



By-Email

Ref.No.: MGM/P&E/511

Date: 29/11/2024

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

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

Reference:

- 1) MoEFCC's Letter Ref No: J-11015/86/2004-IA. II(M) dated 13th September 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-11015/86/2004-IA. II(M) dated 13th September 2005 in respect of Joda West Iron and Manganese Mine of M/s TATA Steel Ltd. for the period from April'2024 to September'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 @ roez.bsr-mef@nic.in.

We believe the above submission is in order.

Thanking You,

Yours Faithfully,

F: TATA STEEL LTD.

Head (Mine Planning),
Joda West 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

**Half Yearly Compliance Report
2024
01 Dec(01 Apr - 30 Sep)**

Acknowledgement

Proposal Name		Joda West Manganese Ore Mine of M/s Tata Steel, Dist. Keonjhar, State-Odisha {Production Capacity: 1.80 LTPA of Manganese Ore }, ML Area 1437.719 Ha.	
Name of Entity / Corporate Office		Tata Steel	
Village(s)		N/A	
District		KENDUJHAR	
Proposal No.	IA/OR/MIN/11664/2005	Category	Non-Coal Mining
Plot / Survey / Khasra No.	N/A	Sub-District	N/A
State	ODISHA	Entity's PAN	*****2803M
MoEF File No.	No.J-11015/86/2004-IA.II(M)	Entity name as per PAN	UTSAV KASHYAP

Compliance Reporting Details

Reporting Year 2024

Remarks (if any) Six Monthly EC
Compliance Report for
Joda West Iron and Mn
Mine Project Proponent:
Tata Steel Limited Project
Type: Mining (Opencast)
Mineral: Manganese

Reporting Period 01 Dec(01 Apr - 30 Sep)

Details of Production and Project Area

Name of Entity / Corporate Office Tata Steel

	Project Area as per EC Granted	Actual Project Area in Possession
Private	9.347	71.273
Revenue Land	229.029	119.894
Forest	1199.34	1246.55
Others	0	0
Total	1437.716	1437.7169999999999

Production Capacity

Sr. no	Product Name	units	Valid Upto	Capacity	Production last year	Capacity as per CTO
1	Manganese Ore	Tons per Annum (TPA)	31/03/2026	180000	178830	180000

Conditions

Specific Conditions

Sr.No.	Condition Type	Condition Details
1	Statutory compliance	Mining shall not be undertaken in areas of forestland within the lease for which necessary approval/ forestry clearance has not been obtained.

PPs Submission: Complied

The present leasehold area of Joda West Iron and Manganese Mine is 1437.719 ha. Out of which, forest land and non-forest land prevails over 1246.552 ha and 191.167 ha. respectively. Stage-II Forest clearance has been accorded vide letter no F F.No.8-89/2004-FC, dated 10.08.2007 for 436.678 ha of forest land. FC for balance area of 809.874 ha (Sabik Forest and Balance Forest) has been applied. Presently mining is restricted to only 436.678 ha diverted forest land, non-forestland of 191.167 ha and some portions of the broken-up forestland (broken up prior to 1980).

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2	GREENBELT	A green belt of should be raised around ML area (296.163 ha), along roads, OB dump sites (64.774 ha), township (21.242 ha) and in other areas within the lease (227.63 ha) covering a total area of not less than 409.809 ha by planting native species in consultation with local DFO/Agriculture department. The density of the trees should be around 2500 plants per ha.
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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 114.830 hectares of area (including waste dump, safety zone, back filled area and avenue plantation zones) have been covered under plantation with 500164 nos of saplings (approx.). In the process of afforestation, the mine has ensured rehabilitation of around 45.1 hectares over OB dump, 62.881 ha of Avenue Planation and 6.848 ha of Safety zone plantation where the saplings have attained self-sustaining stage. The mine management has also established a centralized nursery over an area of 2000 sq-mtr with a generation potential of around 1 lakh saplings/year within the lease area for promoting greenbelt/ afforestation related measures which caters to all the sapling requirement of all the three leases in Manganese Group of Mines. Apart from above we have planted 6515 sapling from April 24-Sep 24. Glimpses of Greenbelt and associated afforestation measures undertaken at mine level is enclosed as Annexure 3.

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3	WATER QUALITY MONITORING AND PRESERVATION	Groundwater shall not be used for mine operations. Prior approval of CGWA shall be obtained for using groundwater.
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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 and 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

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NOC no. CGWA/NOC/MIN/REN/2/2023/7840 which is valid till 22nd July 2024. Copy of the said NOC is enclosed as Annexure 4. Apart from above we have applied for renewal of the NOC. Copy of the online application has been attached.			
4	MINING PLAN	Mining shall 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 intercept the regional ground water table however during the advancement of mining operation at Gangeiguda Quarry feeble seepage from one of its face (attributed to some localized aquifer) was encountered and accordingly a detailed hydrogeological investigation was carried out in this regard by engaging a CGWA accredited/empanelled agency. With the help of ground water modelling studies, it was estimated that peak seepage for mine would be around 246 KLD. Based on the above said studies and deliberations at CGWA, NOC was granted to Joda west mine for the Abstraction of 146 KLD (from bore wells) and 246 KLD from Mine pits (as seepage) vide NOC no. CGWA/NOC/MIN/REN/2/2023/7840 valid till 22nd July 2024.			Date: 29/11/2024
5	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 and the 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 as Annexure 5.			Date: 29/11/2024
6	WATER QUALITY MONITORING AND PRESERVATION	Trace metals such as Fe, Cr+6, Cu, Se, As, Cd, Hg, Pb, Zn and Mn shall be periodically monitored at specific locations in both surface water downstream and in ground water at lower elevations from mine area, 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 April 2024 to September 2024 is enclosed herewith as Annexure 6.			Date: 29/11/2024
7	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. 4234/IND-I-CON-186 dated 17-03-2022 which is valid up to 31/03/2026. A copy of the valid CTO is enclosed as Annexure 7.			Date: 29/11/2024
8	Statutory compliance	A plan for 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. 7726/1WL-SSP-93/2015 dated 31.08.2015. Following funds have been deposited by PP to State Forest Dept till date for - - Rs. 9,79,48,000/- for the implementation of various provisions of site-Specific wildlife conservation plan like avifauna monitoring, solar fencing and other - Rs 6,18,21,917/- for the implementation of regional wildlife conservation as per the demand notices. A copy of the approval of site-specific wildlife conservation plan is enclosed herewith as Annexure 8.			Date: 29/11/2024
9	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. 30.5990 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 and CC, Bhubaneswar vide our letter no MGM/P and E/106/23 dated 31.03.2023. Copy of the letter is enclosed herewith as Annexure 9.			Date: 29/11/2024
10	LAND RECLAMATION	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.	
PPs Submission: Complied No topsoil generated during the period April 2024 to September 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: 29/11/2024
11	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.	
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 mtr and overall slope is maintained well within 28 deg. Environmental Protection Measures ensured at site especially for the dump management aspects are as follows: 1. Network of Garland Drains and/or			Date: 29/11/2024

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 along with photos of the implemented dump stabilization measures is enclosed as Annexure 1.			
12	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 and 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 de-silted 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 D Quarry mine pit to store the water and also recharge the ground water table.			Date: 29/11/2024
13	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, check dams, 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: 29/11/2024
14	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 the period April 2024-September 2024 is enclosed as Annexure-2.			Date: 29/11/2024
15	AIR QUALITY MONITORING AND PRESERVATION	Mineral and OB transportation shall be done 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 from 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			Date: 29/11/2024

point of the mines 4. Dust suppression by means of mobile water tanker (capacity 10Kl) deployed for Haul Roads and other locations. 5. Fixed sprinkling arrangement at railway siding

General Conditions

Sr.No.	Condition Type	Condition Details
1	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 1.8 Lakh tonnes per annum.		Date: 29/11/2024
2	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 & CO 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 & CO) should be regularly submitted to the Ministry including its regional office at Bhubaneshwar 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), 06 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 April 2024 to September 2024 is enclosed as Annexure 10.		Date: 29/11/2024
3	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 blast 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: 29/11/2024
4	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 as Annexure 11.		Date: 29/11/2024
5	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, etc. should be provided with ear plugs/ muffs.
PPs Submission: Complied Ear plugs and Earmuffs are provided to the workers working in mining operation and 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 April 2024 to September 2024 is enclosed as Annexure 12.		Date: 29/11/2024
6	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.
PPs Submission: Complied 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. 4. 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.		Date: 29/11/2024
7	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.
PPs Submission: Complied Environmental Monitoring services are carried out by engaging an NABL Accredited agency having its laboratory recognized by Ministry of Environment, Forest and 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.		Date: 29/11/2024
8	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.
PPs Submission: Complied 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 and 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 and Free Silica exposure assessment by a DGMS approved agency. 2. Hand-Arm Vibration and Whole Body Vibration Exposure Assessment report by a DGMS approved laboratory 3. Mn Poisoning test (periodic) by a medical laboratory.		Date: 29/11/2024
9	MISCELLANEOUS	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.
PPs Submission: Complied 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 Planning), Head (Environment), Senior Manager - Mine Planning, Area Manager (RM Environment), Environment Engineer, Chemists, etc.		Date: 29/11/2024
10	MISCELLANEOUS	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 Bhubaneswar.
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. 274.5 Lakhs - FY-2022-23: Rs. 272.92 Lakhs - FY-2023-24: Rs. 378.33 Lakhs		Date: 29/11/2024
11	Statutory compliance	The Regional Office of this Ministry located at Bhubaneswar 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: 29/11/2024
12	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 Chairman, Municipal Council, Joda on 12.01.2006.		Date: 29/11/2024
13	MISCELLANEOUS	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: 29/11/2024
14	MISCELLANEOUS	The project authorities should advertise at least in two local newspapers widely circulated around the project, one of which shall be in the vernacular language 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 Website 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 Dharitri and Sambad on 17.10.2005.		Date: 29/11/2024
15	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: 29/11/2024
<div style="text-align: center;">Visit Remarks</div>		
Last Site Visit Report Date:		N/A
Additional Remarks:		
<p>Note: This acknowledgement is as per the details submitted by project proponent. In no way is this document to be considered as conclusion on any action on the compliance of the project. This is strictly for the project proponent's reference purpose.</p>		

Compliance to the Environment Clearance Letter No: J-11015/86/2004-IA. II(M) dated 13th September 2005 in respect of "Expansion of Joda West Manganese Mines (0.45LTPA to 1.80 LTPA) of M/s Tata Steel Limited located in villages Joda, Bichhakundi, Kamarjoda, Banspani and Bhuyan Roida, Tehsil-Barbil, District-Keonjhar, Odisha."

Table A:- Specific Conditions

SN.	EC Conditions	Status of Compliance
(i)	Mining shall not be undertaken in areas of forestland within the lease for which necessary approval/ forestry clearance has not been obtained.	The present leasehold area of Joda West Iron and Manganese Mine is 1437.719 ha. Out of which, forest land and non-forest land prevails over 1246.552 ha and 191.167 ha. respectively. Stage-II Forest clearance has been accorded vide letter no F F.No.8-89/2004-FC, dated 10.08.2007 for 436.678 ha of forest land. FC for balance area of 809.874 ha (Sabik Forest and Balance Forest) has been applied. Presently mining is restricted to only 436.678 ha diverted forest land, non-forestland of 191.167 ha and some portions of the broken-up forestland (broken up prior to 1980).
(ii)	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.	No topsoil generated during the period April 2024 to September 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.
(iii)	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.	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 mtr 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 along with photos of the implemented dump stabilization measures is enclosed as Annexure 1 .
(iv)	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 and 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	Existing catch drains and 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 de-silted 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 D Quarry mine pit to store the water and also recharge the ground water table.

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SN.	EC Conditions	Status of Compliance
	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.	
(v)	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.	While designing network of garland drains, check dams, 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.
(vi)	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.	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 the period April 2024-September 2024 is enclosed as Annexure-2 .
(vii)	Mineral and OB transportation shall be done 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 and transfer points, etc.	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 from 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 10Kl) deployed for Haul Roads and other locations. 5. Fixed sprinkling arrangement at railway siding
(viii)	A green belt of should be raised around ML area (296.163 ha), along roads, OB dump sites (64.774 ha), township (21.242 ha) and in other areas within the lease (227.63 ha) \covering a total area of not less than 409.809 ha by planting native species in consultation with local DFO/Agriculture department. The density of the trees should be around 2500 plants per ha.	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 114.830 hectares of area (including waste dump, safety zone, back filled area and avenue plantation zones) have been covered under plantation with 500164 nos of saplings (approx.). In the process of afforestation, the mine has ensured rehabilitation of around 45.1 hectares over OB dump, 62.881 ha of Avenue Planation and 6.848 ha of Safety zone plantation where the saplings have attained self-sustaining stage. The mine management has also established a centralized nursery over an area of 2000 sq-mtr with a generation

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SN.	EC Conditions	Status of Compliance
		potential of around 1 lakh saplings/year within the lease area for promoting greenbelt/ afforestation related measures which caters to all the sapling requirement of all the three leases in Manganese Group of Mines. Apart from above we have planted 6515 sapling from April 24-Sep 24. Glimpses of Greenbelt and associated afforestation measures undertaken at mine level is enclosed as Annexure 3 .
(ix)	Groundwater shall not be used for mine operations. Prior approval of CGWA shall be obtained for using groundwater.	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 and 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/2/2023/7840 which is valid till 22 nd July 2024. Copy of the said NOC is enclosed as Annexure 4 . Apart from above we have applied for renewal of the NOC. Copy of the online application has been attached.
(x)	Mining shall not intersect groundwater. Prior permission of the MOEF and CGWA shall be taken to mine below water table.	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 intercept the regional ground water table however during the advancement of mining operation at Gangeiguda Quarry feeble seepage from one of its face (attributed to some localized aquifer) was encountered and accordingly a detailed hydrogeological investigation was carried out in this regard by engaging a CGWA accredited/empanelled agency. With the help of ground water modelling studies, it was estimated that peak seepage for mine would be around 246 KLD. Based on the above said studies and deliberations at CGWA, NOC was granted to Joda west mine for the Abstraction of 146 KLD (from bore wells) and 246 KLD from Mine pits (as seepage) vide NOC no. CGWA/NOC/MIN/REN/2/2023/7840 valid till 22nd July 2024.
(xi)	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 and Forest and the Central Ground Water Authority quarterly.	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 as Annexure 5 .
(xii)	Trace metals such as Fe, Cr ⁺⁶ , Cu, Se, As, Cd, Hg, Pb, Zn and Mn shall	Water Quality parameters are regularly tested for both surface water and ground water. Monitoring reports are submitted to SPCB from

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SN.	EC Conditions	Status of Compliance
	be periodically monitored at specific locations in both surface water downstream and in ground water at lower elevations from mine area, 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.	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 April 2024 to September 2024 is enclosed herewith as Annexure 6 .
(xiii)	"Consent to Operate" should be obtained from SPCB before expanding mining activities.	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. 4234/IND-I-CON-186 dated 17-03-2022 which is valid up to 31/03/2026. A copy of the valid CTO is enclosed as Annexure 7 .
(xiv)	A plan for 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 and forests, RO, Bhubaneshwar.	<p>A site specific wildlife conservation plan has been approved by PCCF, Bhubaneswar, Odisha and Chief Wildlife Warden Odisha vide memo no. 7726/1WL-SSP-93/2015 dated 31.08.2015.</p> <p>Following funds have been deposited by PP to State Forest Dept till date for –</p> <ul style="list-style-type: none"> Rs. 9,79,48,000/- for the implementation of various provisions of site-Specific wildlife conservation plan like avifauna monitoring, solar fencing and other Rs 6,18,21,917/- for the implementation of regional wildlife conservation as per the demand notices. <p>A copy of the approval of site-specific wildlife conservation plan is enclosed herewith as Annexure 8.</p>
(xv)	A Final Mine Closure Plan along with details of Corpus Fund should be submitted to the Ministry of Environment and Forests 5 years in advance of final mine closure for approval.	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. 30.5990 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 and CC, Bhubaneswar vide our letter no MGM/P and E/106/23 dated 31.03.2023. Copy of the letter is enclosed herewith as Annexure 9 .

Table B:- General Conditions

SN.	EC Conditions	Status of Compliance
(i)	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment and Forests.	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.
(ii)	No change in the calendar plan including excavation, quantum of manganese ore and waste should be made.	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 1.8 Lakh tonnes per annum.
(iii)	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 and CO 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 and CO) should be regularly submitted to the Ministry including its regional office at Bhubaneshwar and the State Pollution Control Board / Central Pollution Control Board once in six months.	In consultation with Regional Office, State Pollution Control Board (Keonjhar Region), 06 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 April 2024 to September 2024 is enclosed as Annexure 10 .
(iv)	Drills should be wet operated or with dust extractors and controlled blasting should be practiced.	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 blast 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.
(v)	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 and unloading points should be provided and properly maintained.	Following measures are ensured for containment of fugitive dust emission: 1. Mobile water tanker (cap-10KI) 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 as Annexure 11 .
(vi)	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, etc. should be provided with	Ear plugs and Earmuffs are provided to the workers working in mining operation and 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:

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SN.	EC Conditions	Status of Compliance
	ear plugs/ muffs.	<ol style="list-style-type: none"> 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. <p>Noise level monitoring data for the period during April 2024 to September 2024 is enclosed as Annexure 12.</p>
(vii)	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>For effective management of effluent following mitigative measures are ensured at the mine level:</p> <ol style="list-style-type: none"> 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. 4. 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.
(viii)	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>Environmental Monitoring services are carried out by engaging an NABL Accredited agency having its laboratory recognized by Ministry of Environment, Forest and Climate Change.</p> <p>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>
(ix)	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>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 and 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 and Free Silica exposure assessment by a DGMS approved agency. 2. Hand-Arm Vibration and Whole Body Vibration Exposure Assessment report by a DGMS approved laboratory 3. Mn Poisoning test (periodic) by a medical laboratory.</p>
(x)	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>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 Planning), Head (Environment), Senior Manager - Mine Planning, Area Manager (RM Environment), Environment Engineer,</p>

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SN.	EC Conditions	Status of Compliance
		Chemists, etc.
(xi)	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 Bhubaneswar.	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: <ul style="list-style-type: none"> • FY-2021-22: Rs. 274.5 Lakhs • FY-2022-23: Rs. 272.92 Lakhs • FY-2023-24: Rs. 378.33 Lakhs
(xii)	The Regional Office of this Ministry located at Bhubaneswar 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.	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.
(xiii)	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.	The clearance letter has been uploaded on the website of the Company. Copy of the clearance letter marked to Chairman, Municipal Council, Joda on 12.01.2006.
(xiv)	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.	The EC documents was displayed in the office of Regional Office, District Industry Centre and Collector s Office/ Tehsildar s Office for 30 days.
(xv)	The project authorities should advertise at least in two local newspapers widely circulated around the project, one of which shall be in the vernacular language 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 Website of the Ministry of Environment and 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.	A copy of Environmental Clearance with regard to Joda West Manganese Mine was published in Oriya News Papers Dharitri and Sambad on 17.10.2005.

Table C:- Additional Conditions as per MoEFCC Letter No. 106-9/11/EPE dt. 02.12.2014 issued to all Non-Coal Mining Projects

SN.	EC Conditions	Status of Compliance
(i)	The project authority shall adopt best mining practices for given conditions in the mining area, adequate number of check dam, retaining wall/ structure, garland drains and settling ponds should be provided to arrest the wash off with rainwater in catchment area.	<p>The mine is operated by opencast mining method using shovel-dumper combination.</p> <p>Due care is taken during all the aspects of mining operations (starting from excavation till dispatch of the minerals) to ensure sustainable practices are adopted such as:</p> <ol style="list-style-type: none"> 1. Wet drilling (Drills with inbuilt features of wet drilling) for preventing fugitive dust generation at the working face. 2. Controlled blasting by means of pre-split blasts using both NONEL and SME for arresting fly rocks and improved fragmentation with minimal ground vibration is practiced. 3. Pre-wetting is also carried out prior to blasting to minimize dust generating potential of blasts. 4. Stationary water sprinklers and mobile water tankers are operated main/permanent haul roads. 5. Garland drains all along the periphery of dumps supported with toe walls/gabion walls and adequate no of settling pits (1.5mX1.5mX2m) have been erected for guiding effluents/surface runoff up to mine pit.
(ii)	The natural water bodies and or stream which are flowing in and around the village should not be disturbed. The water table should be nurtured so as not to go down below the pre-mining period. In case of any water scarcity in the area, the project authority has to provide water to the villagers for their use. A provision for regular monitoring of water table in open dug well.	Agreed. No such water bodies exists within the mine lease area and thus natural water course remains unaffected due to mining activities. Drinking water is being provided to the villagers. A network of wells have been identified in the core and buffer zone for regular water quality monitoring.
(iii)	The illumination and sound at night at project sites disturb the village in respect of both human and animal population. Consequent sleeping disorder and stress may affect the health in the village located close to mining operation. Habitations have a right to darkness and minimal noise level at night. The Project Proponents must ensure that the biological clock of the village is not disturbed by orienting the floodlights mask way from the village and keeping the noise levels well within prescribed limits for day/ night hours.	The operation of the mine is restricted to the two shifts only. It is being ensured that there is no illumination or noise related disturbance to the habitats and fauna found close to the mining areas and the biological clock of the village is not disturbed.
(iv)	The project Authority shall make necessary alternative arrangement, where required, in consultation with	No such grazing land have been acquired by the company.

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SN.	EC Conditions	Status of Compliance
	<p>state Government to provided alternated areas for livestock grazing. In this case context, the Project Authority should implement the direction of Hon ble Supreme Court with regard to acquiring grazing land. The sparse tress on such grazing ground, which provides mid-day shelter from the scorching sun, should be scrupulously guarded felling lest the cattle abandon the grazing ground or return home by noon.</p>	
(v)	<p>Wherever blasting is undertaken as part of mining activity, the Project Authority shall carry out vibration studies well before approaching any such habitats or other building to evaluate the zone of influence and impact of blasting on neighbourhood. Within 500 meters of such sites vulnerable to blasting vibration, avoidance of use of explosives and adoption of alternative means of mineral extraction such as ripper/dozer combination/ rock breakers/ surface mineral etc should be seriously considered and practiced wherever practicable. A provision for monitoring of each blast should be made so that impact of blasting on nearby habitation and dwelling unit could be ascertained. The covenant of lease deed under rule 31 of MCR 1960 provided that no mining operation shall be carried out within 50 meters of public works such as public roads and building or inhabited sites except with prior permission from the competent Authority.</p>	<p>Deep hole drilling and controlled blasting technique is adopted in the mine. Vibration study has been conducted by CIMFR. Each blast is monitored for the Peak Particle Velocity which is well within the DGMS prescribed limits. Rock breakers are used to avoid secondary blasting depending upon the strata.</p>
(vi)	<p>Main haulage road in the mines should be provided with permanent water sprinkler and other road should be regularly wetted water tanker fitted with sprinkler. Crusher and material transfer points should invariably be provided with bag filter and or dry fogging system. Belt conveyor fully covered to avoid air borne dust.</p>	<p>Permanent portions of the haul roads are provided with fixed sprinklers. Water sprinkling though mobile tanker is carried out regularly on all haul roads, mineral stacking area and overburden dumping areas and for dust suppression.</p>

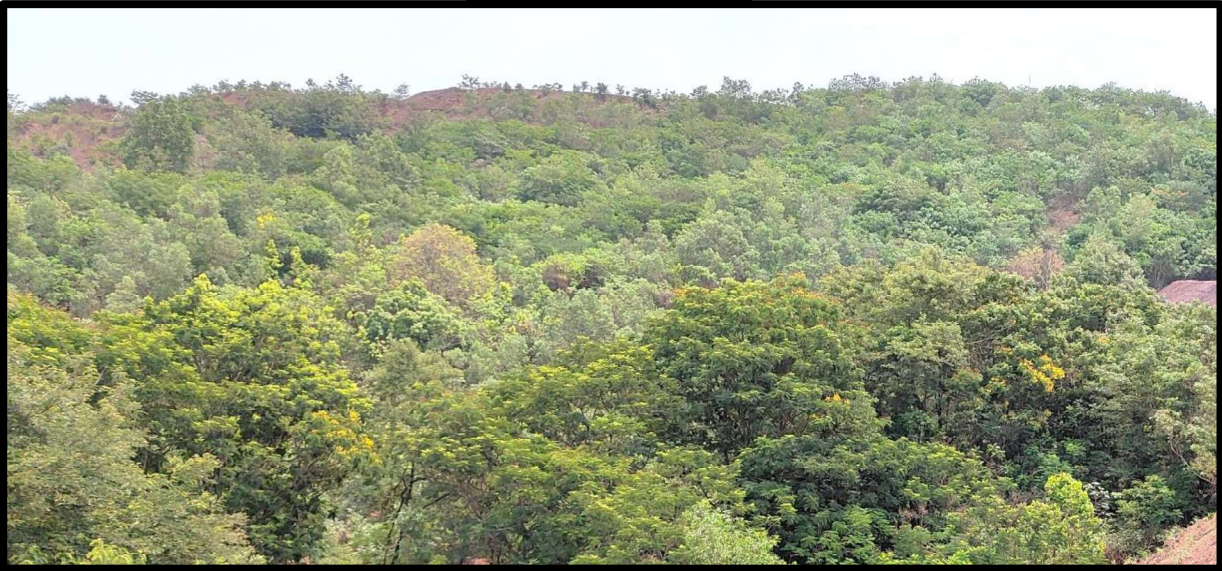
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SN.	EC Conditions	Status of Compliance
(vii)	The project Authority shall ensure that productivity of agriculture crops is not affected due to the mining operation. Crop Liability Insurance Policy has to be taken by PP as a precaution to compensate for the crop loss. The impact zone shall be 5 Km from the boundary of mine lease area for insurance policy. In case, several mines are located in cluster mines, formed inter – alia, to sub serve such and objective shall be responsibility for securing such Crop Liability Policy.	There is no crop land nearby the M.L. area.
(viii)	In case any village is located within the mining leasehold which is not likely to be affected due to mining activities during the life of mine, the Expert Appraisal Committee (EAC) should consider the proposal of Environmental Clearance (EC) for reduced mining area. The mining lease may be executed for the area for which EC is accorded. The mining plan also accordingly revised and required stipulation under the MMDR Act 1957 and MCR 1969 met.	No such village exist within the ML area.
(ix)	Transportation of minerals by road passing through the village shall not be allowed. A “bypass” road should be constructed (say leaving a gap of at least 200 m) for the purpose of transportation of minerals so that the impact of sound, dust and accidents could be mitigated. The PP shall bear the cost towards the widening and strengthening of existing public road network in case same is proposed to be used for the project. No road movement should be allowed on existing village road No road movement should be allowed on existing village road without appropriately increasing carrying capacity of such road	There is no transportation road passing through any village.
(x)	Likewise, alteration or re-routing of foot paths, pagdandies, cart road and village infrastructure/ public utilities or roads (for purpose of land acquisition for mining) shall be	Land Acquisition is not involved.

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SN.	EC Conditions	Status of Compliance
	<p>avoided to extent possible and in such case acquisition is inevitable, alternative arrangements shall be made first and the only the area can be acquired. In these types of cases Inspection reports by site visit by expert may be insisted upon which should be done through reputed Institutes.</p>	
(xi)	<p>The CSR activates by companies including mining establishment has become mandatory up to 2% their financial turn over, socio Economic Development of neighbourhood. Habitats could also be planned and executed by the PPs more systemically based on need based door to door survey by established Social Institute/ Workers on the lines as required under TOR. "R and R Plan// compensation details for Project Affected People (PAP) should be furnished. While preparing the R and R plant, the relevant State/ national Rehabilitation and Resettlement Policy should be kept in view. In respect of SCs and STs and weaker section of society in study, a need bashed sample survey, family-wise, should be undertaken to assess their requirement, and action programmes prepared and submitted accordingly, integrating the sectoral programs of line department of State Government. It may be clearly brought out whether the village including their R and R and socio-economics aspect should be discussed in EIA report.</p>	<p>Tata Steel has taken up many social initiatives for the improvement of quality of life of the surrounding community by means of education, health and other socio-economic aspects. TSF (Tata Steel Foundation) has been pioneering the initiatives through CSR activities. A number of rainwaters harvesting cum recharge ponds have been constructed in the peripheral villages.</p>

Old Stabilized Dump

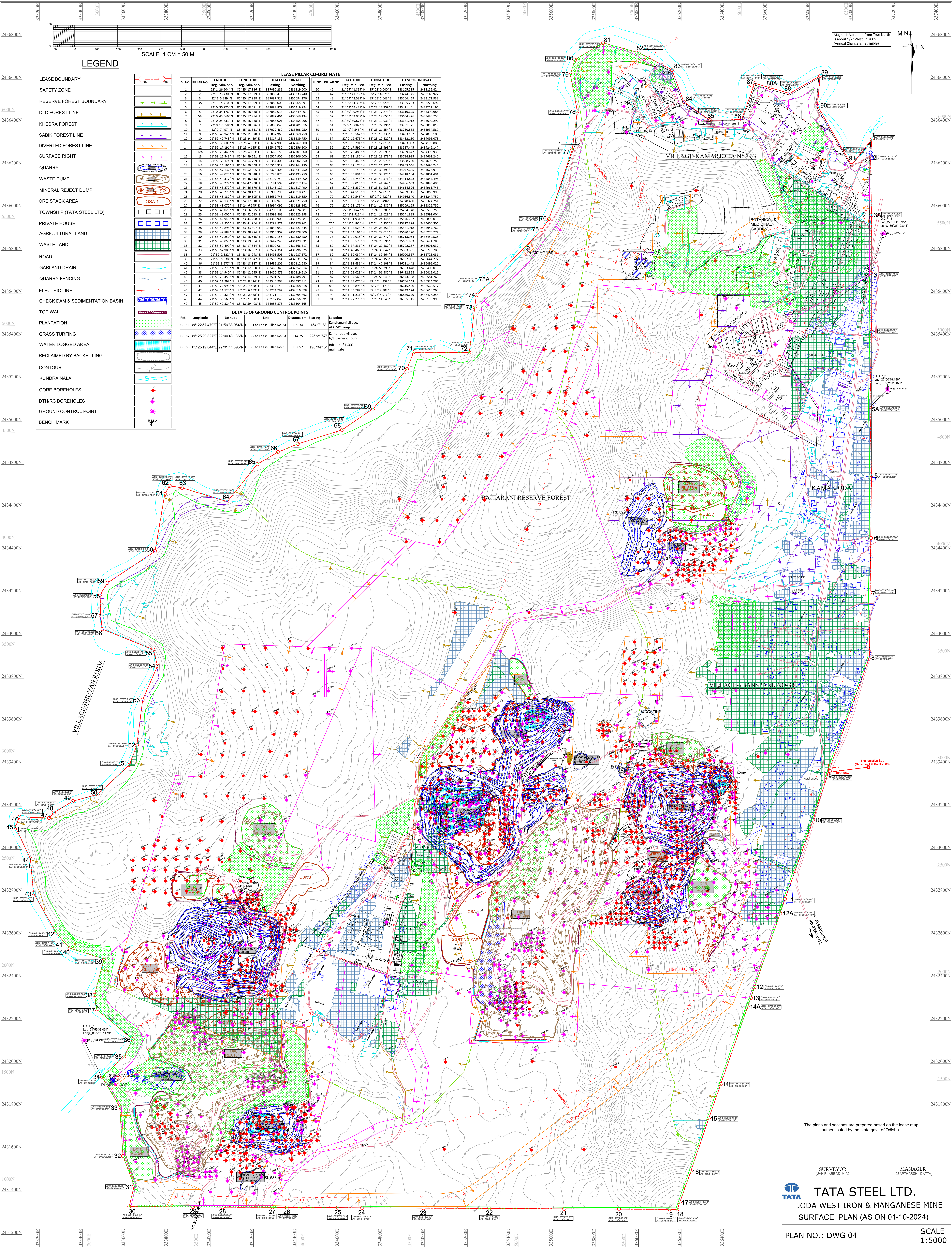


Garland Drains, & Retaining walls



Concrete Rain Pass





DUST FALL ANALYSIS RESULT ABSTARCT

JODA WEST IRON & MN MINES & TIRINGPAHAR IRON & MN MINE

DUST FALL ANALYSIS (SUMMER SEASON – APRIL’24)										
Location	Heavy Metal concentrations (g/m2-mo)									
	Arsenic	Cadmium	Copper	Hexavalent Chromium	Iron	Lead	Manganese	Mercury	Selenium	Zinc
Stocking Yard, D Quarry	<0.0016	<0.0016	1.657	<0.0003	1.835	0.0018	0.546	<0.0003	<0.0016	0.0213
Stocking Yard, Ganguiguda	<0.0016	<0.0016	1.4099	<0.001	14.009	<0.0016	6.637	<0.0010	<0.0016	0.025
Admin Office, Bichakundi	<0.0016	<0.0016	0.953	<0.0023	31.603	<0.0016	6.993	<0.0023	<0.0016	0.0586
Haul Road, H Quarry	<0.0016	<0.0016	0.9533	<0.0005	5.993	<0.0016	1.718	<0.0005	<0.0016	0.0154
Dumping Yard, H Quarry	<0.0016	<0.0016	1.0779	<0.0003	2.86	0.0027	0.567	<0.0003	<0.0016	0.0379
Screen Plant, D Quarry	<0.0016	<0.0016	0.8275	<0.0007	15.409	<0.0016	4.034	<0.0007	<0.0016	0.0199

Dust Fall

Report No. MSKGL/ED/2024-25/000898

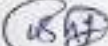
Date: 10.05.2024

ANALYSIS REPORT OF DUSTFALL


Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	01.04.2024 to 30.04.2024
Location	Stoking Yard, D Quarry (JWIMM)

CHEMICAL ANALYSIS OF WATER AS PER IS: 2490

Sl. No.	Test Parameters	Unite	Method	Results
1	Arsenic as (As)	None	EPA 3050 B (Digestion), 1996 EPA 6010 D (ICP-OES): 2018	BDL(DL:0.0003 g/m2-mo)
2	Cadmium (as Cd)	None	EPA 3050 B (Digestion), 1996 EPA 6010 D (ICP-OES): 2018	BDL(DL:0.0003 g/m2-mo)
3	Copper (as Cu)	None	EPA 3050 B (Digestion) EPA 6010 D (ICP-OES): 2018	1.6570 g/m2-mo
4	Hexavalent Chromium (as Cr+6)	None	EPA 3060A_(O)	BDL(DL:0.0003 g/m2-mo)
5	Iron (as Fe)	None	APHA 24th Edition, 2023 4500- O-C/G	1.835 g/m2-mo
6	Lead (as Pb)	None	EPA 3050 B (Digestion) , EPA 6010 D (ICP-OES), July	0.0018 g/m2-mo
7	Manganese (as Mn)	None	EPA 6010D_(O)	0.546 g/m2-mo
8	Mercury (as Hg)	None	EPA 3050 B (Digestion), 1996 EPA 6010 D (ICP-OES): 2018	BDL(DL:0.0003 g/m2-mo)
9	Selenium (as Se)	None	USEPA-29 - 25/06/1996_(O)	BDL(DL:0.0003 g/m2-mo)
10	Zinc (as Zn)	None	EPA 3050 B (Digestion), 1996 EPA 6010 D(ICP-OES): 2018	0.0213 g/m2-mo

Checked by: 

For Mitra S. K. Private Limited


Authorized Signatory

Report No. MSKGL/ED/2024-25/000899


Date: 10.05.2024

ANALYSIS REPORT OF DUSTFALL

Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	01.04.2024 to 30.04.2024
Location	Stoking Yard, Ganguiguda Pit (JWIMM)

CHEMICAL ANALYSIS OF WATER AS PER IS: 2490

Sl. No.	Test Parameters	Unit	Method	Results
1	Arsenic as (As)	None	EPA 3050 B (Digestion), 1996 EPA 6010 D (ICP-OES): 2018	BDL(DL:0.0003 g/m2-mo)
2	Cadmium (as Cd)	None	EPA 3050 B (Digestion), 1996 EPA 6010 D (ICP-OES): 2018	BDL(DL:0.0003 g/m2-mo)
3	Copper (as Cu)	None	EPA 3050 B (Digestion) EPA 6010 D (ICP-OES): 2018	1.4099 g/m2-mo
4	Hexavalent Chromium (as Cr+6)	None	EPA 3060A_(O)	BDL(DL:0.0003 g/m2-mo)
5	Iron (as Fe)	None	APHA 24th Edition, 2023 4500- O-C/G	14.009 g/m2-mo
6	Lead (as Pb)	None	EPA 3050 B (Digestion), EPA 6010 D (ICP-OES), July	BDL(DL:0.0003 g/m2-mo)
7	Manganese (as Mn)	None	EPA 6010D_(O)	6.637 g/m2-mo
8	Mercury (as Hg)	None	EPA 3050 B (Digestion), 1996 EPA 6010 D (ICP-OES): 2018	BDL(DL:0.0003 g/m2-mo)
9	Selenium (as Se)	None	USEPA-29 - 25/06/1996_(O)	BDL(DL:0.0003 g/m2-mo)
10	Zinc (as Zn)	None	EPA 3050 B (Digestion), 1996 EPA 6010 D(ICP-OES): 2018	0.0250 g/m2-mo

