of Daily Exposure Value.

A) Whole Body Vibration:

From the Result it is observed that Daily Vibration for Whole Body vibration exposure in X, Y & Z axis are within the Exposure Action value of A(8) i.e. 0.5m/s². With the current level of exposure, the operator may be allowed to work for a full shift which won't attract any occupational contraventions.

B) Hand Arm Vibration:

From the Result it is observed that daily vibration for Hand Arm Vibration exposure in X, Y & Z axis are within the Exposure Action value of A(8) i.e. 2.5m/s². Here an Operator can work for a full shift at the same exposure level.

Conclusion: Based on the findings of both HAV & WBV, it can be concluded that the status of ergonomics of RB-01 (subject HEMM) is safe in this regard.

11.2 CASE 2 (SAMPLE ID-02):

The subject sample was tested for exposure assessment to both HAV & WBV. Mr. Jitendra Patra, operator of Shovel (VO-19) engaged in shoveling operations at Joribar quarry of Bamebari Iron & Mn Mine was tested for estimation of Daily Exposure Value.

A) Whole Body Vibration:

From the Result it has been observed that daily vibration for Whole body vibration exposure in X, Y & Z axis are within the Exposure Action value of A(8) i.e. 0.5m/s^2 , here an Operator can work for a full shift at the same exposure level without any possibility of any occupational contraventions

B) Hand Arm Vibration:

From the Result it has been observed that daily vibration for Hand Arm Vibration exposure in X, Y & Z axis are within the Exposure Action value of A(8) i.e. 2.5m/s^2 . Here an Operator can work for a full shift at the same exposure level.

Conclusion: Based on the findings of both HAV & WBV, it can be concluded that the status of ergonomics of Shovel (VO-19) (subject HEMM) is safe in this regard.

CASE 3 (SAMPLE ID-03):

The subject sample was tested for exposure assessment to both HAV & WBV. Mr. Singray Lohar, operator of Dumper (VO-02) engaged in transportation of ore and overburden material at Joribar quarry of Bamebari Iron & Mn Mine was tested for estimation of Daily Exposure Value.

A) Whole Body Vibration:

From the result, it has been observed that daily vibration for Whole body vibration exposure in X, Y & Z axis are within the Exposure Action value of A(8) i.e. 0.5m/s^2 Here an Operator can work for a full shift at the same exposure level.

B) Hand Arm Vibration:

From the Result it has been observed that daily vibration for Hand Arm Vibration exposure in X, Y & Z axis are within the Exposure Action value of A(8) i.e. 2.5m/s^2 . Here an Operator can work for a full shift at the same exposure level.

Conclusion: Based on the findings of both HAV & WBV, it can be concluded that the status of ergonomics of the dumper (subject HEMM) is safe in this regard.

11.3 CASE 4 (SAMPLE ID-04):

The subject sample was tested for exposure assessment to both HAV & WBV. Mr. Basant Singh, operator of Front-End Loader engaged in loading of ore material at Joribar quarry of Bamebari Iron & Mn Mine was tested for estimation of Daily Exposure Value.

A) Whole Body Vibration:

From the result, it has been observed that daily vibration for Whole body vibration exposure in X, Y & Z axis are within the Exposure Action value of A(8) i.e. 0.5m/s^2 , here an operator can work for a full shift at the same exposure level.

B) Hand Arm Vibration:

From the Result it has been observed that daily vibration for Hand Arm Vibration exposure in X, Y & Z axis are within the Exposure Action value of A(8) i.e. 2.5m/s^2 . Here an Operator can work for a full shift at the same exposure level.

Conclusion: Based on the findings of both HAV & WBV, it can be concluded that the status of ergonomics of the loader (subject HEMM) is safe in this regard.

11.4 CASE 5 (SAMPLE ID-05):

The subject sample was tested for exposure assessment to both HAV & WBV. Mr. Pradeepta Mahanta, operator of Ripper engaged ripping of soft strata/topsoil at Joribar quarry of Bamebari Iron & Mn Mine was tested for estimation of Daily Exposure Value.

A) Whole Body Vibration:

From the result, it has been observed that daily vibration for Whole body vibration exposure in X, Y & Z axis are within the Exposure Action value of A(8) i.e. 0.5m/s^2 , here an operator can work for a full shift at the same exposure level.

B) Hand Arm Vibration:

From the Result it has been observed that daily vibration for Hand Arm Vibration exposure in X, Y & Z axis are within the Exposure Action value of A(8) i.e. 2.5m/s^2 . Here an Operator can work for a full shift at the same exposure level.

Conclusion: Based on the findings of both HAV & WBV, it can be concluded that the status of ergonomics of the ripper (subject HEMM) is safe in this regard.

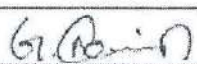

12.0 RECOMMENDATION FOR IMPROVEMENT: From the detailed analysis of triaxial vibration exposure of all the five samples it is inferred that, the

8-hr (daily exposure value) for Hand Arm Vibration as well as Whole Body Vibration for all the five tested samples are indicating of conformance to the applicable ergonomic standard and DGMS prescribed Exposure Action Value of 2.5 m/s^2 and 0.5 m/s^2 respectively. However, Daily Vibration Dose Value (Whole Body Vibration) as computed for all the samples are as follows:

Sample ID 01: VDV is observed to be $2.9456 \text{ m/s}^{1.75}$, which is below Exposure Action Value of $9.1 \text{ m/s}^{1.75}$. However, since no one is allowed to work beyond shift duration of 8hr/ day, thus this won't be of much consideration for the current assessment. VDV is an indicative of predicted exposure level if someone can work for 24hours with the current level of exposure.

- **Sample ID 02:** VDV is observed to be $1.3078 \text{ m/s}^{1.75}$, which is well within the Exposure Action Value of $9.1 \text{ m/s}^{1.75}$.
- **Sample ID 03:** VDV is observed to be $109.195 \text{ m/s}^{1.75}$, This sample indicates that no one should be allowed to work with the current level of exposure for anything beyond 8hr in any case. The mine management must undertake a reassessment of such HEMM. Though A(8) value is in conformance with the DGMS standard still then attention for taking care of ergonomics of the HEMM is a must for the subject sample.
- **Sample ID 04:** VDV is observed to be $8.3675 \text{ m/s}^{1.75}$, which is within the Exposure Action Value of $9.1 \text{ m/s}^{1.75}$. However, the subject HEMM must be considered by the management for a detailed ergonomic assessment so that if any changes in the design of seats and other components is required then the same is ensured.
- **Sample ID 05:** VDV is observed to be $3.7167 \text{ m/s}^{1.75}$, which much above than that of prescribed Exposure Action Value of $9.1 \text{ m/s}^{1.75}$.

CERTIFIED BY

Particulars	Monitored By	Authorized By
Name	G. Naveen	Y. Raghavendra Chary
Signature		
Date	01.09.2022	01.09.2022

PHOTOGRAPHS



SAMPLE-01 (Mr. Nilambar Mahanta)



SAMPLE-02 (Mr. Jitendra Patra)



SAMPLE-03 (Mr. Singray Lohar)



SAMPLE-04 (Mr. Basanta Singh)



SAMPLE-05 (Mr. Pradeepta Kumar Mahanta)

ACKNOWLEDGEMENT


This "Vibration Monitoring" report is prepared by Startech Labs Pvt. Limited, Hyderabad on behalf of M/s Tecorfin Consultants Private Limited to be submitted before Bamebari Iron & Manganese Mine of M/s. Tata Steel Ltd. M/s Startech Labs has conducted a detailed assessment of occupational exposure of HEMM operators of the mine to Vibration & Shocks. The Test House expresses its gratitude towards the Management of Tata Steel Ltd. for awarding this prestigious study to Startech Labs for their trust, hospitality and courtesy bestowed on our on-site project personnel during his project stay.

Startech Lab is indebted to Mr. Sabyasachy Mishra, Head Mine & Production Planning and Mr. Pranakrushna Mahanta, Mines Manager (Bamebari) and Mr. Alok Singh Sardar (Safety Officer) of Bamebari Iron & Mn Mine for supporting us in every stage of the study and extending their co-operation and sparing their valuable time to provide us necessary guidance for the smooth execution and completion of this study.

Startech Lab is indebted to Mr. Arvind Dubey (proprietor of M/s Tecorfin Consultants Private Limited) for believing in us and making such a wonderful collaboration with us for this study.

Startech Lab is also grateful to all the employees of Tata Steel Ltd. (Bamebari Iron & Manganese Mine) who have directly and indirectly extended their help and co-operation in various ways to complete this study successfully.

We thank and highly appreciate the concern of the Management for carrying out this study that would guide them to directly improve the working conditions and thus, generate healthy atmosphere at the workplace.


21-09-2022
Mr. Y. Raghavendra Chary
Assistant Manager, Industrial Hygiene
Startech Labs Pvt. Ltd.