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For Mitra S. K. Private Limited


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Report No. MSKGL/ED/2024-25/000903


Date: 10.05.2024

ANALYSIS REPORT OF DUSTFALL

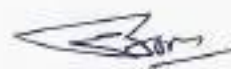
Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	01.04.2024 to 30.04.2024
Location	Admin Office , Bichakundi (JWIMM)

CHEMICAL ANALYSIS OF WATER AS PER IS: 2490

Sl. No.	Test Parameters	Unit	Method	Results
1	Arsenic as (As)	None	EPA 3050 B (Digestion), 1996 , EPA 6010 D (ICP-OES): 2018	BDL(DL:0.0003 g/m2-mo)
2	Cadmium (as Cd)	None	EPA 3050 B (Digestion), 1996 , EPA 6010 D (ICP-OES): 2018	BDL(DL:0.0003 g/m2-mo)
3	Copper (as Cu)	None	EPA 3050 B (Digestion) EPA 6010 D (ICP-OES): 2018	0.9530 g/m2-mo
4	Hexavalent Chromium (as Cr+6)	None	EPA 3060A_(O)	BDL(DL:0.0003 g/m2-mo)
5	Iron (as Fe)	None	APHA 24th Edition, 2023 4500- O-C/G	31.603 g/m2-mo
6	Lead (as Pb)	None	EPA 3050 B (Digestion) , EPA 6010 D (ICP-OES), July	BDL(DL:0.0003 g/m2-mo)
7	Manganese (as Mn)	None	EPA 6010D_(O)	6.993 g/m2-mo
8	Mercury (as Hg)	None	EPA 3050 B (Digestion), 1996 , EPA 6010 D (ICP-OES): 2018	BDL(DL:0.0003 g/m2-mo)
9	Selenium (as Se)	None	USEPA-29 - 25/06/1996_(O)	BDL(DL:0.0003 g/m2-mo)
10	Zinc (as Zn)	None	EPA 3050 B (Digestion), 1996 , EPA 6010 D(ICP-OES): 2018	0.0586 g/m2-mo

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For Mitra S. K. Private Limited


Authorized Signatory

Report No. MSKGL/ED/2024-25/000900


Date: 10.05.2024

ANALYSIS REPORT OF DUSTFALL

Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	01.04.2024 to 30.04.2024
Location	Haul Road, H Quarry (JWIMM)

CHEMICAL ANALYSIS OF WATER AS PER IS: 2490

Sl. No.	Test Parameters	Unite	Method	Results
1	Arsenic as (As)	None	EPA 3050 B (Digestion), 1996 ,EPA 6010 D (ICP-OES): 2018	BDL(DL:0.0003 g/m2-mo)
2	Cadmium (as Cd)	None	EPA 3050 B (Digestion), 1996 ,EPA 6010 D (ICP-OES): 2018	BDL(DL:0.0003 g/m2-mo)
3	Copper (as Cu)	None	EPA 3050 B (Digestion) EPA 6010 D (ICP-OES): 2018	0.9533 g/m2-mo
4	Hexavalent Chromium (as Cr+6)	None	EPA 3060A_(O)	BDL(DL:0.0003 g/m2-mo)
5	Iron (as Fe)	None	APHA 24th Edition, 2023 4500- O-C/G	5.993 g/m2-mo
6	Lead (as Pb)	None	EPA 3050 B (Digestion) , EPA 6010 D (ICP-OES), July	BDL(DL:0.0003 g/m2-mo)
7	Manganese (as Mn)	None	EPA 6010D_(O)	1.718 g/m2-mo
8	Mercury (as Hg)	None	EPA 3050 B (Digestion), 1996 ,EPA 6010 D (ICP-OES): 2018	BDL(DL:0.0003 g/m2-mo)
9	Selenium (as Se)	None	USEPA-29 - 25/06/1996_(O)	BDL(DL:0.0003 g/m2-mo)
10	Zinc (as Zn)	None	EPA 3050 B (Digestion), 1996 ,EPA 6010 D(ICP-OES): 2018	0.0154 g/m2-mo

Checked by: 

For Mitra S. K. Private Limited


Authorized Signatory

Mitra S. K. Private Limited

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W : www.mitrask.com



Report No. MSKGL/ED/2024-25/000901

Date: 10.05.2024

ANALYSIS REPORT OF DUSTFALL

Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	01.04.2024 to 30.04.2024
Location	Dumping Yard, H Quarry (JWIMM)

CHEMICAL ANALYSIS OF WATER AS PER IS: 2490

Sl. No.	Test Parameters	Unite	Method	Results
1	Arsenic as (As)	None	EPA 3050 B (Digestion), 1996 ,EPA 6010 D (ICP-OES): 2018	BDL(DL:0.0003 g/m2-mo)
2	Cadmium (as Cd)	None	EPA 3050 B (Digestion), 1996 ,EPA 6010 D (ICP-OES): 2018	BDL(DL:0.0003 g/m2-mo)
3	Copper (as Cu)	None	EPA 3050 B (Digestion) EPA 6010 D (ICP-OES): 2018	1.0779 g/m2-mo
4	Hexavalent Chromium (as Cr+6)	None	EPA 3060A_(O)	BDL(DL:0.0003 g/m2-mo)
5	Iron (as Fe)	None	APHA 24th Edition, 2023 4500- O-C/G	2.860 g/m2-mo
6	Lead (as Pb)	None	EPA 3050 B (Digestion) , EPA 6010 D (ICP-OES), July	0.0027 g/m2-mo)
7	Manganese (as Mn)	None	EPA 6010D_(O)	0.567 g/m2-mo
8	Mercury (as Hg)	None	EPA 3050 B (Digestion), 1996 ,EPA 6010 D (ICP-OES): 2018	BDL(DL:0.0003 g/m2-mo)
9	Selenium (as Se)	None	USEPA-29 - 25/06/1996_(O)	BDL(DL:0.0003 g/m2-mo)
10	Zinc (as Zn)	None	EPA 3050 B (Digestion), 1996 ,EPA 6010 D(ICP-OES): 2018	0.0379 g/m2-mo

Checked by:

For Mitra S. K. Private Limited

Authorized Signatory

Mitra S. K. Private Limited

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W : www.mitrask.com



Report No. MSKGL/ED/2024-25/000902

Date: 10.05.2024

ANALYSIS REPORT OF DUSTFALL

Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	01.04.2024 to 30.04.2024
Location	Screen Plant, D Quarry (JWIMM)

CHEMICAL ANALYSIS OF WATER AS PER IS: 2490

Sl. No.	Test Parameters	Unit	Method	Results
1	Arsenic as (As)	None	EPA 3050 B (Digestion), 1996 EPA 6010 D (ICP-OES): 2018	BDL(DL:0.0003 g/m2-mo)
2	Cadmium (as Cd)	None	EPA 3050 B (Digestion), 1996 EPA 6010 D (ICP-OES): 2018	BDL(DL:0.0003 g/m2-mo)
3	Copper (as Cu)	None	EPA 3050 B (Digestion) EPA 6010 D (ICP-OES): 2018	0.8275 g/m2-mo
4	Hexavalent Chromium (as Cr+6)	None	EPA 3060A (O)	BDL(DL:0.0003 g/m2-mo)
5	Iron (as Fe)	None	APHA 24th Edition, 2023 4500- O-C/G	15.409 g/m2-mo
6	Lead (as Pb)	None	EPA 3050 B (Digestion), EPA 6010 D (ICP-OES), July	BDL(DL:0.0003 g/m2-mo)
7	Manganese (as Mn)	None	EPA 6010D (O)	4.034 g/m2-mo
8	Mercury (as Hg)	None	EPA 3050 B (Digestion), 1996 EPA 6010 D (ICP-OES): 2018	BDL(DL:0.0003 g/m2-mo)
9	Selenium (as Se)	None	USEPA-29 - 25/06/1996 (O)	BDL(DL:0.0003 g/m2-mo)
10	Zinc (as Zn)	None	EPA 3050 B (Digestion), 1996 EPA 6010 D (ICP-OES): 2018	0.0199 g/m2-mo

Checked by:

For Mitra S. K. Private Limited

Authorized Signatory

Photographs of Plantation Area of Joda West Mines







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:	Joda West Manganese Mines Tata Steel Ltd		
Project Address:	Joda West Manganese Mines, Tata Steel Ltd, Post Office : Bichakundi, Tahsil / Taluk : Barbil / Champua		
Village:	Camp Of Tisco	Block:	Joda
District:	Kendujhar	State:	Odisha
Pin Code:			
Communication Address:	Joda West Iron And Manganese Mine Of M/s Tata Steel Limited, Village-Bichhakundi, Post- Bichhakundi, Block-joda, Kendujhar, 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/2/2023/7840				2.	Date of Issuance		13/05/2023					
3.	Application No.:		21-4/1195/OR/MIN/2017				4.	Category: (GWRE 2020)		Safe					
5.	Project Status:		Existing With Additional Ground Water Requirment				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	
146.00		143080.00						246.00		89790.00					
10.	Details of ground water abstraction /Dewatering structures														
Total Existing No.:4								Total Proposed No.:1							
		DW	DCB	BW	TW	MP	MPu	DW	DCB	BW	TW	MP	MPu		
Abstraction Structure*		0	0	4	0	0	0	0	0	0	0	0	0		
Dewatering Structure*		0	0	0	0	0	0	0	0	0	0	1	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.):							286160.00							
12.	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					1			0	1	0					

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

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पानी बचाये – जीवन बचाये
SAVE WATER - SAVE LIFE

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 CPCE 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).

(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

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Website: cgwa-noc.gov.in

पानी बचाये – जीवन बचाये
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Government of India
Ministry of Jal Shakti
Department of Water Resources, River Development and Ganga Rejuvenation
Central Ground Water Authority (CGWA)
Application for Issue of NOC to Abstract Ground Water (NOCAP)

Application for Renewal of NOC to Dewater Ground Water for Mining Industry
(Application for Renewal of NOC)

Application Number : 21-4/1195/OR/MIN/2017

Applied For Renewal : 3rd

1.	General Information:	
	Water Quality:	Fresh Water
	Purpose of Renewal Application:	Existing with Additional Ground Water Requirement
	Application Type Category/ Type of Application	Manganese ore
2.	Name of Mine/Project:	JODA WEST MANGANESE MINES TATA STEEL LTD
3.	Location Details of the Mining Unit- (Attach Site, Approved Mining Plan, Toposketch of Surrounding 10km Radius Outside) (\$) :	
	Address Line 1 :	JODA WEST MANGANESE MINES, TATA STEEL LTD
	Address Line 2 :	POST OFFICE : BICHAKUNDI
	Address Line 3 :	TAHSIL / TALUK : BARBIL / CHAMPUA
	State:	ODISHA
	District:	KENDUJHAR
	Sub-District:	JODA
	Village/Town:	Camp of Tisco
	Latitude:	
	Logitude:	
	Area Type :	Non-Notified
	Area Type Category :	Safe
	Whether industry is MSME:	No
4.	Communication Address	
	Address Line 1:	JODA WEST MANGANESE MINES, TATA STEEL LTD
	Address Line 2:	POST OFFICE : BICHAKUNDI
	Address Line 3:	TAHSIL / TALUK : BARBIL / CHAMPUA
	State:	ODISHA
	District:	KENDUJHAR
	Sub-District:	JODA
	Pincode:	758034
	Phone Number with Area Code:	
	Mobile Number:	91 7752004290
	Fax Number:	
5.	Details of Existing NOC issued by CGWA (enclose copy)	
	E-Mail:	sabyasachy@tatasteel.com
	NOC Letter No:	CGWA/NOC/MIN/REN/2/2023/7840
	Date of Issuance:	13/05/2023
	Vailidity (Start):	23/07/2022
	Validity (End):	22/07/2024

Government of India
Ministry of Jal Shakti
Department of Water Resources, River Development and Ganga Rejuvenation
Central Ground Water Authority (CGWA)
Application for Issue of NOC to Abstract Ground Water (NOCAP)

Application for Renewal of NOC to Dewater Ground Water for Mining Industry
(Application for Renewal of NOC)

Application Number : 21-4/1195/OR/MIN/2017

Applied For Renewal : 3rd

	Reason for not applying for renewal before expiry of NOC Validity (Attach Affidavit):	NA
6.	Change in Land Use Pattern after execution of Project and Surroundings (10 km Radius - Outside)	
	The predominant land use in the study is forest (78.26%) followed by scrub land (6.83%), crop land (5.92%), mining (4.81%), built-up (3.46%), river (0.38%), water bodies (0.29%) and barren land (0.05%).	
7.	Land Use Detail of Project Area	
	Land Use Details	Existing (sq meter)
	Green Belt Area	10363300.00
	Open Land	2443110.00
	Road/ Paved Area	693400.00
	Rooftop area of building/ sheds	871800.00
	Total	14371610.00
8.	Whether there is a change in Topography of the Area after the execution of the Project:	Yes
	a) Regional	No Significant changes to happen due to the mining project. The project is already in operational phase. It is an operational opencast mine (operational since 1930).
	b) Project Area	As a result of mining excavation and the dumping of overburden, there are anticipated topographical changes within the project area. However, these changes will strictly adhere to the provisions outlined in the approved mine plan.
9.	Whether there is change in Drainage pattern of the area after the execution of the Project:	No
	a) Regional	
	b) Project Area	
10.	Present Townships / Villages within 10 km radius of the Project:-	Raikala, Balita, Bhagalapur, Beleipada, Lahanda, Birikala, Gobindapur, Daduan, Joda, Banspal, Bholabeda, Khadabandha, Langalakanti, Jajanga, Jadibahal, Bandhuabeda, Kamalpur, Palasa(Ka), Guruda, Chormalda, Laidapada, Rugudidihi, Gamulai, Lotapani, Tanto, Serenda, Bhusugaon, Bhadrasahi

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11.	Whether the Groundwater Table will be Intersected by Activity :-								Yes	
	(a) At What Depth (m bgl)		Pre-monsoon				Post-monsoon			
	Minimum (m bgl)		40.00				35.00			
	Maximum (m bgl)		45.00				40.00			
	(b) Maximum Depth Proposed to Dewater (m bgl)		116.00							
	(c) Groundwater Flow Direction (Attach Map)(\$)		East-North-East							
	(d) Any Other Information		NA							
12.	Total Water Requirement for various Purpose to be Mentioned		Existing (m3/day)		Additional (m3/day)		Existing (m3/year)		Additional (m3/year)	
	Ground Water Required through Abstract Structure		0.00		0.00		0.00		0.00	
	Ground Water Abstracted on account of Dewatering / Mining Seepage		246.00		1528.00		89790.00		557720.00	
	Total Ground Water Withdrawal		246.00		1528.00		89790.00		557720.00	
13.	Details of De-Watering Structure									
	(a) De-Watering Existing Structure									
	Number of Existing Structures:						1			
	SNo.	Type of Structure Name / Year of Construction	Depth (Meter) / Diameter (mm)	Depth to Water Level (Meters below Ground Level)	Discharge (m3/Hour)	Operational Hours(Day) / Days (Year)	Mode of Lift Name	Horse Power of Pump	Whether fitted with Water Meter	Whether Permission Registered with CGWA /If so Details Thereof
	1	Mine Pumps / -	- / -			- / -	Centrifugal Pump	50.00	Yes	Yes / -
	(b) De-Watering Requirement and Additional Structure Detail									
	Number of Proposed Structures:						4			
	SNo.	Type of Structure Name / Year of Construction	Depth (Meter) / Diameter (mm)	Depth to Water Level (Meters below Ground Level)	Discharge (m3/Hour)	Operational Hours(Day) / Days(Year)	Mode of Lift Name	Horse Power of Pump	Whether fitted with Water Meter	Whether Permission Registered with CGWA/If so Details Thereof
	1	Mine Pumps / -	- / -			- / -	Centrifugal Pump	50.00	Yes	Yes / -
	2	Mine Pumps / -	- / -			- / -	Centrifugal Pump	50.00	Yes	Yes / -
	3	Mine Pumps / -	- / -			- / -	Centrifugal Pump	50.00	Yes	Yes / -
	4	Mine Pumps / -	- / -			- / -	Centrifugal Pump	75.00	Yes	Yes / -
14.	Details of Utilization of Pumped Water (Please Attach Details)(m3/year) (\$)									

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(a)	Water Supply	Yes	85045.00	Drinking and Domestic Water supply to colony and mines - 233 KLD
(b)	Agriculture	No		
(c)	Green Belt Development	Yes	17155.00	47 KLD for Greenbelt Development
(d)	Suppression of Dust	Yes	33580.00	92 KLD for Dust Supression.
(e)	Recharge	No		
(f)	Any Other Item	7300 m3/year (20 KLD) for Floor washing and others, 504430 m3/year (1382 KLD) for Agriculture		

15. Monitoring of Ground Water Regime (Attach Map(\$))

(a)	Location Details of the Wells / Piezometers (Latitude, Longitude, Reduced Level)	One Piezometer installed at the top of D-Quarry with Latitude- 21.998492 Longitude- 85.410797 and one manual.
(b)	Number of Wells / Piezometers	18 wells have been monitored.02 nos. of piezometers installed 01 with telemetry and 01 manual
(c)	Attach Details of GW Level of Observation Wells / Piezometers(At Least for One Year)(\$)	Ground water level monitoring is done on quarterly basis. Monitoring report is enclosed herewith.
(d)	General Quality of GW in the Area & Surroundings (\$)	Ground Water quality monitoring report is enclosed herewith.
(e)	Any Other Item	Not Applicable

16. Give the details of change in groundwater regime and quality after execution of the project (Attach detailed report with Map showing GW flow direction(\$))

Groundwater flow direction is East- North East. Hydrogeological map provided in attachment section.

17. Proposed Pump / Pumping Groundwater Outside the Mine Pit for Domestic or Other Use (If so, give Details):

Number of Existing Structures:						0				
	SNo.	Type of Structure Name / Year of Construction	Depth (Meter) / Diameter (mm)	Depth to Water Level (Meters below Ground Level)	Discharge (m3/Hour)	Operational Hours (Day) / Days (Year)	Mode of Lift Name	Horse Power of Pump	Whether fitted with Water Meter	Whether Permission Registered with CGWA/If so Details Thereof
Number of Additional Structures:						0				
	SNo.	Type of Structure Name / Year of Construction	Depth (Meter) / Diameter (mm)	Depth to Water Level (Meters below Ground Level)	Discharge (m3/Hour)	Operational Hours (Day) / Days (Year)	Mode of Lift Name	Horse Power of Pump	Whether fitted with Water Meter	Whether Permission Registered with CGWA/If so Details Thereof

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18. (a). Compliance to the Condition prescribed in the NOC				
	SNo.	Conditions given in NOC	Compliance Conditions Applicable	Status of Compliance
	1	Area Specific Plantation	Yes	Plantation is carried out as per the provision of approved Progressive Mine Closure Plan. The status therewith is also submitted to IBM.
	2	Domestic Water School Sanitation	No	NA
	3	Groundwater quality monitoring - Pre monsoon and Post monsoon	Yes	Monitoring. The quality of ground water in the region is in conformance with Drinking Water Standard as per IS 10500:2012 standard.
	4	Maintenance of recharge structures	Yes	Periodically ensured before monsoon and after monsoon season. Apart from this, de-siltation of village tanks is also ensured for peripheral villages in the summer season.
	5	Number of Pizometers as per NOC and Water Level Record	Yes	One Piezometer fitted with telemetry based AWLR and one manual piezometer are in working conditions.
	6	Number of Tubewells Borewales as per NOC	Yes	04 Bore Wells are working before but now the abstraction from these bore wells has been stopped.
	7	Pizometer fitted with AWLRs with telemetry as per NOC	Yes	One Piezometer fitted with telemetry based AWLR is in working conditions.
	8	Quantum of Groundwater as per NOC	Yes	As per previous NOC is 392KLD. currently applying for 1774 KLD due to increase in mine pit area.
	9	Recharge through ponds	Yes	One (1) Roof top rainwater harvesting structure have been constructed at the mine office. Apart from this One (1) Rainwater Harvest Pond has also been constructed near the mine area.
	10	Recycle and reuse of water	Yes	Mining is not a process of intense operation thus scope for re-use of water is limited. Major chunk of usage is for Haul Road Dust Suppression. However Domestic Effluent is completely re-used after tr
	11	RWH and AR structures implemented	Yes	One Roof Top RWH structure at Administration office is in working condition, One RWH Pond of size (L-40mtr X W-50mtr X Depth-7mtr) has been constructed for the purpose.
	12	Submission of Compliance report to the Region	Yes	Self Compliance Report has been submitted through NOCAP Portal.

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13	Water conservation measures	Yes	Drip Irrigation System for use of treated water from STP, Smart Irrigation System for Nursery with around 2000 Nos of automated sprinklers, Fixed Sprinkling system for Haul Road (600mtr) approx.
14	Water Security Plan of villages	Yes	An WTP of 400 KLD has been constructed for providing treated water to the local villagers.
15	Well monitored around the plant premises	Yes	Around 18 Wells monitored within 10Km radius from the project boundary. Apart from this, the mine management undertakes monitoring of around 2-3 wells in and around the mines round the year.
16	Wells fitted with water meter and its Record	Yes	Not Applicable

(b). Compliance to the Condition prescribed in the NOC - Other

SNo.	Conditions given in NOC	Status of Compliance
1	The firm shall report compliance of the NOC conditions online on the website (www.cgwa-noc.gov.in) within one year from the date of issue of this NOC.	Self-Compliance Report has been submitted in time. This Action Taken Report shall also be submitted to the Board for this purpose.

19. Gainful utilization of pump water:-

The total ground water withdrawal from this project is about 1,774 m3/day. Out of which, 767 m3/day of water is from mine seepage and 1007 m3/day of water is from rainwater. The mine dewatering water will be used for various domestic and industrial purpose. About 146 m3/day of water will be used for drinking and domestic purpose after passing through the water treatment plant. About 92 m3/day of water will be used for dust suppression. Around 87 m3/day of water will be utilised for township supply purpose and for green belt development the consumption of water will be 47 m3/day. Other utility services consume 20 m3/day of mine dewatering water. The remaining 1382 m3/day of mine dewatering water will be discharged to River/Nala after passing through sewage treatment plant.

20. Details of Rainwater Harvesting and Artificial Recharge Measures for Groundwater Recharge in the Area:-

One RWH Pond of Dimension (L-45mtr, Width-50mtr, Depth-7mtr), One Roof Top RWH/recharge structure at Administration office for area of around 1200sq-mtr, Apart from this around 6-7 RWH Ponds in the peripheral villages.

MINING USE- Self Declaration

☒ I hereby certify that the data and information furnished above are true to the best of my knowledge and belief and I am aware that if any part of the data / information submitted is found to be false or misleading at any stage, the application will be rejected outright.

I hereby declare that all the mandatory documents prescribed in the application form have been uploaded and no blank /irrelevant documents have been uploaded. I am also aware that any false/ wrong submission /uploading of document will lead to rejection of my application without any notice.

It is to certify that no case related to ground water withdrawal/ contamination is pending against the industry/ project/ unit as on date. Any such case filed against the company/ project/ unit in respect of ground water withdrawal/ contamination during the pendency of this application shall be immediately brought to the notice of CGWA.

I hereby undertake that in case any environmental compensation/ penalty is imposed on the firm by any statutory authority, I shall comply with the decision of such authority.

1. Application Proforma is subject to modification from time to time.

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2. Application is submitted online on website http://cgwa-noc.gov.in to following office.			
Regional Director, Central Ground Water Board South Eastern Region, Bhujal Bhawan, Khandagiri Square, NH-5, Bhubaneswar, KHORDHA, ODISHA, 751030			
3. Incomplete application will be summarily rejected.			
Scanned copy of last page of application with signature and seal should be attached at prescribed place before submission of application.			
4. Receipt of Processing Fee of Rs. 5000.00/- (Rupees Five Thousand Only) submitted through NON TAX RECEIPT PORTAL (https://bharatkosh.gov.in) should be attached along with hard copy of application.			
Processing Fee:-			
Bharat Kosh Transaction Ref. No:-			
Bharat Kosh Transaction Date:-			
Note:- The Processing Fee is Non-Refundable. Applicant should ensure and Check Eligibility of Submission of Application and Required Documents before Submitting Online Application.			
5. Hard copy of application required:	No		
6. Ground Water Quality Approved	Not Define	Ground Water Charge Required:	Not Define
Ground Water Charge Recieve:	No	Ground Water Charge Amount:	
		Ground Water Aear Amount:	

Attached Files:

1). GroundWater flow Direction Map: (Refer:11-C)

S.No	Attachment Name	File Name
1	Groundwater Flow Direction	Groundwater Flow Direction.pdf

2). GW Level of Observation Wells / Piezometer : (Refer:15-C)

S.No	Attachment Name	File Name
1	Piezometer Data	Piezometer Data.pdf

3). General Quality of Ground Water in the Area : (Refer:17-D)

S.No	Attachment Name	File Name
1	Groundwater Quality Reports	GW Quality Reports.pdf

4). Changes in Topography : (Refer: 8)

No Attachment Found!

5). Changes in Drainage Pattern : (Refer: 9)

No Attachment Found!

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Department of Water Resources, River Development and Ganga Rejuvenation
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Applied For Renewal : 3rd

6). Reason for Not Applying for Renewal before Expiring NOC : (Refer: 5)

No Attachment Found!

7). Existing NOC : (Refer: 5)

S.No	Attachment Name	File Name
1	Existing NOC	Joda west.PDF

8). Compliance to the Condition prescribed in the NOC : (Refer: 17-a)

S.No.	Conditions given in NOC	Attachments		
		S.No.	Attachment Name	File Name
1	Area Specific Plantation	No Attachment Found!		
2	Domestic Water School Sanitation	No Attachment Found!		
3	Groundwater quality monitoring - Pre monsoon and Post monsoon	No Attachment Found!		
4	Maintenance of recharge structures	No Attachment Found!		
5	Number of Pizometers as per NOC and Water Level Record	No Attachment Found!		
6	Number of Tubewells Borewales as per NOC	No Attachment Found!		
7	Pizometer fitted with AWLRs with telemetry as per NOC	No Attachment Found!		
8	Quantum of Groundwater as per NOC	No Attachment Found!		
9	Recharge through ponds	No Attachment Found!		
10	Recycle and reuse of water	No Attachment Found!		
11	RWH and AR structures implemented	No Attachment Found!		
12	Submission of Compliance report to the Region	No Attachment Found!		
13	Water conservation measures	No Attachment Found!		
14	Water Security Plan of villages	No Attachment Found!		
15	Well monitored around the plant premises	No Attachment Found!		
16	Wells fitted with water meter and its Record	No Attachment Found!		

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Ministry of Jal Shakti
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9). Compliance to the Condition prescribed in the NOC - Other : (Refer: 17-b)

S.No.	Conditions given in NOC	Attachments		
		S.No.	Attachment Name	File Name
1	The firm shall report compliance of the NOC conditions online on the website (www.cgwa-noc.gov.in) within one year from the date of issue of this NOC.	No Attachment Found!		

10). Extra Attachment :

S.No	Attachment Name	File Name
1	Water Consumption Data	Water Consumption Data.pdf

11). Bharat Kosh Reciept (Porcessing Fee):

S.No	Attachment Name	File Name
1	Bharatkosh Reciept for Joda west	Bharatkosh Reciept for Joda west.pdf

12). Application with Signature and Seal:

S.No	Attachment Name	File Name
1	Aplication with Signature and Seal Attachment	Aplication with Signature and Seal Attachment.pdf

13). MSME certificate in case of MSME:

No Attachment Found!

Date :

Name & Signature of the applicant

Place :

(With official seal)

Associated User : tatamngroupmine

Submitted By User : tatamngroupmine

Submission Date : 20/07/2024

* In case signed by any authorized signatory, the details of the signatory with the authorization shall be enclosed.

GROUND WATER LEVEL

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

T : +91 94370 09615, 94370 09620, 94370 75269
 E : barbil@mitrask.co.in
 W : www.mitrask.com

Report No. MSKGL/ED/2024-25/1691			Date: 29.06.2024
MONITORING REPORT OF GROUND LEVEL			
Name of the Client		M/s. TATA STEEL LIMITED	
Name of the Mines		JODA WEST IRON & MANGANESE MINES (JWIMM)	
SL. NO.	Monitoring Location	Date Monitoring	Water Level (Below Ground level, in mtrs)
1.	Bichakundi, near Community Toilet Bore well No.-1	22.06.2024	30.6
2.	Bichakundi Near WTP Bore well No.-2	22.06.2024	25.5
3.	Bichakundi near micro activity Centre, Bore well No.3	22.06.2024	29.2
4.	Bichakundi, Vegetable Garden	22.06.2024	33.4

Checked by:-



For Mitra S. K. Private Limited


 Authorized Signatory

Report No. MSKGL/ED/2024-25/4287**Date: 02.10.2024****MONITORING REPORT OF GROUND LEVEL**

Name of the Client		M/s. TATA STEEL LIMITED	
Name of the Mines		JODA WEST IRON & MANGANESE MINES (JWIMM)	
SL. NO.	Monitoring Location	Date Monitoring	Water Level (Below Ground level, in mtrs)
1.	Bichakundi, near Community Toilet Bore well No.-1	16.09.2024	11.2
2.	Bichakundi Near WTP Bore well No.-2	16.09.2024	8.4
3.	Bichakundi near micro activity Centre, Bore well No.3	16.09.2024	10.3
4.	Bichakundi, Vegetable Garden	16.09.2024	10.8

Checked by:- **For Mitra S. K. Private Limited****Authorized Signatory**

Water

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-695024000007114F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/XS3E1H

Date :

16/04/2024

Sample No. :

MSKNB/FD/2024-25/04/WHE31F

Date of receipt of sample:

04/04/2024

Date(s) of performance:

04/04/2024 - 16/04/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	03/04/2024
5. Place of sampling	Pond water Near ST High School Bhuya Roida JWMM
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	Dhambrudhar Das

Report No. : MSKPL/FD/2024-25/XS3E1H

Sample No. : MSKNB/FD/2024-25/04/WHE31F

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
1	Alkalinity as CaCO ₃	mg/l	IS 3025 (Part 23)	39.2
2	Arsenic as As	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
3	Biochemical Oxygen Demand (BOD)	mg/l	IS 3025 (Part 44)	5.8
4	Boron as B	mg/l	IS 3025 (Part 2)	BDL(DL:0.25)
5	Cadmium as Cd	mg/l	IS 3025 (Part 2)	BDL(DL:0.001)
6	Calcium as Ca	mg/l	IS 3025 (Part 40)	12.12
7	Chemical Oxygen Demand (as COD)	mg/l	IS 3025 (Part 58)	32
8	Chloride as Cl	mg/l	IS 3025 (Part 32)	14.70
9	Colour	Hazen	IS 3025 (Part 4)	BDL(DL:1.0)
10	Conductivity	micro S/cm	IS 3025 (Part 14)	150
11	Copper as Cu	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
12	Cyanide as CN	mg/l	IS 3025 (Part 27) Sec1	BDL(DL:0.02)
13	Dissolved Oxygen	mg/l	IS 3025 (Part 38)	5.6
14	Fluoride as F	mg/l	IS 3025 (Part 60)	0.39
15	Hexavalent Chromium (as Cr+6)	mg/l	IS 3025 (Part 52) Sec2	BDL(DL:0.01)
16	Iron as Fe	mg/l	IS 3025 (Part 2)	BDL(DL:0.05)
17	Lead as Pb	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
18	Magnesium as Mg	mg/l	IS 3025 (Part 46)	4.85
19	Manganese as Mn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)

Reviewed By:

Signature

Amitava Sena P. Ganguly

Name

Mr. Amitava Sena, Ms. Palli Ganguly

Designation

Sr. Exe. Chemist, Executive Chemist

Authorized Signatory:

Signature

Name

Lab In charge

Dr. Soumyajit Mahapatra

Address of Laboratory :

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



TC-6950



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ULR: TC-695024000007114F

Report No. : MSKPLFD/2024-25/XS3E1H

Sample No. : MSKNB/FD/2024-25/04/WHE31F

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
20	Mercury as Hg	mg/l	IS 3025 (Part 48)	BDL(DL:0.0002)
21	Nitrate as NO3	mg/l	APHA (24th EDITION) 4500-NO3- B	1.22
22	Odour	None	IS 3025 (Part 5)	AGREEABLE
23	Oil & Grease	mg/l	IS 3025 (Part 39)	BDL(DL:1.4)
24	Phenolic Compounds as C6H5OH	mg/l	IS 3025 (Part 43) Sec1	BDL(DL:0.001)
25	Sulphate as SO4	mg/l	IS 3025 (Part 24) Sec1	6.20
26	Total Dissolved Solids	mg/l	IS 3025 (Part 16)	98
27	Total Hardness as CaCO3	mg/l	IS 3025 (Part 21)	50.5
28	Total Suspended Solids	mg/l	IS 3025 (Part 17)	46
29	Zinc as Zn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
30	pH	None	IS 3025 (Part 11)	6.81 AT 24 DEG C

Opinion : NA

Statement of Conformity NA

— END —

Reviewed By:

Signature: *Abhishek Saha* *P. Ganguly*
Name : Ms. Abhishek Saha, Ms. Priti 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 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 (Solid, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (and) 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. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

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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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West
At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2024-25/XS3E1H_1

Date :

16/04/2024

Sample No. :

MSKNB/FD/2024-25/04/WHE31F_1

Date of receipt of sample:

04/04/2024

Date(s) of performance:

04/04/2024 - 16/04/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	03/04/2024
5. Place of sampling	Pond water Near ST High School Bhuya Roida 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	Dhambrudhar Das

Report No. : MSKPL/FD/2024-25/XS3E1H_1

Sample No. : MSKNB/FD/2024-25/04/WHE31F_1

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
1	Salinity	mg/l	By Calculation	79.08

Opinion : NA

----- END -----

Reviewed By:

Signature : *Abhaya Saha P. Ganguly*
Name : Mr. Abhaya Saha, Mr. Priti Ganguly
Designation : Sr. Exe. Chemist, Executive Chemist

Authorized Signatory:

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

This result is valid only for the sample 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 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



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ULR: TC-69502400007114F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/XS3E1H

Date :

16/04/2024

Sample No. :

MSKNB/FD/2024-25/04/WHE31F

Date of receipt of sample:

04/04/2024

Date(s) of performance:

04/04/2024 - 09/04/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/066, 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	03/04/2024
5. Place of sampling	Pond water Near ST High School Bhuya Roida 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	Dhambudhar Das

Report No. : MSKPL/FD/2024-25/XS3E1H**Sample No. :** MSKNB/FD/2024-25/04/WHE31F

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	7000

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

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: 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

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-695024000007113F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/TG0E1G

Date :

16/04/2024

Sample No. :

MSKNB/FD/2024-25/04/V1633M

Date of receipt of sample:

04/04/2024

Date(s) of performance:

04/04/2024 - 16/04/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	03/04/2024
5. Place of sampling	Sona River Near Mahanadi Guest House (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	Dhambudhar Das

Report No. : MSKPL/FD/2024-25/TG0E1G

Sample No. : MSKNB/FD/2024-25/04/V1633M

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
1	Alkalinity as CaCO ₃	mg/l	IS 3025 (Part 23)	19.6
2	Arsenic as As	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
3	Biochemical Oxygen Demand (BOD)	mg/l	IS 3025 (Part 44)	5.6
4	Boron as B	mg/l	IS 3025 (Part 2)	BDL(DL:0.25)
5	Cadmium as Cd	mg/l	IS 3025 (Part 2)	BDL(DL:0.001)
6	Calcium as Ca	mg/l	IS 3025 (Part 40)	8.06
7	Chemical Oxygen Demand (as COD)	mg/l	IS 3025 (Part 56)	28
8	Chloride as Cl	mg/l	IS 3025 (Part 32)	9.80
9	Colour	Hazen	IS 3025 (Part 4)	BDL(DL:1.0)
10	Conductivity	micro S/cm	IS 3025 (Part 14)	70.0
11	Copper as Cu	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
12	Cyanide as CN	mg/l	IS 3025 (Part 27) Sec1	BDL(DL:0.02)
13	Dissolved Oxygen	mg/l	IS 3025 (Part 38)	5.6
14	Fluoride as F	mg/l	IS 3025 (Part 60)	0.36
15	Hexavalent Chromium (as Cr+6)	mg/l	IS 3025 (Part 52) Sec2	BDL(DL:0.01)
16	Iron as Fe	mg/l	IS 3025 (Part 2)	BDL(DL:0.05)
17	Lead as Pb	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
18	Magnesium as Mg	mg/l	IS 3025 (Part 46)	2.42
19	Manganese as Mn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)

Reviewed By:

Signature

Atsaya Saha P. Ganguly

Name : Ms. Atsaya Saha, Ms. Poo 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, Pagladenga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayantab@mitrask.com



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ULR: TC-695024000007113F

Report No. : MSKPLFD/2024-25/TG0E1G

Sample No. : MSKNB/FD/2024-25/04/V1633M

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
20	Mercury as Hg	mg/l	IS 3025 (Part 48)	BDL(DL:0.0002)
21	Nitrate as NO3	mg/l	APHA (24th EDITION) 4500-NO3- B	1.10
22	Odour	None	IS 3025 (Part 5)	AGREEABLE
23	Oil & Grease	mg/l	IS 3025 (Part 39)	BDL(DL:1.4)
24	Phenolic Compounds as C6H5OH	mg/l	IS 3025 (Part 43) Sec1	BDL(DL:0.001)
25	Sulphate as SO4	mg/l	IS 3025 (Part 24) Sec1	4.56
26	Total Dissolved Solids	mg/l	IS 3025 (Part 16)	50
27	Total Hardness as CaCO3	mg/l	IS 3025 (Part 21)	30.3
28	Total Suspended Solids	mg/l	IS 3025 (Part 17)	31
29	Zinc as Zn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
30	pH	None	IS 3025 (Part 11)	6.85 AT 24 DEG C

Opinion : NA

Statement of Conformity NA

— END —

Reviewed By:

Signature: *Atanya Sam P. Ganguly*
Name: Ms. Atanya Saha, Ms. Palli Ganguly
Designation: Sr. E&C Chemist, Executive Chemist

Authorized Signatory:

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

The results relate only to the items tested.