Certificate of CalibrationCalibration of HAVPro Monitor: 3rd Dec 2021

Valid Till: 1 Year from the Date of Issuance

**TSI INCORPORATED - OCONOMOWOC**
 1000 Corporate Center Drive, Oconomowoc, WI 53055 USA
 Tel: 851 899 2811 • toll free: 800 249 0779 • web: www.tsi.com

 99-002-0051
 Registered Company
Certificate of Calibration

Certificate Number: 356489659HAV06011

Model:	HAVPro Vibration Monitor	Date of Issue:	03-December-2021
S/N:	06011	Instrument ID:	ST-EQ-IT-033

On this day of manufacture and calibration, TSI certificate that the above listed product meets or exceeds the performance requirements of the following acoustic standard(s)

Test Conditions:

Temperature:	18-25°C
Humidity:	20-80% R.H.
Barometric Pressure:	950-1050 mBar

Test Procedure: S972-001

Subassemblies:

H-A Pro - PCB 356A67 S/N: 66819

Reference Standard(s) Device	Measurement Uncertainty: Uncertainty estimated at 95% Confidence level (k=2)	Cal Due Date
Kistler 8076K	+/- 1.8 % Vibration	2-March-2022
Fluke 45	+/- 1.4 % AC Voltage, +/- 0.1% DC Voltage	2-March-2022

 Calibrated By: 
 Janet Pompe - Assembler

In order to maintain best instrument performance over time and in the event of inspection, audit or litigation, we recommend the instrument be recalibrated annually. Any number of factors may cause the calibration item to drift before the recommended interval has expired. See your manual for more information.

All equipment used in the test is traceable to NIST, and applies only to the unit identified above.
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098-659 Rev F

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an ISO 9001
Registered Company

EU Declaration of Conformity

Certificate Number: 356489659HAV06011

Product Line: Vibration Monitor

Model: HAVPro

S/N: 06011

Directive Covered:

- > EMC / Council Directive 2014/53/EU on Electromagnetic Compatibility
- > Safety / Council Directive 2014/35/EU on Low Voltage Equipment Safety
- > RoHS / Council Directive 2011/65/EU on the restriction and use of certain hazardous substances
- > WEEE / Council Directive 2012/19/EU on Waste Electrical and Electronic Equipment

The basis on which conformity is being declared:

EN 61326-1 (2005) Electrical equipment for measurement, control and laboratory use - EMC requirements
Group 1, Class B Equipment (emissions)

EN 61326-1 (2005) Electrical equipment for measurement control and laboratory use - EMG requirements
Industrial location immunity

IEC 61010-1 (2010) Safety requirements for electrical equipment for measurement, control and laboratory use
Part 1: General Requirements

CFR: 47 (2005) Code of Federal Regulations: Part 15 Subpart B - Radio Frequency Devices - Unintentional Radiators

ANSI S1.40-2006 (R2011) - Specifications and Verification Procedures for Sound Calibrators

IEC 60942:2003 / EN60942:2003 Electroacoustic Sound Calibrators / Class I

EN 50581 (2012) Technical documentation for the assessment of electrical and electronic products with respect
to the restriction of hazardous substances

Note: This certification applies to all standard options and accessories supplied with the instrument.
At the end of its life cycle, this product, and any internal lithium cell, must be sent to a WEEE recycling center, and is marked
accordingly.

The technical construction file required by this directive is maintained in Oconomowoc, WI USA



Tom Jacobson - Vice President - Engineering, TSI, Inc.

**TSI INCORPORATED - OCONOMOWOC**15000 Corporate Center Drive • Oconomowoc, WI 53066-1800
Tel 531 400 2811 • toll free 800 245 9772 • web:www.tsi.comTSI is a member of the
Paj Anomowoc Group

Certificate of Calibration

Certificate Number: 356489658HAV07123

Model: HAVPro Vibration Monitor Date of Issue: 03-December-2021
S/N: 07123 Instrument ID: ST-EQ-IH-032

On this day of manufacture and calibration, TSI certificate that the above listed product meets
or exceeds the performance requirements of the following acoustic standard(s)

Test Conditions:

Temperature: 18-25°C
Humidity: 20-80% R.H.
Barometric Pressure: 950-1050 mBar

Test Procedure: S072-001**Subassemblies:**

H-A Pro - PCB 356A67 S/N: 66819

Reference Standard(s) Device	Measurement Uncertainty: Uncertainty estimated at 95% Confidence level (k=2)	Cal Due Date
Kistler 8076K	+/- 1.8 % Vibration	2-March-2022
Fluke 45	+/- 1.4 % AC Voltage, +/-0.1% DC Voltage	2-March-2022

Calibrated By:
Janet Pompe - Assembler

In order to maintain best instrument performance over time and in the event of inspection, audit or litigation, we recommend the instrument
be recalibrated annually. Any number of factors may cause the calibration item to drift before the recommended interval has expired.
See your manual for more information.

All equipment used in the test is traceable to NIST, and applies only to the unit identified above.
This report must not be reproduced except in its entirety, without the written approval of TSI, Inc.

038-659 Rev F

Annexures-1



TSL INCORPORATED - OCONOMOWOC
5000 Corporate Center Drive, Oconomowoc, WI 53099-5128
Tel: 414-881-2000 • Fax: 414-881-2001 • Email: sales@tslinc.com • Web: www.tsllab.com

The TSL product
has passed the following

EU Declaration of Conformity

Certificate Number: 356489658HAV07123

Product Line: Vibration Monitor Model: HAVPro S/N: 07123

Directive Covered:

- > EMC / Council Directive 2014/53/EU on Electromagnetic Compatibility
- > Safety / Council Directive 2014/35/EU on Low Voltage Equipment Safety
- > RoHS / Council Directive 2011/65/EU on the restriction and use of certain hazardous substances
- > WEEE / Council Directive 2012/19/EU on Waste Electrical and Electronic Equipment

The basis on which conformity is being declared:

EN 61326-1 (2005) Electrical equipment for measurement, control and laboratory use - EMC requirements
Group 1, Class B Equipment (emissions)

EN 61326-1 (2005) Electrical equipment for measurement control and laboratory use - EMG requirements
Industrial location immunity

IEC 61010-1 (2010) Safety requirements for electrical equipment for measurement, control and laboratory use
Part 1: General Requirements

CFR: 47 (2005) Code of Federal Regulations: Part 15 Subpart B - Radio Frequency Devices - Unintentional Radiators

ANSI S1.40-2008 (R2011) - Specifications and Verification Procedures for Sound Calibrators

IEC 60942-2003 / EN60942-2003 Electroacoustic Sound Calibrators / Class I

EN 50581 (2012) Technical documentation for the assessment of electrical and electronic products with respect
to the restriction of hazardous substances

Note: This certification applies to all standard options and accessories supplied with the instrument.
At the end of its life cycle, this product, and any internal lithium cell, must be sent to a WEEE recycling center, and is marked
accordingly.

The technical construction file required by this directive is maintained in Oconomowoc, WI USA



Tom Jacobson - Vice President - Engineering, TSL, Inc.

Annexure-2

RAW DATA SHEET
(SYSTEM GENERATED DATA SHEET)

List of Enclosures:

Sl.No	Sample ID	Name of Worker	Report Title
01	SAMPLE ID-01	Mr. Nilambar Mahanta (Rock Breaker Operator)	Whole Body Vibration
			Hand Arm Vibration
02	SAMPLE ID-02	Mr. Jitendra Patra, Shovel Operator	Whole Body Vibration
			Hand Arm Vibration
03	SAMPLE ID-03	Mr. Singray Lohar, Dumper Operator	Whole Body Vibration
			Hand Arm Vibration
04	SAMPLE ID-04	Mr. Basanta Singh, Loader Operator	Whole Body Vibration
			Hand Arm Vibration
05	SAMPLE ID-05	Mr. Pradeepta Mahanta, Ripper Operator	Whole Body Vibration
			Hand Arm Vibration

Whole Body Vibration Study Report

5/3/2022

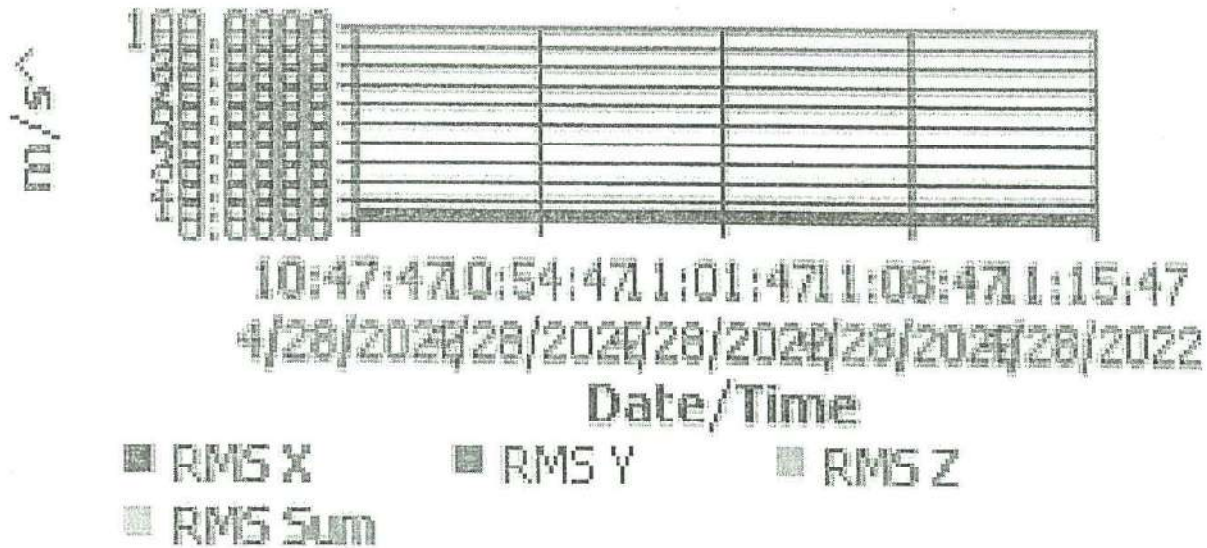
Information Panel

Location: Rock Breaker
 Name: Mr. Nilambar Mahenta
 Comments: Operator
 Start Time: Thursday, April 28, 2022 10:46:30
 Stop Time: Thursday, April 28, 2022 11:17:58