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The reserved part of sample(s) for chemical analysis (from - 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 (from - 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
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Tel. : +91 7044036120
Email: udayanlab@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

Report No. :

MSKPL/FD/2024-25/TG0E1G_1

Date :

16/04/2024

Sample No. :

MSKNB/FD/2024-25/04/V1633M_1

Date of receipt of sample:

04/04/2024

Date(s) of performance:

04/04/2024 - 16/04/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	03/04/2024
5. Place of sampling	Sona River Near Mahanadi Guest House (JWIMM)
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	Dhambudhar Das

Report No. : MSKPL/FD/2024-25/TG0E1G_1**Sample No. :** MSKNB/FD/2024-25/04/V1633M_1

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
1	Salinity	mg/l	By Calculation	49.57

Opinion : NA

----- END -----

Reviewed By:**Signature****Name** : Ms. Ananya Saha, Ms. Piali Ganguly**Designation** : Sr. Exec. Chemist, Executive Chemist**Authorized Signatory:****Signature** :**Name** : Dr. Soumyadeep Mukhopadhyay**Designation** : Lab in charge

The results relate only to the sample tested.

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The reserved part of sample(s) for chemical analysis (from - 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 (from - 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 7044035120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000007113F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM) Joda West

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

Report No. :

MSKPL/FD/2024-25/TG0E1G

Date :

16/04/2024

Sample No. :

MSKNB/FD/2024-25/04/V1633M

Date of receipt of sample:

04/04/2024

Date(s) of performance:

04/04/2024 - 09/04/2024

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	03/04/2024
5. Place of sampling	Sona River Near Mahanadi Guest House (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	Dhambrudhar Das

Report No. : MSKPL/FD/2024-25/TG0E1G

Sample No. : MSKNB/FD/2024-25/04/V1633M

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	22000

Opinion : NA

Statement of Conformity NA

— END —

Reviewed By:

Signature :

Name : Ms. Malinika Chakraborty

Designation : Executive Microbiologist

Authorized Signatory:

Signature :

Name : Ms. Malinika Chakraborty

Designation : Executive Microbiologist

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, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline 8 (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: Strachey Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel.: 91 33 40143000 / 22660007 Fax : 91 33 22660008
Email : info@mitrask.com Website : www.mitrask.com

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-6950



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ULR: TC-695024000007091F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

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

Report No. :

MSKPL/FD/2024-25/NDBDFJ

Date :

15/04/2024

Sample No. :

MSKNB/FD/2024-25/04/Z93149

Date of receipt of sample:

02/04/2024

Date(s) of performance:

02/04/2024 - 15/04/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	01/04/2024
5. Place of sampling	Vegetable Garden Pond (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	Pranab Kr. Setti

Report No. : MSKPL/FD/2024-25/NDBDFJ

Sample No. : MSKNB/FD/2024-25/04/Z93149

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Result
1	Alkalinity as CaCO ₃	mg/l	IS 3025 (Part 23)	29.4
2	Arsenic as As	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
3	Biochemical Oxygen Demand (BOD)	mg/l	IS 3025 (Part 44)	26.5
4	Boron as B	mg/l	IS 3025 (Part 2)	BDL(DL:0.25)
5	Cadmium as Cd	mg/l	IS 3025 (Part 2)	BDL(DL:0.001)
6	Calcium as Ca	mg/l	IS 3025 (Part 40)	10.20
7	Chemical Oxygen Demand (as COD)	mg/l	IS 3025 (Part 58)	128
8	Chloride as Cl	mg/l	IS 3025 (Part 32)	9.80
9	Colour	Hazen	IS 3025 (Part 4)	3.0
10	Conductivity	micro S/cm	IS 3025 (Part 14)	110
11	Copper as Cu	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
12	Cyanide as CN	mg/l	IS 3025 (Part 27) Sec1	BDL(DL:0.02)
13	Dissolved Oxygen	mg/l	IS 3025 (Part 38)	5.8
14	Fluoride as F	mg/l	IS 3025 (Part 60)	0.36
15	Hexavalent Chromium (as Cr+6)	mg/l	IS 3025 (Part 52) Sec2	BDL(DL:0.01)
16	Iron as Fe	mg/l	IS 3025 (Part 2)	5.53
17	Lead as Pb	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
18	Magnesium as Mg	mg/l	IS 3025 (Part 46)	4.90
19	Manganese as Mn	mg/l	IS 3025 (Part 2)	0.44

Reviewed By:

Signature

Name : Mr. Arunee 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 7044038120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000007091F

Report No. : MSKPL/FD/2024-25/ND8DFJ

Sample No. : MSKNB/FD/2024-25/04/Z93149

RESULT


Chemical				
Sl No.	Parameter	UOM	Method	Result
20	Mercury as Hg	mg/l	IS 3025 (Part 48)	BDL(DL-0.0002)
21	Nitrate as NO3	mg/l	APHA (24th EDITION) 4500-NO3- B	1.02
22	Odour	None	IS 3025 (Part 5)	AGREEABLE
23	Oil & Grease	mg/l	IS 3025 (Part 39)	BDL(DL-1.4)
24	Phenolic Compounds as C6H5OH	mg/l	IS 3025 (Part 43) Sec1	BDL(DL-0.001)
25	Sulphate as SO4	mg/l	IS 3025 (Part 24) Sec1	8.20
26	Total Dissolved Solids	mg/l	IS 3025 (Part 16)	72
27	Total Hardness as CaCO3	mg/l	IS 3025 (Part 21)	45.90
28	Total Suspended Solids	mg/l	IS 3025 (Part 17)	52.0
29	Zinc as Zn	mg/l	IS 3025 (Part 2)	BDL(DL-0.02)
30	pH	None	IS 3025 (Part 11)	6.5 AT 24 DEG C

Opinion : NA

Statement of Conformity NA

— END —

Reviewed By:

Signature : 

Name : Mr. Anayee Saha, Ms. Priya Ganguly

Designation : Sr. Exe. Chemist, 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 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 & (AO) 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 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.

Address of Laboratory :

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

Report No. :

MSKPL/FD/2024-25/NDBDFJ_1

Date :

15/04/2024

Sample No. :

MSKNB/FD/2024-25/04/Z93149_1

Date of receipt of sample:

02/04/2024

Date(s) of performance:

02/04/2024 - 15/04/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	01/04/2024
5. Place of sampling	Vegetable Garden Pond (JWMM)
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	Pranab Kr. Setti

Report No. : MSKPL/FD/2024-25/NDBDFJ_1**Sample No. :** MSKNB/FD/2024-25/04/Z93149_1

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
1	Salinity	mg/l	By Calculation	57.99


Opinion : NA

----- END -----

Reviewed By:

Signature: 
Name: Ms. Ananya Saha, Ms. Piali Ganguly
Designation: Sr. Exec. Chemist, Executive Chemist

Authorized Signatory:

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

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

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The retained part of sample(s) for chemical analysis (Food - 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 (Non - 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, Bacteriological Water, Bacteriological 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-69502400007091F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/NDBDFJ

Date :

15/04/2024

Sample No. :

MSKNB/FD/2024-25/04/Z93149

Date of receipt of sample:

02/04/2024

Date(s) of performance:

02/04/2024 - 08/04/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/066, 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	01/04/2024
5. Place of sampling	Vegetable Garden Pond (JWIMM)
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 Kr. Setti

Report No. : MSKPL/FD/2024-25/NDBDFJ

Sample No. : MSKNB/FD/2024-25/04/Z93149

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	33

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: Service 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-695024000007090F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West
At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2024-25/M2ADF6

Date :

15/04/2024

Sample No. :

MSKNB/FD/2024-25/04/WP911J

Date of receipt of sample:

02/04/2024

Date(s) of performance:

02/04/2024 - 15/04/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	01/04/2024
5. Place of sampling	Pichlaghat Down Stream (JWMM)
6. Environmental conditions during sampling & Transport	(2 -5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS:17514(P-23) 2021
8. Identification of the personnel performing sampling by MSK	Pranab Kr. Setti

Report No. : MSKPL/FD/2024-25/M2ADF6

Sample No. : MSKNB/FD/2024-25/04/WP911J

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
1	Alkalinity as CaCO ₃	mg/l	IS 3025 (Part 23)	14.7
2	Arsenic as As	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
3	Biochemical Oxygen Demand (BOD)	mg/l	IS 3025 (Part 44)	BDL(DL:2.0)
4	Boron as B	mg/l	IS 3025 (Part 2)	BDL(DL:0.25)
5	Cadmium as Cd	mg/l	IS 3025 (Part 2)	BDL(DL:0.001)
6	Calcium as Ca	mg/l	IS 3025 (Part 40)	6.12
7	Chemical Oxygen Demand (as COD)	mg/l	IS 3025 (Part 58)	16.0
8	Chloride as Cl	mg/l	IS 3025 (Part 32)	4.90
9	Colour	Hazen	IS 3025 (Part 4)	BDL(DL:1.0)
10	Conductivity	micro S/cm	IS 3025 (Part 14)	62
11	Copper as Cu	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
12	Cyanide as CN	mg/l	IS 3025 (Part 27) Sec1	BDL(DL:0.02)
13	Dissolved Oxygen	mg/l	IS 3025 (Part 38)	6.4
14	Fluoride as F	mg/l	IS 3025 (Part 60)	0.28
15	Hexavalent Chromium (as Cr+6)	mg/l	IS 3025 (Part 52) Sec2	BDL(DL:0.01)
16	Iron as Fe	mg/l	IS 3025 (Part 2)	BDL(DL:0.05)
17	Lead as Pb	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
18	Magnesium as Mg	mg/l	IS 3025 (Part 48)	1.22
19	Manganese as Mn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)

Reviewed By:

Signature

Name : Mr. Anupam Saha, Sr. Asst. Chemist

Designation : Sr. Asst. Chemist, Executive Chemist

Authorized Signatory:

Signature

Name

Designation : Lab In charge

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-695024000007090F

Report No. : MSKPL/FD/2024-25/M2ADF6

Sample No. : MSKNB/FD/2024-25/04/WP911J

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
20	Mercury as Hg	mg/l	IS 3025 (Part 48)	BDL(DL:0.0002)
21	Nitrate as NO3	mg/l	APHA (24th EDITION) 4500-NO3- B	BDL(DL:0.4)
22	Odour	None	IS 3025 (Part 5)	AGREEABLE
23	Oil & Grease	mg/l	IS 3025 (Part 39)	BDL(DL:1.4)
24	Phenolic Compounds as C6H5OH	mg/l	IS 3025 (Part 43) Sec1	BDL(DL:0.001)
25	Sulphate as SO4	mg/l	IS 3025 (Part 24) Sec1	4.60
26	Total Dissolved Solids	mg/l	IS 3025 (Part 16)	40
27	Total Hardness as CaCO3	mg/l	IS 3025 (Part 21)	20.40
28	Total Suspended Solids	mg/l	IS 3025 (Part 17)	BDL(DL:2.5)
29	Zinc as Zn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
30	pH	None	IS 3025 (Part 11)	7.2 AT 21 DEG C

Opinion : NA

Statement of Conformity NA

— END —

Reviewed By:

Signature: *Abayee Saha P. Ganguly*
Name: Ms. Abayee Saha, Ms. Palli Ganguly
Designation: Sr. Exe. Chemist, Executive Chemist

Authorized Signatory:

Signature: *Dr. Soumyadeep Mukherjee*
Name: Dr. Soumyadeep 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 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 & (W) 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.

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Email: udayanlab@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

Report No. :

MSKPL/FD/2024-25/M2ADF6_1

Date :

15/04/2024

Sample No. :

MSKNB/FD/2024-25/04/WP911J_1

Date of receipt of sample:

02/04/2024

Date(s) of performance:

02/04/2024 - 15/04/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	01/04/2024
5. Place of sampling	Pichlaghat Down Stream (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	Pranab Kr. Setti

Report No. : MSKPL/FD/2024-25/M2ADF6_1

Sample No. : MSKNB/FD/2024-25/04/WP911J_1

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
1	Salinity	mg/l	By Calculation	32.69

Opinion : NA

----- END -----

Reviewed By:

Signature : 

Name : Mr. Abhijit Saha, Mr. Palli Ganguly

Designation : Sr. Ess. Chemist, Executive Chemist

Authorized Signatory:

Signature : 

Name : Dr. Sourendra Kumar

Designation : Lab in charge

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The retained part of sample(s) for chemical analysis (Solid & Liquid Waste) shall be retained for 15 days as per CPCB guidelines & (A/Q) 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. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

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ULR: TC-69502400007090F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/M2ADF6

Date :

15/04/2024

Sample No. :

MSKNB/FD/2024-25/04/WP911J

Date of receipt of sample:

02/04/2024

Date(s) of performance:

02/04/2024 - 08/04/2024

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	01/04/2024
5. Place of sampling	Pichlaghat Down Stream (JWMM)
6. Environmental conditions during sampling & Transport	(2 -5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS:17814(P-25) 2022
8. Identification of the personnel performing sampling by MSK	Pranab Kr. Setti

Report No. : MSKPL/FD/2024-25/M2ADF6

Sample No. : MSKNB/FD/2024-25/04/WP911J

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	2800

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

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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 CPOB 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, Soiled Water, Soiled 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 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-695024000007089F

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

Tata Steel Ltd. (MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/R7EDES

Date :

15/04/2024

Sample No. :

MSKNB/FD/2024-25/04/RCB15E

Date of receipt of sample:

02/04/2024

Date(s) of performance:

02/04/2024 - 15/04/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	01/04/2024
5. Place of sampling	Pichlaghat Up Stream (JWIMM)
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	Pranab Kr. Setti


Report No. : MSKPL/FD/2024-25/R7EDES

Sample No. : MSKNB/FD/2024-25/04/RCB15E


RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
1	Alkalinity as CaCO ₃	mg/l	IS 3025 (Part 23)	19.6
2	Arsenic as As	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
3	Biochemical Oxygen Demand (BOD)	mg/l	IS 3025 (Part 44)	BDL(DL:2.0)
4	Boron as B	mg/l	IS 3025 (Part 2)	BDL(DL:0.25)
5	Cadmium as Cd	mg/l	IS 3025 (Part 2)	BDL(DL:0.001)
6	Calcium as Ca	mg/l	IS 3025 (Part 40)	8.16
7	Chemical Oxygen Demand (as COD)	mg/l	IS 3025 (Part 58)	12.0
8	Chloride as Cl	mg/l	IS 3025 (Part 32)	5.88
9	Colour	Hazen	IS 3025 (Part 4)	BDL(DL:1.0)
10	Conductivity	micro S/cm	IS 3025 (Part 14)	80
11	Copper as Cu	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
12	Cyanide as CN	mg/l	IS 3025 (Part 27) Sec1	BDL(DL:0.02)
13	Dissolved Oxygen	mg/l	IS 3025 (Part 38)	6.1
14	Fluoride as F	mg/l	IS 3025 (Part 60)	BDL(DL:0.2)
15	Hexavalent Chromium (as Cr+6)	mg/l	IS 3025 (Part 52) Sec2	BDL(DL:0.01)
16	Iron as Fe	mg/l	IS 3025 (Part 2)	BDL(DL:0.05)
17	Lead as Pb	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
18	Magnesium as Mg	mg/l	IS 3025 (Part 48)	2.45
19	Manganese as Mn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)

Reviewed By:

Signature : 
 Name : Mr. Arupko Soha, Ms. Poo Ganguly
 Designation : Sr. Exo. Chemist, Executive Chemist

Authorized Signatory:

Signature : 
 Name : Dr. Soumitra
 Designation : Lab in charge

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-695024000007089F

Report No. : MSKPL/FD/2024-25/R7EDES

Sample No. : MSKNB/FD/2024-25/04/RCB15E

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
20	Mercury as Hg	mg/l	IS 3025 (Part 48)	BDL(DL:0.0002)
21	Nitrate as NO3	mg/l	APHA (24th EDITION) 4500-NO3- B	0.74
22	Odour	None	IS 3025 (Part 5)	AGREEABLE
23	Oil & Grease	mg/l	IS 3025 (Part 39)	BDL(DL:1.4)
24	Phenolic Compounds as C6H5OH	mg/l	IS 3025 (Part 43) Sec1	BDL(DL:0.001)
25	Sulphate as SO4	mg/l	IS 3025 (Part 24) Sec1	5.58
26	Total Dissolved Solids	mg/l	IS 3025 (Part 16)	60
27	Total Hardness as CaCO3	mg/l	IS 3025 (Part 21)	30.60
28	Total Suspended Solids	mg/l	IS 3025 (Part 17)	BDL(DL:2.5)
29	Zinc as Zn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
30	pH	None	IS 3025 (Part 11)	6.7 AT 23 DEG C

Opinion : NA

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name

Designation

Abhaya Saha P. Ganguly
- Mr. Abhaya Saha, Mr. Pail Ganguly
- Sr. Exo. Chemist, Executive Chemist

Authorized Signatory:

Signature

Name

Designation

Dr. Soumyadeep Mukherjee
- Dr. Soumyadeep Mukherjee
- Lab In charge

The results relate only to the items tested.

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The reserved part of sample(s) for chemical analysis (gas - perishable sample(s) POCO, Wate) 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 (gas - 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 :

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3, Pagladanga Road, Kolkata 700015
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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/R7EDES_1

Date :

15/04/2024

Sample No. :

MSKNB/FD/2024-25/04/RCB15E_1

Date of receipt of sample:

02/04/2024

Date(s) of performance:

02/04/2024 - 15/04/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	01/04/2024
5. Place of sampling	Pichlaghat Up Stream (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	Pranab Kr. Setti

Report No. : MSKPL/FD/2024-25/R7EDES_1**Sample No. :** MSKNB/FD/2024-25/04/RCB15E_1

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
1	Salinity	mg/l	By Calculation	42.18


Opinion : NA

— END —

Reviewed By:

Signature: 
Name: Ms. Ananya Saha, Ms. Palli Ganguly
Designation: Sr. Exe. Chemist, Executive Chemist

Authorized Signatory:

Signature: 
Name: Dr. Subinjoy Mukherjee
Designation: Lab In charge

The results relate only to the sample(s) tested.
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The retained part of sample(s) for chemical analysis (Solid - 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 (Solid, Solid & Liquid Waste) shall be retained for 15 days as per CPOB guideline A (M) 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, Sewage 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,
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West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000007089F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/R7EDES

Date :

15/04/2024

Sample No. :

MSKNB/FD/2024-25/04/RCB15E

Date of receipt of sample:

02/04/2024

Date(s) of performance:

02/04/2024 - 08/04/2024

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	01/04/2024
5. Place of sampling	Pichlaghat Up Stream (JWMM)
6. Environmental conditions during sampling & Transport	(2-5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS:17814(P-25) 2022
8. Identification of the personnel performing sampling by MSK	Pranab Kr. Setti

Report No. : MSKPL/FD/2024-25/R7EDES

Sample No. : MSKNB/FD/2024-25/04/RCB15E

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	170

Opinion : NA

Statement of Conformity NA

— END —

Reviewed By:

Signature :

Name : Ms. Matreya Chakraborty

Designation : Executive Microbiologist

Authorized Signatory:

Signature :

Name : Ms. Matreya Chakraborty

Designation : Executive Microbiologist

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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, Boiled 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 / 22950007 Fax : 91 33 22950008
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-69502400007088F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd (MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/YVKDDR

Date :

15/04/2024

Sample No. :

MSKNB/FD/2024-25/04/M6412D

Date of receipt of sample:

02/04/2024

Date(s) of performance:

02/04/2024 - 15/04/2024

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	01/04/2024
5. Place of sampling	Keth-hutting after H-quarry Down Stream (Sona River), (JWIMM)
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	Pranab Kr. Setti


Report No. : MSKPL/FD/2024-25/YVKDDR

Sample No. : MSKNB/FD/2024-25/04/M6412D


RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
1	Alkalinity as CaCO ₃	mg/l	IS 3025 (Part 23)	29.4
2	Arsenic as As	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
3	Biochemical Oxygen Demand (BOD)	mg/l	IS 3025 (Part 44)	3.6
4	Boron as B	mg/l	IS 3025 (Part 2)	BDL(DL:0.25)
5	Cadmium as Cd	mg/l	IS 3025 (Part 2)	BDL(DL:0.001)
6	Calcium as Ca	mg/l	IS 3025 (Part 40)	8.16
7	Chemical Oxygen Demand (as COD)	mg/l	IS 3025 (Part 58)	16.0
8	Chloride as Cl	mg/l	IS 3025 (Part 32)	7.84
9	Colour	Hazen	IS 3025 (Part 4)	BDL(DL:1.0)
10	Conductivity	micro S/cm	IS 3025 (Part 14)	90
11	Copper as Cu	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
12	Cyanide as CN	mg/l	IS 3025 (Part 27) Sec1	BDL(DL:0.02)
13	Dissolved Oxygen	mg/l	IS 3025 (Part 38)	6.1
14	Fluoride as F	mg/l	IS 3025 (Part 60)	0.28
15	Hexavalent Chromium (as Cr+6)	mg/l	IS 3025 (Part 52) Sec2	BDL(DL:0.01)
16	Iron as Fe	mg/l	IS 3025 (Part 2)	BDL(DL:0.05)
17	Lead as Pb	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
18	Magnesium as Mg	mg/l	IS 3025 (Part 46)	3.67
19	Manganese as Mn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)

Reviewed By:

Signature : 
Name : Ms. Anupama Saha, Ms. Pooi Ghosh
Designation : Sr. Exe. Chemist, Executive Chemist

Authorized Signatory:

Signature : 
Name : Dr. Soumyajit 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-8950



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ULR: TC-895024000007086F

Report No. : MSKPL/FD/2024-25/YVKDDR

Sample No. : MSKNB/FD/2024-25/04/M6412D

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
20	Mercury as Hg	mg/l	IS 3025 (Part 48)	BDL(DL:0.0002)
21	Nitrate as NO3	mg/l	APHA (24th EDITION) 4500-NO3- B	0.78
22	Odour	None	IS 3025 (Part 5)	AGREEABLE
23	Oil & Grease	mg/l	IS 3025 (Part 39)	BDL(DL:1.4)
24	Phenolic Compounds as C6H5OH	mg/l	IS 3025 (Part 43) Sec1	BDL(DL:0.001)
25	Sulphate as SO4	mg/l	IS 3025 (Part 24) Sec1	6.50
26	Total Dissolved Solids	mg/l	IS 3025 (Part 16)	62
27	Total Hardness as CaCO3	mg/l	IS 3025 (Part 21)	35.70
28	Total Suspended Solids	mg/l	IS 3025 (Part 17)	4.2
29	Zinc as Zn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
30	pH	None	IS 3025 (Part 11)	7.1 AT 22 DEG C

Opinion : NA

Statement of Conformity NA

— END —

Reviewed By:

Signature

Name

Designation

Arup Saha P. Ganguly
: Mr. Arup Saha, Mr. Pali Ganguly
: Sr. Exe. Chemist, Executive Chemist

Authorized Signatory:

Signature

Name

Designation

Dr. Sourajdeep Mukherjee
: Dr. Sourajdeep 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 (Sol, 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 :

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

Report No. :

MSKPL/FD/2024-25/YVKDDR_1

Date :

15/04/2024

Sample No. :

MSKNB/FD/2024-25/04/M6412D_1

Date of receipt of sample:

02/04/2024

Date(s) of performance:

02/04/2024 - 15/04/2024

Reference No. & Date :

3000158017/056, Date - 16/09/2023

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	01/04/2024
5. Place of sampling	Keih-hutting after H-quarry Down Stream (Sona River), (J/MMM)
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	Pranab Kr. Setti

Report No. : MSKPL/FD/2024-25/YVKDDR_1**Sample No. :** MSKNB/FD/2024-25/04/M6412D_1

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
1	Salinity	mg/l	By Calculation	47.45


Opinion : NA

----- END -----

Reviewed By:

Signature: 
Name: Ms. Ananya Saha, Ms. Priyanka
Designation: Sr. Exec. Chemist, 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 retained part of sample(s) for chemical analysis (Dist. - 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 (Sol. Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (W) 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, Spoiled Water, Spoiled 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-695024000007088F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

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

Report No. :

MSKPL/FD/2024-25/YVKDDR

Date :

15/04/2024

Sample No. :

MSKNB/FD/2024-25/04/M6412D

Date of receipt of sample:

02/04/2024

Date(s) of performance:

02/04/2024 - 08/04/2024

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	01/04/2024
5. Place of sampling	Keth-hutting after H-quarry Down Stream (Sona River), (JWIMM)
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 Kr. Setti

Report No. : MSKPL/FD/2024-25/YVKDDR

Sample No. : MSKNB/FD/2024-25/04/M6412D

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	2200

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 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.
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: Srivasti Centre (5th Floor), 748, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel : 91 33 40140000 / 22650007 Fax : 91 33 22650008
Email : info@mitrask.com Website : www.mitrask.com

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-6950



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ULR: TC-695024000007087F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd (MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/N11DDN

Date :

15/04/2024

Sample No. :

MSKNB/FD/2024-25/04/GAW13G

Date of receipt of sample:

02/04/2024

Date(s) of performance:

02/04/2024 - 15/04/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	01/04/2024
5. Place of sampling	Keth-hutting before H-quarry Up Stream (Sona River), (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	Pranab Kr. Setti


Report No. : MSKPL/FD/2024-25/N11DDN

Sample No. : MSKNB/FD/2024-25/04/GAW13G

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
1	Alkalinity as CaCO ₃	mg/l	IS 3025 (Part 23)	15.68
2	Arsenic as As	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
3	Biochemical Oxygen Demand (BOD)	mg/l	IS 3025 (Part 44)	5.6
4	Boron as B	mg/l	IS 3025 (Part 2)	BDL(DL:0.25)
5	Cadmium as Cd	mg/l	IS 3025 (Part 2)	BDL(DL:0.001)
6	Calcium as Ca	mg/l	IS 3025 (Part 40)	4.90
7	Chemical Oxygen Demand (as COD)	mg/l	IS 3025 (Part 58)	24.0
8	Chloride as Cl	mg/l	IS 3025 (Part 32)	7.84
9	Colour	Hazen	IS 3025 (Part 4)	BDL(DL:1.0)
10	Conductivity	micro S/cm	IS 3025 (Part 14)	74
11	Copper as Cu	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
12	Cyanide as CN	mg/l	IS 3025 (Part 27) Sec1	BDL(DL:0.02)
13	Dissolved Oxygen	mg/l	IS 3025 (Part 38)	5.8
14	Fluoride as F	mg/l	IS 3025 (Part 60)	0.32
15	Hexavalent Chromium (as Cr+6)	mg/l	IS 3025 (Part 52) Sec2	BDL(DL:0.01)
16	Iron as Fe	mg/l	IS 3025 (Part 2)	BDL(DL:0.05)
17	Lead as Pb	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
18	Magnesium as Mg	mg/l	IS 3025 (Part 46)	1.96
19	Manganese as Mn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)

Reviewed By:

Signature: 
Name: Mr. Anupam Saha, Mr. Piali Ganguly
Designation: Sr. Exe. Chemist, Executive Chemist

Authorized Signatory:

Signature: 
Name: Dr. Souvik Kumar Mukherjee
Designation: Lab In charge

Address of Laboratory :

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



TC-6950



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ULR: TC-695024000007087F

Report No. : MSKPL/FD/2024-25/N1100N

Sample No. : MSKNB/FD/2024-25/04/GAW13G

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
20	Mercury as Hg	mg/l	IS 3025 (Part 48)	BDL(DL:0.0002)
21	Nitrate as NO3	mg/l	APHA (24th EDITION) 4500-NO3- B	0.86
22	Odour	None	IS 3025 (Part 5)	AGREEABLE
23	Oil & Grease	mg/l	IS 3025 (Part 39)	BDL(DL:1.4)
24	Phenolic Compounds as C6H5OH	mg/l	IS 3025 (Part 43) Sec1	BDL(DL:0.001)
25	Sulphate as SO4	mg/l	IS 3025 (Part 24) Sec1	4.60
26	Total Dissolved Solids	mg/l	IS 3025 (Part 16)	48
27	Total Hardness as CaCO3	mg/l	IS 3025 (Part 21)	20.40
28	Total Suspended Solids	mg/l	IS 3025 (Part 17)	8.60
29	Zinc as Zn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
30	pH	None	IS 3025 (Part 11)	6.8 AT 23 DEG C

Opinion : NA

Statement of Conformity NA

----- END -----

Reviewed By:

Signature : *Arupree Sena P. Ganguly*
Name : Ms. Arupree Sena, Ms. Priya Ganguly
Designation : Sr. Ess. Chemist, Executive Chemist

Authorized Signatory:

Signature : *Dr. Spandip Mukhopadhyay*
Name : Dr. Spandip 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 3 days from the date of issue of the Test Report.

The reserved part of sample(s) for chemical 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 3 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. Perishable sample(s) shall be retained 3 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



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/N11DDN_1

Date :

15/04/2024

Sample No. :

MSKNB/FD/2024-25/04/GAW13G_1

Date of receipt of sample:

02/04/2024

Date(s) of performance:

02/04/2024 - 15/04/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	01/04/2024
5. Place of sampling	Keth-hutting before H-quarry Up Stream (Sona River), (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	Pranab Kr. Setai

Report No. : MSKPL/FD/2024-25/N11DDN_1

Sample No. : MSKNB/FD/2024-25/04/GAW13G_1

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
1	Salinity	mg/l	By Calculation	38.71

Opinion : NA

----- END -----

Reviewed By:

Signature:

Name : Mr. Anayee Saha, Ms. Palli Ganguly

Designation : Sr. Ess. Chemist, Executive Chemist

Authorized Signatory:

Signature :

Name :

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 (Solid, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (or) 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. 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
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Email: udayanlab@mitrask.com



TC-8950



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ULR: TC-695024000007067F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

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

Report No. :

MSKPL/FD/2024-25/N11DDN

Date :

15/04/2024

Sample No. :

MSKNB/FD/2024-25/04/GAW13G

Date of receipt of sample:

02/04/2024

Date(s) of performance:

02/04/2024 - 08/04/2024

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	01/04/2024
5. Place of sampling	Keth-hutting before H-quarry Up Stream (Sona River), (JWMM)
6. Environmental conditions during sampling & Transport	(2 -5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS: 17514(P-25) 2022
8. Identification of the personnel performing sampling by MSK	Pranab Kr. Setti

Report No. : MSKPL/FD/2024-25/N11DDN

Sample No. : MSKNB/FD/2024-25/04/GAW13G

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	7000

Opinion : NA

Statement of Conformity NA

— END —

Reviewed By:

Signature :

Name : Ms. Malinnee Chakraborty

Designation : Executive Microbiologist

Authorized Signatory

Signature :

Name : Ms. Malinnee 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 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: Shreeji Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700018, 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



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ULR: TC-695024000008381F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM), Joda West

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

Report No. :

MSKPL/FD/2024-25/QF2053

Date :

13/05/2024

Sample No. :

MSKNB/FD/2024-25/04/BNMAC2

Date of receipt of sample:

17/04/2024

Date(s) of performance:

17/04/2024 - 12/05/2024

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	16/04/2024
5. Place of sampling	kandara Village baitarani river. (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	Pranab Sethi, Dambarudhar Das

Report No. : MSKPL/FD/2024-25/QF2053

Sample No. : MSKNB/FD/2024-25/04/BNMAC2

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
1	Alkalinity as CaCO3	mg/l	IS 3025 (Part 23)	59.4
2	Arsenic as As	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
3	Biochemical Oxygen Demand (BOD)	mg/l	IS 3025 (Part 44)	BDL(DL:2.0)
4	Boron as B	mg/l	IS 3025 (Part 2)	BDL(DL:0.25)
5	Cadmium as Cd	mg/l	IS 3025 (Part 2)	BDL(DL:0.001)
6	Calcium as Ca	mg/l	IS 3025 (Part 40)	20.20
7	Chemical Oxygen Demand (as COD)	mg/l	IS 3025 (Part 58)	16.0
8	Chloride as Cl	mg/l	IS 3025 (Part 32)	7.35
9	Colour	Hazen	IS 3025 (Part 4)	BDL(DL:1.0)
10	Conductivity	micro S/cm	IS 3025 (Part 14)	152
11	Copper as Cu	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
12	Cyanide as CN	mg/l	IS 3025 (Part 27) Sec1	BDL(DL:0.02)
13	Dissolved Oxygen	mg/l	IS 3025 (Part 38)	6.1
14	Fluoride as F	mg/l	IS 3025 (Part 60)	0.32
15	Hexavalent Chromium (as Cr+6)	mg/l	IS 3025 (Part 52) Sec2	BDL(DL:0.01)
16	Iron as Fe	mg/l	IS 3025 (Part 2)	BDL(DL:0.05)
17	Lead as Pb	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
18	Magnesium as Mg	mg/l	IS 3025 (Part 48)	6.06
19	Manganese as Mn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)

Reviewed By:

Signature

Name

: Mr. Abhishek Saha, Ms. Piali Ganguly

Designation

: Sr. Exe. Chemist, Executive Chemist

Authorized Signatory:

Signature

Name

: Dr. Soumyadeep Mukherjee

Designation

: Lab in charge

Head Office:

Shree Centre (8th 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 Laboratory :

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



TC-6950



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ULR: TC-695024000008381F

Report No. : MSKPL/FD/2024-25/QF2053

Sample No. : MSKNB/FD/2024-25/04/BNMAC2

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
20	Mercury as Hg	mg/l	IS 3025 (Part 46)	BDL(DL:0.0002)
21	Nitrate as NO3	mg/l	APHA (24th EDITION) 4500-NO3- B	1.85
22	Odour	None	IS 3025 (Part 5)	AGREEABLE
23	Oil & Grease	mg/l	IS 3025 (Part 39)	BDL(DL:1.4)
24	Phenolic Compounds as C6H5OH	mg/l	IS 3025 (Part 43) Sec1	BDL(DL:0.001)
25	Sulphate as SO4	mg/l	IS 3025 (Part 24) Sec1	10.8
26	Total Dissolved Solids	mg/l	IS 3025 (Part 16)	96
27	Total Hardness as CaCO3	mg/l	IS 3025 (Part 21)	75.75
28	Total Suspended Solids	mg/l	IS 3025 (Part 17)	20.1
29	Zinc as Zn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
30	pH	None	IS 3025 (Part 11)	8.9 AT 26 DEG C

Opinion : NA

Statement of Conformity NA

----- END -----

Reviewed By:

Signature : *Abayee Sena P. Ganguly*

Name : Ms. Abayee Sena, Ms. Piali Ganguly

Designation : Sr. Exe. Chemist, Executive Chemist

Authorized Signatory:

Signature : *Dr. Somnathrup Mukhopadhyay*

Name : Dr. Somnathrup 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 (then - 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 (A) 1 month from the date of issue of the Test Report.

The reserved part of sample(s) for Microbiological analysis (then - 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 :

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3, Pagladanga Road, Kolkata 700015
West Bengal
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Email: udeyanlab@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

Report No. :

MSKPL/FD/2024-25/QF2053_1

Date :

13/05/2024

Sample No. :

MSKNB/FD/2024-25/04/BNMAC2_1

Date of receipt of sample:

17/04/2024

Date(s) of performance:

17/04/2024 - 12/05/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	16/04/2024
5. Place of sampling	kandara Village baitarani river. (JWIMM)
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	Pranab Sethi, Dambarudhar Das

Report No. : MSKPL/FD/2024-25/QF2053_1**Sample No. :** MSKNB/FD/2024-25/04/BNMAC2_1

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
1	Salinity	mg/l	By Calculation	50.61


Opinion : NA

----- END -----

Reviewed By:

Signature : 
Name : Mr. Anvesh Saha, Ms. Palli Ganguly
Designation : Sr. Exe. Chemist, Executive Chemist

Authorized Signatory:

Signature : 
Name : Dr. Srimyashree Mukherjee
Designation : 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 (Solid, Semi Solid & Liquid) shall be retained for 15 days as per CPCB guideline & (No) 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, Surface Water, Treated 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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West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000008381F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM) Joda West

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

Report No. :

MSKPL/FD/2024-25/QF2053

Date :

13/05/2024

Sample No. :

MSKNB/FD/2024-25/04/BNMAC2

Date of receipt of sample:

17/04/2024

Date(s) of performance:

17/04/2024 - 22/04/2024

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	16/04/2024
5. Place of sampling	Kandara Village Baitarani river. (JWMM)
6. Environmental conditions during sampling & Transport	(2 -5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS:17514(P-25) 2022
8. Identification of the personnel performing sampling by MSK	Pranab Sethi, Dambarudhar Das

Report No. : MSKPL/FD/2024-25/QF2053

Sample No. : MSKNB/FD/2024-25/04/BNMAC2

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	70

Opinion : NA

Statement of Conformity NA

— END —

Reviewed By:

Signature :

Name : Ms. Maheswari Chelambori

Designation : Executive Microbiologist

Authorized Signatory:

Signature :

Name : Mr. Sukanta Palai

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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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-695024000008382F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/1B206Q

Date :

13/05/2024

Sample No. :

MSKNB/FD/2024-25/04/C8XABR

Date of receipt of sample:

17/04/2024

Date(s) of performance:

17/04/2024 - 12/05/2024

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	16/04/2024
5. Place of sampling	sona river before confluence with baitarani river,(Kandara Village) (JW/MM)
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	Pranab Sethi, Dambarudhar Das


Report No. : MSKPL/FD/2024-25/1B206Q

Sample No. : MSKNB/FD/2024-25/04/C8XABR

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
1	Alkalinity as CaCO ₃	mg/l	IS 3025 (Part 23)	44.55
2	Arsenic as As	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
3	Biochemical Oxygen Demand (BOD)	mg/l	IS 3025 (Part 44)	BDL(DL:2.0)
4	Boron as B	mg/l	IS 3025 (Part 2)	BDL(DL:0.25)
5	Cadmium as Cd	mg/l	IS 3025 (Part 2)	BDL(DL:0.001)
6	Calcium as Ca	mg/l	IS 3025 (Part 40)	14.14
7	Chemical Oxygen Demand (as COD)	mg/l	IS 3025 (Part 58)	16.0
8	Chloride as Cl	mg/l	IS 3025 (Part 32)	9.80
9	Colour	Hazen	IS 3025 (Part 4)	BDL(DL:1.0)
10	Conductivity	micro S/cm	IS 3025 (Part 14)	120
11	Copper as Cu	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
12	Cyanide as CN	mg/l	IS 3025 (Part 27) Sec1	BDL(DL:0.02)
13	Dissolved Oxygen	mg/l	IS 3025 (Part 38)	6.4
14	Fluoride as F	mg/l	IS 3025 (Part 60)	0.25
15	Hexavalent Chromium (as Cr+6)	mg/l	IS 3025 (Part 52) Sec2	BDL(DL:0.01)
16	Iron as Fe	mg/l	IS 3025 (Part 2)	BDL(DL:0.05)
17	Lead as Pb	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
18	Magnesium as Mg	mg/l	IS 3025 (Part 46)	4.85
19	Manganese as Mn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)

Reviewed By:

Signature : 
Name : Mr. Aranya Saha, Ms. P. Ganguly
Designation : Sr. Exec. Chemist, Executive Chemist

Authorized Signatory:

Signature : 
Name : Dr. Sushanta Kumar Choudhury
Designation : Lab in charge

Address of Laboratory :

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3, Pagladanga Road, Kolkata 700015
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Email: udayanlab@mitrask.com



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ULR: TC-695024000008382F

Report No. : MSKPL/FD/2024-25/1B206Q

Sample No. : MSKNE/FD/2024-25/04/C6XABR

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
20	Mercury as Hg	mg/l	IS 3025 (Part 48)	BDL(DL:0.0002)
21	Nitrate as NO3	mg/l	APHA (24th EDITION) 4500-NO3- B	0.89
22	Odour	None	IS 3025 (Part 5)	AGREEABLE
23	Oil & Grease	mg/l	IS 3025 (Part 39)	BDL(DL:1.4)
24	Phenolic Compounds as C6H5OH	mg/l	IS 3025 (Part 43) Sec1	BDL(DL:0.001)
25	Sulphate as SO4	mg/l	IS 3025 (Part 24) Sec1	6.20
26	Total Dissolved Solids	mg/l	IS 3025 (Part 16)	90
27	Total Hardness as CaCO3	mg/l	IS 3025 (Part 21)	55.55
28	Total Suspended Solids	mg/l	IS 3025 (Part 17)	BDL(DL:2.5)
29	Zinc as Zn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
30	pH	None	IS 3025 (Part 11)	7.0 AT 28 DEG C

Opinion : NA

Statement of Conformity NA

— END —

Reviewed By:

Signature :

Name : Mr. Aniruddha Saha, Mr. Piali Ganguly

Designation : Sr. Exec. Chemist, Executive Chemist

Authorized Signatory:

Signature :

Name : Dr. Saumyadeep Mukhopadhyay

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 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 & (AII) 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 :

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Tel. : +91 7044036120
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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West
At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2024-25/1B206Q_1

Date :

13/05/2024

Sample No. :

MSKNB/FD/2024-25/04/C8XABR_1

Date of receipt of sample:

17/04/2024

Date(s) of performance:

17/04/2024 - 12/05/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	16/04/2024
5. Place of sampling	sona river before confluence with baitarani river. (Kandara Village) (JWIMM)
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	Pranab Sethi, Dambarudhar Das

Report No. : MSKPL/FD/2024-25/1B206Q_1**Sample No. :** MSKNB/FD/2024-25/04/C8XABR_1

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
1	Salinity	mg/l	By Calculation	63.27

Opinion : NA

— END —

Reviewed By:**Signature****Name****Designation**


Ms. Anirban Saha, Ms. Palli Ganguly
Sr. Exe. Chemist, Executive Chemist

Authorized Signatory:**Signature****Name****Designation**


Dr. Soumyajit Mukhopadhyay
Lab in charge

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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 (Gut, Solid & Liquid Waste) shall be retained for 15 days as per OPCS guidelines & (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. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

Address of Laboratory :

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TC-6950



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ULR: TC-69502400000382F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/1B206Q

Date :

13/05/2024

Sample No. :

MSKNB/FD/2024-25/04/C8XABR

Date of receipt of sample:

17/04/2024

Date(s) of performance:

17/04/2024 - 22/04/2024

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	16/04/2024
5. Place of sampling	sons river before confluence with baitarani river. (Kandara Village) (JWIMM)
6. Environmental conditions during sampling & Transport	(2 -5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS:17814(P-25) 2022
8. Identification of the personnel performing sampling by MSK	Pranab Sethi, Dambarudhar Das

Report No. : MSKPL/FD/2024-25/1B206Q**Sample No. :** MSKNB/FD/2024-25/04/C8XABR

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	170

Opinion : NA**Statement of Conformity :** NA

— END —

Reviewed By:**Signature :****Name :****Designation :**

Ms. Malvika Chakraborty

Executive Microbiologist

Authorized Signatory:**Signature :****Name :****Designation :**

Mr. Sukanta Palui

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 (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: Strachy 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-8950



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ULR: TC-695024000009100F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

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

Report No. :

MSKPL/FD/2024-25/A0464D

Date :

22/05/2024

Sample No. :

MSKNB/FD/2024-25/05/SKW73T

Date of receipt of sample:

08/05/2024

Date(s) of performance:

08/05/2024 - 22/05/2024

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	07/05/2024
5. Place of sampling	Keth Hutting before H-Quarry (Up stream) (JW/MM)
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	Pranab Ku Sethi

Report No. : MSKPL/FD/2024-25/A0464D

Sample No. : MSKNB/FD/2024-25/05/SKW73T

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

Designation

P. Ganguly
P. Ganguly, Sr. Exec. Chemist

Authorized Signatory:

Signature

Name

Designation

Dr. Sankudeep Bhattacharya
Dr. Sankudeep Bhattacharya, Lab in charge

Address of Laboratory :

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



TC-6950



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ULR: TC-895024000009100F

Reviewed By:

Signature:

Name:

Designation:

Abaya Saha P. Ganguly
Ms. Abayee Saha, Ms. Pabi Ganguly
Sr. Executive Chemist

Authorized Signatory:

Signature:

Name:

Designation:

[Signature]
Dr. Soumyajit Dasgupta
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 (Solid, Bulk & Liquid Waste) shall be retained for 15 days as per ISO 9001:2015 & (IA) 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, Baked Water, Baked 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-695024000009100F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM), Joda West

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

Report No. :

MSKPL/FD/2024-25/A0464D

Date :

22/05/2024

Sample No. :

MSKNB/FD/2024-25/05/5KW73T

Date of receipt of sample:

08/05/2024

Date(s) of performance:

08/05/2024 - 13/05/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/058, 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	07/05/2024
5. Place of sampling	Keth Huttling before H-Quarry (Up stream) (JW/MM)
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 Ku Sethi

Report No. : MSKPL/FD/2024-25/A0464D**Sample No. :** MSKNB/FD/2024-25/05/5KW73T

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	14

Opinion : NA**Statement of Conformity** NA

— END —

Reviewed By:

Signature :

Name : Mr. Malinika Chakraborty

Designation : Executive Microbiologist

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 (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: Shreeji Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700015, West Bengal, India.
Tel. : 91 33 40143000 / 22600607 Fax : 91 33 22656008
Email : info@mitrask.com Website : www.mitrask.com

Report No. MSKGL/ED/2024-25/001424

Date: 22.05.2024

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	07.05.2024
Location	Keth -Hutting before H-Quarry Up Stream (JWIMM)

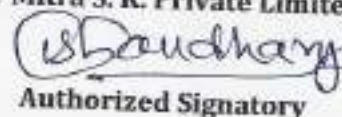
CHEMICAL ANALYSIS OF WATER

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	---	13
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, 2033 4500-O-C/G	---	5.6
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	98
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	0.09
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	---	0.05
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ 2-E	---	2.6
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	40
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	61
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	44
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	3.4
18	pH value at 23.7 deg C	None	APHA 24th Edition, 2033 4500-H+B	5.5-9.0	7.40

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-69502400009101F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/89464Y

Date :

22/05/2024

Sample No. :

MSKNB/FD/2024-25/05/7SR7BQ

Date of receipt of sample:

08/05/2024

Date(s) of performance:

08/05/2024 - 22/05/2024

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	07/05/2024
5. Place of sampling	Keth Huttling after H-Quarry (Down stream) (JWIMM)
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	Pranab Ku Sethi

Report No. : MSKPL/FD/2024-25/89464Y

Sample No. : MSKNB/FD/2024-25/05/7SR7BQ

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:0.1)
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

Designation

Ms. Ananya Saha, Ms. Palli Ganguly

Sr. Executive Chemist

Authorized Signatory:

Signature

Name

Designation

Dr. Ananya Saha, Sr. Executive Chemist

Mitra S. K. Private Limited

Doc No.: MSK/GEN/19/07

Address of Laboratory :

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



TC-6950



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ULR: TC-69502400009101F

Reviewed By:

Signature : *Abiraj Saha P. Ganguly*
Name : Mr. Abiraj Saha, Mr. P. Ganguly
Designation : Sr. Executive Chemist

Authorized Signatory:

Signature : *Dr. Sourin K. Mukhopadhyay*
Name : Dr. Sourin K. 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 (Food, Solid & Liquid Waste) shall be retained for 10 days as per (PMD) guidelines & (PAC) 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, Banded 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.

Head Office: Service Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel. : 91 33 40143000 / 23690907 Fax : 91 33 22690500
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-8850

Doc No.: MSKGEN18107



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ULR: TC-885024000009101F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd (MGM) Joda West

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

Report No. :

MSKPL/FD/2024-25/89464Y

Date :

22/05/2024

Sample No. :

MSKNB/FD/2024-25/06/7SR7BQ

Date of receipt of sample:

08/05/2024

Date(s) of performance:

06/05/2024 - 13/05/2024

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	07/05/2024
5. Place of sampling	Keth Huttling after H-Quarry (Down stream) (JVIMM)
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 Ku Sethi

Report No. : MSKPL/FD/2024-25/89464Y

Sample No. : MSKNB/FD/2024-25/05/7SR7BQ

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	24

Opinion : NA

Statement of Conformity NA

— END —

Reviewed By:

Signature :

Name : Ms. Malleswari Chakraborty

Designation : Executive Microbiologist

Authorized Signatory:

Signature :

Name : Mr. Subarna Palui

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 (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: Shree Chitra (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India
Tel. : 91 33 48143800 / 22960007 Fax : 91 33 22850066
Email : info@mitrask.com Website : www.mitrask.com

Report No. MSKGL/ED/2024-25/001425

Date: 22.05.2024

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	07.05.2024
Location	Keth-Hutting after H- Quarry Down Stream (JWIMM)

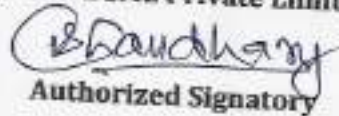
CHEMICAL ANALYSIS OF WATER

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	---	6
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	96
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	0.07
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	5.7
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	---	0.09
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	3.5
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	36
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	59
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	44
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	5.2
18	pH value at 26.3 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	7.30

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: udayanlsb@mitrask.com



TC-6950



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ULR: TC-695024000009102F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

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

Report No. :

MSKPL/FD/2024-25/RK4645

Date :

22/05/2024

Sample No. :

MSKNB/FD/2024-25/05/83G750

Date of receipt of sample:

08/05/2024

Date(s) of performance:

08/05/2024 - 22/05/2024

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	07/05/2024
5. Place of sampling	Sona river near Pichlaghat Pump House (Up stream) (JWIMM)
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	Pranab Ku Sethi

Report No. : MSKPL/FD/2024-25/RK4645

Sample No. : MSKNB/FD/2024-25/05/83G750

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. Atanjan Saha, Sr. Executive Chemist

Designation : Sr. Executive Chemist

Authorized Signatory:

Signature:

Name : Dr. Soumyajit Mukherjee

Designation : Lab in charge

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-695024000009102F

Reviewed By:

Signature: *Atanjan Saha P. Ganguly*
Name : Mr. Atanjan Saha, Ms. Palli Ganguly
Designation : Sr. Executive Chemist

Authorized Signatory:

Signature : *Dr. Soumyajit Mukherjee*
Name : Dr. Soumyajit Mukherjee
Designation : 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 & (W) 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. 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, Pagledanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
Email: udayanlab@mitrask.com



TC-8950



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ULR: TC-89502400009102F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM), Joda West

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

Report No. :

MSKPL/FD/2024-25/RK4645

Date :

22/05/2024

Sample No. :

MSKNB/FD/2024-25/05/83G750

Date of receipt of sample:

08/05/2024

Date(s) of performance:

08/05/2024 - 13/05/2024

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	07/05/2024
5. Place of sampling	Sona river near Pichlaghat Pump House (Up stream) (JWIMM)
6. Environmental conditions during sampling & Transport	(2-5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS:17814(P-25) 2022
8. Identification of the personnel performing sampling by MSK	Pranab Ku Sethi

Report No. : MSKPL/FD/2024-25/RK4645**Sample No. :** MSKNB/FD/2024-25/05/83G750

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	12

Opinion : NA**Statement of Conformity** NA

— END —

Reviewed By:**Signature :****Name :** Ms. Meitreyee Chakraborty**Designation :** Executive Microbiologist**Authorized Signatory:****Signature :****Name :** Mr. Sukanta Palai**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: Shreeji Centre (5th Floor), 748, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel. : 91 33 45143000 / 22950007 Fax : 91 33 22820006
Email : info@mitrask.com Website : www.mitrask.com

Report No. MSKGL/ED/2024-25/001426

Date: 22.05.2024

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	07.05.2024
Location	Pichlaghat Pump House Up Stream (JWIMM)

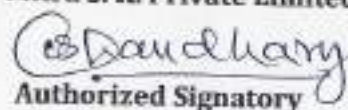
CHEMICAL ANALYSIS OF WATER

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	---	10
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	---	5.9
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	93
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	0.13
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	---	0.09
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	2.7
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	32
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	58
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	44
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	6.2
18	pH value at 19.8 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	7.36

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-695024000009103F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM) Joda West

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

Report No. :

MSKPL/FD/2024-25/T7464U

Date :

22/05/2024

Sample No. :

MSKNB/FD/2024-25/05/8S778S

Date of receipt of sample:

08/05/2024

Date(s) of performance:

08/05/2024 - 22/05/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	07/05/2024
5. Place of sampling	Sona river near Pichlaghat Pump House (Down stream). (JW/MM)
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	Pranab Ku Sethi

Report No. : MSKPL/FD/2024-25/T7464U

Sample No. : MSKNB/FD/2024-25/05/8S778S

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. Animesh Saha, Sr. Executive Chemist

Designation : Sr. Executive Chemist

Authorized Signatory:

Signature :

Name : Dr. Subhrajyoti Mukherjee

Designation : Lab In charge

Mitra S. K. Private Limited

Doc No.: MSKGEN1907

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-895024000009103F

Reviewed By:

Signature

Name

Designation

Aranya Sam P. Ganguly
: Ms. Aranya Sam, Ms. Palli Ganguly
: Sr. Executive Chemist

Authorized Signatory:

Signature

Name

Designation

Boutyashop Muddupattana
: Boutyashop Muddupattana
: Lab in charge

The results relate only to the sample(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 (Micro - portable sample(s) Food, Water) shall be retained for 10 days from the date of issue of the Test Report. Portable 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, Gull & 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 - portable sample(s) Food, Sealed Water, Sealed food) shall be retained for 10 days from the date of issue of the Test Report. Portable sample(s) shall be retained 2 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 / 22850007 Fax : 91 33 22850008
Email : info@mitrask.com Website : www.mitrask.com

Address of Laboratory :

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



TC-6950



Scan for Portal

ULR: TC-695024000009103F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

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

Report No. :

MSKPL/FD/2024-25/T7464U

Date :

22/05/2024

Sample No. :

MSKNB/FD/2024-25/05/8S778S

Date of receipt of sample:

08/05/2024

Date(s) of performance:

08/05/2024 - 13/05/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 15/08/2023

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	07/05/2024
5. Place of sampling	Sona river near Pichlaghat Pump House (Down stream). (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	Pranab Ku Sathi

Report No. : MSKPL/FD/2024-25/T7464U

Sample No. : MSKNB/FD/2024-25/05/8S778S

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. Madhurya Chakraborty

Designation : Executive Microbiologist

Authorized Signatory:

Signature :

Name : Mr. Sukanta Palui

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

Tel. : 91 33 40143900 / 22650057 Fax : 91 33 22650058

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

Report No. MSKGL/ED/2024-25/001427

Date: 22.05.2024

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	07.05.2024
Location	Pichlaghat Pump House Down Stream (JWIMM)

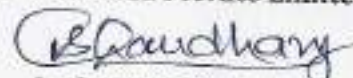
CHEMICAL ANALYSIS OF WATER

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	---	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	---	10
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	6.1
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	90
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	0.14
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	3.8
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	---	0.08
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	3.9
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	32
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	56
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	44
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	2.2
18	pH value at 20.5 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	7.32

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-695024000009104F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/8E464Q

Date :

22/05/2024

Sample No. :

MSKNB/FD/2024-25/05/9FA7AL

Date of receipt of sample:

08/05/2024

Date(s) of performance:

08/05/2024 - 22/05/2024

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	07/05/2024
5. Place of sampling	Sona River near Mahanadi Guest House (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	Pranab Ku Sethi

Report No. : MSKPL/FD/2024-25/8E464Q

Sample No. : MSKNB/FD/2024-25/05/9FA7AL

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. Abhaya Saha, Mr. Pankaj Garguly

Designation : Sr. Executive Chemist

Authorized Signatory:

Signature:

Name : Dr. Soumyadeep Mukhopadhyay

Designation : Lab in charge

Address of Laboratory :

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



TC-6950



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ULR: TC-695024000009104F

Reviewed By:

Signature

Name

Designation : Sr. Executive Chemist

Authorized Signatory:

Signature

Name

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 (Pet, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (W) 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, Sewage Water, Sewage Sludge) 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.

Head Office: Shreeji Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700015, West Bengal, India.
Tel. : 91 33 40143000 / 23650007 Fax : 91 33 23650006
Email : info@mitrask.com Website : www.mitrask.com

Address of Laboratory :

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



TC-8950



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ULR: TC-895024000009104F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

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

Report No. :

MSKPL/FD/2024-25/8E464Q

Date :

22/05/2024

Sample No. :

MSKNB/FD/2024-25/05/9FA7AL

Date of receipt of sample:

08/05/2024

Date(s) of performance:

08/05/2024 - 13/05/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/058, 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	07/05/2024
5. Place of sampling	Sona River near Mahanadi Guest House (JWMM)
6. Environmental conditions during sampling & Transport	(2 -5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS:17814(P-25) 2022
8. Identification of the personnel performing sampling by MSK	Pranab Ku Sethi

Report No. : MSKPL/FD/2024-25/8E464Q**Sample No. :** MSKNB/FD/2024-25/05/9FA7AL

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 —

Authorized Signatory:**Signature :****Name :** Mr. Sukanta Palui**Designation :** Technical In charge**Reviewed By:****Signature :****Name :** Ms. Malvika Chakraborty**Designation :** Executive Microbiologist

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 this 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: Bhadrachal 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

At/P.O. : BARBIL Ward No-6
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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/2024-25/001428

Date: 22.05.2024

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	07.05.2024
Location	Sona River Near Mahanadi Guest House (JWIMM)

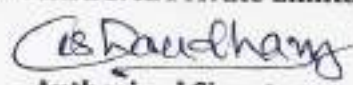
CHEMICAL ANALYSIS OF WATER

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	5.2
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	---	5.7
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	97
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	0.13
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	6.7
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	---	0.09
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	4.2
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	40
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	61
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	48
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	3.4
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



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ULR: TC-695024000009105F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/AE464X

Date :

22/05/2024

Sample No. :

MSKNB/FD/2024-25/05/CSC74B

Date of receipt of sample:

08/05/2024

Date(s) of performance:

08/05/2024 - 22/05/2024

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	07/05/2024
5. Place of sampling	Pond Inside Bichkundli Vegetables Garden (JWIMM)
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	Pranab Ku Sathi

Report No. : MSKPL/FD/2024-25/AE464X**Sample No. :** MSKNB/FD/2024-25/05/CSC74B

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 46)	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: Ms. Ananya Saha, Ms. Palli Ganguly

Designation: Sr. Executive Chemist

Authorized Signatory:

Signature:

Name:

Dr. Soumyadeep Mukhopadhyay

Designation: Lab in charge

Mitra S. K. Private Limited

Address of Laboratory :

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Email: udayanlab@mitrask.com



TC-6850

Doc No.: MSK/GEN/H16107



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ULR: TC-695024000009105F

Reviewed By:

Signature : *Atanayana P. Ganguly*

Name : Mr. Atanayana P. Ganguly

Designation : Sr. Executive Chemist

Authorized Signatory:

Signature : *L. Chatterjee*

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 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, Soiled Water, Soiled 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.

Head Office: Shree Centre (5th Floor), 74B, A.I.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: udayantab@mitrasak.com



TC-6850



Scan for Portal

ULR: TC-695024000009105F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM) Joda West

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

Report No. :

MSKPL/FD/2024-25/AE464X

Date :

22/05/2024

Sample No. :

MSKNB/FD/2024-25/05/CSC74B

Date of receipt of sample:

08/05/2024

Date(s) of performance:

08/05/2024 - 13/05/2024

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	07/05/2024
5. Place of sampling	Pond inside Bidhakundi Vegetables Garden (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	Pranab Ku Sethi

Report No. : MSKPL/FD/2024-25/AE464X

Sample No. : MSKNB/FD/2024-25/05/CSC74B

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	21

Opinion : NA

Statement of Conformity NA

— END —

Reviewed By:

Signature :

Name : Ms. Matheya Chakraborty

Designation : Executive Microbiologist

Authorized Signatory:

Signature :

Name : Mr. Sukanta Palu

Designation : Technical 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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 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/2024-25/001429

Date: 22.05.2024

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	07.05.2024
Location	Bichakundi Vegetable Garden Pond (JWIMM)

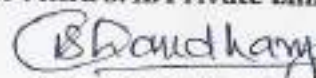
CHEMICAL ANALYSIS OF WATER

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	3.5
2	Calcium (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	14
3	Chemical Oxygen Demand (COD)	mg/l	APHA (24th Edition), 5220B	250	10.4
4	Chloride (as Cl ⁻)	mg/l	APHA (24th Edition), 4500 -Cl B	---	16
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	4.8
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	155
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	0.61
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	3.8
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	---	0.09
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO42-E	---	25.2
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	40
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	96
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	51
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	21
18	pH value at 19.2 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	7.0

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-695024000009106F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

A/Po. - Joda, Dist. - Keonjhar, Odisha - 759034 India Pin

Report No. :

MSKPL/FD/2024-25/B5464Z

Date :

22/05/2024

Sample No. :

MSKNB/FD/2024-25/05/QKB76T

Date of receipt of sample:

08/05/2024

Date(s) of performance:

08/05/2024 - 22/05/2024

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	07/05/2024
5. Place of sampling	Sona River before Confluence with bairani River Kandra Village (JWIMM)
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	Pranab Ku Sethi

Report No. : MSKPL/FD/2024-25/B5464Z

Sample No. : MSKNB/FD/2024-25/05/QKB76T

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

Designation

Mr. Anirban Saha, Mr. Pall Ganguly
Sr. Executive Chemist

Authorized Signatory:

Signature

Name

Designation

Dr. Sourendra Kumar
Lab In charge

Mitra S. K. Private Limited

Doc No.: MSK/GEN/1907

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TC-6950



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Reviewed By:

Signature

Name

Designation

Abanipal P. Ganguly

Ms. Abanipal Saha, Mr. Prati Ganguly

Sr. Executive Chemist

Authorized Signatory:

Signature

Name

Designation

Siddhanta

Siddhanta Mahapatra

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, Soft & Liquid Waste) shall be retained for 15 days as per CPCB guideline is (Min) 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.

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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-89502400009106F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/B5464Z

Date :

22/05/2024

Sample No. :

MSKNB/FD/2024-25/05/QKB76T

Date of receipt of sample:

08/05/2024

Date(s) of performance:

08/05/2024 - 13/05/2024

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	07/05/2024
5. Place of sampling	Sone River before Confluence with baitami River Kendra Village (JW/MM)
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 Ku. Sethi

Report No. : MSKPL/FD/2024-25/B5464Z**Sample No. :** MSKNB/FD/2024-25/05/QKB76T

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	26

Opinion : NA**Statement of Conformity** NA

— END —

Reviewed By:**Signature :****Name :** Ms. Malleswari Chakraborty**Designation :** Executive Microbiologist**Authorized Signatory:****Signature :****Name :** Mr. Subanta 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: Shraddha Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel. : 91 33 40143000 / 22680007 Fax: 91 33 22680008
Email : info@mitrask.com Website : www.mitrask.com

Report No. MSKGL/ED/2024-25/001421

Date: 22.05.2024

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	07.05.2024
Location	Sona River Kandra Village before confluence with Baitarni River (JWIMM)

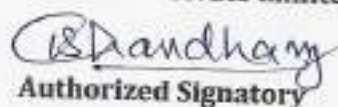
CHEMICAL ANALYSIS OF WATER

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	---	13
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	---	14
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	6
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	142
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	0.09
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	6.7
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	---	0.07
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	10.8
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	59
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	89
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	59
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	3.4
18	pH value at 19.2 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	7.42

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-69502400009107F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/FP4670

Date :

22/05/2024

Sample No. :

MSKNB/FD/2024-25/05/S5R796

Date of receipt of sample:

08/05/2024

Date(s) of performance:

08/05/2024 - 22/05/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	07/05/2024
5. Place of sampling	Baitarni River Kandra Village (JWIMM)
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	Pranab Ku Sethi

Report No. : MSKPL/FD/2024-25/FP4670

Sample No. : MSKNB/FD/2024-25/05/S5R796

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. Aniruddha Saha, Mr. Prati Garguly

Designation : Sr. Executive Chemist

Authorized Signatory:

Signature :

Name : Dr. Soumyajit Mukhopadhyay

Designation : Lab in charge

Address of Laboratory :

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Tel. : +91 7044038120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000009107F

Reviewed By:

Signature: *Arup Saha P. Ganguly*
Name: Mr. Arup Saha, Mr. P. Ganguly
Designation: Sr. Executive Chemist

Authorized Signatory:

Signature: *P. Ganguly*
Name: Mr. Soumitra P. Ganguly
Designation: 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 (Solid, Gaseous & 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 retained 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 :

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



TC-6950



Scan for Portal

ULR: TC-695024000009107F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM), Joda West

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

Report No. :

MSKPL/FD/2024-25/FP4670

Date :

22/05/2024

Sample No. :

MSKNB/FD/2024-25/05/S5R796

Date of receipt of sample:

08/05/2024

Date(s) of performance:

08/05/2024 - 13/05/2024

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	07/05/2024
5. Place of sampling	Baitarni River Kendra Village (JWIMM)
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 Ku Sethi

Report No. : MSKPL/FD/2024-25/FP4670

Sample No. : MSKNB/FD/2024-25/05/S5R796

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 : Mr. Maitrayee Chakraborty

Designation : Executive Microbiologist

Authorized Signatory:

Signature :

Name : Mr. Sukanta Paki

Designation : Technical 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 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 33 40143100 / 22850007 Fax: 91 33 22850008
Email : info@mitrask.com Website : www.mitrask.com

Report No. MSKGL/ED/2024-25/001422

Date: 22.05.2024

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	07.05.2024
Location	Baitarni River Kandra Village (JWIMM)

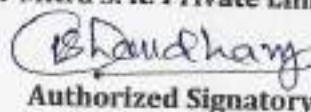
CHEMICAL ANALYSIS OF WATER

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	---	14
3	Chemical Oxygen Demand (COD)	mg/l	APHA (24th Edition), 5220B	250	4.4
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	---	5.8
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	119
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	0.29
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	5.7
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	---	0.07
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	7.2
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	48
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	74
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	59
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	11
18	pH value at 19.2 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	6.44

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-695024000009108F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

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

Report No. :

MSKPL/FD/2024-25/F74676

Date :

22/05/2024

Sample No. :

MSKNB/FD/2024-25/05/X8B77R

Date of receipt of sample:

08/05/2024

Date(s) of performance:

08/05/2024 - 22/05/2024

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	07/05/2024
5. Place of sampling	Bhuiya Roida Pond Water (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	Pranab Ku Sethi

Report No. : MSKPL/FD/2024-25/F74676

Sample No. : MSKNB/FD/2024-25/05/X8B77R

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: *Abhijit Saha P. Ganguly*

Name : Mr. Abhijit Saha, Mr. Pali Ganguly

Designation : Sr. Executive Chemist

Authorized Signatory:

Signature: *S. Saha*
Name : Dr. Soumitra Saha
Designation : Lab in charge

Mitra S. K. Private Limited

Doc No.: MSK/GEN/1807

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-695024000009108F

Reviewed By:

Signature

Name

Designation

Atanayee Saha P. Gonyak

Mr. Atanayee Saha, Mr. P. Gonyak

Sr. Executive Chemist

Authorized Signatory:

Signature

Name

Designation

[Signature]

Dr. Soumyajit 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 guideline & (Up to 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.

Head Office: Shree Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel. : 91 33 40143000 / 22800087 Fax : 91 33 22800000
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-695024000009108F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

AU/PO. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

Report No. :

MSKPL/FD/2024-25/F74676

Date :

22/05/2024

Sample No. :

MSKNB/FD/2024-25/05/X8B77R

Date of receipt of sample:

08/05/2024

Date(s) of performance:

08/05/2024 - 13/05/2024

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	07/05/2024
5. Place of sampling	Bhuiya Roida Pond Water (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	Pranab Ku Sethi

Report No. : MSKPL/FD/2024-25/F74676**Sample No. :** MSKNB/FD/2024-25/05/X8B77R

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. Maitreyee Chakraborty**Designation :** Executive Microbiologist**Authorized Signatory:****Signature :****Name :** Mr. Sukanta Patel**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: Shrauti Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel. : 91 33 40143000 / 22059007 Fax : 91 33 22658008
Email : info@mitrask.com Website : www.mitrask.com

Report No. MSKGL/ED/2024-25/001431

Date: 22.05.2024

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	07.05.2024
Location	Bhuia Roida Pond Water (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	14
2	Calcium (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	14
3	Chemical Oxygen Demand (COD)	mg/l	APHA (24th Edition), 5220B	250	39
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	---	4.7
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	207
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	2
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	5.7
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	---	0.10
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	9.7
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	79
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	129
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	59
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	39
18	pH value at 19.2 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	7.14

Checked by:-

[Signature]

For Mitra S. K. Private Limited

[Signature]
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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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/Z1537Q_1

Date :

25/06/2024

Sample No. :

MSKNB/FD/2024-25/06/B61558_1

Date of receipt of sample:

03/06/2024

Date(s) of performance:

03/06/2024 - 25/06/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	01/06/2024
5. Place of sampling	Tindharia Up Stream (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	Pankaj Ku. Mahanta

Report No. : MSKPL/FD/2024-25/Z1537Q_1

Sample No. : MSKNB/FD/2024-25/06/B61558_1

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)	150
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	2.05
13	Zinc as Zn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)

Opinion : NA

— END —

Reviewed By:

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

Authorized Signatory:

Signature :
Name : Dr. Souravdeep Mukhopadhyay
Designation : Lab in charge

Mitra S. K. Private Limited

Address of Laboratory :

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



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Reviewed By:

Signature : *Atanjan Saha P. Ganguly*
Name : Ms. Atanjan Saha, Ms. Pail Ganguly
Designation : Sr. Executive Chemist

Authorized Signatory:

Signature : *Dr. Srimadheep Bhattacharyya*
Name : Dr. Srimadheep Bhattacharyya
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, Semi & Liquid Waste) shall be retained for 15 days as per CPCB guideline 5 (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, Boiled 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.

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3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/Z1537Q_1

Date :

25/06/2024

Sample No. :

MSKNB/FD/2024-25/06/B61558_1

Date of receipt of sample:

03/06/2024

Date(s) of performance:

03/06/2024 - 08/06/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	01/06/2024
5. Place of sampling	Tindharia Up Stream (Baitarani river)
6. Environmental conditions during sampling & Transport	(2 -5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS:17814(P-25) 2022
8. Identification of the personnel performing sampling by MSK	Pankaj Ku. Mahanta

Report No. : MSKPL/FD/2024-25/Z1537Q_1

Sample No. : MSKNB/FD/2024-25/06/B61558_1

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	40

Opinion : NA

— END —

Reviewed By:

Signature :

Name : Ms. Madhurya Chakraborty

Designation : Executive Microbiologist

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: Shreechi Centre (5th Floor), 748, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India
Tel. : 91 33 40140000 / 22850007 Fax : 91 33 22600008
Email : info@mitrask.com Website : www.mitrask.com

Report No. MSKGL/ED/2024-25/0002045


Date: 17.06.2024

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	01.06.2024
Location	Tindharia Up Stream 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	---	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	---	6
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	5.1
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	84
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	6.4
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	1.9
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	---	0.04
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ 2-E	---	8
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	20
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	52
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	28
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	42
18	pH value at 25 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	7.56

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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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM) Joda West

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

Report No. :

MSKPL/FD/2024-25/2A537B_1

Date :

25/06/2024

Sample No. :

MSKNB/FD/2024-25/06/UDG94C_1

Date of receipt of sample:

03/06/2024

Date(s) of performance:

03/06/2024 - 25/06/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	01/06/2024
5. Place of sampling	Tindharia Down Stream (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	Pankaj Ku. Mahanta

Report No. : MSKPL/FD/2024-25/2A537B_1

Sample No. : MSKNB/FD/2024-25/06/UDG94C_1

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)	300
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)	0.04
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	1.65
13	Zinc as Zn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)

Opinion : NA

----- END -----

Reviewed By:

Signature

Name

Designation

Aranya Saha P. Ganguly

Ms. Aranya Saha, Ms. Piali Ganguly

Sr. Executive Chemist

Authorized Signatory:

Signature

Name

Designation

Dr. Soumendra Kumar Ghosh

Dr. Soumendra Kumar Ghosh

Lab in charge

Head Office:

Shree Centre (2nd 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

Mitra S. K. Private Limited

Address of Laboratory :

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




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Reviewed By:

Signature : 
Name : Mr. Arayee Baha, Ms. Piali Ganguly
Designation : Sr. 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 CPCRI 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.

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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

Report No. :

MSKPL/FD/2024-25/2A537B_1

Date :

25/06/2024

Sample No. :

MSKNB/FD/2024-25/06/UDG94C_1

Date of receipt of sample:

03/06/2024

Date(s) of performance:

03/06/2024 - 08/06/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	01/06/2024
5. Place of sampling	Tindharis Down Stream (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	Pankaj Ku. Mahanta

Report No. : MSKPL/FD/2024-25/2A537B_1

Sample No. : MSKNB/FD/2024-25/06/UDG94C_1

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	110

Opinion : NA

— END —

Reviewed By:

Signature :
Name : Ms. Madhurya Chakraborty
Designation : Executive Microbiologist

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 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.