General Data Panel

Description	Meter	Value	Description	Meter	Value
VDV	X	1.354256 m/s ^{1.75}	Amin	X	0.044134 m/
s ²					
Amax	X	0.188646 m/s ²	Aeq	X	0.101752 m/
s ²					
Amp	X	1.453028 m/s ²	VDV	Y	1.138789 m/
s ^{1.75}					
Amin	Y	0.041978 m/s ²	Amax	Y	0.165430 m/
s ²					
Aeq	Y	0.080179 m/s ²	Amp	Y	1.129576 m/
s ²					
VDV	Z	2.734301 m/s ^{1.75}	Amin	Z	0.063095 m/
s ²					
Amax	Z	0.484125 m/s ²	Aeq	Z	0.236182 m/
s ²					
Amp	Z	2.021635 m/s ²	VDV	Sum	3.109578 m/
s ^{1.75}					
Amin	Sum	0.151152 m/s ²	Amax	Sum	0.507502 m/
s ²					
Aeq	Sum	0.297302 m/s ²	Amp	Sum	2.134281 m/
s ²					
Gain	X	20dB	SumFactor	X	1.40
Weighting	X	Wd	Output	X	AC Weighted
Sensitivity	X	1.000000e+002	Gain	Y	20dB
SumFactor	Y	1.40	Weighting	Y	Wd
Output	Y	AC Weighted	Sensitivity	Y	1.000000e
+002					
Gain	Z	20dB	SumFactor	Z	1.00
Weighting	Z	Wk	Output	Z	AC Weighted
Sensitivity	Z	1.000000e+002	Mode		WholeBody
Averaging		60s	StoreTime		1 s
Accelerometer		ICP	DisplayUnits		m/s
DBReference		1e ⁻⁶	Integration		None
Auto Save		True	SecondHistory		None
PrintLoggingOn		False	SetupFileName		
Calibration Level		1.000000e+000	ExposureReference		2.8 m/s

Logged Data Chart



Exposure Calculator

(* measurements use k factor)

Run Time 00:31:28

Measurement	X	Y	Z	Sum	Units
VDV	1.3543	1.1388	2.7343	2.9456*	m/s ^{1.75}
Amin	0.0441	0.0420	0.0631		m/s ²
Amax	0.1886	0.1654	0.4840		m/s ²
Aeq	0.1018	0.0802	0.2362	0.2978*	m/s ²
Amp	1.4530	1.1296	2.0218		m/s ²
A(1)	0.0729	0.0575	0.1693	0.2134*	m/s ²
A(2)	0.0516	0.0406	0.1197	0.1509*	m/s ²
A(4)	0.0365	0.0287	0.0846	0.1067*	m/s ²
A(8)	0.0258	0.0203	0.0589	0.0756*	m/s ²
CFmp	14.2801	14.0881	8.5603		
K Factor	1.4	1.4	1.0		
Max RMS			0.2362*		m/s ²
A(8), Max RMS			0.0598*	0.0755*	m/s ²
Max VDV			2.7343*		m/s ^{1.75}

RMS Calculated Values

Action Value Criterion 0.50 m/s² (8 hours)

Limit Value Criterion 1.15 m/s² (8 hours)

Exposure Time 08:00 hh:mm

	X	Y	Z	Sum	Units
EAV	>24*	>24*	>24*	22:33*	hh:mm
ELV	>24*	>24*	>24*	>24*	hh:mm
A(8)	0.1425*	0.1123*	0.2362*	0.2978*	m/s ²

VDV Calculated Values

Action Value Criterion 9.10 m/sec^{1.75} (8 hours)

Limit Value Criterion 21.00 m/sec^{1.75} (8 hours)

Exposure Time 08:00 hh:mm

	<u>X</u>	<u>Y</u>	<u>Z</u>	<u>Sum</u>	<u>Units</u>
EAV	>24*	>24*	>24*	>24*	hh:mm
ELV	>24*	>24*	>24*	>24*	hh:mm
eVDV	1.8557	1.4623	4.3075	5.4310*	m/s ^{1.75}

Hand Arm Vibration Study Report

5/3/2022

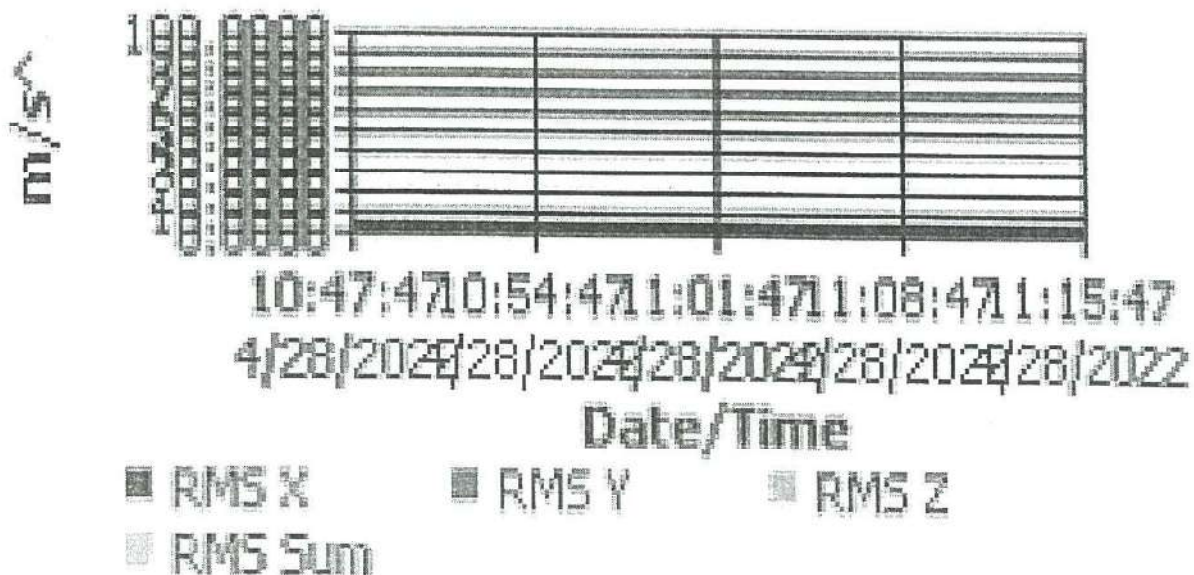
Information Panel

Location: Rock Breaker
 Name: Mr. Nilambar Mahenta
 Comments: Operator
 Start Time: Thursday, April 28, 2022 10:46:47
 Stop Time: Thursday, April 28, 2022 11:17:36

General Data Panel

Description	Meter	Value	Description	Meter	Value
Gain	X	20dB	SumFactor	X	1.40
Weighting	X	Wh	Output	X	AC Weighted
Sensitivity	X	1.000000e+002	Gain	Y	20dB
SumFactor	Y	1.40	Weighting	Y	Wh
Output	Y	AC Weighted	Sensitivity	Y	1.000000e
+002					
Gain	Z	20dB	SumFactor	Z	1.00
Weighting	Z	Wh	Output	Z	AC Weighted
Sensitivity	Z	1.000000e+002	Mode		HandArm
Averaging		60s	StoreTime		1 s
Accelerometer		ICP	DisplayUnits		m/s
DBReference		1e^-6	Integration		None
Auto Save		True	SecondHistory		None
PrintLoggingOn		False	SetupFileName		
Calibration Level		1.000000e+000	ExposureReference		2.8 m/s
Amin	X	0.032021 m/s^2	Amax	X	0.376271 m/
s^2			Amin	Y	0.006823 m/
Aeq	X	0.087792 m/s^2	Aeq	Y	0.728484 m/
s^2			Amax	Z	0.376781 m/
Amax	Y	2.497202 m/s^2	Amin	Sum	0.057702 m/
s^2			Aeq	Sum	1.031627 m/
Amin	Z	0.032064 m/s^2			
s^2					
Aeq	Z	0.087911 m/s^2			
s^2					
Amax	Sum	3.555563 m/s^2			
s^2					

Logged Data Chart



Exposure Calculator

(* measurements use k factor)

Run Time 00:30:49

<u>Measurement</u>	<u>X</u>	<u>Y</u>	<u>Z</u>	<u>Sum</u>	<u>Units</u>
Amin	0.0320	0.0068	0.0321		m/s ²
Amax	0.3763	2.4972	0.3768		m/s ²
Aeq	0.0878	0.7285	0.0879	1.0310*	m/s ²
A(1)	0.0629	0.5221	0.0630	0.7389*	m/s ²
A(2)	0.0445	0.3692	0.0445	0.5225*	m/s ²
A(4)	0.0315	0.2610	0.0315	0.3694*	m/s ²
A(8)	0.0222	0.1846	0.0223	0.2612*	m/s ²
CFmp					
K Factor	1.4	1.4	1.0		
Max RMS		1.0199*			m/s ²
A(8), Max RMS		0.3618*		0.2612*	m/s ²

RMS Calculated Values

Action Value Criterion 0.50 m/s² (8 hours)

Limit Value Criterion 1.15 m/s² (8 hours)

Exposure Time 08:00 hh:mm

	<u>X</u>	<u>Y</u>	<u>Z</u>	<u>Sum</u>	<u>Units</u>
EAV	>24*	01:55*	>24*	01:52*	hh:mm
ELV	>24*	10:10*	>24*	09:57*	hh:mm
A(8)	0.1229*	1.0199*	0.0879*	1.0310*	m/s ²

Whole Body Vibration Study Report

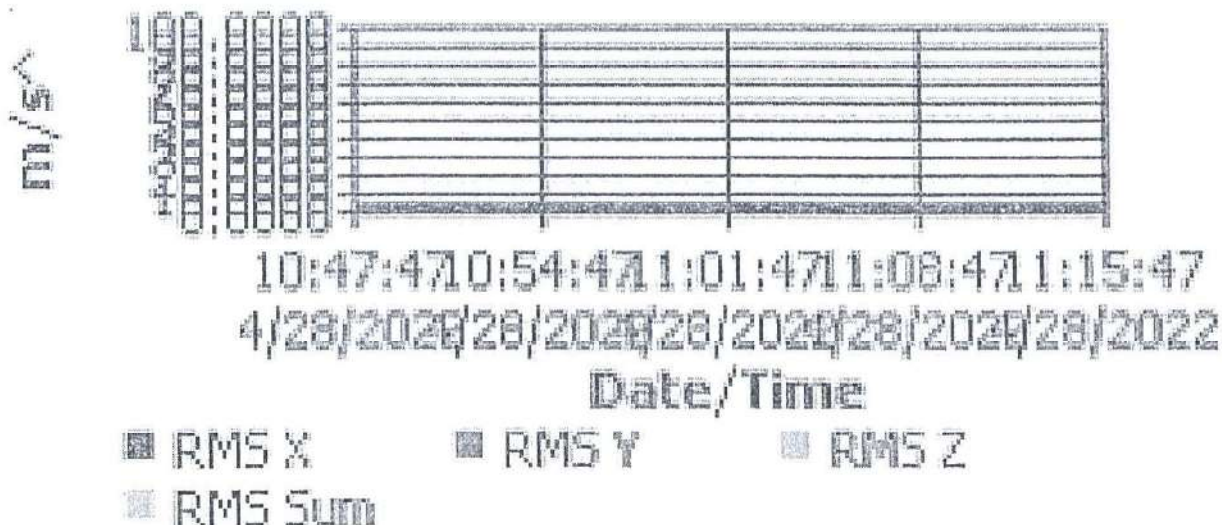
Information Panel

Location Shovel (V-19)
 Name Mr. Jitendra Patra
 Comments Operator
 Start Time Thursday, April 28, 2022 10:46:50
 Stop Time Thursday, April 28, 2022 11:18:10

General Data Panel

Description	Meter	Value	Description	Meter	Value
Gain	X	20dB	SumFactor	X	1.40
Weighting	X	Wd	Output	X	AC Weighted
Sensitivity	X	1.000000e+002	Gain	Y	20dB
SumFactor	Y	1.40	Weighting	Y	Wd
Output	Y	AC Weighted	Sensitivity	Y	1.000000e
+002					
Gain	Z	20dB	SumFactor	Z	1.00
Weighting	Z	Wk	Output	Z	AC Weighted
Sensitivity	Z	1.000000e+002	Mode		WholeBody
Averaging		60s	StoreTime		1 s
Accelerometer		ICP	DisplayUnits		m/s
DBReference		1e^-6	Integration		None
Auto Save		True	SecondHistory		None
PrintLoggingOn		False	SetupFileName		
Calibration Level		1.000000e+000	ExposureReference		2.8 m/s
VDV	X	0.894928 m/s^1.75	Amin	X	0.006257 m/
s^2					
Amax	X	0.159277 m/s^2	Aeq	X	0.026999 m/
s^2					
Amp	X	0.894928 m/s^2	VDV	Y	0.586608 m/
s^1.75					
Amin	Y	0.004101 m/s^2	Amax	Y	0.097834 m/
s^2					
Aeq	Y	0.017016 m/s^2	Amp	Y	0.629392 m/
s^2					
VDV	Z	0.282012 m/s^1.75	Amin	Z	0.008394 m/
s^2					
Amax	Z	0.044015 m/s^2	Aeq	Z	0.014963 m/
s^2					
Amp	Z	0.325970 m/s^2	VDV	Sum	1.519415 m/
s^1.75					
Amin	Sum	0.013573 m/s^2	Amax	Sum	0.264985 m/
s^2					
Aeq	Sum	0.047034 m/s^2	Amp	Sum	1.542211 m/
s^2					

Logged Data Chart



Exposure Calculator

(* measurements use k factor)

Run Time 00:31:20

Measurement	X	Y	Z	Sum	Units
VDV	0.8949	0.5866	0.2820	1.3078*	m/s ^{1.75}
Amin	0.0063	0.0041	0.0084		m/s ²
Amax	0.1593	0.0978	0.0440		m/s ²
Aeq	0.0270	0.0170	0.0150	0.0471*	m/s ²
Amp	0.8949	0.6294	0.3260		m/s ²
A(1)	0.0215	0.0135	0.0119	0.0375*	m/s ²
A(2)	0.0152	0.0096	0.0084	0.0265*	m/s ²
A(4)	0.0107	0.0068	0.0060	0.0187*	m/s ²
A(8)	0.0076	0.0048	0.0042	0.0133*	m/s ²
CFmp	33.1464	36.9880	21.7857		
K Factor	1.4	1.4	1.0		
Max RMS	0.0378*				m/s ²
A(8), Max RMS	0.0149*			0.0133*	m/s ²
Max VDV	1.2529*				m/s ^{1.75}

RMS Calculated Values

Action Value Criterion 0.50 m/s² (8 hours)

Limit Value Criterion 1.15 m/s² (8 hours)

Exposure Time 08:00 hh:mm

	X	Y	Z	Sum	Units
EAV	>24*	>24*	>24*	>24*	hh:mm
ELV	>24*	>24*	>24*	>24*	hh:mm
A(8)	0.0378*	0.0238*	0.0150*	0.0471*	m/s ²

VDV Calculated Values

Action Value Criterion 9.10 m/sec^{1.75} (8 hours)

Limit Value Criterion 21.00 m/sec^{1.75} (8 hours)

Exposure Time 08:00 hh:mm

	<u>X</u>	<u>Y</u>	<u>Z</u>	<u>Sum</u>	<u>Units</u>
EAV	>24*	>24*	>24*	>24*	hh:mm
ELV	>24*	>24*	>24*	>24*	hh:mm
eVDV	0.4924	0.3103	0.2729	0.8593*	m/s ^{1.75}

Hand Arm Vibration Study Report

5/3/2022

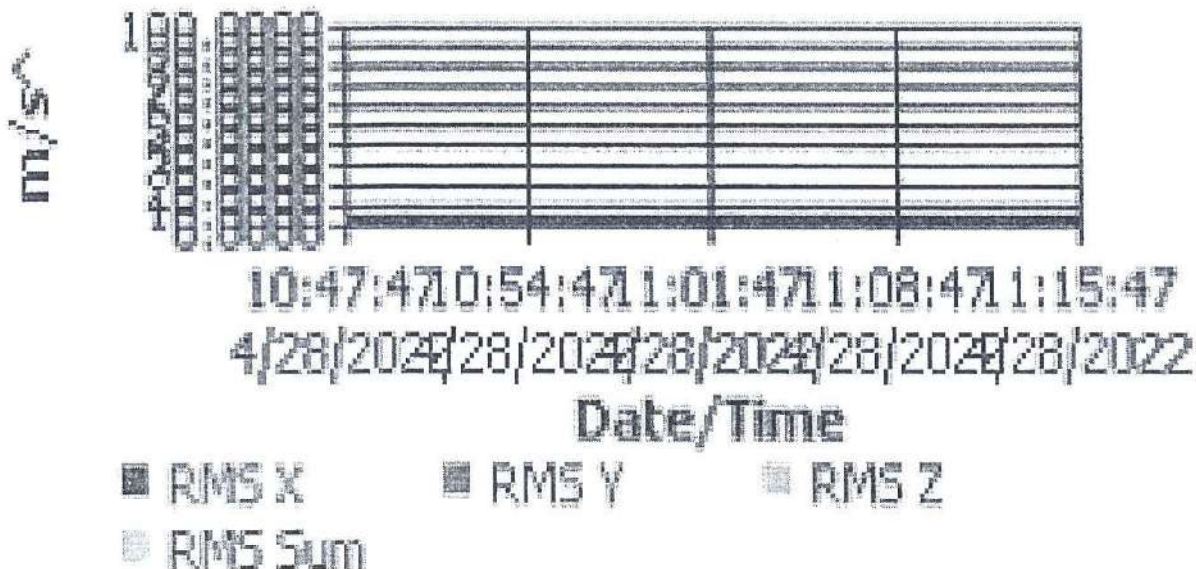
Information Panel

Location Shovel (V-19)
 Name Mr. Jitendra Patra
 Comments Operator
 Start Time Thursday, April 28, 2022 10:46:47
 Stop Time Thursday, April 28, 2022 11:17:36