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

Report No. MSKGL/ED/2023-24/002046


Date: 17.06.2024

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	01.06.2024
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	---	6
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	---	6
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	4.9
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	72
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	7.4
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	---	0.04
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	<1.0
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	20
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	45
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	28
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	55
18	pH value at 19.2 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	7.37

Checked by: 

For Mitra S. K. Private Limited


 Authorized Signatory

Mitra S. K. Private Limited

Address of Laboratory :

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

Report No. :

MSKPL/FD/2024-25/3Y539K_1

Date :

25/06/2024

Sample No. :

MSKNB/FD/2024-25/06/YEL81G_1

Date of receipt of sample:

12/06/2024

Date(s) of performance:

12/06/2024 - 20/06/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	11/06/2024
5. Place of sampling	Keth Huttling after H-Quarry (Down stream) (JWIMM)
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	Loknath Mahanta

Report No. : MSKPL/FD/2024-25/3Y539K_1

Sample No. : MSKNB/FD/2024-25/06/YEL81G_1

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

— END —

Reviewed By:

Signature

Name

Designation

Aranya Saha P. Ganguly

Ms. Aranya Saha, Ms. Piali Ganguly

Sr. Executive Chemist

Authorized Signatory:

Signature

Name

Designation

Dr. Soumyadeep Mukherjee

Lab in charge

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



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Reviewed By

Signature : 
Name : Mr. Arunee Saha, Ms. Piali Ganguly
Designation : Sr. 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 CPOB 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. Perishable sample(s) shall be retained 2 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

Report No. :

MSKPL/FD/2024-25/3Y539K_1

Date :

25/06/2024

Sample No. :

MSKNB/FD/2024-25/06/YEL81G_1

Date of receipt of sample:

12/06/2024

Date(s) of performance:

12/06/2024 - 17/06/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	11/06/2024
5. Place of sampling	Keth Hutting after H-Quarry (Down stream) (JWIMM)
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	Loknath Mahanta

Report No. : MSKPL/FD/2024-25/3Y539K_1

Sample No. : MSKNB/FD/2024-25/06/YEL81G_1

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

— END —

Reviewed By:

Signature :

Name : Ms. Madhaya Chakraborty

Designation : Executive Microbiologist

Authorized Signatory:

Signature :

Name : Mr. Sukanta Palui

Designation : Technical In charge

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The reserved part of sample(s) for microbiological 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.

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

Report No. MSKGL/ED/2024-25/002099

Date: 22.06.2024

ANALYSIS REPORT OF SURFACE WATER

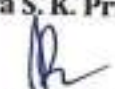
Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	11.06.2024
Location	Keth-Hutting after H- Quarry Down Stream (JWIMM)

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	---	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	---	4
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	5
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	77
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	0.47
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	4
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	---	0.04
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	1.4
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	32
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	48
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	12
18	pH value at 26.3 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	6.75

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



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/42539X_1

Date :

25/06/2024

Sample No. :

MSKNB/FD/2024-25/06/Q9M800_1

Date of receipt of sample:

12/06/2024

Date(s) of performance:

12/06/2024 - 20/06/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	11/06/2024
5. Place of sampling	Keth Huttling before H-Quarry (Up stream) (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	Loknath Mahanta

Report No. : MSKPL/FD/2024-25/42539X_1**Sample No. :** MSKNB/FD/2024-25/06/Q9M800_1

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

— END —

Reviewed By:

Signature

Name

Designation

Abaya Saha P. Ganguly
Mo. Abaya Saha, Ms. Piali Ganguly
Sr. Executive Chemist

Authorized Signatory:

Signature

Name

Designation

Dr. Soumyadeep Mukherjee
Lab in charge

Address of Laboratory :

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West Bengal
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Email: udayanlab@mitrask.com



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Reviewed By:

Signature : 
Name : Ms. Anayee Saha, Ms. Priati Ganguly
Designation : Sr. Executive Chemist

Authorized Signatory:

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

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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. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

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

Page 2 of 2

Signature : 
Name : Ms. Matinyee Chelimbory
Designation : Executive Microbiologist

Authorized Signatory:
Signature : 
Name : Mr. Sukanta Pokui
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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Page 1 of 1

Report No. MSKGL/ED/2024-25/002098

Date: 22.06.2024

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	11.06.2024
Location	Keth -Hutting before H-Quarry Up Stream (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	---	13
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	---	2
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	4.9
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	96
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	---	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	---	0.05
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO42-E	---	<1.0
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	52
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	60
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	44
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	14
18	pH value at 23.7 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	7

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



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/KE539C_1

Date :

25/06/2024

Sample No. :

MSKNB/FD/2024-25/06/N1Q83C_1

Date of receipt of sample:

12/06/2024

Date(s) of performance:

12/06/2024 - 20/06/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	11/06/2024
5. Place of sampling	Pond inside Bichakundi Vegetables Garden (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	Loknath Mahanta

Report No. : MSKPL/FD/2024-25/KE539C_1**Sample No. :** MSKNB/FD/2024-25/06/N1Q83C_1

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

— END —

Reviewed By:

Signature

Name

Designation : Sr. Executive Chemist


Mr. Anirban Saha, Ms. Piali Ganguly

Authorized Signatory:

Signature

Name

Designation : Lab in charge


Dr. Soumyadeep Mukhopadhyay

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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Reviewed By:

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

Authorized Signatory:

Signature : *Souryadeep Mukherjee*
Name : Dr. Souryadeep 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 (Sed, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline 3 (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. 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
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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West
At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2024-25/KE539C_1

Date :

25/06/2024

Sample No. :

MSKNB/FD/2024-25/06/N1Q83C_1

Date of receipt of sample:

12/06/2024

Date(s) of performance:

12/06/2024 - 14/06/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	11/06/2024
5. Place of sampling	Pond inside Bichakundi Vegetables Garden (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	Loknath Mahanta

Report No. : MSKPL/FD/2024-25/KE539C_1

Sample No. : MSKNB/FD/2024-25/06/N1Q83C_1

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	<1.8

Opinion : NA

— END —

Reviewed By:

Signature :

Name : Ms. Madhaya Chatterborty

Designation : Executive Microbiologist

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, Soaked Water, Soaked 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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Report No. MSKGL/ED/2024-25/002097

Date: 22.06.2024

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	11.06.2024
Location	Bichakundi Vegetable Garden Pond (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	---	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	---	6
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	4.9
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	101
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	0.62
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	3
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	---	0.05
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ 2-E	---	6
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	36
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	62
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	27
18	pH value at 19.2 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	6.95

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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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/UZ5398_1

Date :

25/06/2024

Sample No. :

MSKNB/FD/2024-25/06/9P182N_1

Date of receipt of sample:

12/06/2024

Date(s) of performance:

12/06/2024 - 20/06/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	11/06/2024
5. Place of sampling	Sona river near Pichlaghat Pump House (Up stream) (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	Loknath Mahanta

Report No. : MSKPL/FD/2024-25/UZ5398_1

Sample No. : MSKNB/FD/2024-25/06/9P182N_1

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

— END —

Reviewed By:

Signature

Name

Designation

Atorupe Saha P. Ganguly
Ms. Atorupe Saha, Ms. Pasi Ganguly

Sr. Executive Chemist

Authorized Signatory:

Signature

Name

Designation

Dr. Soumendu Mukherjee
Dr. Soumendu Mukherjee
Lab in charge

Head Office:

Shreechi Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
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Mitra S. K. Private Limited

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



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Reviewed By:

Signature

Name

Designation

Atanup Saha P. Ganguly

Ms. Atanup Saha, Ms. Paul Ganguly

Sr. Executive Chemist

Authorized Signatory:

Signature

Name

Designation

Dr. Soumitra Deep Bhattacharya

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, Sterile Water, Sterile 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.

Head Office: Shree Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700015, West Bengal, India
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Mitra S. K. Private Limited

Address of Laboratory :

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

Report No. :

MSKPL/FD/2024-25/UZ5398_1

Date :

25/06/2024

Sample No. :

MSKNB/FD/2024-25/06/9P182N_1

Date of receipt of sample:

12/06/2024

Date(s) of performance:

12/06/2024 - 17/06/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	11/06/2024
5. Place of sampling	Sona river near Pichlaghat Pump House (Up stream) (JWIMM)
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	Loknath Mahanta

Report No. : MSKPL/FD/2024-25/UZ5398_1

Sample No. : MSKNB/FD/2024-25/06/9P182N_1

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	20

Opinion : NA

— END —

Reviewed By:

Signature

Name : Mr. Maitreyee Chakraborty

Designation : Executive Microbiologist

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: Shrochi 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/2024-25/002095

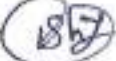
Date: 22.06.2024

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	11.06.2024
Location	Sona river near Pichlaghat Pump House Up Stream (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	---	10
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	---	2
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	5.1
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	81
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	1.1
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	3.8
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	---	0.04
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	---	32
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	50
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	12
18	pH value at 19.8 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	6.80

Checked by: 

For Mitra S. K. Private Limited


Authorized Signatory

Address of Laboratory :

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3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044036120
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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/BT539Q_1

Date :

25/06/2024

Sample No. :

MSKNB/FD/2024-25/06/M8B85G_1

Date of receipt of sample:

12/06/2024

Date(s) of performance:

12/06/2024 - 20/06/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	11/06/2024
5. Place of sampling	Sona river near Pichlaghat Pump House (Down stream). (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	Loknath Mahanta

Report No. : MSKPL/FD/2024-25/BT539Q_1

Sample No. : MSKNB/FD/2024-25/06/M8B85G_1

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

— END —

Reviewed By:

Signature

Name

Designation

Atanu Saha P. Ganguly
Ms. Atanu Saha, Ms. Palli Ganguly
Sr. Executive Chemist

Authorized Signatory

Signature

Name

Designation

Dr. Soumdeep Mukhopadhyay
Dr. Soumdeep Mukhopadhyay
Lab in charge

Address of Laboratory :

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



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Reviewed By:

Signature : 
Name : Ms. Anirban Saha, Ms. Piali Ganguly
Designation : Sr. 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, Seawater, Surface Water, Sewage) 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.

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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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/BT539Q_1

Date :

25/06/2024

Sample No. :

MSKNB/FD/2024-25/06/M8B85G_1

Date of receipt of sample:

12/06/2024

Date(s) of performance:

12/06/2024 - 17/06/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	11/06/2024
5. Place of sampling	Sona river near Pichlaghat Pump House (Down stream). (JWIMM)
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	Loknath Mahanta

Report No. : MSKPL/FD/2024-25/BT539Q_1

Sample No. : MSKNB/FD/2024-25/06/M8B85G_1

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

— END —

Reviewed By:

Signature

Name

Ms. Malreyee Chatterjee

Designation

Executive Microbiologist

Authorized Signatory:

Signature

Name

Mr. Sukanta Palu

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

Report No. MSKGL/ED/2024-25/002096

Date: 22.06.2024

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	11.06.2024
Location	Sona river near Pichlaghat Pump House Down Stream (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	---	6
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	5.3
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	90
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	1.43
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	4
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	---	0.04
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	1.4
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	40
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	56
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	15
18	pH value at 20.5 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	7.1

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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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/2D5394_1

Date :

25/06/2024

Sample No. :

MSKNB/FD/2024-25/06/6JD7FF_1

Date of receipt of sample:

12/06/2024

Date(s) of performance:

12/06/2024 - 20/06/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	11/06/2024
5. Place of sampling	Sona River Near Mahanadi Guest House JWMM
6. Environmental conditions during sampling & Transport	IS:17614(P-23) 2021
7. Sampling Plan & Method used	IS:17614(P-25) 2022
8. Identification of the personnel performing sampling by MSK	Loknath Mahanta

Report No. : MSKPL/FD/2024-25/2D5394_1

Sample No. : MSKNB/FD/2024-25/06/6JD7FF_1

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

----- END -----

Reviewed By:

Signature

Name

Designation

Arunava Saha P. Ganguly
Ms. Arunava Saha, Ms. Piali Ganguly
Sr. Executive Chemist

Authorized Signatory:

Signature

Name

Designation

Dr. Sudhakar Mukherjee
Dr. Sudhakar 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



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Reviewed By:

Signature : 
Name : Ms. Ananya Saha, Ms. Padi Ganguly
Designation : Sr. Executive Chemist

Authorized Signatory:

Signature : 
Name : Dr. Soumendra Kumar
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 (Sol. 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.

Mitra S. K. Private Limited

Address of Laboratory :

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3, Pagladanga Road, Kolkata 700015
West Bengal
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Email: udayanlab@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

Report No. :

MSKPL/FD/2024-25/2D5394_1

Date :

25/06/2024

Sample No. :

MSKNB/FD/2024-25/06/6JD7FF_1

Date of receipt of sample:

12/06/2024

Date(s) of performance:

12/06/2024 - 17/06/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	11/06/2024
5. Place of sampling	Sona River Near Mahanadi Guest House JWIMM
6. Environmental conditions during sampling & Transport	IS:17814(P-25) 2022
7. Sampling Plan & Method used	IS:17814(P-25) 2022
8. Identification of the personnel performing sampling by MSK	Loknath Mahanta

Report No. : MSKPL/FD/2024-25/2D5394_1

Sample No. : MSKNB/FD/2024-25/06/6JD7FF_1

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	2200

Opinion : NA

— END —

Reviewed By:

Signature :

Name : Ms. Maitreyee Chakraborty

Designation : Executive Microbiologist

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.

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Report No. MSKGL/ED/2024-25/002094


Date: 22.06.2024

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	11.06.2024
Location	Sona River Near Mahanadi Guest House (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	---	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	---	4.1
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	102
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	0.25
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	4
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	---	0.05
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	5
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	44
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	63
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	44
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	4
18	pH value at 19.2 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	6.91

Checked by: 

For Mitra S. K. Private Limited


Authorized Signatory

Mitra S. K. Private Limited

Address of Laboratory :

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

Report No. :

Date :

Sample No. :

Date of receipt of sample:

Date(s) of performance:

Reference No. & Date :

MSKPL/FD/2024-25/JV54CZ_1

27/06/2024

MSKNB/FD/2024-25/06/VLN8AF_1

13/06/2024

13/06/2024 - 26/06/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	12/06/2024
5. Place of sampling	Sona River before Confluence with baitarni River Kandra Village (JVIMM)
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	Pranab Kumar Sethy

Report No. : MSKPL/FD/2024-25/JV54CZ_1

Sample No. : MSKNB/FD/2024-25/06/VLN8AF_1

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	0.83
13	Zinc as Zn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)

Opinion : NA

— END —

Reviewed By:

Signature

Name

Designation

Abhishek Saha, P. Ganguly

Ms. Anayee Saha, Ms. Piali Ganguly

Sr. Executive Chemist

Authorized Signatory:

Signature

Name

Designation

Dr. Sourindeep Mukherjee

Lab In charge

Head Office:

Shreeji Centre (8th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel : 91 33 40143000 / 22650007 Fax : 91 33 22650006
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Email: udayanlab@mitrask.com



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Reviewed By:

Signature

Name

Designation

Mr. Anayak Saha *P. Ganguly*
: Ms. Anayak Saha, Ms. Priy Ganguly
: Sr. Executive Chemist

Authorized Signatory:

Signature

Name

Designation

Dr. Somyadeep Mukhopadhyay
: Dr. Somyadeep Mukhopadhyay
: Lab in charge

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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 4 (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, Sterile Water, Sterile 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.

Head Office:

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West Bengal
Tel : +91 7044036120
Email: udayanlab@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

Report No. :

Date :

Sample No. :

Date of receipt of sample:

Date(s) of performance:

Reference No. & Date :

MSKPL/FD/2024-25/JV54CZ_1

27/06/2024

MSKNB/FD/2024-25/06/VLN8AF_1

13/06/2024

13/06/2024 - 16/06/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	12/06/2024
5. Place of sampling	Sona River before Confluence with baitarni River Kandra 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	Pranab Kumar Sethy

Report No. : MSKPL/FD/2024-25/JV54CZ_1

Sample No. : MSKNB/FD/2024-25/06/VLN8AF_1

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	<1.8

Opinion : NA

— END —

Reviewed By:

Signature :

Name : Ms. Malinayee Chakraborty

Designation : Executive Microbiologist

Authorized Signatory:

Signature :

Name : Mr. Sukanta Patra

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/2024-25/002104

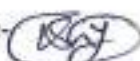
Date: 22.06.2024

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	12.06.2024
Location	Sona River Kandara 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	---	17
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
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	148
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	0.44
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	7
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	---	0.07
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	10
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	60
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	93
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	71
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	13
18	pH value at 19.2 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	6.89

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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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:

Reference No. & Date :

MSKPL/FD/2024-25/AJ54CG_1

27/06/2024

MSKNB/FD/2024-25/06/LEJ8BX_1

13/06/2024

13/06/2024 - 26/06/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	12/06/2024
5. Place of sampling	Beitarni River Kandra 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	Pranab Kumar Sethy

Report No. : MSKPL/FD/2024-25/AJ54CG_1

Sample No. : MSKNB/FD/2024-25/06/LEJ8BX_1

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	0.69
13	Zinc as Zn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)

Opinion : NA

END

Reviewed By:

Signature

Name

Designation

Ms. Anupriya Saha, Ms. Piali Ganguly
Sr. Executive Chemist

Authorized Signatory:

Signature

Name

Designation

Dr. Soumyadeep Mukhopadhyay
Lab in charge

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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Reviewed By:

Signature : *Apurba Saha* *P. Ganguly*
Name : Ms. Apurba Saha, Ms. Poo Ganguly
Designation : Sr. Executive Chemist

Authorized Signatory:

Signature : *[Signature]*
Name : Dr. Soumyadeep Mukhopadhyay
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 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 Air) 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.

Mitra S. K. Private Limited

Address of Laboratory :

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West Bengal
Tel. : +91 7044035120
Email: udayanlab@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

Report No. :

Date :

Sample No. :

Date of receipt of sample:

Date(s) of performance:

Reference No. & Date :

MSKPL/FD/2024-25/AJ54CG_1

27/06/2024

MSKNB/FD/2024-25/06/LEJ8BX_1

13/06/2024

13/06/2024 - 16/06/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	12/06/2024
5. Place of sampling	Baitani River Kandra 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	Pranab Kumar Sethy

Report No. : MSKPL/FD/2024-25/AJ54CG_1

Sample No. : MSKNB/FD/2024-25/06/LEJ8BX_1

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	<1.8

Opinion : NA

— END —

Reviewed By:

Signature :

Name : Ms. Maliree Chakraborty

Designation : Executive Microbiologist

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: Shreeji 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/2024-25/002103


Date: 22.06.2024

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	12.06.2024
Location	Baitarni River Kandra Village (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	---	14
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	---	5.3
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	110
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	1.07
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	3.8
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	---	0.06
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	5
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	44
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	69
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	51
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	28
18	pH value at 19.2 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	6.95

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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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/4H539P_1

Date :

25/08/2024

Sample No. :

MSKNB/FD/2024-25/06/57384U_1

Date of receipt of sample:

12/06/2024

Date(s) of performance:

12/06/2024 - 20/06/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	11/06/2024
5. Place of sampling	Roida 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	Loknath Mahanta

Report No. : MSKPL/FD/2024-25/4H539P_1

Sample No. : MSKNB/FD/2024-25/06/57384U_1

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	1.12
13	Zinc as Zn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)

Opinion : NA

— END —

Reviewed By:

Signature

Name

Designation : Sr. Executive Chemist

Abhishek Saha P. Ganguly
Mr. Abhishek Saha, Mr. Pali Ganguly

Authorized Signatory:

Signature

Name

Designation : Lab in charge

[Signature]
Dr. Bhumadep Mukherjee

Mitra S. K. Private Limited

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3, Pagladanga Road, Kolkata 700015
West Bengal
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Reviewed By:

Signature : *Aranya Saha P. Ganguly*
Name : Ms. Aranya Saha, Ms. Pooi Ganguly
Designation : Sr. Executive Chemist

Authorized Signatory:

Signature : *[Signature]*
Name : Dr. Subrata Kumar Ghosh
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. Perishable sample(s) shall be retained 2 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

Report No. :

MSKPL/FD/2024-25/4H539P_1

Date :

25/06/2024

Sample No. :

MSKNB/FD/2024-25/06/57384U_1

Date of receipt of sample:

12/06/2024

Date(s) of performance:

12/06/2024 - 14/06/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	11/06/2024
5. Place of sampling	Roida 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	Loknath Mahanta

Report No. : MSKPL/FD/2024-25/4H539P_1

Sample No. : MSKNB/FD/2024-25/06/57384U_1

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	<1.8

Opinion : NA

— END —

Reviewed By:

Signature :

Name : Ms. Malleswari Chakraborty

Designation : Executive Microbiologist

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.

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Address of Laboratory :

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

Report No. :

MSKPL/FD/2024-25/H65FAQ_1

Date :

19/07/2024

Sample No. :

MSKNB/FD/2024-25/07/N0H510_1

Date of receipt of sample:

08/07/2024

Date(s) of performance:

08/07/2024 - 19/07/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	Surface Water
4. Date of sampling	06/07/2024
5. Place of sampling	Roida Village Pond Water 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	D.Pradhan

Report No. : MSKPL/FD/2024-25/H65FAQ_1

Lab Sample Id. : MSK/KOL/2024-25/106

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
1	Arsenic as As	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	2.1
2	Boron as B	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	5.6
3	Cadmium as Cd	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
4	Colour	Hazen	IS 3025 (Part 4)	BDL(DL:1.0)
5	Copper as Cu	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	2.8
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	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
10	Manganese as Mn	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	36.7
11	Mercury as Hg	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
12	Nitrate as NO3	mg/l	APHA (24th EDITION) 4500-NO3- B	1.78
13	Zinc as Zn	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)

Reviewed By:

Signature

Name

: Ms. Anayee Saha, Mr. Padi Ganguly

Designation

: Sr. Executive Chemist

Authorized Signatory:

Signature

Name

: Dr. Somnathdeep Mukhopadhyay

Designation

: Lab In-charge

Head Office:

Shrachi 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@mitrask.com Website : www.mitrask.com

Address of Laboratory :

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West Bengal
Tel : +91 7044038120
Email: udayanlab@mitrask.com




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Opinion : NA

— END —

Reviewed By:

Signature : 
Name : Mr. Abirjee Saha/Ms. Priya Ganguly
Designation : Sr. 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 (Sol, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (W) 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, Sewage Water, Sewage 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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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West
At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2024-25/H65FAQ_1

Date :

19/07/2024

Sample No. :

MSKNB/FD/2024-25/07/NOH510_1

Date of receipt of sample:

08/07/2024

Date(s) of performance:

08/07/2024 - 11/07/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	Surface Water
4. Date of sampling	06/07/2024
5. Place of sampling	Roida Village Pond Water 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	D.Pradhan

Report No. : MSKPL/FD/2024-25/H65FAQ_1**Lab Sample Id.** MSK/KOL/2024-25/106

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	<1.8

Opinion : NA

----- END -----

Reviewed By:

Signature :

Name : Ms. Mdreyee Chakraborty

Designation : Executive Microbiologist

Authorized Signatory:

Signature :

Name : Mr. Sukanta Pali

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: Shreeji Centre (10th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.

Tel. : 91 33 40143000 / 22950007 Fax : 91 33 22950008

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

Report No. MSKGL/ED/2024-25/002780

Date: 19.07.2024

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	06.07.2024
Location	Bhuia Roida Village Pond Water (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	9
2	Calcium (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	14
3	Chemical Oxygen Demand (COD)	mg/l	APHA (24th Edition), 5220B	250	31
4	Chloride (as Cl ⁻)	mg/l	APHA (24th Edition), 4500 -Cl B	---	53
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	3.2
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	225
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	1.04
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	4.7
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	---	0.11
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	26.6
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	44
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	141
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	55
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	53
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, Pagledanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044038120
Email: udayanlab@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

Report No. :

MSKPL/FD/2024-25/HK5FA6_1

Date :

19/07/2024

Sample No. :

MSKNB/FD/2024-25/07/ZMR4EW_1

Date of receipt of sample:

08/07/2024

Date(s) of performance:

08/07/2024 - 19/07/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	Surface Water
4. Date of sampling	06/07/2024
5. Place of sampling	Baitami River Kandra 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	D.Pradhan

Report No. : MSKPL/FD/2024-25/HK5FA6_1**Lab Sample Id. :** MSK/KOL/2024-25/107

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
1	Arsenic as As	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	2.4
2	Boron as B	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
3	Cadmium as Cd	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
4	Colour	Hazen	IS 3025 (Part 4)	15
5	Copper as Cu	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	16.1
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	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	2.8
10	Manganese as Mn	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	65.0
11	Mercury as Hg	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
12	Nitrate as NO3	mg/l	APHA (24th EDITION) 4500-NO3- B	1.32
13	Zinc as Zn	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	23.1

Reviewed By:

Signature

Name

Designation

Amitree Saha P Ganguly
Ms. Amitree Saha, Ms. Padi Ganguly

Sr. Executive Chemist

Authorized Signatory:

Signature

Name

Designation

Dr. Soumyajit Mukhopadhyay
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 22650005
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




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Opinion : NA

— END —

Reviewed By:

Signature: 

Name : Mr. Anil Kumar P. Ganguly

Designation : Sr. 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 retained part of sample(s) for chemical analysis (from - 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 Wastes) 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 (from - perishable sample(s) Food, Sterile Water, Gravel, Soil) 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- 43, Udayan Industrial Estate,
3, Pagladanga Road, Kolkata 700015
West Bengal
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Email: udayanlab@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

Report No. :

MSKPL/FD/2024-25/HK5FA6_1

Date :

19/07/2024

Sample No. :

MSKNB/FD/2024-25/07/ZMR4EW_1

Date of receipt of sample:

08/07/2024

Date(s) of performance:

08/07/2024 - 11/07/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	Surface Water
4. Date of sampling	06/07/2024
5. Place of sampling	Baitani River Kandra 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	D.Pradhan

Report No. : MSKPL/FD/2024-25/HK5FA6_1**Lab Sample Id.** MSK/KOL/2024-25/107

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	<1.8

Opinion : NA

----- END -----

Reviewed By:

Signature :

Name : Ms. Meenyes Chakraborty

Designation : Executive Microbiologist

Authorized Signatory:

Signature :

Name : Mr. Sukanta Palui

Designation : Technical In-charge

This result relates 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: Shreeji 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

Report No. MSKGL/ED/2024-25/002782

Date: 19.07.2024

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	06.07.2024
Location	Baitarni River Kandara 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	---	6
3	Chemical Oxygen Demand (COD)	mg/l	APHA (24th Edition), 5220B	250	10
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	---	5.8
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	96
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	7.9
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	4.7
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	---	0.05
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	7.8
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	24
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	60
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	35
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	273
18	pH value at 19.2 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	6.56

Checked by: 

For Mitra S. K. Private Limited


Authorized Signatory

Address of Laboratory :

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

Report No. :

MSKPL/FD/2024-25/PZ5FAR_1

Date :

19/07/2024

Sample No. :

MSKNB/FD/2024-25/07/AUA508_1

Date of receipt of sample:

08/07/2024

Date(s) of performance:

08/07/2024 - 19/07/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	Surface Water
4. Date of sampling	08/07/2024
5. Place of sampling	Sona River Near Mahanadi Guest House 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	D.Pradhan

Report No. : MSKPL/FD/2024-25/PZ5FAR_1**Lab Sample Id. :** MSKKOL/2024-25/105

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
1	Arsenic as As	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
2	Boron as B	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
3	Cadmium as Cd	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
4	Colour	Hazen	IS 3025 (Part 4)	BDL(DL:1.0)
5	Copper as Cu	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
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	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
10	Manganese as Mn	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	2.1
11	Mercury as Hg	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
12	Nitrate as NO3	mg/l	APHA (24th EDITION) 4500-NO3- B	1.02
13	Zinc as Zn	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)

Reviewed By:

Signature:

Name:

Designation:

Atanjan Saha P. Ganguly
Mr. Atanjan Saha/Mr. Pali Ganguly
Sr. Executive Chemist

Authorized Signatory:

Signature:

Name:

Designation:

Dr. Soumyadeep Mukherjee
Dr. Soumyadeep Mukherjee
Lab In-charge

Head Office:

Shradhi 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 Laboratory :

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



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Opinion : NA

— END —

Reviewed By:

Signature : *Amayee Saha P. Ganguly*
Name : Ms. Amayee Saha, Ms. Preeti Ganguly
Designation : Sr. Executive Chemist

Authorized Signatory:

Signature : *Dr. Soumyadeep Mukherjee*
Name : Dr. Soumyadeep Mukherjee
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 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 (Solid, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (W) 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.

Head Office: Service Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700015, 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



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West
At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2024-25/PZ5FAR_1

Date :

19/07/2024

Sample No. :

MSKNB/FD/2024-25/07/AUA508_1

Date of receipt of sample:

08/07/2024

Date(s) of performance:

08/07/2024 - 10/07/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	Surface Water
4. Date of sampling	06/07/2024
5. Place of sampling	Sona River Near Mahanadi Guest House JWIMM
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	D.Pradhan

Report No. : MSKPL/FD/2024-25/PZ5FAR_1**Lab Sample Id.** MSK/KOL/2024-25/105

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	<1.8

Opinion : NA

— END —

Reviewed By:

Signature :

Name : Ms. Madhura Chakraborty

Designation : Executive Microbiologist

Authorized Signatory:

Signature :

Name : Mr. Sukanta Palui

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 (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: Bhadrak Centre (8th 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/2024-25/002781

Date: 19.07.2024

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	06.07.2024
Location	Sona River Near Mahanadi Guest House (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	---	13
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	---	6
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	4.8
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	99
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	0.1
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	2.8
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	---	0.05
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	5.6
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	32
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	62
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	43
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	27
18	pH value at 19.2 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	6.82

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 7046038120
Email: udayanlab@mitrask.com



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

Tata Steel Ltd.(MGM) _Joda West

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

Report No. :

MSKPL/FD/2024-25/YH5FA5_1

Date :

19/07/2024

Sample No. :

MSKNB/FD/2024-25/0703Y4FY_1

Date of receipt of sample:

08/07/2024

Date(s) of performance:

08/07/2024 - 19/07/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	SURFACE WATER
4. Date of sampling	06/07/2024
5. Place of sampling	Sona River before Confluence with bailamli River Kandra 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	D.Pradhan

Report No. : MSKPL/FD/2024-25/YH5FA5_1**Lab Sample Id. :** MSK/KOL/2024-25/104**RESULT**

Chemical				
Sl No.	Parameter	UOM	Method	Result
1	Arsenic as As	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	1.2
2	Boron as B	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	10.1
3	Cadmium as Cd	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
4	Colour	Hazen	IS 3025 (Part 4)	BDL(DL:1.0)
5	Copper as Cu	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
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	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
10	Manganese as Mn	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
11	Mercury as Hg	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
12	Nitrate as NO3	mg/l	APHA (24th EDITION) 4500-NO3- B	1.80
13	Zinc as Zn	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)

Reviewed By:

Signature

Name : Ms. Aniruddha Saha, Ms. Priya Ganguly

Designation : Sr. Executive Chemist

Authorized Signatory:

Signature

Name : Dr. Subhasdeep Mukhopadhyay

Designation : Lab In-charge

Address of Laboratory :

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



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Opinion : NA

— END —

Reviewed By:

Signature : 
Name : Mr. Anirban Saha, Ms. Palli Ganguly
Designation : Sr. 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 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 (Sol, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (AO) 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. 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



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West
At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2024-25/YH5FA5_1

Date :

19/07/2024

Sample No. :

MSKNB/FD/2024-25/07/03Y4FY_1

Date of receipt of sample:

08/07/2024

Date(s) of performance:

08/07/2024 - 10/07/2024

Reference No. & Date :

3000156017/056, Date - 18/09/2023

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)	SURFACE WATER
4. Date of sampling	08/07/2024
5. Place of sampling	Sona River before Confluence with baltami River Kandra Village (JWMM)
6. Environmental conditions during sampling & Transport	(2 - 5)deg C Cold chain maintained
7. Sampling Plan & Method used	IS 17814 (P - 25): 2022
8. Identification of the personnel performing sampling by MSK	D.Pradhan

Report No. : MSKPL/FD/2024-25/YH5FA5_1**Lab Sample Id.** MSK/KOL/2024-25/104

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	<1.8

Opinion : NA

----- END -----

Reviewed By:**Signature :****Name :** Ms. Maitreyee Chakraborty**Designation :** Executive Microbiologist**Authorized Signatory:****Signature :****Name :** Mr. Sukanta Palui**Designation :** Technical 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: Shreeji Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
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Report No. MSKGL/ED/2024-25/002779


Date: 19.07.2024

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	06.07.2024
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	---	17
3	Chemical Oxygen Demand (COD)	mg/l	APHA (24th Edition), 5220B	250	<4.0
4	Chloride (as Cl ⁻)	mg/l	APHA (24th Edition), 4500 -ClB	---	10
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	6.2
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	174
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	0.13
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	8.5
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	---	0.08
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO42-E	---	20.6
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	59
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	109
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	82
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	4.8
18	pH value at 19.2 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	6.84

Checked by: 

For Mitra S. K. Private Limited


Authorized Signatory

Address of Laboratory :

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



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 759034 India

Report No. :

MSKPL/FD/2024-25/3U5EEV_1

Date :

10/07/2024

Sample No. :

MSKNB/FD/2024-25/07/SRD37M_1

Date of receipt of sample:

04/07/2024

Date(s) of performance:

04/07/2024 - 10/07/2024

Reference No. & Date :

3000156017/056, Date - 16/08/2023

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)	Surface Water
4. Date of sampling	03/07/2024
5. Place of sampling	Pond inside Bichakundi vegetables garden
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	Pranab Sethi, Dhamaprakash Pradhan

Report No. : MSKPL/FD/2024-25/3U5EEV_1**Lab Sample Id. :** MSK/KOL/2024-25/39

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
1	Arsenic as As	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
2	Boron as B	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	6.2
3	Cadmium as Cd	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
4	Colour	Hazen	IS 3025 (Part 4)	BDL(DL:1.0)
5	Copper as Cu	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
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	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
10	Manganese as Mn	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	11.1
11	Mercury as Hg	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
12	Nitrate as NO3	mg/l	IS 3025 (Part 34)	1.09
13	Zinc as Zn	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	8.5

Reviewed By:

Signature

Name

Designation

Ms. Anayee Saha, Mr. Pali Ganguly

Sr. Executive Chemist

Authorized Signatory:

Signature

Name

Designation

Dr. Soumyadeep Mukhopadhyay

Lab in charge

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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Opinion : NA

----- END -----

Reviewed By:

Signature

Name

Designation

Atreyee Saha P. Ganguly
Ms. Atreyee Saha, Ms. Piali Ganguly
Sr. Executive Chemist

Authorized Signatory:

Signature

Name

Designation

Dr. Soumyadeep Mukhopadhyay
Dr. Soumyadeep Mukhopadhyay
Lab In charge

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

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The retained part of sample(s) for chemical analysis (Max - 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 microbiological analysis (Max - 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.

Head Office:

Service Centre (3rd Floor), 74B, A.J.C. Bose Road, Kolkata - 700015, West Bengal, India.
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3, Pagladanga Road, Kolkata 700015
West Bengal
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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:

Reference No. & Date :

MSKPL/FD/2024-25/3U5EEV_1

10/07/2024

MSKNB/FD/2024-25/07/SRD37M_1

04/07/2024

04/07/2024 - 09/07/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	Surface Water
4. Date of sampling	03/07/2024
5. Place of sampling	Pond inside Bichakundi vegetables garden
6. Environmental conditions during sampling & Transport	(2 - 5) deg C Cold Chain Maintained
7. Sampling Plan & Method used	IS: 17814(P-25) 2022
8. Identification of the personnel performing sampling by MSK	Pranab Sethi, Dharmaprakash Pradhan

Report No. : MSKPL/FD/2024-25/3U5EEV_1

Lab Sample Id. MSK/KOL/2024-25/39

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	33000

Opinion : NA

— END —

Reviewed By:

Signature :

Name : Ms. Malliyye Chatterboty

Designation : Executive Microbiologist

Authorized Signatory:

Signature :

Name : Mr. Sukanta Patra

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/2024-25/002762

Date: 17.07.2024

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	03.07.2024
Location	Bichakundi Vegetable Garden Pond (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	---	8.0
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	---	8.0
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	5.2
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	83
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	0.24
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	3.8
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	---	0.04
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ 2-E	---	7.2
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	24
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	52
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	35
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	13
18	pH value at 19.2 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	7.27

Checked by: 

For Mitra S. K. Private Limited



Authorized Signatory

Mitra S. K. Private Limited

Address of Laboratory :

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3, Pagladanga Road, Kolkata 700015
West Bengal
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Email: udayanlab@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

Report No. :

MSKPL/FD/2024-25/2Y5EET_1

Date :

10/07/2024

Sample No. :

MSKNB/FD/2024-25/07/MYS36F_1

Date of receipt of sample:

04/07/2024

Date(s) of performance:

04/07/2024 - 10/07/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	Surface Water
4. Date of sampling	03/07/2024
5. Place of sampling	Sona river near Pichlaghat Pump House (downstream)
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	Pranab Sethi, Dharmaprakash Pradhan

Report No. : MSKPL/FD/2024-25/2Y5EET_1

Lab Sample Id. : MSK/KOL/2024-25/38

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
1	Arsenic as As	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
2	Boron as B	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	6.6
3	Cadmium as Cd	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
4	Colour	Hazen	IS 3025 (Part 4)	BDL(DL:1.0)
5	Copper as Cu	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	2.4
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	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
10	Manganese as Mn	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	36.8
11	Mercury as Hg	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
12	Nitrate as NO3	mg/l	IS 3025 (Part 34)	4.68
13	Zinc as Zn	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	12.3

Reviewed By:

Signature

Abhaya Saha P. Ganguly

Name

Ms. Abhaya Saha, Ms. Piali Ganguly

Designation

Sr. Executive Chemist

Authorized Signatory:

Signature

Name

Designation

Dr. Soumyajit Mondal

Lab in charge

Head Office:

Shreeji Centre (5th Floor), T-4B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India
Tel. : 91 33 40143000 / 22650007 Fax : 91 33 22650008
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West Bengal
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Email: udayanlab@mitrask.com



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Opinion : NA

— END —

Reviewed by:

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

Authorized Signatory:

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

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The reserved part of sample(s) for chemical analysis (Solid, Gaseous & Liquid sample(s)) shall be retained for 15 days as per CPCB guideline & (AII) 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.