General Data Panel

Description	Meter	Value	Description	Meter	Value
Gain	X	20dB	SumFactor	X	1.40
Weighting	X	Wh	Output	X	AC Weighted
Sensitivity	X	1.000000e+002	Gain	Y	20dB
SumFactor	Y	1.40	Weighting	Y	Wh
Output	Y	AC Weighted	Sensitivity	Y	1.000000e
+002					
Gain	Z	20dB	SumFactor	Z	1.00
Weighting	Z	Wh	Output	Z	AC Weighted
Sensitivity	Z	1.000000e+002	Mode		HandArm
Averaging		60s	StoreTime		1 s
Accelerometer		ICP	DisplayUnits		m/s
DBReference		1e^-6	Integration		None
Auto Save		True	SecondHistory		None
PrintLoggingOn		False	SetupFileName		
Calibration Level		1.000000e+000	ExposureReference		2.8 m/s
Amin	X	0.032021 m/s^2	Amax	X	0.376271 m/
s^2					
Aeq	X	0.087792 m/s^2	Amin	Y	0.006823 m/
s^2					
Amax	Y	2.497202 m/s^2	Aeq	Y	0.728484 m/
s^2					
Amin	Z	0.032064 m/s^2	Amax	Z	0.376781 m/
s^2					
Aeq	Z	0.087911 m/s^2	Amin	Sum	0.057702 m/
s^2					
Amax	Sum	3.555563 m/s^2	Aeq	Sum	1.031627 m/
s^2					

Logged Data Chart



Exposure Calculator

(* measurements use k factor)

Run Time 00:30:49

<u>Measurement</u>	<u>X</u>	<u>Y</u>	<u>Z</u>	<u>Sum</u>	<u>Units</u>
Amin	0.0320	0.0068	0.0321		m/s ²
Amax	0.3763	2.4972	0.3768		m/s ²
Aeq	0.0878	0.7285	0.0879	1.0310*	m/s ²
A(1)	0.0629	0.5221	0.0630	0.7389*	m/s ²
A(2)	0.0445	0.3692	0.0445	0.5225*	m/s ²
A(4)	0.0315	0.2610	0.0315	0.3694*	m/s ²
A(8)	0.0222	0.1846	0.0223	0.2612*	m/s ²
CFmp					
K Factor	1.4	1.4	1.0		
Max RMS		1.0199*			m/s ²
A(8), Max RMS		0.3618*		0.2612*	m/s ²

RMS Calculated Values

Action Value Criterion 0.50 m/s² (8 hours)

Limit Value Criterion 1.15 m/s² (8 hours)

Exposure Time 08:00 hh:mm

	<u>X</u>	<u>Y</u>	<u>Z</u>	<u>Sum</u>	<u>Units</u>
EAV	>24*	01:55*	>24*	01:52*	hh:mm
ELV	>24*	10:10*	>24*	09:57*	hh:mm
A(8)	0.1229*	1.0199*	0.0879*	1.0310*	m/s ²

Whole Body Vibration Study Report

5/3/2022

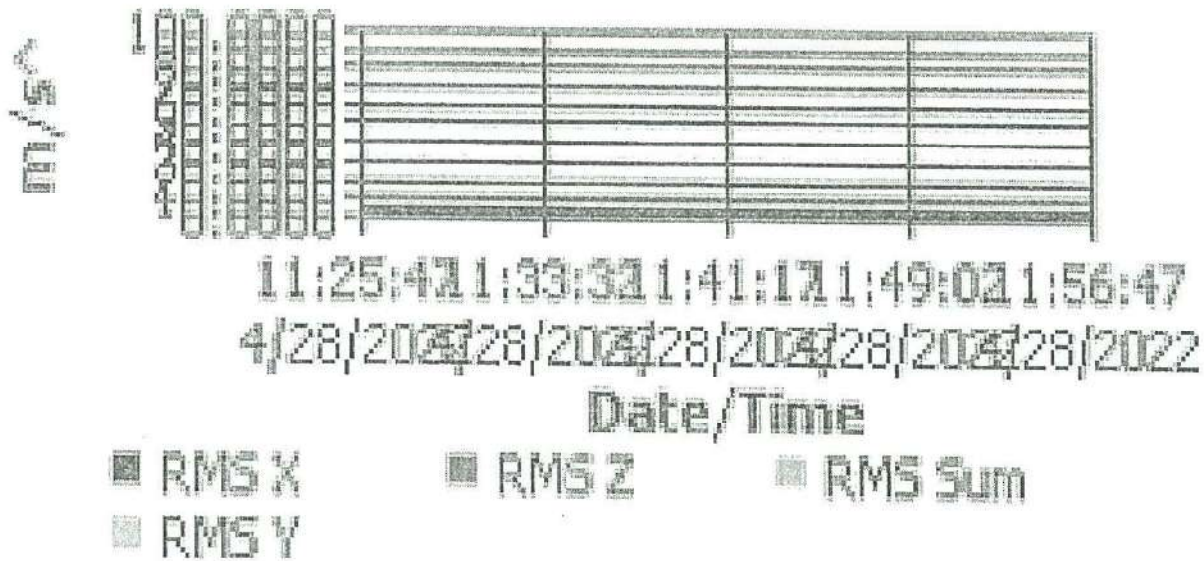
Information Panel

Location Dumper -02
 Name Mr. Singray Lohar
 Comments Operator
 Start Time Thursday, April 28, 2022 11:26:01
 Stop Time Thursday, April 28, 2022 12:02:21

General Data Panel

Description	Meter	Value	Description	Meter	Value
Gain	X	20dB	SumFactor	X	1.40
Weighting	X	Wd	Output	X	AC Weighted
Sensitivity	X	1.000000e+002	Gain	Y	20dB
SumFactor	Y	1.40	Weighting	Y	Wd
Output	Y	AC Weighted	Sensitivity	Y	1.000000e
+002					
Gain	Z	20dB	SumFactor	Z	1.00
Weighting	Z	Wk	Output	Z	AC Weighted
Sensitivity	Z	1.000000e+002	Mode		WholeBody
Averaging		60s	StoreTime		1 s
Accelerometer		ICP	DisplayUnits		m/s
DBReference		1e^-6	Integration		None
Auto Save		True	SecondHistory		None
PrintLoggingOn		False	SetupFileName		
Calibration Level		1.000000e+000	ExposureReference		2.8 m/s
VDV	X	11.375141 m/s^1.75	Amin	X	0.008647 m/
s^2					
Amax	X	0.029844 m/s^2	Aeq	X	0.204055 m/
s^2					
Amp	X	18.073215 m/s^2	VDV	Y	77.986703
m/s^1.75					
Amin	Y	0.006851 m/s^2	Amax	Y	0.028812 m/
s^2					
Aeq	Y	1.563231 m/s^2	VDV	Z	8.630086 m/
s^1.75					
Amin	Z	0.013647 m/s^2	Amax	Z	0.026890 m/
s^2					
Aeq	Z	0.117612 m/s^2	Amp	Z	18.771457
m/s^2					
VDV	Sum	109.694224 m/s^1.75	Amin	Sum	0.020763 m/
s^2					
Amax	Sum	0.063955 m/s^2	Aeq	Sum	2.207752 m/
s^2					

Logged Data Chart



Exposure Calculator

(* measurements use k factor)

Run Time 00:36:20

Measurement	X	Y	Z	Sum	Units
VDV	11.3751	77.9867	8.6301	109.1948*	m/s ^{1.75}
Amin	0.0086	0.0069	0.0136		m/s ²
Amax	0.0298	0.0288	0.0269		m/s ²
Aeq	0.2041	1.5632	0.1176	2.2102*	m/s ²
Amp	18.0732	18.7715		m/s ²	
A(1)	0.1621	1.2416	0.0934	1.7555*	m/s ²
A(2)	0.1146	0.8779	0.0661	1.2413*	m/s ²
A(4)	0.0810	0.6208	0.0467	0.8777*	m/s ²
A(8)	0.0573	0.4390	0.0330	0.6207*	m/s ²
CFmp	88.5702	159.6047			
K Factor	1.4	1.4	1.0		
Max RMS		2.1885*			m/s ²
A(8), Max RMS		0.8604*		0.6207*	m/s ²
Max VDV		109.1814*			m/s ^{1.75}

RMS Calculated Values

Action Value Criterion 0.50 m/s² (8 hours)

Limit Value Criterion 1.15 m/s² (8 hours)

Exposure Time 08:00 hh:mm

	X	Y	Z	Sum	Units
EAV	>24*	00:25*	>24*	00:24*	hh:mm
ELV	>24*	02:12*	>24*	02:09*	hh:mm
A(8)	0.2857*	2.1885*	0.1176*	2.2102*	m/s ²

VDV Calculated Values

Action Value Criterion 9.10 m/sec^{1.75} (8 hours)

Limit Value Criterion 21.00 m/sec^{1.75} (8 hours)

Exposure Time 08:00 hh:mm

	<u>X</u>	<u>Y</u>	<u>Z</u>	<u>Sum</u>	<u>Units</u>
EAV	00:04*	00:00*	00:46*	00:00*	hh:mm
ELV	01:54*	00:00*	22:07*	00:00*	hh:mm
eVDV	3.7215	28.5101	2.1450	40.3099*	m/s ^{1.75}