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Address of Laboratory :

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

Report No. :

MSKPL/FD/2024-25/2Y5EET_1

Date :

10/07/2024

Sample No. :

MSKNE/FD/2024-25/07/MYS36F_1

Date of receipt of sample:

04/07/2024

Date(s) of performance:

04/07/2024 - 09/07/2024

Reference No. & Date :

3000158017/056, Date - 16/09/2023

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)	Surface Water
4. Date of sampling	03/07/2024
5. Place of sampling	Sona river near Pichlaghat Pump House (downstream)
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, Dharmaprakash Pradhan

Report No. : MSKPL/FD/2024-25/2Y5EET_1**Lab Sample Id.** MSK/KOL/2024-25/38

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	2100

Opinion : NA

— END —

Reviewed By:

Signature :

Name : Ms. Malayika Chakraborty

Designation : Executive Microbiologist

Authorized Signatory:

Signature :

Name : Mr. Sukanta Palui

Designation : Technical In charge

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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 & (Ail) 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 33 40143000 / 22650007 Fax : 91 33 22650008
Email : info@mitrask.com Website : www.mitrask.com

Report No. MSKGL/ED/2024-25/002761

Date: 17.07.2024

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	03.07.2024
Location	Sona river near Pichlaghat Pump House Down Stream (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	---	19
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	---	2.0
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	5.9
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	112
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	3.8
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	0.9
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	---	12
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	36
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	70
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	51
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	79
18	pH value at 20.5 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	7.29

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



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/905EEJ_1

Date :

10/07/2024

Sample No. :

MSKNB/FD/2024-25/07/J3C33S_1

Date of receipt of sample:

04/07/2024

Date(s) of performance:

04/07/2024 - 10/07/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	Surface Water
4. Date of sampling	03/07/2024
5. Place of sampling	Sona river near Pichlaghat Pump House(upstream)
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	Pranab Sethi, Dharmaprakash Pradhan

Report No. : MSKPL/FD/2024-25/905EEJ_1**Lab Sample Id. :** MSK/KOL/2024-25/37

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
1	Arsenic as As	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
2	Boron as B	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	7.0
3	Cadmium as Cd	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
4	Colour	Hazen	IS 3025 (Part 4)	BDL(DL:1.0)
5	Copper as Cu	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	2.2
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	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
10	Manganese as Mn	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	36.9
11	Mercury as Hg	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
12	Nitrate as NO3	mg/l	IS 3025 (Part 34)	3.2
13	Zinc as Zn	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	15.2

Reviewed By:

Signature

Name : Ms. Ananya Saha, Ms. Piali Ganguly

Designation : Sr. Executive Chemist

Authorized Signatory:

Signature

Name : Dr. Sohamdeep 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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Opinion : NA

— END —

Reviewed By:

Signature : 
Name : Ms. Anayee Saha, Ms. Palli Ganguly
Designation : Sr. Executive Chemist

Authorized Signatory:

Signature : 
Name : Dr. Soumyajit 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 (Sol, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (Ase) 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, Sterile 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.

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

Report No. :

MSKPL/FD/2024-25/9D5EEJ_1

Date :

10/07/2024

Sample No. :

MSKNB/FD/2024-25/07/J3C33S_1

Date of receipt of sample:

04/07/2024

Date(s) of performance:

04/07/2024 - 09/07/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	Surface Water
4. Date of sampling	03/07/2024
5. Place of sampling	Sona river near Pichlaghai Pump House(upstream)
6. Environmental conditions during sampling & Transport	(2 - 5) deg C Cold Chain Maintained
7. Sampling Plan & Method used	IS: 17514(P-25) 2022
8. Identification of the personnel performing sampling by MSK	Pranab Sethi, Dhamaprakash Pradhan

Report No. : MSKPL/FD/2024-25/9D5EEJ_1

Lab Sample Id. MSK/KOL/2024-25/37

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	22000

Opinion : NA

— END —

Reviewed By:

Signature :
Name : Ms. Madhurya Chakraborty
Designation : Executive Microbiologist

Authorized Signatory:

Signature :
Name : Mr. Subanta Palui
Designation : Technical 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: Street Centre (5th Floor), 748, A.J.C. Bose Road, Kolkata - 700015, West Bengal, India.
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Report No. MSKGL/ED/2024-25/002760

Date: 17.07.2024

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	03.07.2024
Location	Sona river near Pichlaghat Pump House Up Stream (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	---	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	---	6
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	7.1
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	144
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	7.8
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	10.0
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	---	0.07
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	14
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	28
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	90
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	82
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	106
18	pH value at 19.8 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	7.32

Checked by: 

For Mitra S. K. Private Limited


Authorized Signatory

Mitra S. K. Private Limited

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West Bengal
Tel : +91 7044036120
Email: udayanlab@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

Report No. :

MSKPL/FD/2024-25/W65EEC_1

Date :

10/07/2024

Sample No. :

MSKNB/FD/2024-25/07/6QT35Q_1

Date of receipt of sample:

04/07/2024

Date(s) of performance:

04/07/2024 - 10/07/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	Surface Water
4. Date of sampling	03/07/2024
5. Place of sampling	Keth Hutting after H-QUARRRRY (downstream)
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	Pranab Sethi, Dharmaprakash Pradhan

Report No. : MSKPL/FD/2024-25/W65EEC_1

Lab Sample Id. : MSK/KOL/2024-25/36

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
1	Arsenic as As	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
2	Boron as B	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	5.9
3	Cadmium as Cd	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
4	Colour	Hazen	IS 3025 (Part 4)	BDL(DL:1.0)
5	Copper as Cu	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	1.7
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	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
10	Manganese as Mn	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	29.6
11	Mercury as Hg	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
12	Nitrate as NO3	mg/l	IS 3025 (Part 34)	3.11
13	Zinc as Zn	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	20.5

Reviewed By:

Signature

Name : Ms. Anayee Saha, Ms. Priya Ganguly

Designation : Sr. Executive Chemist

Authorized Signatory:

Signature

Name : Dr. Soumyajit Mukhopadhyay

Designation : Lab In charge

Head Office:

Strach Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700015, West Bengal, India.
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Opinion : NA

----- END -----

Reviewed By:

Signature

Name

Designation

Atayee Saha P. Ganguly

Ms. Atayee Saha, Ms. Palli Ganguly

Sr. Executive Chemist

Authorized Signatory:

Signature

Name

Designation

Dr. Soumya Mukhopadhyay

Lab in charge

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The reserved part of sample(s) for chemical analysis (Solid - 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 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, Sterile 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

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West Bengal
Tel. : +91 7044036120
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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/W65EEC_1

Date :

10/07/2024

Sample No. :

MSKNB/FD/2024-25/07/6QT36Q_1

Date of receipt of sample:

04/07/2024

Date(s) of performance:

04/07/2024 - 09/07/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	Surface Water
4. Date of sampling	03/07/2024
5. Place of sampling	Keth Huttling after H-QUARRRRY (downstream)
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, Dharmaprakash Pradhan

Report No. : MSKPL/FD/2024-25/W65EEC_1

Lab Sample Id. MSK/KOL/2024-25/36

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	3500

Opinion : NA

— END —

Reviewed by:

Signature :
Name : Ms. Malleswari Chakraborty
Designation : Executive Microbiologist

Authorized Signatory:

Signature :
Name : Mr. Sukanta Pakul
Designation : Technical 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.

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

Report No. MSKGL/ED/2024-25/002759


Date: 17.07.2024

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	03.07.2024
Location	Keth-Hutting after H- Quarry Down Stream (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	---	9
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	---	5.8
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	122
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	3.2
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	11
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 2-E	---	14
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	36
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	---	71
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	17
18	pH value at 26.3 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	7.35

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



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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:

Reference No. & Date :

MSKPL/FD/2024-25/VW5EEM_1

10/07/2024

MSKNB/FD/2024-25/07/15Q34B_1

04/07/2024

04/07/2024 - 10/07/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	Surface Water
4. Date of sampling	03/07/2024
5. Place of sampling	keth Hutting before H-Quarry (upstream)
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	Pranab Sethi, Dharmaprakash Pradhan

Report No. : MSKPL/FD/2024-25/VW5EEM_1

Lab Sample Id. : MSK/KOL/2024-25/35

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
1	Arsenic as As	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
2	Boron as B	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	7.3
3	Cadmium as Cd	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
4	Colour	Hazen	IS 3025 (Part 4)	BDL(DL:1.0)
5	Copper as Cu	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	2.2
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	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
10	Manganese as Mn	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	43.0
11	Mercury as Hg	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
12	Nitrate as NO3	mg/l	IS 3025 (Part 34)	4.52
13	Zinc as Zn	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	29.0

Reviewed By:

Signature

Name

Designation

Amitava Saha P. Ganguly

Ms. Anayee Saha, Ms. Pooi Ganguly

Sr. Executive Chemist

Authorized Signatory:

Signature

Name

Designation

Dr. Gourab Das Mukherjee

Lab in charge

Head Office:

Shyachi Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700018, West Bengal, India.
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West Bengal
Tel. : +91 7044038120
Email: udayanlab@mitrask.com



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Opinion : NA

— END —

Reviewed By:

Signature : 
Name : Ms. Anayee Saha, Ms. Palli Ganguly
Designation : Sr. Executive Chemist

Authorized Signatory:

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

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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. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

Address of Laboratory :

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

Report No. :

MSKPL/FD/2024-25/VW5EEM_1

Date :

10/07/2024

Sample No. :

MSKNB/FD/2024-25/07/15Q34B_1

Date of receipt of sample:

04/07/2024

Date(s) of performance:

04/07/2024 - 09/07/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	03/07/2024
5. Place of sampling	keith Hutting before H-Quarry (upstream)
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, Dhamaprakash Pradhan

Report No. : MSKPL/FD/2024-25/VW5EEM_1

Lab Sample Id. MSK/KOL/2024-25/35

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	2800

Opinion : NA

----- END -----

Reviewed By:

Signature : 
Name : Ms. Mallesha Chakraborty
Designation : Executive Microbiologist

Authorized Signatory:

Signature : 
Name : Mr. Subanta 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.
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Report No. MSKGL/ED/2024-25/002753


Date: 17.07.2024

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	03.07.2024
Location	Keth -Hutting before H-Quarry Up Stream (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	---	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	---	2
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	4.8
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	99
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	2.5
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	4.7
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	---	0.05
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ 2-E	---	14
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	28
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	62
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	47
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	15
18	pH value at 23.7 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	7.38

Checked by: 

For Mitra S. K. Private Limited


Authorized Signatory

Report No. MSKGL/ED/2024-25/003401


Date: 30.08.2024

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	23.08.2024
Location	Bichakundi Vegetable Garden pond (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	---	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	---	8
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	4.4
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	117
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	1.27
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	2.8
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	---	0.06 PSU
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	8.6
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	30
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	62
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	39
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	24
18	pH value at 23.7 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	6.66

Checked by: 
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For Mitra S. K. Private


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Report No. MSKGL/ED/2024-25/003401

Date: 30.08.2024

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	23.08.2024
Location	Bichakundi Vegetable Garden pond (JWIMM)

CHEMICAL ANALYSIS OF WATER

Sl. No.	Test Parameters	Unit	Max. Tolerance Limit as per CPCB	Results
1	Arsenic as As	mg/l	0.2	<1.0
2	Boron as B	mg/l	---	5.8
3	Cadmium as Cd	mg/l	2	<1.0
4	Colour	Hazen	5	<1.0
5	Copper as Cu	mg/l	3	<1.0
6	Cyanide as CN	mg/l	0.2	<0.02
7	Fluoride as F	mg/l	2	<0.2
8	Hexavalent Chromium (as Cr+6)	mg/l	0.1	<0.01
9	Lead as Pb	mg/l	0.1	<1.0
10	Mercury as Hg	mg/l	0.01	<1.0
11	Manganese as Mn	mg/l	2	10.4
12	Nitrate as NO3	mg/l	10	0.98
13	Zinc as Zn	mg/l	5	8.2
14	Total coliform	/100ml	---	Present

Checked by: *Sanku*

For Mitra S. K. Private Limited

Sanku
Authorized Signatory

Report No. MSKGL/ED/2024-25/003402

Date: 30.08.2024

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	23.08.2024
Location	Pichlaghat pump house (downstream) (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	---	6.3
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	---	2
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	6
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	88
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	---	3.8
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	---	0.04 PSU
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	3.8
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	27
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	52
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	31
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	27
18	pH value at 26.3 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	7.26

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Report No. MSKGL/ED/2024-25/003402

Date: 30.08.2024

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	23.08.2024
Location	Pichlaghat pump house (downstream) (JWIMM)

CHEMICAL ANALYSIS OF WATER

Sl. No.	Test Parameters	Unit	Max. Tolerance Limit as per CPCB	Results
1	Arsenic as As	mg/l	0.2	<1.0
2	Boron as B	mg/l	---	6.2
3	Cadmium as Cd	mg/l	2	<1.0
4	Colour	Hazen	5	<1.0
5	Copper as Cu	mg/l	3	2.2
6	Cyanide as CN	mg/l	0.2	<0.02
7	Fluoride as F	mg/l	2	<0.2
8	Hexavalent Chromium (as Cr+6)	mg/l	0.1	<0.01
9	Lead as Pb	mg/l	0.1	<1.0
10	Mercury as Hg	mg/l	0.01	<1.0
11	Manganese as Mn	mg/l	2	36.4
12	Nitrate as NO3	mg/l	10	4.27
13	Zinc as Zn	mg/l	5	13.2
14	Total coliform	/100ml	---	Present

Checked by: *Sanket*

For Mitra S. K. Private Limited

Sanket
Authorized Signatory

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Report No. MSKGL/ED/2024-25/003403


Date: 30.08.2024

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	23.08.2024
Location	Pichalaghat pump house (upstream) (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	---	9.4
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	---	4.9
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	5.3
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	94
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	0.9
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	4.7
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	---	0.05 PSU
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ 2-E	---	5.2
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	38
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	59
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	43
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	115
18	pH value at 19.8 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	7.46

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Report No. MSKGL/ED/2024-25/003403


Date: 30.08.2024

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	23.08.2024
Location	Pichalaghat pump house (upstream) (JWIMM)

CHEMICAL ANALYSIS OF WATER

Sl. No.	Test Parameters	Unit	Max. Tolerance Limit as per CPCB	Results
1	Arsenic as As	mg/l	0.2	<1.0
2	Boron as B	mg/l	---	6.4
3	Cadmium as Cd	mg/l	2	<1.0
4	Colour	Hazen	5	<1.0
5	Copper as Cu	mg/l	3	2
6	Cyanide as CN	mg/l	0.2	<0.02
7	Fluoride as F	mg/l	2	<0.2
8	Hexavalent Chromium (as Cr+6)	mg/l	0.1	<0.01
9	Lead as Pb	mg/l	0.1	<1.0
10	Mercury as Hg	mg/l	0.01	<1.0
11	Manganese as Mn	mg/l	2	35.8
12	Nitrate as NO ₃	mg/l	10	3.18
13	Zinc as Zn	mg/l	5	14.8
14	Total coliform	/100ml	---	Present

Checked by: 

For Mitra S. K. Private Limited


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Report No. MSKGL/ED/2024-25/003404


Date: 31.08.2024

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	24.08.2024
Location	Keth hutting before H-Quarry (upstream) (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	---	6.3
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	---	3
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	6.4
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	75
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	1.07
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	4.7
9	Odour	mg/l	APHA (24th Edition), 2150B	Agrecable	Agrecable
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	---	0.05 PSU
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	8
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	23
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	47
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	35
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	19
18	pH value at 20.5 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	7.14

Checked by:- 
 Limited

For Mitra S. K. Private


 Authorized Signatory

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Report No. MSKGL/ED/2024-25/003404

Date: 31.08.2024

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	24.08.2024
Location	Keth hutting before H-Quarry (upstream) (JWIMM)

CHEMICAL ANALYSIS OF WATER

Sl. No.	Test Parameters	Unite	Max. Tolerance Limit as per CPCB	Results
1	Arsenic as As	mg/l	0.2	<1.0
2	Boron as B	mg/l	---	7.1
3	Cadmium as Cd	mg/l	2	<1.0
4	Colour	Hazen	5	<1.0
5	Copper as Cu	mg/l	3	2
6	Cyanide as CN	mg/l	0.2	<0.02
7	Fluoride as F	mg/l	2	<0.2
8	Hexavalent Chromium (as Cr+6)	mg/l	0.1	<0.01
9	Lead as Pb	mg/l	0.1	<1.0
10	Mercury as Hg	mg/l	0.01	<1.0
11	Manganese as Mn	mg/l	2	41
12	Nitrate as NO3	mg/l	10	4.28
13	Zinc as Zn	mg/l	5	26
14	Total coliform	/100ml	---	Present

Checked by:- *Sanku*

For Mitra S. K. Private Limited


 Authorized Signatory

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Report No. MSKGL/ED/2024-25/003405


Date: 31.08.2024

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	24.08.2024
Location	Keth hutting after H-Quarry (downstream) (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	---	9.4
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	---	5.9
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	6.3
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	79
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	1.13
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	0.9
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	---	0.04 PSU
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	6.2
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	19
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	45
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	25
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	26
18	pH value at 19.2 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	7.07

Checked by: 
 Limited

For Mitra S. K. Private


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Report No. MSKGL/ED/2024-25/003405

Date: 31.08.2024

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	24.08.2024
Location	Keth hutting after H-Quarry (downstream) (JWIMM)

CHEMICAL ANALYSIS OF WATER

Sl. No.	Test Parameters	Unite	Max. Tolerance Limit as per CPCB	Results
1	Arsenic as As	mg/l	0.2	<1.0
2	Boron as B	mg/l	—	5.6
3	Cadmium as Cd	mg/l	2	<1.0
4	Colour	Hazen	5	<1.0
5	Copper as Cu	mg/l	3	1.8
6	Cyanide as CN	mg/l	0.2	<0.02
7	Fluoride as F	mg/l	2	<0.2
8	Hexavalent Chromium (as Cr+6)	mg/l	0.1	<0.01
9	Lead as Pb	mg/l	0.1	<1.0
10	Mercury as Hg	mg/l	0.01	<1.0
11	Manganese as Mn	mg/l	2	28.4
12	Nitrate as NO ₃	mg/l	10	3.04
13	Zinc as Zn	mg/l	5	21.4
14	Total coliform	/100ml	—	Present

Checked by:- *Sanku*

For Mitra S. K. Private Limited


 Authorized Signatory

Report No. MSKGL/ED/2024-25/003406


Date: 31.08.2024

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	24.08.2024
Location	Sona river near Mahanadi guest house (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	---	9.4
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	---	6.1
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	78
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	1.73
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	3.8
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	---	0.04 PSU
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ 2-E	---	7.6
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	27
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	51
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	39
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	15
18	pH value at 19.2 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	6.9

Checked by:- 
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For Mitra S. K. Private


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Report No. MSKGL/ED/2024-25/003406

Date: 31.08.2024

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	24.08.2024
Location	Sona river near Mahanadi guest house (JWIMM)

CHEMICAL ANALYSIS OF WATER

Sl. No.	Test Parameters	Unit	Max. Tolerance Limit as per CPCB	Results
1	Arsenic as As	mg/l	0.2	<1.0
2	Boron as B	mg/l	---	<1.0
3	Cadmium as Cd	mg/l	2	<1.0
4	Colour	Hazen	5	<1.0
5	Copper as Cu	mg/l	3	<1.0
6	Cyanide as CN	mg/l	0.2	<0.02
7	Fluoride as F	mg/l	2	<0.2
8	Hexavalent Chromium (as Cr+6)	mg/l	0.1	<0.01
9	Lead as Pb	mg/l	0.1	<1.0
10	Mercury as Hg	mg/l	0.01	<1.0
11	Manganese as Mn	mg/l	2	2
12	Nitrate as NO ₃	mg/l	10	0.96
13	Zinc as Zn	mg/l	5	<1.0
14	Total coliform	/100ml	---	Present

Checked by: *Sanku*

For Mitra S. K. Private Limited


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Report No. MSKGL/ED/2024-25/003408


Date: 31.08.2024

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	24.08.2024
Location	Baitarani River Kandara 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	---	7.8
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	---	6.1
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	116
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	4.2
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	5.6
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	---	0.06 PSU
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	17
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	27
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	74
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	43
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	248
18	pH value at 19.2 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	6.86

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Report No. MSKGL/ED/2024-25/003408


Date: 31.08.2024

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	24.08.2024
Location	Baitarani River Kandara Village (JWIMM)

CHEMICAL ANALYSIS OF WATER

Sl. No.	Test Parameters	Unite	Max. Tolerance Limit as per CPCB	Results
1	Arsenic as As	mg/l	0.2	2.2
2	Boron as B	mg/l	---	<1.0
3	Cadmium as Cd	mg/l	2	<1.0
4	Colour	Hazen	5	11
5	Copper as Cu	mg/l	3	15.2
6	Cyanide as CN	mg/l	0.2	<0.02
7	Fluoride as F	mg/l	2	<0.2
8	Hexavalent Chromium (as Cr+6)	mg/l	0.1	<0.01
9	Lead as Pb	mg/l	0.1	2.6
10	Mercury as Hg	mg/l	0.01	<1.0
11	Manganese as Mn	mg/l	2	61
12	Nitrate as NO3	mg/l	10	1.28
13	Zinc as Zn	mg/l	5	22.1
14	Total coliform	/100ml	---	Present

Checked by: 

For Mitra S. K. Private Limited


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Mitra S. K. Private Limited

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Report No. MSKGL/ED/2024-25/003407


Date: 31.08.2024

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	24.08.2024
Location	Sona River before confluence with Baitarani 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	---	18
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	---	16
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	6.1
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	174
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	1.3
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	8.5
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	---	0.09 PSU
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	19
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	49
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	101
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	82
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	5.6
18	pH value at 19.2 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	6.86

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Date: 31.08.2024

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	24.08.2024
Location	Sona River before confluence with Baitarani River (JWIMM)

CHEMICAL ANALYSIS OF WATER

Sl. No.	Test Parameters	Unite	Max. Tolerance Limit as per CPCB	Results
1	Arsenic as As	mg/l	0.2	1
2	Boron as B	mg/l	---	9.4
3	Cadmium as Cd	mg/l	2	<1.0
4	Colour	Hazen	5	<1.0
5	Copper as Cu	mg/l	3	<1.0
6	Cyanide as CN	mg/l	0.2	<0.02
7	Fluoride as F	mg/l	2	<0.2
8	Hexavalent Chromium (as Cr+6)	mg/l	0.1	<0.01
9	Lead as Pb	mg/l	0.1	<1.0
10	Mercury as Hg	mg/l	0.01	<1.0
11	Manganese as Mn	mg/l	2	<1.0
12	Nitrate as NO ₃	mg/l	10	1.64
13	Zinc as Zn	mg/l	5	<1.0
14	Total coliform	/100ml	---	Present

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For Mitra S. K. Private Limited


 Authorized Signatory

Report No. MSKGL/ED/2024-25/003409


Date: 31.08.2024

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	24.08.2024
Location	Bhuia Roida Village Pond Water (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	---	13
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	---	6.3
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	3
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	97
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	0.23
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	3
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	---	0.05 PSU
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	7.6
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	34
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	59
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	43
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	59
18	pH value at 19.2 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	6.71

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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	24.08.2024
Location	Bhuia Roida Village Pond Water (JWIMM)

CHEMICAL ANALYSIS OF WATER

Sl. No.	Test Parameters	Unit	Max. Tolerance Limit as per CPCB	Results
1	Arsenic as As	mg/l	0.2	1.8
2	Boron as B	mg/l	—	4.8
3	Cadmium as Cd	mg/l	2	<1.0
4	Colour	Hazen	5	<1.0
5	Copper as Cu	mg/l	3	2.2
6	Cyanide as CN	mg/l	0.2	<0.02
7	Fluoride as F	mg/l	2	<0.2
8	Hexavalent Chromium (as Cr+6)	mg/l	0.1	<0.01
9	Lead as Pb	mg/l	0.1	<1.0
10	Mercury as Hg	mg/l	0.01	<1.0
11	Manganese as Mn	mg/l	2	34.8
12	Nitrate as NO ₃	mg/l	10	1.64
13	Zinc as Zn	mg/l	5	<1.0
14	Total coliform	/100ml	—	Present

Checked by:- 

For Mitra S. K. Private Limited


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Report No. MSKGL/ED/2024-25/003999

Date: 30.09.2024

ANALYSIS REPORT OF SURFACE WATER

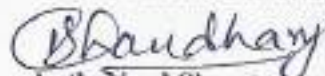
Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	16.09.2024
Location	Bichakundi Vegetable Garden Pond (JWIMM)

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	---	15
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	---	6.3
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	140
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	0.17
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	---	0.07 PSU
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	11.2
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	55
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	86
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	61
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	19
18	pH value at 25 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	7.1

Checked by: 

For Mitra S. K. Private Limited


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Report No. MSKGL/ED/2024-25/003999


Date: 30.09.2024

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	16.09.2024
Location	Bichakundi Vegetable Garden Pond (JWIMM)

CHEMICAL ANALYSIS OF WATER

Sl.No	Test Parameter	Test Method	Limit as per CPCB for discharge of effluent to inland Surface Water	Result
1.	Colour in Hazen Units	IS 3025 (Part 4): 2021	All efforts should be made to remove colour as far as practicable	10
2.	Copper(as Cu) in mg/l	IS 3025 (Part 42): 1992; RA: 2019	3.0	<0.02
3.	Fluoride(as F) in mg/l	APHA 24th Edition 2023, 4500 F D	2.0	<0.1
4.	Manganese (as Mn) in mg/l	IS 3025 (Part 59): 2023	2.0	8.9
5.	Nitrate (as NO ₃) in mg/l	IS 3025 (Part 34)-1986, RA: 2019	10.0	1.12
6.	Zinc(as Zn) in mg/l	IS 3025(Part 49)-1994;RA: 2019	5.0	5.2
7.	Cadmium (as Cd) in mg/l	IS 3025 (Part 41): 2023	2.0	<0.002
8.	Cyanide (as CN) in mg/l	IS 3025 (Part 27): 1986(RA: 2019)	0.2	<0.02
9.	Lead (as Pb) in mg/l	IS 3025 (Part 47): 1994 (RA: 2019)	0.1	<0.01
10.	Mercury (as Hg) in mg/l	IS 3025 (Part 48): 1994(RA: 2019)	0.01	<0.001
11.	Total Arsenic (as As) in mg/l	IS 3025 (Part 37): 2022	0.2	<0.01
12.	Boron(as B) in mg/l	IS 13428-2005(Annex L); RA:2018	—	6.3
13.	Hexavalent Chromium in mg/l	APHA 24th Edition 2023; 3500 Cr B	0.1	<0.05
14.	Total Coliform in MPN/100 ml	Standard methods for the examination of water & waste water, 24 th edn. 9221B	—	<1.8

Checked by:- 

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Report No. MSKGL/ED/2024-25/003995

Date: 30.09.2024

ANALYSIS REPORT OF SURFACE WATER

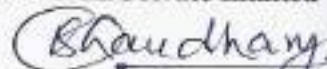
Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	16.09.2024
Location	Sona river near Pichlaghat pump house (downstream) (JWIMM)

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	---	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	---	2
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	6.2
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	115
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	5.1
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	3.9
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 PSU
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ 2-E	---	12.2
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	42
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	70
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	44
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	9.3
18	pH value at 25 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	7.18

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Report No. MSKGL/ED/2024-25/003995

Date: 30.09.2024

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	16.09.2024
Location	Sona river near Pichlaghat pump house (downstream) (JWIMM)

CHEMICAL ANALYSIS OF WATER

Sl.No	Test Parameter	Test Method	Limit as per CPCB for discharge of effluents to Inland Surface Water	Result
1.	Colour in Hazen Units	IS 3025 (Part 4): 2021	All efforts should be made to remove colour as far as practicable	10
2.	Copper(as Cu) in mg/l	IS 3025 (Part 42): 1992; RA 2019	3.0	<0.02
3.	Fluoride(as F) in mg/l	APHA 24th Edition 2023, 4500 F D	2.0	<0.1
4.	Manganese (as Mn) in mg/l	IS 3025 (Part 59): 2023	2.0	4.8
5.	Nitrate (as NO ₃) in mg/l	IS 3025 (Part 34)-1986, RA: 2019	10.0	0.66
6.	Zinc(as Zn) in mg/l	IS 3025(Part 49)-1994;RA: 2019	5.0	5.4
7.	Cadmium (as Cd) in mg/l	IS 3025 (Part 41): 2023	2.0	<0.002
8.	Cyanide (as CN) in mg/l	IS 3025 (Part 27): 1986(RA 2019)	0.2	<0.02
9.	Lead (as Pb) in mg/l	IS 3025 (Part 47): 1994 (RA 2019)	0.1	<0.01
10.	Mercury (as Hg) in mg/l	IS 3025 (Part 48): 1994(RA 2019)	0.01	<0.001
11.	Total Arsenic (as As) in mg/l	IS 3025 (Part 37): 2022	0.2	<0.01
12.	Boron(as B) in mg/l	IS 13428-2005(Annex L); RA:2018	---	3.5
13.	Hexavalent Chromium in mg/l	APHA 24th Edition 2023; 3500 Cr B	0.1	<0.05
14.	Total Coliform in MPN/100 ml	Standard methods for the examination of water & waste water, 24 th edn. 9221B	---	1800

Checked by:-



For Mitra S. K. Private Limited


 Authorized Signatory

A/P.O.: BARBIL Ward No-6
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Report No. MSKGL/ED/2024-25/003994

Date: 30.09.2024

ANALYSIS REPORT OF SURFACE WATER

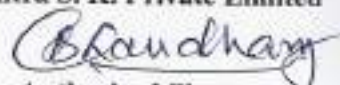
Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	16.09.2024
Location	Sona river near Pichlaghat pump house (upstream) (JWIMM)

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	---	13
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	---	6
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	5.9
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	136
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	6.7
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	3.9
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	---	0.07 PSU
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	18.8
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	38
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	---	48
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	14
18	pH value at 25 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	7.11

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For Mitra S. K. Private Limited


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Report No. MSKGL/ED/2024-25/004145


Date: 03.10.2024

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	18.09.2024
Location	Bichakundi Admin Office RO (JWIMM)

CHEMICAL ANALYSIS OF WATER AS PER IS: 10500 - 2012

Sl.No	Test Parameter	Test Method	Limit As Per IS 10500 :2012, RA: 2018 Amd. 1 & 2		Result
			Acceptable Limit	Permissible Limit	
1.	Colour in Hazen Units	IS 3025 (Part 4): 2021	5	15	<5
2.	Copper(as Cu) in mg/l	IS 3025 (Part 42): 1992 ; RA 2019	0.05	1.5	<0.02
3.	Fluoride(as F) in mg/l	APHA 24th Edition 2023, 4500 F D	1.0	1.5	<0.1
4.	Manganese (as Mn) in mg/l	IS 3025 (Part 59): 2023	0.1	0.3	0.74
5.	Nitrate (as NO ₃) in mg/l	IS 3025 (Part 34)-1986 RA: 2019	45	No Relaxation	0.69
6.	Selenium(as Se) in mg/l	IS 15303-2003; RA : 2018	0.01	No Relaxation	<0.01
7.	Silver (as Ag) in mg/l	IS 13428:2005 Annex J , (RA: 2018)	0.1	No Relaxation	<0.1
8.	Zinc(as Zn) in mg/l	IS 3025(Part 49)-1994;RA: 2019	5	15	<0.02
9.	Cadmium (as Cd) in mg/l	IS 3025 (Part 41): 2023	0.003	No Relaxation	<0.002
10.	Cyanide (as CN) in mg/l	IS 3025 (Part 27): 1986(RA 2019)	0.05	No Relaxation	<0.02
11.	Lead (as Pb) in mg/l	IS 3025 (Part 47): 1994 (RA 2019)	0.01	No Relaxation	<0.01
12.	Mercury (as Hg) in mg/l	IS 3025 (Part 48): 1994(RA 2019)	0.001	No Relaxation	<0.001
13.	Nickel (as Ni) in mg/l	IS 3025(Part 54):2003 (RA 2019)	0.02	No Relaxation	<0.02
14.	Total Arsenic (as As) in mg/l	IS 3025 (Part 37): 2022	0.01	No Relaxation	<0.01
15.	Total Chromium (as Cr) in mg/l	IS 3025 (Part 52): 2003 (RA 2019)	0.05	No Relaxation	<0.05
16.	Silica (SiO ₂) in mg/l	APHA 24th Edition-2023, 4500 SiO ₂ C	—	—	<0.1
17.	Total coliform in /100ml	IS 15185	Absent	Absent	Present
18.	E. coli in /100ml	IS 15185	Absent	Absent	Absent

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For Mitra S. K. Private Limited


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Report No. MSKGL/ED/2024-25/004157

Date: 03.10.2024

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	17.09.2024
Location	Joda Project Camp Canteen Aquaguard (JWIMM)

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	<1.0
2	Calcium (as Ca)	mg/l	APHA (24th Edition), 3500 Ca B	75	200	21
3	Chloride (as Cl)	mg/l	APHA (24th Edition), 4500 -Cl B	250	1000	9.9
4	Odour	Hazen	3025 (Part-5)-1983; Rfm:2012	Agreeable	Agreeable	Agreeable
5	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	---	96
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	4.8
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	---	---	0.05 PSU
11	Sodium (as Na)	mg/l	APHA (24th Edition), 3500 Na B	---	---	2.06
12	Sulphate (as SO4)	mg/l	APHA (24th Edition), 4500 SO42-E	200	400	<1.0
13	Taste	None	IS 3025 (Part 8)-1983 Rfm:2012 (O)	Agreeable	Agreeable	Agreeable
14	Total Alkalinity (as CaCO3)	mg/l	APHA (24th Edition), 2320B	200	600	17
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	500	2000	59
16	Total Hardness (as CaCO3)	mg/l	APHA (24th Edition), 2340 C	200	600	73
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	6.72

Checked by:-

For Mitra S. K. Private Limited

B. Raudhary
Authorized Signatory

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Report No. MSKGL/ED/2024-25/003994

Date: 30.09.2024

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	16.09.2024
Location	Sona river near Pichlaghat pump house (upstream) (JWIMM)

CHEMICAL ANALYSIS OF WATER

Sl.No	Test Parameter	Test Method	Limit as per CPCB for discharge of effluent to Inland Surface Water	Result
1.	Colour in Hazen Units	IS 3025 (Part 4): 2021	All efforts should be made to remove colour as far as practicable	5
2.	Copper(as Cu) in mg/l	IS 3025 (Part 42): 1992; RA: 2019	3.0	<0.02
3.	Fluoride(as F) in mg/l	APHA 24th Edition 2023, 4500 F D	2.0	<0.1
4.	Manganese (as Mn) in mg/l	IS 3025 (Part 59): 2023	2.0	5.1
5.	Nitrate (as NO ₃) in mg/l	IS 3025 (Part 34)-1986, RA: 2019	10.0	0.61
6.	Zinc(as Zn) in mg/l	IS 3025(Part 49)-1994;RA: 2019	5.0	3.8
7.	Cadmium (as Cd) in mg/l	IS 3025 (Part 41): 2023	2.0	<0.002
8.	Cyanide (as CN) in mg/l	IS 3025 (Part 27): 1986(RA: 2019)	0.2	<0.02
9.	Lead (as Pb) in mg/l	IS 3025 (Part 47): 1994 (RA: 2019)	0.1	<0.01
10.	Mercury (as Hg) in mg/l	IS 3025 (Part 48): 1994(RA: 2019)	0.01	<0.001
11.	Total Arsenic (as As) in mg/l	IS 3025 (Part 37): 2022	0.2	<0.01
12.	Boron(as B) in mg/l	IS 13428-2005(Annex L); RA:2018	---	2.5
13.	Hexavalent Chromium in mg/l	APHA 24th Edition 2023; 3500 Cr B	0.1	<0.05
14.	Total Coliform in MPN/100 ml	Standard methods for the examination of water & waste water, 24 th edtn. 9221B	---	<1.8

Checked by: 

For Mitra S. K. Private Limited


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Report No. MSKGL/ED/2024-25/003996

Date: 30.09.2024

ANALYSIS REPORT OF SURFACE WATER

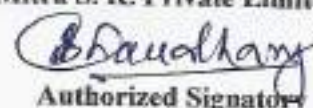
Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	16.09.2024
Location	Keth hutting before H-Quarry (upstream) (JWIMM)

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	---	6.5
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	---	6.1
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	90
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	3.1
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	---	0.05 PSU
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO42-E	---	13.8
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	21
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	54
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	28
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	21
18	pH value at 25 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	7.09

Checked by:-

For Mitra S. K. Private Limited



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Report No. MSKGL/ED/2024-25/003996


Date: 30.09.2024

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	16.09.2024
Location	Keth hutting before H-Quarry (upstream) (JWIMM)

CHEMICAL ANALYSIS OF WATER

Sl.No	Test Parameter	Test Method	Limit as per CPCB for discharge of effluents to Inland Surface Water	Result
1.	Colour in Hazen Units	IS 3025 (Part 4): 2021	All efforts should be made to remove colour as far as practicable	<5
2.	Copper(as Cu) in mg/l	IS 3025 (Part 42): 1992; RA: 2019	3.0	<0.02
3.	Fluoride(as F) in mg/l	APHA 24th Edition 2023, 4500 F D	2.0	<0.1
4.	Manganese (as Mn) in mg/l	IS 3025 (Part 59): 2023	2.0	6.1
5.	Nitrate (as NO ₃) in mg/l	IS 3025 (Part 34)-1986, RA: 2019	10.0	0.72
6.	Zinc(as Zn) in mg/l	IS 3025(Part 49)-1994;RA: 2019	5.0	4.1
7.	Cadmium (as Cd) in mg/l	IS 3025 (Part 41): 2023	2.0	<0.002
8.	Cyanide (as CN) in mg/l	IS 3025 (Part 27): 1986(RA: 2019)	0.2	<0.02
9.	Lead (as Pb) in mg/l	IS 3025 (Part 47): 1994 (RA: 2019)	0.1	<0.01
10.	Mercury (as Hg) in mg/l	IS 3025 (Part 48): 1994(RA: 2019)	0.01	<0.001
11.	Total Arsenic (as As) in mg/l	IS 3025 (Part 37): 2022	0.2	<0.01
12.	Boron(as B) in mg/l	IS 13428-2005(Annex I); RA:2018	—	3.2
13.	Hexavalent Chromium in mg/l	APHA 24th Edition 2023; 3500 Cr B	0.1	<0.05
14.	Total Coliform in MPN/100 ml	Standard methods for the examination of water & waste water, 24 th edtn. 9221B	—	2400

Checked by: 

For Mitra S. K. Private Limited


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Report No. MSKGL/ED/2024-25/003997


Date: 30.09.2024

ANALYSIS REPORT OF SURFACE WATER

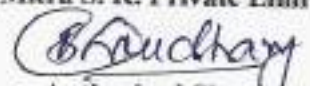
Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	16.09.2024
Location	Keth hutting after H-Quarry (downstream) (JWIMM)

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	---	10
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	---	6.2
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	98
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	4
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	---	0.05 PSU
13	Sulphate (as SO ₄ ⁻²)	mg/l	APHA (24th Edition), 4500 SO ₄ 2-E	---	12.2
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	29
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	61
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	33
18	pH value at 25 deg C	None	APHA 24th Edition, 2023 4500 H+B	5.5-9.0	7.26

Checked by: 

For Mitra S. K. Private Limited


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Report No. MSKGL/ED/2024-25/003997


Date: 30.09.2024

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	16.09.2024
Location	Keth hutting after H-Quarry (downstream) (JWIMM)

CHEMICAL ANALYSIS OF WATER

Sl.No	Test Parameter	Test Method	Limit as per CPCB for discharge of effluentsto Inland Surface Water	Result
1.	Colour in Hazen Units	IS 3025 (Part 4): 2021	All efforts should be made to remove colour as far as practicable	5
2.	Copper(as Cu) in mg/l	IS 3025 (Part 42): 1992; RA 2019	3.0	<0.02
3.	Fluoride(as F) in mg/l	APHA 24th Edition 2023, 4500 F D	2.0	<0.1
4.	Manganese (as Mn) in mg/l	IS 3025 (Part 59): 2023	2.0	4.1
5.	Nitrate (as NO ₃) in mg/l	IS 3025 (Part 34)-1986, RA: 2019	10.0	0.57
6.	Zinc(as Zn) in mg/l	IS 3025(Part 49)-1994;RA: 2019	5.0	3.2
7.	Cadmium (as Cd) in mg/l	IS 3025 (Part 41): 2023	2.0	<0.002
8.	Cyanide (as CN) in mg/l	IS 3025 (Part 27): 1986(RA 2019)	0.2	<0.02
9.	Lead (as Pb) in mg/l	IS 3025 (Part 47): 1994 (RA 2019)	0.1	<0.01
10.	Mercury (as Hg) in mg/l	IS 3025 (Part 48): 1994(RA 2019)	0.01	<0.001
11.	Total Arsenic (as As) in mg/l	IS 3025 (Part 37): 2022	0.2	<0.01
12.	Boron(as B) in mg/l	IS 13428-2005(Annex L); RA:2018	---	2.4
13.	Hexavalent Chromium in mg/l	APHA 24th Edition2023; 3500 Cr B	0.1	<0.05
14.	Total Coliform in MPN/100 ml	Standard methods for the examination of water & waste water, 24 th edtn. 9221B	---	3000

Checked by:- 

For Mitra S. K. Private Limited


 Authorized Signatory

Report No. MSKGL/ED/2024-25/003998

Date: 30.09.2024

ANALYSIS REPORT OF SURFACE WATER

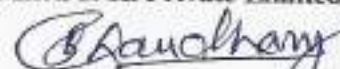
Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	16.09.2024
Location	Sona river near Mahanadi guest house (JWIMM)

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	---	18
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	---	6
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	6
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	142
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	1.4
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	---	0.07 PSU
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	10.4
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	59
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	87
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	65
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	14
18	pH value at 25 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	6.94

Checked by: 

For Mitra S. K. Private Limited


Authorized Signatory

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Report No. MSKGL/ED/2024-25/003998


Date: 30.09.2024

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	16.09.2024
Location	Sona river near Mahanadi guest house (JWIMM)

CHEMICAL ANALYSIS OF WATER

Sl.No	Test Parameter	Test Method	Limit as per CPCB for discharge of effluents to Inland Surface Water	Result
1.	Colour in Hazen Units	IS 3025 (Part 4): 2021	All efforts should be made to remove colour as far as practicable	<5
2.	Copper(as Cu) in mg/l	IS 3025 (Part 42): 1992; RA 2019	3.0	<0.02
3.	Fluoride(as F) in mg/l	APHA 24th Edition 2023, 4500 F D	2.0	<0.1
4.	Manganese (as Mn) in mg/l	IS 3025 (Part 59): 2023	2.0	5.6
5.	Nitrate (as NO ₃) in mg/l	IS 3025 (Part 34)-1986, RA; 2019	10.0	0.77
6.	Zinc(as Zn) in mg/l	IS 3025(Part 49)-1994;RA: 2019	5.0	5.9
7.	Cadmium (as Cd) in mg/l	IS 3025 (Part 41): 2023	2.0	<0.002
8.	Cyanide (as CN) in mg/l	IS 3025 (Part 27): 1986(RA 2019)	0.2	<0.02
9.	Lead (as Pb) in mg/l	IS 3025 (Part 47): 1994 (RA 2019)	0.1	<0.01
10.	Mercury (as Hg) in mg/l	IS 3025 (Part 48): 1994(RA 2019)	0.01	<0.001
11.	Total Arsenic (as As) in mg/l	IS 3025 (Part 37): 2022	0.2	<0.01
12.	Boron(as B) in mg/l	IS 13428-2005(Annex L); RA:2018	—	7.8
13.	Hexavalent Chromium in mg/l	APHA 24th Edition 2023; 3500 Cr B	0.1	<0.05
14.	Total Coliform in MPN/100 ml	Standard methods for the examination of water & waste water, 24 th edn. 9221B	---	<1.8

Checked by: 

For Mitra S. K. Private Limited


 Authorized Signatory

Report No. MSKGL/ED/2024-25/004042


Date: 30.09.2024

ANALYSIS REPORT OF SURFACE WATER

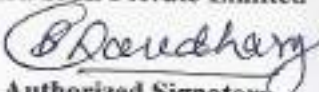
Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	16.09.2024
Location	Baitarani River Kandara Village (JWIMM)

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	---	11
3	Chemical Oxygen Demand (COD)	mg/l	APHA (24th Edition), 5220B	250	4.8
4	Chloride (as Cl ⁻)	mg/l	APHA (24th Edition), 4500 -Cl B	---	2
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	6.4
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	89
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	1.01
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	---	0.04 PSU
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	---	34
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	53
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	12
18	pH value at 25 deg C	None	APHA 24th Edition, 2023 4500 H+B	5.5-9.0	6.61

Checked by: 

For Mitra S. K. Private Limited


Authorized Signatory

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Report No. MSKGL/ED/2024-25/004042

Date: 30.09.2024

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	16.09.2024
Location	Baitarani River Kandara Village (JWIMM)

CHEMICAL ANALYSIS OF WATER

Sl.No	Test Parameter	Test Method	Limit as per CPCB for discharge of effluent to Inland Surface Water	Result
1.	Colour in Hazen Units	IS 3025 (Part 4): 2021	All efforts should be made to remove colour as far as practicable	5
2.	Copper(as Cu) in mg/l	IS 3025 (Part 42): 1992; RA 2019	3.0	<0.02
3.	Fluoride(as F) in mg/l	APHA 24th Edition 2023, 4500 F D	2.0	<0.1
4.	Manganese (as Mn) in mg/l	IS 3025 (Part 59): 2023	2.0	10.2
5.	Nitrate (as NO ₃) in mg/l	IS 3025 (Part 34)-1986, RA: 2019	10.0	0.98
6.	Zinc(as Zn) in mg/l	IS 3025(Part 49)-1994;RA: 2019	5.0	9.5
7.	Cadmium (as Cd) in mg/l	IS 3025 (Part 41): 2023	2.0	<0.002
8.	Cyanide (as CN) in mg/l	IS 3025 (Part 27): 1986(RA 2019)	0.2	<0.02
9.	Lead (as Pb) in mg/l	IS 3025 (Part 47): 1994 (RA 2019)	0.1	<0.01
10.	Mercury (as Hg) in mg/l	IS 3025 (Part 48): 1994(RA 2019)	0.01	<0.001
11.	Total Arsenic (as As) in mg/l	IS 3025 (Part 37): 2022	0.2	<0.01
12.	Boron(as B) in mg/l	IS 13428-2005(Annex I); RA:2018	---	8.1
13.	Hexavalent Chromium in mg/l	APHA 24th Edition 2023; 3500 Cr B	0.1	<0.05
14.	Total Coliform in MPN/100 ml	Standard methods for the examination of water & waste water, 24 th edtn. 9221B	---	<1.8

Checked by: 

For Mitra S. K. Private Limited


 Authorized Signatory

Report No. MSKGL/ED/2024-25/003994

Date: 30.09.2024

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	16.09.2024
Location	Sona River before confluence with Baitarani 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	---	21
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	---	5
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	153
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	0.14
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	---	0.08 PSU
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ 2-E	---	14.2
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	63
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	92
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	73
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	18
18	pH value at 25 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	6.9

Checked by:-

For Mitra S. K. Private Limited

Chandhary
Authorized Signatory

Report No. MSKGL/ED/2024-25/003994


Date: 30.09.2024

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	16.09.2024
Location	Sona River before confluence with Baitarani River (JWIMM)

CHEMICAL ANALYSIS OF WATER

Sl.No	Test Parameter	Test Method	Limit as per CPCB for discharge of effluentsto Inland Surface Water	Result
15.	Colour in Hazen Units	IS 3025 (Part 4): 2021	All efforts should be made to remove colour as far as practicable	10
16.	Copper(as Cu) in mg/l	IS 3025 (Part 42): 1992; RA 2019	3.0	<0.02
17.	Fluoride(as F) in mg/l	APHA 24th Edition 2023, 4500 F D	2.0	<0.1
18.	Manganese (as Mn) in mg/l	IS 3025 (Part 59): 2023	2.0	8.2
19.	Nitrate (as NO ₃) in mg/l	IS 3025 (Part 34)-1986, RA: 2019	10.0	0.86
20.	Zinc(as Zn) in mg/l	IS 3025(Part 49)-1994;RA: 2019	5.0	6.1
21.	Cadmium (as Cd) in mg/l	IS 3025 (Part 41): 2023	2.0	<0.002
22.	Cyanide (as CN) in mg/l	IS 3025 (Part 27): 1986(RA 2019)	0.2	<0.02
23.	Lead (as Pb) in mg/l	IS 3025 (Part 47): 1994 (RA 2019)	0.1	<0.01
24.	Mercury (as Hg) in mg/l	IS 3025 (Part 48): 1994(RA 2019)	0.01	<0.001
25.	Total Arsenic (as As) in mg/l	IS 3025 (Part 37): 2022	0.2	<0.01
26.	Boron(as B) in mg/l	IS 13428-2005(Annex L); RA:2018	—	4.4
27.	Hexavalent Chromium in mg/l	APHA 24th Edition2023; 3500 Cr B	0.1	<0.05
28.	Total Coliform in MPN/100 ml	Standard methods for the examination of water & waste water, 24 th edn. 9221B	---	<1.8

Checked by: 

For Mitra S. K. Private Limited


Authorized Signatory

Report No. MSKGL/ED/2024-25/004000

Date: 30.09.2024

ANALYSIS REPORT OF SURFACE WATER

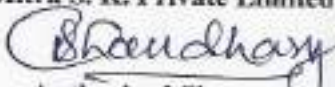
Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	16.09.2024
Location	Bhuia Roida Village Pond Water (JWIMM)

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	---	23
3	Chemical Oxygen Demand (COD)	mg/l	APHA (24th Edition), 5220B	250	6.8
4	Chloride (as Cl ⁻)	mg/l	APHA (24th Edition), 4500 -Cl B	---	18
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	4.8
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	160
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	0.21
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	---	0.08 PSU
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ 2-E	---	6.2
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	76
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	100
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	77
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	23
18	pH value at 25 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	7.01

Checked by: 

For Mitra S. K. Private Limited


Authorized Signatory

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Report No. MSKGL/ED/2024-25/004000

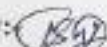
Date: 30.09.2024

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	16.09.2024
Location	Bhuia Roida Village Pond Water (JWIMM)

CHEMICAL ANALYSIS OF WATER

Sl.No	Test Parameter	Test Method	Limit as per CPCB for discharge of effluentsto Inland Surface Water	Result
1.	Colour in Hazen Units	IS 3025 (Part 4): 2021	All efforts should be made to remove colour as far as practicable	15
2.	Copper(as Cu) in mg/l	IS 3025 (Part 42): 1992; RA 2019	3.0	<0.02
3.	Fluoride(as F) in mg/l	APHA 24th Edition 2023, 4500 F D	2.0	<0.1
4.	Manganese (as Mn) in mg/l	IS 3025 (Part 59): 2023	2.0	11.4
5.	Nitrate (as NO ₃) in mg/l	IS 3025 (Part 34)-1986, RA: 2019	10.0	1.52
6.	Zinc(as Zn) in mg/l	IS 3025(Part 49)-1994;RA: 2019	5.0	8.6
7.	Cadmium (as Cd) in mg/l	IS 3025 (Part 41): 2023	2.0	<0.002
8.	Cyanide (as CN) in mg/l	IS 3025 (Part 27): 1986(RA 2019)	0.2	<0.02
9.	Lead (as Pb) in mg/l	IS 3025 (Part 47): 1994 (RA 2019)	0.1	<0.01
10.	Mercury (as Hg) in mg/l	IS 3025 (Part 48): 1994(RA 2019)	0.01	<0.001
11.	Total Arsenic (as As) in mg/l	IS 3025 (Part 37): 2022	0.2	<0.01
12.	Boron(as B) in mg/l	IS 13428-2005(Annex I); RA:2018	—	7.5
13.	Hexavalent Chromium in mg/l	APHA 24th Edition 2023; 3500 Cr B	0.1	<0.05
14.	Total Coliform in MPN/100 ml	Standard methods for the examination of water & waste water, 24 th edtn. 9221B	—	<1.8

Checked by: 

For Mitra S. K. Private Limited


 Authorized Signatory

Mitra S. K. Private Limited

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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd (MGM)_Joda West
At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2024-25/6R5379_1

Date :

25/06/2024

Sample No. :

MSKNB/FD/2024-25/06/G0U3FC_1

Date of receipt of sample:

06/06/2024

Date(s) of performance:

06/06/2024 - 25/06/2024

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	Water & Residue in Water
2. Description of sample	Ground Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	05/06/2024
5. Place of sampling	Bichakundi Borewell No-3 Micro activity Centre (JWMM)
6. Environmental conditions during sampling & Transport	(2 -5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS: 13969 (P-11) 2018
8. Identification of the personnel performing sampling by MSK	Loknath Mahanta

Report No. : MSKPL/FD/2024-25/6R5379_1

Sample No. : MSKNB/FD/2024-25/06/G0U3FC_1

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
1	Arsenic as As	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
2	Cadmium as Cd	mg/l	IS 3025 (Part 2)	BDL(DL:0.001)
3	Colour	Hazen	IS 3025 (Part 4)	BDL(DL:1.0)
4	Copper as Cu	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
5	Cyanide as CN	mg/l	IS 3025 (Part 27) Sec1	BDL(DL:0.02)
6	Fluoride as F	mg/l	IS 3025 (Part 60)	BDL(DL:0.2)
7	Lead as Pb	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
8	Manganese as Mn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
9	Mercury as Hg	mg/l	IS 3025 (Part 48)	BDL(DL:0.0002)
10	Nickel (as Ni)	mg/l	IS 3025 (Part 2)	BDL(DL:0.01)
11	Nitrate as NO3	mg/l	APHA (24th EDITION) 4500-NO3- B	BDL(DL:0.4)
12	Selenium as Se	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
13	Silica as SiO2	mg/l	IS 3025 (Part 35)	BDL(DL:0.1)
14	Silver as Ag	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
15	Total Chromium as Cr	mg/l	IS 3025 (Part 2)	BDL(DL:0.01)
16	Zinc as Zn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)

Reviewed By:

Signature:

Name : Mr. Aniruddha Saha, Mr. Piali Ganguly

Designation : Sr. Executive Chemist

Authorized Signatory:

Signature :

Name :

Dr. Subrata Dasgupta

Designation : Lab in charge

Head Office: Shree Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India
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The retained part of sample(s) for chemical analysis (Dirt, Soil & 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. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

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Page 2 of 2

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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/6R5379_1

Date :

25/06/2024

Sample No. :

MSKNB/FD/2024-25/06/G0U3FC_1

Date of receipt of sample:

06/06/2024

Date(s) of performance:

06/06/2024 - 08/06/2024

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	Water & Residue in Water
2. Description of sample	Ground Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	05/06/2024
5. Place of sampling	Bichakundi Borewell No-3 Micro activity Centre (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	Loknath Mahanta

Report No. : MSKPL/FD/2024-25/6R5379_1**Sample No. :** MSKNB/FD/2024-25/06/G0U3FC_1

RESULT

Micro Biology

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

Opinion : NA

— END —

Reviewed By:

Signature :

Name : Mr. Malinoy Chakraborty

Designation : Executive Microbiologist

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.

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Report No. MSKGL/ED/2024-25/002058

Date: 21.06.2024

ANALYSIS REPORT OF GROUND WATER

Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	05.06.2024
Location	Bichakundi Borewell No-3 Micro activity Centre (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-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	22
4	Odour	Hazen	3025 (Part-5)-1983; RfM:2012	Agreeable	Agreeable	Agreeable
5	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	---	152
6	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	0.3	No Relaxation	0.06
7	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	30	100	4.8
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	---	---	0.08
11	Sodium (as Na)	mg/l	APHA (24th Edition), 3500 Na B	---	---	10
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_(0)	Agreeable	Agreeable	Agreeable
14	Total Alkalinity (as CaCO ₃)	mg/l	APHA (24th Edition), 2320B	200	600	30
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	500	2000	94
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	200	600	87
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	6.76

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



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/5C537X_1

Date :

25/06/2024

Sample No. :

MSKNB/FD/2024-25/06/NB4406_1

Date of receipt of sample:

06/06/2024

Date(s) of performance:

06/06/2024 - 25/06/2024

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	Water & Residue in Water
2. Description of sample	Ground Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	05/06/2024
5. Place of sampling	Bichakundi Borewell No-1 (Near Community Toilet) (JWIMM)
6. Environmental conditions during sampling & Transport	(2-5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS: 13969 (P-11) 2018
8. Identification of the personnel performing sampling by MSK	Loknath Mahanta

Report No. : MSKPL/FD/2024-25/5C537X_1**Sample No. :** MSKNB/FD/2024-25/06/NB4406_1

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
1	Arsenic as As	mg/l	IS 3025 (Part 2)	BDL(DL:0.006)
2	Cadmium as Cd	mg/l	IS 3025 (Part 2)	BDL(DL:0.001)
3	Colour	Hazen	IS 3025 (Part 4)	BDL(DL:1.0)
4	Copper as Cu	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
5	Cyanide as CN	mg/l	IS 3025 (Part 27) Sec1	BDL(DL:0.02)
6	Fluoride as F	mg/l	IS 3025 (Part 60)	BDL(DL:0.2)
7	Lead as Pb	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
8	Manganese as Mn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
9	Mercury as Hg	mg/l	IS 3025 (Part 48)	BDL(DL:0.0002)
10	Nickel (as Ni)	mg/l	IS 3025 (Part 2)	BDL(DL:0.01)
11	Nitrate as NO3	mg/l	APHA (24th EDITION) 4500-NO3- B	BDL(DL:0.4)
12	Selenium as Se	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
13	Silica as SiO2	mg/l	IS 3025 (Part 35)	BDL(DL:0.1)
14	Silver as Ag	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
15	Total Chromium as Cr	mg/l	IS 3025 (Part 2)	BDL(DL:0.01)
16	Zinc as Zn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)

Reviewed By:

Signature: 

Name: Ms. Aranya Saha, Ms. Piali Ganguly

Designation: Sr. Executive Chemist

Authorized Signatory:

Signature: 

Name: Dr. Anandadeep Mukhopadhyay

Designation: Lab In charge

Mitra S. K. Private Limited

Address of Laboratory :

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3, Pagladanga Road, Kolkata 700015
West Bengal
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Email: udayanlab@mitrask.com



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Opinion : NA

— END —

Reviewed By:

Signature : *Atanayee Saha P. Ganguly*
Name : Ms. Atanayee Saha, Ms. Preeti Ganguly
Designation : Sr. Executive Chemist

Authorized Signatory:

Signature : *[Signature]*
Name : Dr. Saumyadeep Mukhopadhyay
Designation : Lab in charge

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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 guidelines & (AW) 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, Borewell Water, Sterile 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.

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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/5C537X_1

Date :

25/06/2024

Sample No. :

MSKNB/FD/2024-25/06/NB4408_1

Date of receipt of sample:

06/08/2024

Date(s) of performance:

06/06/2024 - 08/06/2024

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	Water & Residue in Water
2. Description of sample	Ground Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	05/06/2024
5. Place of sampling	Bichakundi Borewell No-1 (Near Community Toilet) (JWIMM)
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	Loknath Mahanta

Report No. : MSKPL/FD/2024-25/5C537X_1

Sample No. : MSKNB/FD/2024-25/06/NB4408_1

RESULT

Micro Biology

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

Opinion : NA

— END —

Reviewed By:

Signature :

Name : Ms. Maitreyee Chakraborty

Designation : Executive Microbiologist

Authorized Signatory:

Signature :

Name : Mr. Sukanta Pakui

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/2024-25/002059

Date: 21.06.2024

ANALYSIS REPORT OF GROUND WATER

Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	05.06.2024
Location	Bichakundi Borewell No-1 (Near Community Toilet) (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-NH3-F	0.5	No Relaxation	<0.1
2	Calcium (as Ca)	mg/l	APHA (24th Edition), 3500 Ca B	75	200	3
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	---	---	45
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	1.0
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	---	---	0.02
11	Sodium (as Na)	mg/l	APHA (24th Edition), 3500 Na B	---	---	4.7
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	4
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	500	2000	27
16	Total Hardness (as CaCO3)	mg/l	APHA (24th Edition), 2340 C	200	600	12
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	6.84

Checked by:

For Mitra S. K. Private Limited

Authorized Signatory

Mitra S. K. Private Limited

Address of Laboratory :

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3, Pagladanga Road, Kolkata 700015
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Email: udayanlab@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

Report No. :

Date :

Sample No. :

Date of receipt of sample:

Date(s) of performance:

Reference No. & Date :

MSKPL/FD/2024-25/K1538N_1

25/06/2024

MSKNB/FD/2024-25/06/13L3FU_1

06/06/2024

06/06/2024 - 25/06/2024

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	Water & Residue in Water
2. Description of sample	Ground Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	05/06/2024
5. Place of sampling	Bichakundi Borewell No-3 Micro activity Centre (JWMM)
6. Environmental conditions during sampling & Transport	(2 -5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS: 13969 (P-11) 2018
8. Identification of the personnel performing sampling by MSK	Akash Ku. Sethy

Report No. : MSKPL/FD/2024-25/K1538N_1

Sample No. : MSKNB/FD/2024-25/06/13L3FU_1

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Result
1	Arsenic as As	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
2	Cadmium as Cd	mg/l	IS 3025 (Part 2)	BDL(DL:0.001)
3	Copper as Cu	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
4	Hexavalent Chromium (as Cr+6)	mg/l	IS 3025 (Part 52) Sec2	BDL(DL:0.01)
5	Iron as Fe	mg/l	IS 3025 (Part 2)	BDL(DL:0.05)
6	Lead as Pb	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
7	Manganese as Mn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
8	Mercury as Hg	mg/l	IS 3025 (Part 48)	BDL(DL:0.0002)
9	Selenium as Se	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
10	Zinc as Zn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)

Opinion : NA

----- END -----

Reviewed By:

Signature : *Abayee Saha P. Ganguly*

Name : Ms. Abayee Saha, Ms. Piali Ganguly

Designation : Sr. Executive Chemist

Authorized Signatory:

Signature : *Dr. Sourinabha Mukhopadhyay*

Name : Dr. Sourinabha Mukhopadhyay

Designation : Lab In charge

Head Office: Shreeji 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

Page 1 of 2

Reviewed By:

Signature : *Abayee Saha P. Ganguly*

Name : Ms. Abayee Saha, Ms. Piali Ganguly

Designation : Sr. Executive Chemist

Authorized Signatory:

Signature : *Dr. Sourinabha Mukhopadhyay*

Name : Dr. Sourinabha Mukhopadhyay

Designation : Lab In charge

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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 & (AA) 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.

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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/Q3538G_1

Date :

25/06/2024

Sample No. :

MSKNB/FD/2024-25/06/EJ840F_1

Date of receipt of sample:

06/06/2024

Date(s) of performance:

06/06/2024 - 25/06/2024

Reference No. & Date :

3000158017/056, Date - 16/09/2023

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	Ground Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	05/06/2024
5. Place of sampling	Bichakundi Borewell No-1 (Near Community Toilet) (JWIMM)
6. Environmental conditions during sampling & Transport	(2 -5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS: 13989 (P-11) 2018
8. Identification of the personnel performing sampling by MSK	Akash Ku. Sethy

Report No. : MSKPL/FD/2024-25/Q3538G_1

Sample No. : MSKNB/FD/2024-25/06/EJ840F_1

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Result
1	Arsenic as As	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
2	Cadmium as Cd	mg/l	IS 3025 (Part 2)	BDL(DL:0.001)
3	Copper as Cu	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
4	Hexavalent Chromium (as Cr+6)	mg/l	IS 3025 (Part 52) Sec2	BDL(DL:0.01)
5	Iron as Fe	mg/l	IS 3025 (Part 2)	BDL(DL:0.05)
6	Lead as Pb	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
7	Manganese as Mn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
8	Mercury as Hg	mg/l	IS 3025 (Part 48)	BDL(DL:0.0002)
9	Selenium as Se	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
10	Zinc as Zn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)

Opinion : NA

— END —

Reviewed By:

Signature: *Amita Saha P. Ganguly*

Name: Ms. Amita Saha, Ms. Piali Ganguly

Designation: Sr. Executive Chemist

Authorized Signatory:

Signature: *Dr. Soumitra Deep Mukherjee*

Name: Dr. Soumitra Deep Mukherjee

Designation: Lab In charge

Mitra S. K. Private Limited

Address of Laboratory :

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Email: udayanlab@mitrask.com



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Reviewed By:

Signature : *Aranya Saha P. Ganguly*
Name : Ms. Aranya Saha, Ms. Preeti Ganguly
Designation : Sr. Executive Chemist

Authorized Signatory:

Signature : *[Signature]*
Name : Dr. [Name]
Designation : Lab in charge

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The reserved part of sample(s) for chemical analysis (Sol. Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline & (MA) 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.

At/P.O.: BARBIL Ward No-8
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Report No. MSKGL/ED/2024-25/003986

Date: 30.09.2024

ANALYSIS REPORT OF GROUND WATER

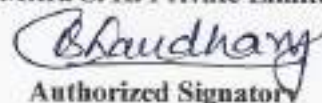
Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	17.09.2024
Location	Bichakundi Borewell No-3 Micro activity Centre (JWIMM)

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-NH ₃ -F	0.5	No Relaxation	<1.0
2	Calcium (as Ca)	mg/l	APHA (24th Edition), 3500 Ca B	75	200	3.2
3	Chloride (as Cl)	mg/l	APHA (24th Edition), 4500 -Cl B	250	1000	14
4	Odour	Hazen	3025 (Part-5)-1983; Rf: 2012	Agreeable	Agreeable	Agreeable
5	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	---	64
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	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	---	---	0.03 PSU
11	Sodium (as Na)	mg/l	APHA (24th Edition), 3500 Na B	---	---	3.6
12	Sulphate (as SO ₄)	mg/l	APHA (24th Edition) 4500 SO ₄ -E	200	400	2.2
13	Taste	None	IS 3025 (Part 8)-1983 Rf: 2012 (O)	Agreeable	Agreeable	Agreeable
14	Total Alkalinity (as CaCO ₃)	mg/l	APHA (24th Edition), 2320B	200	600	13
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	500	2000	39
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	200	600	16
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	6.48

Checked by:-

For Mitra S. K. Private Limited


 Authorized Signatory

At/P.O.: BARBIL Ward No-6
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Report No. MSKGL/ED/2024-25/003986


Date: 30.09.2024

ANALYSIS REPORT OF GROUND WATER

Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	17.09.2024
Location	Bichakundi Borewell No-3 Micro activity Centre (JWIMM)

CHEMICAL ANALYSIS OF WATER AS PER IS: 10500 - 2012

Sl.No	Test Parameter	Test Method	Limit As Per IS 10500 :2012, RA: 2018 Amd. 1 & 2		Result
			Acceptable Limit	Permissible Limit	
1.	Colour in Hazen Units	IS 3025 (Part 4): 2021	5	15	<5
2.	Copper(as Cu) in mg/l	IS 3025 (Part 42): 1992 ; RA 2019	0.05	1.5	<0.02
3.	Fluoride(as F) in mg/l	APHA 24th Edition 2023, 4500 F D	1.0	1.5	0.13
4.	Manganese (as Mn) in mg/l	IS 3025 (Part 59): 2023	0.1	0.3	0.06
5.	Nitrate (as NO ₃) in mg/l	IS 3025 (Part 34)-1986 RA: 2019	45	No Relaxation	0.58
6.	Selenium(as Se) in mg/l	IS 15303-2003; RA : 2018	0.01	No Relaxation	<0.01
7.	Silver (as Ag) in mg/l	IS 13428-2005 Annex J , (RA: 2018)	0.1	No Relaxation	<0.1
8.	Zinc(as Zn) in mg/l	IS 3025(Part 49)-1994-RA: 2019	5	15	<0.02
9.	Cadmium (as Cd) in mg/l	IS 3025 (Part 41): 2023	0.003	No Relaxation	<0.002
10.	Cyanide (as CN) in mg/l	IS 3025 (Part 27): 1986(RA 2019)	0.05	No Relaxation	<0.02
11.	Lead (as Pb) in mg/l	IS 3025 (Part 47): 1994 (RA 2019)	0.01	No Relaxation	<0.01
12.	Mercury (as Hg) in mg/l	IS 3025 (Part 48): 1994(RA 2019)	0.001	No Relaxation	<0.001
13.	Nickel (as Ni) in mg/l	IS 3025(Part 54):2003 (RA 2019)	0.02	No Relaxation	<0.02
14.	Total Arsenic (as As) in mg/l	IS 3025 (Part 37): 2022	0.01	No Relaxation	<0.01
15.	Total Chromium (as Cr) in mg/l	IS 3025 (Part 52): 2003 (RA 2019)	0.05	No Relaxation	<0.05
16.	Silica (SiO ₂) in mg/l	APHA 24th Edition-2023, 4500 SiO ₂ C	---	---	<0.1
17.	Total coliform in /100ml	IS 15185	Absent	Absent	Present
18.	E. coli in /100ml	IS 15185	Absent	Absent	Absent

Checked by:- 

For Mitra S. K. Private Limited


 Authorized Signatory

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Report No. MSKGL/ED/2024-25/003991

Date: 30.09.2024

ANALYSIS REPORT OF GROUND WATER

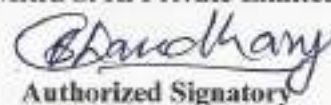
Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	17.09.2024
Location	Bichakundi Borewell No-1 (Near Community Toilet) (JWIMM)

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	<1.0
2	Calcium (as Ca)	mg/l	APHA (24th Edition), 3500 Ca B	75	200	4.8
3	Chloride (as Cl)	mg/l	APHA (24th Edition), 4500 -Cl B	250	1000	10
4	Odour	Hazen	3025 (Part-5)-1983; RfM:2012	Agreeable	Agreeable	Agreeable
5	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	---	60
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	1
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	---	---	0.03 PSU
11	Sodium (as Na)	mg/l	APHA (24th Edition), 3500 Na B	---	---	3.52
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	13
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	500	2000	40
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	200	600	16
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	6.7

Checked by: 

For Mitra S. K. Private Limited


 Authorized Signatory

Report No. MSKGL/ED/2024-25/003991


Date: 30.09.2024

ANALYSIS REPORT OF GROUND WATER

Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	17.09.2024
Location	Bichakundi Borewell No-1 (Near Community Toilet) (JWIMM)

CHEMICAL ANALYSIS OF WATER AS PER IS: 10500 - 2012

Sl.No	Test Parameter	Test Method	Limit As Per IS 10500 :2012, RA: 2018 Amd. 1 & 2		Result
			Acceptable Limit	Permissible Limit	
19.	Colour in Hazen Units	IS 3025 (Part 4): 2021	5	15	<5
20.	Copper(as Cu) in mg/l	IS 3025 (Part 42): 1992 ; RA 2019	0.05	1.5	<0.02
21.	Fluoride(as F) in mg/l	APHA 24th Edition 2023, 4500 F D	1.0	1.5	0.19
22.	Manganese (as Mn) in mg/l	IS 3025 (Part 59): 2023	0.1	0.3	0.12
23.	Nitrate (as NO ₃) in mg/l	IS 3025 (Part 34)-1986 RA: 2019	45	No Relaxation	<0.5
24.	Selenium(as Se) in mg/l	IS 15303-2003; RA : 2018	0.01	No Relaxation	<0.01
25.	Silver (as Ag) in mg/l	IS 13428-2005 Annex J, (RA: 2018)	0.1	No Relaxation	<0.1
26.	Zinc(as Zn) in mg/l	IS 3025(Part 49)-1994;RA: 2019	5	15	<0.02
27.	Cadmium (as Cd) in mg/l	IS 3025 (Part 41): 2023	0.003	No Relaxation	<0.002
28.	Cyanide (as CN) in mg/l	IS 3025 (Part 27): 1986(RA 2019)	0.05	No Relaxation	<0.02
29.	Lead (as Pb) in mg/l	IS 3025 (Part 47): 1994 (RA 2019)	0.01	No Relaxation	<0.01
30.	Mercury (as Hg) in mg/l	IS 3025 (Part 48): 1994(RA 2019)	0.001	No Relaxation	<0.001
31.	Nickel (as Ni) in mg/l	IS 3025(Part 54)-2003 (RA 2019)	0.02	No Relaxation	<0.02
32.	Total Arsenic (as As) in mg/l	IS 3025 (Part 37): 2022	0.01	No Relaxation	<0.01
33.	Total Chromium (as Cr) in mg/l	IS 3025 (Part 52): 2003 (RA 2019)	0.05	No Relaxation	<0.05
34.	Silica (SiO ₂) in mg/l	APHA 24th Edition-2023, 4500 SiO ₂ C	—	—	<0.1
35.	Total coliform in /100ml	IS 15185	Absent	Absent	Present
36.	E. coli in /100ml	IS 15185	Absent	Absent	Absent

Checked by:- 

For Mitra S. K. Private Limited


Authorized Signatory

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Report No. MSKGL/ED/2023-24/003992