Hand Arm Vibration Study Report

5/3/2022

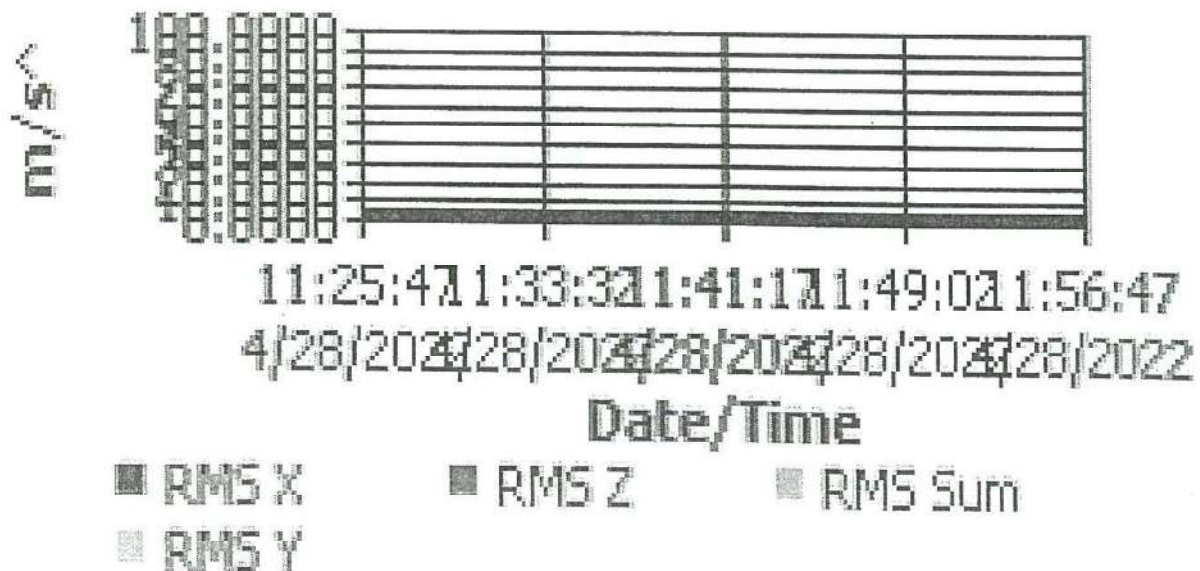
Information Panel

Location Dumper -02
 Name Mr. Singray Lohar
 Comments Operator
 Start Time Thursday, April 28, 2022 11:25:47
 Stop Time Thursday, April 28, 2022 12:01:29

General Data Panel

Description	Meter	Value	Description	Meter	Value
Gain	X	20dB	SumFactor	X	1.40
Weighting	X	Wh	Output	X	AC Weighted
Sensitivity	X	1.000000e+002	Gain	Y	20dB
SumFactor	Y	1.40	Weighting	Y	Wh
Output	Y	AC Weighted	Sensitivity	Y	1.000000e
+002					
Gain	Z	20dB	SumFactor	Z	1.00
Weighting	Z	Wh	Output	Z	AC Weighted
Sensitivity	Z	1.000000e+002	Mode		HandArm
Averaging		60s	StoreTime		1 s
Accelerometer		ICP	DisplayUnits		m/s
DBReference		1e^-6	Integration		None
Auto Save		True	SecondHistory		None
PrintLoggingOn		False	SetupFileName		
Calibration Level		1.000000e+000	ExposureReference		2.8 m/s
Amin	X	0.039927 m/s^2	Amax	X	0.410326 m/
s^2			Amin	Y	0.038028 m/
Aeq	X	0.175109 m/s^2	Aeq	Y	0.170663 m/
s^2			Amax	Z	0.345042 m/
Amax	Y	0.352597 m/s^2	Amin	Sum	0.093307 m/
s^2			Aeq	Sum	0.383470 m/
Amin	Z	0.031123 m/s^2			
s^2					
Aeq	Z	0.173458 m/s^2			
s^2					
Amax	Sum	0.815116 m/s^2			
s^2					

Logged Data Chart



Exposure Calculator

(* measurements use k factor)

Run Time 00:35:42

Measurement	X	Y	Z	Sum	Units
Amin	0.0399	0.0380	0.0311		m/s ²
Amax	0.4103	0.3526	0.3450		m/s ²
Aeq	0.1751	0.1707	0.1735	0.3838*	m/s ²
A(1)	0.1351	0.1316	0.1338	0.2960*	m/s ²
A(2)	0.0955	0.0931	0.0946	0.2093*	m/s ²
A(4)	0.0675	0.0658	0.0669	0.1480*	m/s ²
A(8)	0.0478	0.0465	0.0473	0.1047*	m/s ²
CFmp					
K Factor	1.4	1.4	1.0		
Max RMS	0.2452*				m/s ²
A(8), Max RMS	0.0936*			0.1047*	m/s ²

RMS Calculated Values

Action Value Criterion 0.50 m/s² (8 hours)

Limit Value Criterion 1.15 m/s² (8 hours)

Exposure Time 08:00 hh:mm

	X	Y	Z	Sum	Units
EAV	>24*	>24*	>24*	13:34*	hh:mm
ELV	>24*	>24*	>24*	>24*	hh:mm
A(8)	0.2452*	0.2389*	0.1735*	0.3838*	m/s ²

Whole Body Vibration Study Report

5/3/2022

Information Panel

Location	Loader -1
Name	Mr. Basanta Singh
Comments	Operator
Start Time	Thursday, April 28, 2022 14:11:49
Stop Time	Thursday, April 28, 2022 14:44:56

General Data Panel

Description	Meter	Value	Description	Meter	Value
Gain	X	20dB	SumFactor	X	1.40
Weighting	X	Wd	Output	X	AC Weighted
Sensitivity	X	1.000000e+002	Gain	Y	20dB
SumFactor	Y	1.40	Weighting	Y	Wd
Output	Y	AC Weighted	Sensitivity	Y	1.000000e
+002					
Gain	Z	20dB	SumFactor	Z	1.00
Weighting	Z	Wk	Output	Z	AC Weighted
Sensitivity	Z	1.000000e+002	Mode		WholeBody
Averaging		60s	StoreTime		1 s
Accelerometer		ICP	DisplayUnits		m/s
DBReference		1e^-6	Integration		None
Auto Save		True	SecondHistory		None
PrintLoggingOn		False	SetupFileName		
Calibration Level		1.000000e+000	ExposureReference		2.8 m/s
VDV	X	4.686515 m/s^1.75	Amin	X	0.061078 m/
s^2					
Amax	X	0.623456 m/s^2	Aeq	X	0.431988 m/
s^2					
Amp	X	5.490857 m/s^2	VDV	Y	4.642313 m/
s^1.75					
Amin	Y	0.047610 m/s^2	Amax	Y	0.634525 m/
s^2					
Aeq	Y	0.433746 m/s^2	Amp	Y	4.362031 m/
s^2					
VDV	Z	5.963552 m/s^1.75	Amin	Z	0.033529 m/
s^2					
Amax	Z	0.775292 m/s^2	Aeq	Z	0.532127 m/
s^2					
Amp	Z	4.874169 m/s^2	VDV	Sum	9.449476 m/
s^1.75					
Amin	Sum	0.121004 m/s^2	Amax	Sum	1.431550 m/
s^2					
Aeq	Sum	1.006792 m/s^2	Amp	Sum	9.748338 m/
s^2					

Exposure Calculator

(* measurements use k factor)

Run Time 00:33:07

Measurement	X	Y	Z	Sum	Units
VDV	4.6865	4.6423	5.9636	8.3675*	m/s ^{1.75}
Amin	0.0611	0.0476	0.0335		m/s ²
Amax	0.6235	0.6345	0.7753		m/s ²
Aeq	0.4320	0.4337	0.5321	1.0088*	m/s ²
Amp	5.4909	4.3620	4.8742		m/s ²
A(1)	0.3182	0.3195	0.3919	0.7430*	m/s ²
A(2)	0.2250	0.2259	0.2771	0.5254*	m/s ²
A(4)	0.1591	0.1597	0.1960	0.3715*	m/s ²
A(8)	0.1125	0.1130	0.1386	0.2627*	m/s ²
CFmp	12.7107	10.0567	9.1598		
K Factor	1.4	1.4	1.0		
Max RMS		0.6072*			m/s ²
A(8), Max RMS		0.2214*		0.2627*	m/s ²
Max VDV	6.5611*				m/s ^{1.75}

RMS Calculated Values

Action Value Criterion 0.50 m/s² (8 hours)

Limit Value Criterion 1.15 m/s² (8 hours)

Exposure Time 08:00 hh:mm

	X	Y	Z	Sum	Units
EAV	05:28*	05:25*	07:03*	01:57*	hh:mm
ELV	>24*	>24*	>24*	10:23*	hh:mm
A(8)	0.6048*	0.6072*	0.5321*	1.0088*	m/s ²

VDV Calculated Values

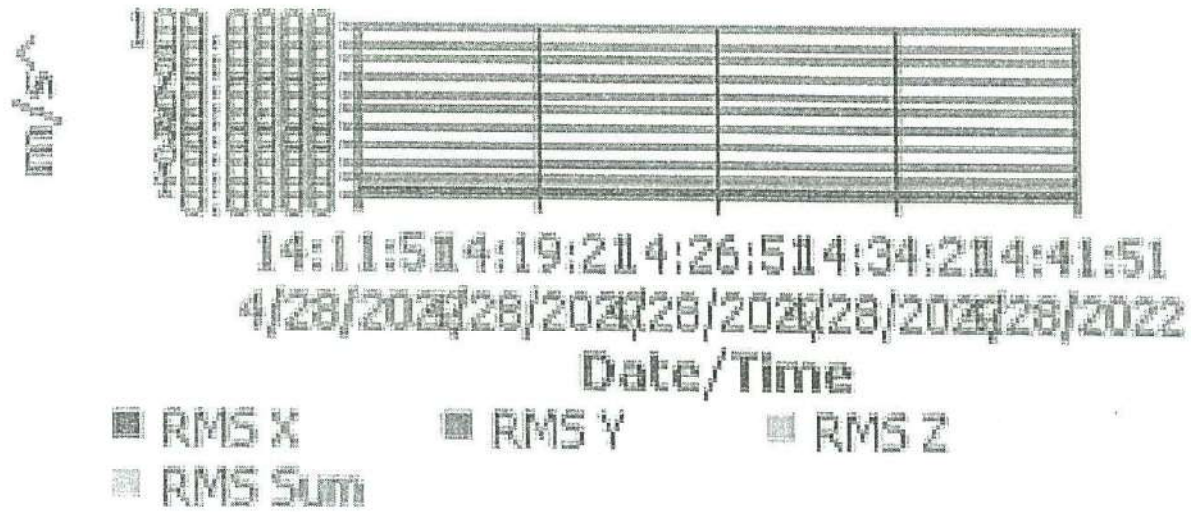
Action Value Criterion 9.10 m/sec^{1.75} (8 hours)

Limit Value Criterion 21.00 m/sec^{1.75} (8 hours)

Exposure Time 08:00 hh:mm

	X	Y	Z	Sum	Units
EAV	02:00*	02:05*	02:56*	00:45*	hh:mm
ELV	>24*	>24*	>24*	21:31*	hh:mm
eVDV	7.8786	7.9106	9.7049	18.3984*	m/s ^{1.75}

Logged Data Chart



Hand Arm Vibration Study Report

5/3/2022

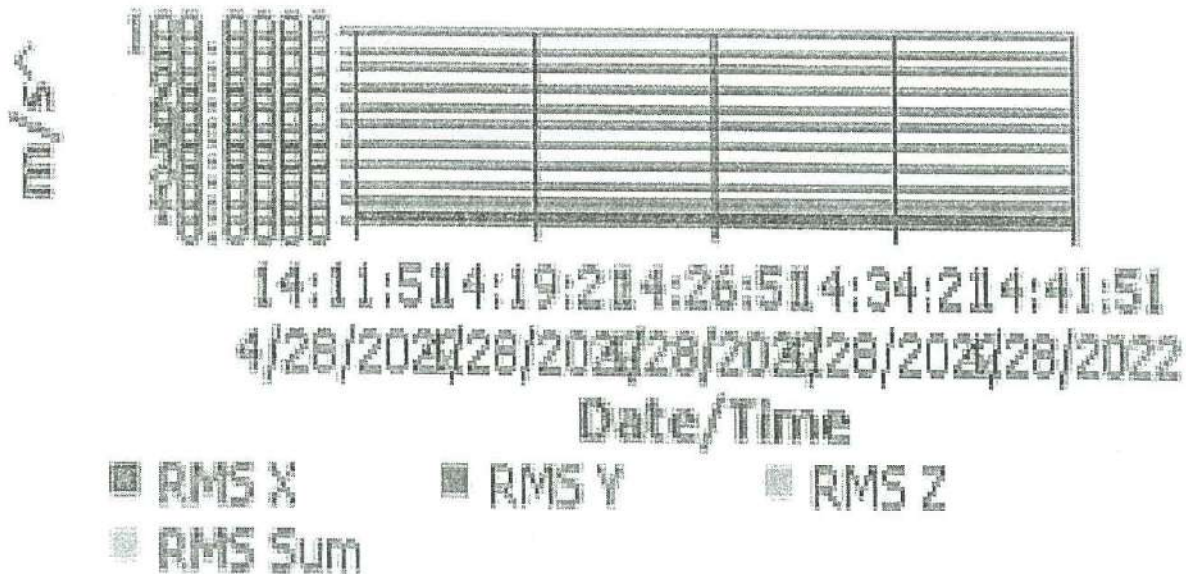
Information Panel

Location	Loader -1
Name	Mr. Basanta Singh
Comments	Operator
Start Time	Thursday, April 28, 2022 14:11:51
Stop Time	Thursday, April 28, 2022 14:44:19

General Data Panel

Description	Meter	Value	Description	Meter	Value
Gain	X	20dB	SumFactor	X	1.40
Weighting	X	Wh	Output	X	AC Weighted
Sensitivity	X	1.000000e+002	Gain	Y	20dB
SumFactor	Y	1.40	Weighting	Y	Wh
Output	Y	AC Weighted	Sensitivity	Y	1.000000e
+002					
Gain	Z	20dB	SumFactor	Z	1.00
Weighting	Z	Wh	Output	Z	AC Weighted
Sensitivity	Z	1.000000e+002	Mode		HandArm
Averaging		60s	StoreTime		1 s
Accelerometer		ICP	DisplayUnits		m/s
DBReference		1e^-6	Integration		None
Auto Save		True	SecondHistory		None
PrintLoggingOn		False	SetupFileName		
Calibration Level		1.000000e+000	ExposureReference		2.8 m/s
Amin	X	0.048390 m/s^2	Amax	X	0.127737 m/
s^2					
Aeq	X	0.087673 m/s^2	Amp	X	2.738005 m/
s^2					
Amin	Y	0.051221 m/s^2	Amax	Y	0.113084 m/
s^2					
Aeq	Y	0.075441 m/s^2	Amp	Y	2.246951 m/
s^2					
Amin	Z	0.028425 m/s^2	Amax	Z	0.098100 m/
s^2					
Aeq	Z	0.063696 m/s^2	Amp	Z	1.814252 m/
s^2					
Amin	Sum	0.109469 m/s^2	Amax	Sum	0.253751 m/
s^2					
Aeq	Sum	0.173693 m/s^2	Amp	Sum	3.946213 m/
s^2					

Logged Data Chart



Exposure Calculator

(* measurements use k factor)

Run Time 00:32:28

Measurement	X	Y	Z	Sum	Units
Amin	0.0484	0.0512	0.0284		m/s ²
Amax	0.1277	0.1131	0.0981		m/s ²
Aeq	0.0877	0.0754	0.0637	0.1740*	m/s ²
Amp	2.7380	2.2470	1.8143		m/s ²
A(1)	0.0645	0.0555	0.0469	0.1280*	m/s ²
A(2)	0.0456	0.0392	0.0331	0.0905*	m/s ²
A(4)	0.0322	0.0277	0.0234	0.0640*	m/s ²
A(8)	0.0228	0.0196	0.0166	0.0453*	m/s ²
CFmp	31.2296	29.7844	28.4830		
K Factor	1.4	1.4	1.0		
Max RMS	0.1227*				m/s ²
A(8), Max RMS	0.0447*			0.0453*	m/s ²

RMS Calculated Values

Action Value Criterion 0.50 m/s² (8 hours)

Limit Value Criterion 1.15 m/s² (8 hours)

Exposure Time 08:00 hh:mm

	X	Y	Z	Sum	Units
EAV	>24*	>24*	>24*	>24*	hh:mm
ELV	>24*	>24*	>24*	>24*	hh:mm
A(8)	0.1227*	0.1056*	0.0637*	0.1740*	m/s ²

Whole Body Vibration Study Report

5/3/2022

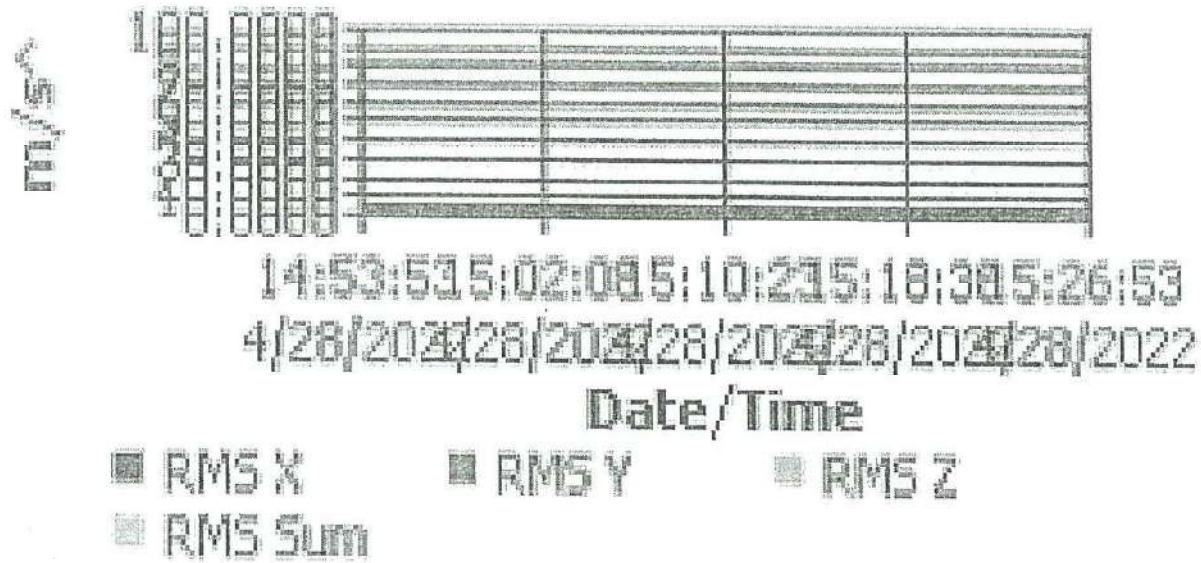
Information Panel

Location	Ripper -01
Name	Mr. Pradeepta Kumar Mahanta
Comments	Operator
Start Time	Thursday, April 28, 2022 14:53:52
Stop Time	Thursday, April 28, 2022 15:27:52

General Data Panel

Description	Meter	Value	Description	Meter	Value
Gain	X	20dB	SumFactor	X	1.40
Weighting	X	Wd	Output	X	AC Weighted
Sensitivity	X	1.000000e+002	Gain	Y	20dB
SumFactor	Y	1.40	Weighting	Y	Wd
Output	Y	AC Weighted	Sensitivity	Y	1.000000e
+002					
Gain	Z	20dB	SumFactor	Z	1.00
Weighting	Z	Wk	Output	Z	AC Weighted
Sensitivity	Z	1.000000e+002	Mode		WholeBody
Averaging		60s	StoreTime		1 s
Accelerometer		ICP	DisplayUnits		m/s
DBReference		1e^-6	Integration		None
Auto Save		True	SecondHistory		None
PrintLoggingOn		False	SetupFileName		
Calibration Level		1.000000e+000	ExposureReference		2.8 m/s
VDV	X	2.243911 m/s^1.75	Amin	X	0.008136 m/
s^2					
Amax	X	0.366220 m/s^2	Aeq	X	0.066606 m/
s^2					
Amp	X	2.410832 m/s^2	VDV	Y	2.213738 m/
s^1.75					
Amin	Y	0.006411 m/s^2	Amax	Y	0.361295 m/
s^2					
Aeq	Y	0.065622 m/s^2	Amp	Y	2.391329 m/
s^2					
VDV	Z	1.037229 m/s^1.75	Amin	Z	0.013945 m/
s^2					
Amax	Z	0.168824 m/s^2	Aeq	Z	0.033986 m/
s^2					
Amp	Z	1.148076 m/s^2	VDV	Sum	4.530554 m/
s^1.75					
Amin	Sum	0.020346 m/s^2	Amax	Sum	0.739413 m/
s^2					
Aeq	Sum	0.135028 m/s^2	Amp	Sum	4.887384 m/
s^2					

Logged Data Chart



Exposure Calculator

(* measurements use k factor)

Run Time 00:34:00

Measurement	X	Y	Z	Sum	Units
VDV	2.2439	2.2137	1.0372	3.7167*	m/s ^{1.75}
Amin	0.0081	0.0064	0.0139		m/s ²
Amax	0.3662	0.3613	0.1688		m/s ²
Aeq	0.0666	0.0656	0.0340	0.1352*	m/s ²
Amp	2.4108	2.3913	1.1481		m/s ²
A(1)	0.0479	0.0472	0.0244	0.0973*	m/s ²
A(2)	0.0339	0.0334	0.0173	0.0688*	m/s ²
A(4)	0.0240	0.0236	0.0122	0.0486*	m/s ²
A(8)	0.0169	0.0167	0.0086	0.0344*	m/s ²
CFmp	36.1954	36.4412	33.7806		
K Factor	1.4	1.4	1.0		
Max RMS	0.0932*				m/s ²
A(8), Max RMS	0.0332*			0.0344*	m/s ²
Max VDV	3.1415*				m/s ^{1.75}

RMS Calculated Values

Action Value Criterion 0.50 m/s² (8 hours)

Limit Value Criterion 1.15 m/s² (8 hours)

Exposure Time 08:00 hh:mm

	X	Y	Z	Sum	Units
EAV	>24*	>24*	>24*	>24*	hh:mm
ELV	>24*	>24*	>24*	>24*	hh:mm
A(8)	0.0932*	0.0919*	0.0340*	0.1352*	m/s ²

VDV Calculated Values

Action Value Criterion 9.10 m/sec^{1.75} (8 hours)

Limit Value Criterion 21.00 m/sec^{1.75} (8 hours)

Exposure Time 08:00 hh:mm

	<u>X</u>	<u>Y</u>	<u>Z</u>	<u>Sum</u>	<u>Units</u>
EAV	>24*	>24*	>24*	18:35*	hh:mm
ELV	>24*	>24*	>24*	>24*	hh:mm
eVDV	1.2148	1.1968	0.6198	2.4665*	m/s ^{1.75}

Hand Arm Vibration Study Report

5/3/2022

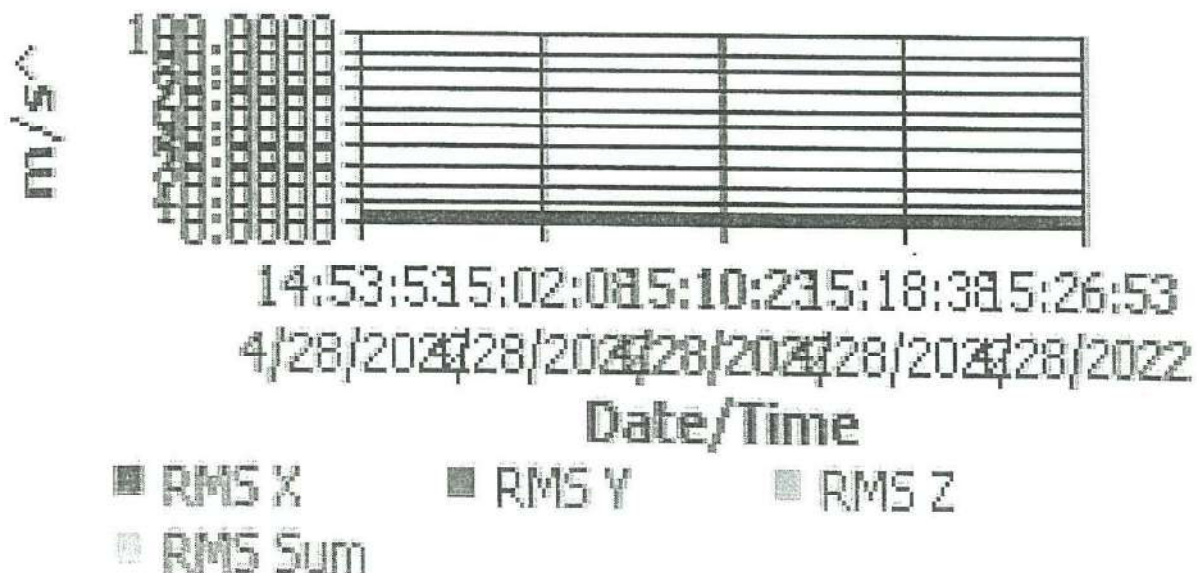
Information Panel

Location	Ripper -01
Name	Mr. Pradeeta Kumar Mahanta
Comments	Operator
Start Time	Thursday, April 28, 2022 14:53:53
Stop Time	Thursday, April 28, 2022 15:27:59

General Data Panel

Description	Meter	Value	Description	Meter	Value
Gain	X	20dB	SumFactor	X	1.40
Weighting	X	Wh	Output	X	AC Weighted
Sensitivity	X	1.000000e+002	Gain	Y	20dB
SumFactor	Y	1.40	Weighting	Y	Wh
Output	Y	AC Weighted	Sensitivity	Y	1.000000e
+002					
Gain	Z	20dB	SumFactor	Z	1.00
Weighting	Z	Wh	Output	Z	AC Weighted
Sensitivity	Z	1.000000e+002	Mode		HandArm
Averaging		60s	StoreTime		1 s
Accelerometer		ICP	DisplayUnits		m/s
DBReference		1e^-6	Integration		None
Auto Save		True	SecondHistory		None
PrintLoggingOn		False	SetupFileName		
Calibration Level		1.000000e+000	ExposureReference		2.8 m/s
Amin	X	0.035014 m/s^2	Amax	X	0.081272 m/
s^2					
Aeq,	X	0.059125 m/s^2	Amin	Y	0.035395 m/
s^2					
Amax	Y	0.098632 m/s^2	Aeq	Y	0.073029 m/
s^2					
Amp	Y	1.546392 m/s^2	Amin	Z	0.027891 m/
s^2					
Amax	Z	0.144876 m/s^2	Aeq	Z	0.088748 m/
s^2					
Amin	Sum	0.074932 m/s^2	Amax	Sum	0.198336 m/
s^2					
Aeq	Sum	0.158417 m/s^2			

Logged Data Chart



Exposure Calculator

(* measurements use k factor)

Run Time 00:34:06

Measurement	X	Y	Z	Sum	Units
Amin	0.0350	0.0354	0.0279		m/s ²
Amax	0.0813	0.0986	0.1449		m/s ²
Aeq	0.0591	0.0730	0.0887	0.1587*	m/s ²
A(1)	0.0446	0.0551	0.0669	0.1196*	m/s ²
A(2)	0.0315	0.0389	0.0473	0.0846*	m/s ²
A(4)	0.0223	0.0275	0.0335	0.0598*	m/s ²
A(8)	0.0158	0.0195	0.0237	0.0423*	m/s ²
CFmp	21.1751				
K Factor	1.4	1.4	1.0		
Max RMS		0.1022*			m/s ²
A(8), Max RMS		0.0382*		0.0423*	m/s ²

RMS Calculated Values

Action Value Criterion 0.50 m/s² (8 hours)

Limit Value Criterion 1.15 m/s² (8 hours)

Exposure Time 08:00 hh:mm

	X	Y	Z	Sum	Units
EAV	>24*	>24*	>24*	>24*	hh:mm
ELV	>24*	>24*	>24*	>24*	hh:mm
A(8)	0.0828*	0.1022*	0.0887*	0.1587*	m/s ²