Date: 30.09.2024

ANALYSIS REPORT OF GROUND WATER

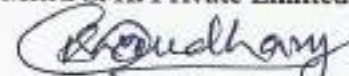
Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	17.09.2024
Location	Bichakundi Borewell No-2 Near WTP

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	<1.0
2	Calcium (as Ca)	mg/l	APHA (24th Edition), 3500 Ca B	75	200	4.8
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	---	---	70
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	1.9
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	---	---	0.04 PSU
11	Sodium (as Na)	mg/l	APHA (24th Edition), 3500 Na B	---	---	2.4
12	Sulphate (as SO4)	mg/l	APHA (24th Edition) 4500 SO42-E	200	400	2.6
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	17
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	500	2000	44
16	Total Hardness (as CaCO3)	mg/l	APHA (24th Edition), 2340 C	200	600	20
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	6.54

Checked by: 

For Mitra S. K. Private Limited


Authorized Signatory

Report No. MSKGL/ED/2023-24/003992


Date: 30.09.2024

ANALYSIS REPORT OF GROUND WATER

Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	17.09.2024
Location	Bichakundi Borewell No-2 Near WTP

CHEMICAL ANALYSIS OF WATER AS PER IS: 10500 - 2012

Sl.No	Test Parameter	Test Method	Limit As Per IS 10500 :2012, RA: 2018 Amd. 1 & 2		Result
			Acceptable Limit	Permissible Limit	
1.	Colour in Hazen Units	IS 3025 (Part 4): 2021	5	15	<5
2.	Copper(as Cu) in mg/l	IS 3025 (Part 42): 1992 ; RA 2019	0.05	1.5	<0.02
3.	Fluoride(as F) in mg/l	APHA 24th Edition 2023, 4500 F D	1.0	1.5	0.28
4.	Manganese (as Mn) in mg/l	IS 3025 (Part 59): 2023	0.1	0.3	0.43
5.	Nitrate (as NO ₃) in mg/l	IS 3025 (Part 34)-1986 RA: 2019	45	No Relaxation	0.76
6.	Selenium(as Se) in mg/l	IS 15303-2003; RA : 2018	0.01	No Relaxation	<0.01
7.	Silver (as Ag) in mg/l	IS 13428:2005 Annex J , (RA: 2018)	0.1	No Relaxation	<0.1
8.	Zinc(as Zn) in mg/l	IS 3025(Part 49)-1994;RA: 2019	5	15	0.16
9.	Cadmium (as Cd) in mg/l	IS 3025 (Part 41): 2023	0.003	No Relaxation	<0.002
10.	Cyanide (as CN) in mg/l	IS 3025 (Part 27): 1986(RA 2019)	0.05	No Relaxation	<0.02
11.	Lead (as Pb) in mg/l	IS 3025 (Part 47): 1994 (RA 2019)	0.01	No Relaxation	<0.01
12.	Mercury (as Hg) in mg/l	IS 3025 (Part 48): 1994(RA 2019)	0.001	No Relaxation	<0.001
13.	Nickel (as Ni) in mg/l	IS 3025(Part 54):2003 (RA 2019)	0.02	No Relaxation	<0.02
14.	Total Arsenic (as As) in mg/l	IS 3025 (Part 37): 2022	0.01	No Relaxation	<0.01
15.	Total Chromium (as Cr) in mg/l	IS 3025 (Part 52): 2003 (RA 2019)	0.05	No Relaxation	<0.05
16.	Silica (SiO ₂) in mg/l	APHA 24th Edition-2023, 4500 SiO ₂ C	—	—	<0.1
17.	Total coliform in /100ml	IS 15185	Absent	Absent	Present
18.	E. coli in /100ml	IS 15185	Absent	Absent	Absent

Checked by:- 

For Mitra S. K. Private Limited


Authorized Signatory

Report No. MSKGL/ED/2023-24/003987

Date: 30.09.2024

ANALYSIS REPORT OF GROUND WATER

Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	17.09.2024
Location	Borewell inside ST school Roida

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	<1.0
2	Calcium (as Ca)	mg/l	APHA (24th Edition), 3500 Ca B	75	200	31
3	Chloride (as Cl)	mg/l	APHA (24th Edition), 4500 -Cl B	250	1000	22
4	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	---	Agreeable
5	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	0.3	No Relaxation	245
6	Odour	None	3025 (Part-5)-1983; Rffm:2012	Agreeable	Agreeable	<0.05
7	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	30	100	17
8	pH value at 23 deg C	None	APHA 24 th Edition, 2023, 4500, H+B	6.5-8.5	No Relaxation	<0.001
9	Potassium (as K)	mg/l	APHA (24th Edition), 3500 K B	---	---	<1.0
10	Phenolic Compound (as C ₆ H ₅ OH)	mg/l	APHA (24th Edition), 5530C (Chloroform Extraction)	0.001	0.002	0.12 PSU
11	Salinity	PSU	APHA (24th Edition), 2520B	---	---	12.2
12	Sodium (as Na)	mg/l	APHA (24th Edition), 3500 Na B	---	---	11.4
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition) 4500 SO ₄ -E	200	400	Agreeable
14	Taste	None	IS 3025 (Part 8)-1983 Rffm:2012_(O)	Agreeable	Agreeable	97
15	Total Alkalinity (as CaCO ₃)	mg/l	APHA (24th Edition), 2320B	200	600	153
16	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	500	2000	149
17	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	200	600	<2.5
18	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	---	---	<1.0
19	Turbidity	N.T.U	APHA (24th Edition), 2130B	1	5	6.52

Checked by:-

For Mitra S. K. Private Limited

R. Raudhary
Authorized Signatory

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Report No. MSKGL/ED/2023-24/003987


Date: 30.09.2024

ANALYSIS REPORT OF GROUND WATER

Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	17.09.2024
Location	Borewell inside 5T school Roida

CHEMICAL ANALYSIS OF WATER AS PER IS: 10500 - 2012

Sl.No	Test Parameter	Test Method	Limit As Per IS 10500 :2012, RA: 2018 Amd. 1 & 2		Result
			Acceptable Limit	Permissible Limit	
1.	Colour in Hazen Units	IS 3025 (Part 4): 2021	5	15	<5
2.	Copper(as Cu) in mg/l	IS 3025 (Part 42): 1992 ; RA 2019	0.05	1.5	<0.02
3.	Fluoride(as F) in mg/l	APHA 24th Edition 2023, 4500 F D	1.0	1.5	0.15
4.	Manganese (as Mn) in mg/l	IS 3025 (Part 59): 2023	0.1	0.3	0.07
5.	Nitrate (as NO ₃) in mg/l	IS 3025 (Part 34)-1986 RA: 2019	45	No Relaxation	<0.5
6.	Selenium(as Se) in mg/l	IS 15303-2003; RA : 2018	0.01	No Relaxation	<0.01
7.	Silver (as Ag) in mg/l	IS 13428-2005 Annex J , (RA: 2018)	0.1	No Relaxation	<0.1
8.	Zinc(as Zn) in mg/l	IS 3025(Part 49)-1994;RA: 2019	5	15	0.09
9.	Cadmium (as Cd) in mg/l	IS 3025 (Part 41): 2023	0.003	No Relaxation	<0.002
10.	Cyanide (as CN) in mg/l	IS 3025 (Part 27): 1986(RA 2019)	0.05	No Relaxation	<0.02
11.	Lead (as Pb) in mg/l	IS 3025 (Part 47): 1994 (RA 2019)	0.01	No Relaxation	<0.01
12.	Mercury (as Hg) in mg/l	IS 3025 (Part 48): 1994(RA 2019)	0.001	No Relaxation	<0.001
13.	Nickel (as Ni) in mg/l	IS 3025(Part 54):2003 (RA 2019)	0.02	No Relaxation	<0.02
14.	Total Arsenic (as As) in mg/l	IS 3025 (Part 37): 2022	0.01	No Relaxation	<0.01
15.	Total Chromium (as Cr) in mg/l	IS 3025 (Part 52): 2003 (RA 2019)	0.05	No Relaxation	<0.05
16.	Silica (SiO ₂) in mg/l	APHA 24th Edition-2023, 4500 SiO ₂ C	---	---	<0.1
17.	Total coliform in /100ml	IS 15185	Absent	Absent	Absent
18.	E. coli in /100ml	IS 15185	Absent	Absent	Absent

Checked by: 

For Mitra S. K. Private Limited


Authorized Signatory

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

At/Po. - Joda, Dist - Kaonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2024-25/004051

Date :

30/09/2024

Sample No. :

MSKGL/ED/2024-25/09/01567

Drawn/Submitted on :

16/09/2024

Reference No. & Date :

3000158017, Date - 28/09/2023

We hereby certify that the following sample drawn by us / submitted by the customer has been analyzed with the following results:

1. Description of sample (As declared by customer)	Ground Water (Trace Metal)
2. Sample Mark (if any, given by the customer)	Joda West Iron & Mn Mine
3. Date of sampling	16/09/2024
4. Place of sampling	Bichakundi Borewell No-1 Near Community Toilet
5. Environmental conditions during sampling	Rainy
6. Sampling Plan & Procedures used	NA

Report No. :

MSKGL/ED/2024-25/004051

Sample No. :

MSKGL/ED/2024-25/09/01567

ANALYSIS RESULT

Sl No.	Test Parameters	Unit	Test Method	Result
1	Copper (as Cu)	mg/l	IS 3025 (Part 2)	<0.02
2	Iron (as Fe)	mg/l	IS 3025 (Part 2)	<0.05
3	Manganese (as Mn)	mg/l	IS 3025 (Part 2)	<0.02
4	Selenium (as Se)	mg/l	IS 3025 (Part 2)	<0.005
5	Cadmium (as Cd)	mg/l	IS 3025 (Part 2)	<0.001
6	Lead (as Pb)	mg/l	IS 3025 (Part 2)	<0.005
7	Mercury (as Hg)	mg/l	IS 3025 (Part 48)	<0.0002
8	Arsenic (as As)	mg/l	IS 3025 (Part 2)	<0.005
9	Zinc (as Zn)	mg/l	IS 3025 (Part 2)	<0.02
10	Hexavalent Chromium (as Cr+6)	mg/l	IS 3025 (Part 52)	<0.01

DL : Detection Limit

BDL : Below Detection Limit

Opinion : All the parameters are analysed in NABL accredited laboratory.

Report Verified By



For Mitra S. K. Private Limited



Authorised Signatory

* 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.

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/2024-25/004054

Date :

30/09/2024

Sample No. :

MSKGL/ED/2024-25/09/01566

Drawn/Submitted on :

16/09/2024

Reference No. & Date :

3000156017, Date - 28/09/2023

We hereby certify that the following sample drawn by us / submitted by the customer has been analyzed with the following results:

1. Description of sample (As declared by customer)	Ground Water (Trace Metal)
2. Sample Mark (if any, given by the customer)	Joda West Iron & Mn Mine
3. Date of sampling	16/09/2024
4. Place of sampling	Bichakundi Borewell No-2 Near WTP
5. Environmental conditions during sampling	Rainy
6. Sampling Plan & Procedures used	NA

Report No. :

MSKGL/ED/2024-25/004054

Sample No. :

MSKGL/ED/2024-25/09/01566

ANALYSIS RESULT

Sl No.	Test Parameters	Unit	Test Method	Result
1	Copper (as Cu)	mg/l	IS 3025 (Part 2)	<0.02
2	Iron (as Fe)	mg/l	IS 3025 (Part 2)	<0.05
3	Manganese (as Mn)	mg/l	IS 3025 (Part 2)	<0.02
4	Selenium (as Se)	mg/l	IS 3025 (Part 2)	<0.005
5	Cadmium (as Cd)	mg/l	IS 3025 (Part 2)	<0.001
6	Lead (as Pb)	mg/l	IS 3025 (Part 2)	<0.005
7	Mercury (as Hg)	mg/l	IS 3025 (Part 48)	<0.0002
8	Arsenic (as As)	mg/l	IS 3025 (Part 2)	<0.005
9	Zinc (as Zn)	mg/l	IS 3025 (Part 2)	<0.02
10	Hexavalent Chromium (as Cr+6)	mg/l	IS 3025 (Part 52)	<0.01

DL : Detection Limit

BDL : Below Detection Limit

Opinion : All the parameters are analysed in NABL accredited laboratory.

Report Verified By



For Mitra S. K. Private Limited



Authorised Signatory

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

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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

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

At/Po. - Joda, Dist. - Kaonjhar, Odisha - 758034 India Pin

Report No. :

MSKGL/ED/2024-25/004056

Date :

30/09/2024

Sample No. :

MSKGL/ED/2024-25/09/01569

Drawn/Submitted on :

16/09/2024

Reference No. & Date :

3000156017, Date - 28/09/2023

We hereby certify that the following sample drawn by us / submitted by the customer has been analyzed with the following results:

1. Description of sample (As declared by customer)	Ground Water (Trace Metal)
2. Sample Mark (if any, given by the customer)	Joda West Iron & Mn Mine
3. Date of sampling	16/09/2024
4. Place of sampling	Bichakundi Borewell No-3 Near Micro Activity Centre
5. Environmental conditions during sampling	Rainy
6. Sampling Plan & Procedures used	NA

Report No. :

MSKGL/ED/2024-25/004056

Sample No. :

MSKGL/ED/2024-25/09/01569

ANALYSIS RESULT

Sl No.	Test Parameters	Unit	Test Method	Result
1	Copper (as Cu)	mg/l	IS 3025 (Part 2)	<0.02
2	Iron (as Fe)	mg/l	IS 3025 (Part 2)	<0.05
3	Manganese (as Mn)	mg/l	IS 3025 (Part 2)	<0.02
4	Selenium (as Se)	mg/l	IS 3025 (Part 2)	<0.005
5	Cadmium (as Cd)	mg/l	IS 3025 (Part 2)	<0.001
6	Lead (as Pb)	mg/l	IS 3025 (Part 2)	<0.005
7	Mercury (as Hg)	mg/l	IS 3025 (Part 48)	<0.0002
8	Arsenic (as As)	mg/l	IS 3025 (Part 2)	<0.005
9	Zinc (as Zn)	mg/l	IS 3025 (Part 2)	<0.02
10	Hexavalent Chromium (as Cr+6)	mg/l	IS 3025 (Part 52)	<0.01

DL : Detection Limit

BDL : Below Detection Limit

Opinion : All the parameters are analysed in NABL accredited laboratory.

Report Verified By



For Mitra S. K. Private Limited



Authorised Signatory

* 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.

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Koojhar, Orisha - 758034 India Pin

Report No. :

MSKGL/ED/2024-25/004056

Date :

30/09/2024

Sample No. :

MSKGL/ED/2024-25/09/01570

Drawn/Submitted on :

16/09/2024

Reference No. & Date :

3000156017, Date - 28/09/2023

We hereby certify that the following sample drawn by us / submitted by the customer has been analyzed with the following results:

1. Description of sample (As declared by customer)	Ground Water (Trace Metal)
2. Sample Mark (if any, given by the customer)	Joda West Iron & Mn Mine
3. Date of sampling	16/09/2024
4. Place of sampling	Borewell inside 5t school Roida
5. Environmental conditions during sampling	Rainy
6. Sampling Plan & Procedures used	NA

Report No. :

MSKGL/ED/2024-25/004056

Sample No. :

MSKGL/ED/2024-25/09/01570

ANALYSIS RESULT

Sl No.	Test Parameters	Unit	Test Method	Result
1	Copper (as Cu)	mg/l	IS 3025 (Part 2)	<0.02
2	Iron (as Fe)	mg/l	IS 3025 (Part 2)	<0.05
3	Manganese (as Mn)	mg/l	IS 3025 (Part 2)	<0.02
4	Selenium (as Se)	mg/l	IS 3025 (Part 2)	<0.005
5	Cadmium (as Cd)	mg/l	IS 3025 (Part 2)	<0.001
6	Lead (as Pb)	mg/l	IS 3025 (Part 2)	<0.005
7	Mercury (as Hg)	mg/l	IS 3025 (Part 4B)	<0.0002
8	Arsenic (as As)	mg/l	IS 3025 (Part 2)	<0.005
9	Zinc (as Zn)	mg/l	IS 3025 (Part 2)	<0.02
10	Hexavalent Chromium (as Cr+6)	mg/l	IS 3025 (Part 52)	<0.01

DL : Detection Limit

BDL : Below Detection Limit

Opinion : All the parameters are analysed in NABL accredited laboratory.

Report Verified By



For Mitra S. K. Private Limited


Authorised Signatory

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

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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-6960



Scan for Portal

ULR: TC-695024000008365F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/Q5206D

Date :

13/05/2024

Sample No. :

MSKNB/FD/2024-25/04/H0UADX

Date of receipt of sample:

17/04/2024

Date(s) of performance:

17/04/2024 - 13/05/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000166017/056, 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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	16/04/2024
5. Place of sampling	H-Guarry Seepage Water (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	Akash Sethi, Pranab Sethi

Report No. : MSKPL/FD/2024-25/Q5206D

Sample No. : MSKNB/FD/2024-25/04/H0UADX

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
1	Alkalinity as CaCO ₃	mg/l	IS 3025 (Part 23)	24.75
2	Arsenic as As	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
3	Biochemical Oxygen Demand (BOD)	mg/l	IS 3025 (Part 44)	4.7
4	Boron as B	mg/l	IS 3025 (Part 2)	BDL(DL:0.25)
5	Cadmium as Cd	mg/l	IS 3025 (Part 2)	BDL(DL:0.001)
6	Calcium as Ca	mg/l	IS 3025 (Part 40)	10.10
7	Chemical Oxygen Demand (as COD)	mg/l	IS 3025 (Part 58)	24.0
8	Chloride as Cl	mg/l	IS 3025 (Part 32)	4.90
9	Colour	Hazen	IS 3025 (Part 4)	BDL(DL:1.0)
10	Conductivity	micro S/cm	IS 3025 (Part 14)	75
11	Copper as Cu	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
12	Cyanide as CN	mg/l	IS 3025 (Part 27) Sec1	BDL(DL:0.02)
13	Dissolved Oxygen	mg/l	IS 3025 (Part 38)	6.1
14	Fluoride as F	mg/l	IS 3025 (Part 60)	0.28
15	Hexavalent Chromium (as Cr+6)	mg/l	IS 3025 (Part 52) Sec2	BDL(DL:0.01)
16	Iron as Fe	mg/l	IS 3025 (Part 2)	BDL(DL:0.05)
17	Lead as Pb	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
18	Magnesium as Mg	mg/l	IS 3025 (Part 46)	3.64
19	Manganese as Mn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)

Reviewed By:

Signature

Name

Designation

Atanayee Saha P. Ganguly
Ms. Atanayee Saha, Ms. Piali Ganguly
Sr. Exe. Chemist, Executive Chemist

Authorized Signatory:

Signature

Name

Designation

[Signature]
Dr. Soumyajit 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-6960



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ULR: TC-695024000008385F

Report No. : MSKPL/FD/2024-25/Q6206D

Sample No. : MSKNB/FD/2024-25/04/H0UADX

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Result
20	Mercury as Hg	mg/l	IS 3025 (Part 48)	BDL(DL:0.0002)
21	Nitrate as NO3	mg/l	APHA (24th EDITION) 4500-NO3- B	0.85
22	Odour	None	IS 3025 (Part 5)	AGREEABLE
23	Oil & Grease	mg/l	IS 3025 (Part 39)	BDL(DL:1.4)
24	Phenolic Compounds as C6H5OH	mg/l	IS 3025 (Part 43) Sec1	BDL(DL:0.001)
25	Sulphate as SO4	mg/l	IS 3025 (Part 24) Sec1	5.20
26	Total Dissolved Solids	mg/l	IS 3025 (Part 16)	56
27	Total Hardness as CaCO3	mg/l	IS 3025 (Part 21)	40.40
28	Total Suspended Solids	mg/l	IS 3025 (Part 17)	38.2
29	Zinc as Zn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
30	pH	None	IS 3025 (Part 11)	6.72 AT 24 DEG C

Opinion : NA

Statement of Conformity NA

----- END -----

Reviewed By:

Signature : *Arupree Saha* *P. Ganguly*
Name : Ms. Arupree Saha, Ms. Preeti Ganguly
Designation : Sr. Exe. Chemist, Executive Chemist

Authorized Signatory:

Signature : *Dr. Soumyajit Mukherjee*
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 retained part of sample(s) for chemical analysis (gas - 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 (solid & liquid waste) shall be retained for 15 days as per CPCB guideline & (W) 1 month from the date of issue of the Test Report.

The retained part of sample(s) for Microbiological analysis (gas - 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



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West
At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034, India

Report No. :

MSKPL/FD/2024-25/Q5206D_1

Date :

13/05/2024

Sample No. :

MSKNB/FD/2024-25/D4/H0UADX_1

Date of receipt of sample:

17/04/2024

Date(s) of performance:

17/04/2024 - 13/05/2024

Reference No. & Date :

3000168017/056, Date - 16/09/2023

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	16/04/2024
5. Place of sampling	H-Quarry Seepage Water (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	Akash Sethy, Pranab Sethi

Report No. : MSKPL/FD/2024-25/Q5206D_1**Sample No. :** MSKNB/FD/2024-25/D4/H0UADX_1

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
1	Salinity	mg/l	By Calculation	25.30


Opinion : NA

----- END -----

Reviewed By:

Signature: 
Name: Mr. Ananya Saha, Mr. Palli Ganguly
Designation: Sr. Ess. Chemist, Executive Chemist

Authorized Signatory:

Signature: 
Name: Dr. Sourajdeep 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 (Solid - 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 & (for 1 month from the date of issue of the Test Report).
The reserved part of sample(s) for Microbiological analysis (Solid - 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 :

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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-695024000006385F

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/2024-25/Q5206D

13/05/2024

MSKNB/FD/2024-25/04/H0UADX

17/04/2024

17/04/2024 - 22/04/2024

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	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	16/04/2024
5. Place of sampling	H-Quarry Seepage Water (JW/MM)
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 Sethi, Pranab Sethi

Report No. : MSKPL/FD/2024-25/Q5206D**Sample No. :** MSKNB/FD/2024-25/04/H0UADX

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	40

Opinion : NA**Statement of Conformity :** NA

— END —

Reviewed By:

Signature :

Name : Ms. Maheswari Chakraborty

Designation : Executive Microbiologist

Authorized Signatory:

Signature :

Name : Mr. Sukanta Palu

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:

Strachey Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel. : 91 33 40143000 / 22550007 Fax: 91 33 22550008
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 7044038120
Email: udayanlab@mitrask.com



TC-6950



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ULR: TC-695024000008384F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/HS206C

Date :

13/05/2024

Sample No. :

MSKNB/FD/2024-25/04/E2AABY

Date of receipt of sample:

17/04/2024

Date(s) of performance:

17/04/2024 - 12/05/2024

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	16/04/2024
5. Place of sampling	Ganguiguda Seepage Water (JWIMM)
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 Sethy, Pranab Sethi

Report No. : MSKPL/FD/2024-25/HS206C

Sample No. : MSKNB/FD/2024-25/04/E2AABY

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
1	Alkalinity as CaCO ₃	mg/l	IS 3025 (Part 23)	54.45
2	Arsenic as As	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
3	Biochemical Oxygen Demand (BOD)	mg/l	IS 3025 (Part 44)	6.1
4	Boron as B	mg/l	IS 3025 (Part 2)	BDL(DL:0.25)
5	Cadmium as Cd	mg/l	IS 3025 (Part 2)	BDL(DL:0.001)
6	Calcium as Ca	mg/l	IS 3025 (Part 40)	16.16
7	Chemical Oxygen Demand (as COD)	mg/l	IS 3025 (Part 58)	36.0
8	Chloride as Cl	mg/l	IS 3025 (Part 32)	7.35
9	Colour	Hazen	IS 3025 (Part 4)	BDL(DL:1.0)
10	Conductivity	micro S/cm	IS 3025 (Part 14)	90
11	Copper as Cu	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
12	Cyanide as CN	mg/l	IS 3025 (Part 27) Sec1	BDL(DL:0.02)
13	Dissolved Oxygen	mg/l	IS 3025 (Part 38)	5.8
14	Fluoride as F	mg/l	IS 3025 (Part 60)	0.35
15	Hexavalent Chromium (as Cr+6)	mg/l	IS 3025 (Part 52) Sec2	BDL(DL:0.01)
16	Iron as Fe	mg/l	IS 3025 (Part 2)	BDL(DL:0.05)
17	Lead as Pb	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
18	Magnesium as Mg	mg/l	IS 3025 (Part 46)	6.06
19	Manganese as Mn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)

Reviewed By:

Signature

Name

Designation

Abir Saha P. Ganguly
Mr. Abir Saha, Mr. Pab Ganguly
Sr. Exe. Chemist, Executive Chemist

Authorized Signatory:

Signature

Name

Designation

[Signature]
Dr. Soumitra Mukherjee
Lab in charge

Address of Laboratory :

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



TC-6950



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ULR: TC-695024000008384F

Report No. : MSKPL/FD/2024-25/HS206C

Sample No. : MSKNB/FD/2024-25/04/E2AABY

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Result
20	Mercury as Hg	mg/l	IS 3025 (Part 48)	BDL(DL:0.0002)
21	Nitrate as NO3	mg/l	APHA (24th EDITION) 4500-NO3- B	1.48
22	Odour	None	IS 3025 (Part 5)	AGREEABLE
23	Oil & Grease	mg/l	IS 3025 (Part 39)	BDL(DL:1.4)
24	Phenolic Compounds as C6H5OH	mg/l	IS 3025 (Part 43) Sec1	BDL(DL:0.001)
25	Sulphate as SO4	mg/l	IS 3025 (Part 24) Sec1	6.20
26	Total Dissolved Solids	mg/l	IS 3025 (Part 16)	80
27	Total Hardness as CaCO3	mg/l	IS 3025 (Part 21)	65.65
28	Total Suspended Solids	mg/l	IS 3025 (Part 17)	40.2
29	Zinc as Zn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
30	pH	None	IS 3025 (Part 11)	6.7 AT 28 DEG C

Opinion : NA

Statement of Conformity NA

— END —

Reviewed By:

Signature: *Abanipriya Saha, P. Ganguly*

Name : Ms. Abanipriya Saha, Ms. Palli Ganguly

Designation : Sr. Exe. Chemist, Executive Chemist

Authorized Signatory:

Signature: *Dr. Subinjoydeep Mukherjee*

Name : Dr. Subinjoydeep Mukherjee

Designation : Lab in charge

The results relate only to the sample 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 (Solid, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guidelines & (WQ) 1 starts 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. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

Head Office: Shikhi 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

Mitra S. K. Private Limited

Address of Laboratory :

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

Report No. :

MSKPL/FD/2024-25/HS208C_1

Date :

13/05/2024

Sample No. :

MSKNB/FD/2024-25/04/E2AABY_1

Date of receipt of sample:

17/04/2024

Date(s) of performance:

17/04/2024 - 12/05/2024

Reference No. & Date :

3000158017/056, Date - 16/09/2023

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	16/04/2024
5. Place of sampling	Ganguliguda Seepage Water (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	Akash Sethy, Pranab Sethi

Report No. : MSKPL/FD/2024-25/HS208C_1

Sample No. : MSKNB/FD/2024-25/04/E2AABY_1

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
1	Salinity	mg/l	By Calculation	47.45

Opinion : NA

— END —

Reviewed By:

Signature : *Abaya Sam P. Ganguly*

Name : Ms. Ananya Saha, Ms. Palli Ganguly

Designation : Sr. Exec. Chemist, Executive Chemist

Authorized Signatory:

Signature : *Dr. Soumyadeep Mukhopadhyay*

Name : Dr. Soumyadeep Mukhopadhyay

Designation : Lab in charge

The results relate only to the items 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 & (AO) 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. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

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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



Scan for Portal

ULR: TC-69502400008364F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM), Joda West

As/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/FD/2024-25/HS206C

13/05/2024

MSKNB/FD/2024-25/04/E2AABY

17/04/2024

17/04/2024 - 22/04/2024

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	Surface Water
3. Unique Identification of sample(If any)	NA
4. Date of sampling	16/04/2024
5. Place of sampling	Ganguliguda Seepage Water (JWMM)
6. Environmental conditions during sampling & Transport	(2 -5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS:17614(P-24) 2022
8. Identification of the personnel performing sampling by MSK	Akash Sethy, Pranab Sethi

Report No. : MSKPL/FD/2024-25/HS206C**Sample No. :** MSKNB/FD/2024-25/04/E2AABY

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	33

Opinion : NA**Statement of Conformity** NA

— END —

Reviewed By:

Signature :

Name : Ms. Matreyee Chakraborty

Designation : Executive Microbiologist

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 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.

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



TC-6950



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ULR: TC-695024000006383F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

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

Report No. :

MSKPL/FD/2024-25/3K208M

Date :

13/05/2024

Sample No. :

MSKNB/FD/2024-25/04/AC4AC0

Date of receipt of sample:

17/04/2024

Date(s) of performance:

17/04/2024 - 12/05/2024

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	18/04/2024
5. Place of sampling	D-Quarry Seepage D-Quarry Seepage Water (JW/MM)
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 Sethy, Pranab Sethi

Report No. : MSKPL/FD/2024-25/3K208M

Sample No. : MSKNB/FD/2024-25/04/AC4AC0

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
1	Alkalinity as CaCO ₃	mg/l	IS 3025 (Part 23)	19.8
2	Arsenic as As	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
3	Biochemical Oxygen Demand (BOD)	mg/l	IS 3025 (Part 44)	BDL(DL:2.0)
4	Boron as B	mg/l	IS 3025 (Part 2)	BDL(DL:0.25)
5	Cadmium as Cd	mg/l	IS 3025 (Part 2)	BDL(DL:0.001)
6	Calcium as Ca	mg/l	IS 3025 (Part 40)	8.08
7	Chemical Oxygen Demand (as COD)	mg/l	IS 3025 (Part 58)	16.0
8	Chloride as Cl	mg/l	IS 3025 (Part 32)	9.80
9	Colour	Hazen	IS 3025 (Part 4)	BDL(DL:1.0)
10	Conductivity	micro S/cm	IS 3025 (Part 14)	68
11	Copper as Cu	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
12	Cyanide as CN	mg/l	IS 3025 (Part 27) Sec1	BDL(DL:0.02)
13	Dissolved Oxygen	mg/l	IS 3025 (Part 38)	5.9
14	Fluoride as F	mg/l	IS 3025 (Part 60)	0.26
15	Hexavalent Chromium (as Cr+6)	mg/l	IS 3025 (Part 52) Sec2	BDL(DL:0.01)
16	Iron as Fe	mg/l	IS 3025 (Part 2)	BDL(DL:0.05)
17	Lead as Pb	mg/l	IS 3025 (Part 2)	BDL(DL:0.005)
18	Magnesium as Mg	mg/l	IS 3025 (Part 46)	1.21
19	Manganese as Mn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)

Reviewed By:

Signature

Name

Designation

Abrarjee Samir P. Gogoi
Ms. Abrarjee Samir, Ms. Pooja Gogoi
Sr. Ex. Chemist, Executive Chemist

Authorized Signatory

Signature

Name

Designation

Dr. Sourav Deep Mukherjee
Lab In charge

Address of Laboratory :

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3, Pagladanga Road, Kolkata 700015
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TC-6950



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ULR: TC-695024000008383F

Report No. : MSKPL/FDI/2024-25/3K206M

Sample No. : MSKNB/FD/2024-25/04/AC4AC0

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Result
20	Mercury as Hg	mg/l	IS 3025 (Part 48)	BDL(DL:0.0002)
21	Nitrate as NO3	mg/l	APHA (24th EDITION) 4500-NO3- B	0.98
22	Odour	None	IS 3025 (Part 6)	AGREEABLE
23	Oil & Grease	mg/l	IS 3025 (Part 39)	BDL(DL:1.4)
24	Phenolic Compounds as C6H5OH	mg/l	IS 3025 (Part 43) Sec1	BDL(DL:0.001)
25	Sulphate as SO4	mg/l	IS 3025 (Part 24) Sec1	5.20
26	Total Dissolved Solids	mg/l	IS 3025 (Part 16)	60
27	Total Hardness as CaCO3	mg/l	IS 3025 (Part 21)	30.3
28	Total Suspended Solids	mg/l	IS 3025 (Part 17)	5.8
29	Zinc as Zn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)
30	pH	None	IS 3025 (Part 11)	6.58 AT 25.2 DEG C

Opinion : NA

Statement of Conformity NA

-----END-----

Reviewed By

Signature *Abayer Sam P. Genguly*

Name : Mr. Arayee Saha, Ms. Palli Ganguly

Designation: Sr. Env. Chemist, Executive Chemist

Authorized Signature: _____

Signature _____

Name _____

Designation	Lab in charge
-------------	---------------

The results relate only to the 2000 festival.

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The retained part of sample(s) for chemical analysis (Soil - particulate sample(s) Feed, Water) shall be retained for 15 days from the date of issue of the Test Report. Probabistic 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 (Aerobic - perishable sample(s) Feed, Suckled Veals, Suckled Cows) 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.

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Address of Laboratory :

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

Report No. :

MSKPL/FD/2024-25/3K206M_1

Date :

13/05/2024

Sample No. :

MSKNB/FD/2024-25/04/AC4AC0_1

Date of receipt of sample:

17/04/2024

Date(s) of performance:

17/04/2024 - 12/05/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	16/04/2024
5. Place of sampling	D-Quarry Seepage D-Quarry Seepage Water (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	Akash Sethy, Pranab Sethi

Report No. : MSKPL/FD/2024-25/3K206M_1

Sample No. : MSKNB/FD/2024-25/04/AC4AC0_1

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
1	Salinity	mg/l	By Calculation	35.65

Opinion : NA

— END —

Reviewed By:

Signature : *Atanay Saha P. Ganguly*
Name : Ms. Atanay Saha, Ms. Pail Ganguly
Designation : Sr. Exa. Chemist, Executive Chemist

Authorized Signatory:

Signature : *Dr. Sushyadeep Mukhopadhyay*
Name : Dr. Sushyadeep 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 - particulate sample(s) Food, Water) shall be retained for 15 days from the date of issue of the Test Report. Particulate 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 & (W) 1 month from the date of issue of the Test Report.
The reserved part of sample(s) for Microbiological analysis (Soil - particulate sample(s) Food, Sterile Water, Sealed food) shall be retained for 15 days from the date of issue of the Test Report. Particulate sample(s) shall be retained 2 days from the date of issue of the Test Report.

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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-695024000008383F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/3K206M

Date :

13/05/2024

Sample No. :

MSKNB/FD/2024-25/04/AC4AC0

Date of receipt of sample:

17/04/2024

Date(s) of performance:

17/04/2024 - 22/04/2024

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	Surface Water
3. Unique Identification of sample(if any)	NA
4. Date of sampling	16/04/2024
5. Place of sampling	D-Quarry Seepage D-Quarry Seepage Water (JWIMM)
6. Environmental conditions during sampling & Transport	(2 -5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS-17814(P-25) 2022
8. Identification of the personnel performing sampling by MSK	Akash Sethy, Pranab Sethi

Report No. : MSKPL/FD/2024-25/3K206M**Sample No. :** MSKNB/FD/2024-25/04/AC4AC0

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	32

Opinion : NA**Statement of Conformity :** NA

— END —

Reviewed By

Signature

Name : Ms. Meherjee Chakraborty

Designation : Executive Microbiologist

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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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



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ULR: TC-69502400009117F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

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

Report No. :

MSKPL/FD/2024-25/9R46C0

Date :

22/05/2024

Sample No. :

MSKNB/FD/2024-25/05/2RN78T

Date of receipt of sample:

08/05/2024

Date(s) of performance:

08/05/2024 - 22/05/2024

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	07/05/2024
5. Place of sampling	D-Quarry Pit Water (JWIMM)
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	Pranab Ku Sethi

Report No. : MSKPL/FD/2024-25/9R46C0

Sample No. : MSKNB/FD/2024-25/05/2RN78T

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:0.004)
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. Aronjit Saha, Sr. Executive Chemist

Designation : Sr. Executive Chemist

Authorized Signatory:

Signature:

Name : Dr. Soumyadeep Ghosh

Designation : Lab in charge

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-695024000009117F

Reviewed By:

Signature: *Abanipriya Saha P. Ganguly*
Name: Ms. Abanipriya Saha, Mr. Pail Ganguly
Designation: Sr. Executive Chemist

Authorized Signatory:

Signature: *[Signature]*
Name: *[Name]*
Designation: 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 & (No) 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. Perishable sample(s) shall be retained 2 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



Scan for Portal

ULR: TC-695024000009117F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM) Joda West

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

Report No. :

MSKPL/FD/2024-25/9R46C0

Date :

22/05/2024

Sample No. :

MSKNB/FD/2024-25/05/2RN78T

Date of receipt of sample:

08/05/2024

Date(s) of performance:

08/05/2024 - 13/05/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/066, 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	07/05/2024
5. Place of sampling	D-Quarry Pit Water (JWIMM)
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 Ku Sethi

Report No. : MSKPL/FD/2024-25/9R46C0

Sample No. : MSKNB/FD/2024-25/05/2RN78T

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	9.3

Opinion : NA

Statement of Conformity NA

— END —

Reviewed By:

Signature :

Name : Ms. Mahesha Chakraborty

Designation : Executive Microbiologist

Authorized Signatory:

Signature :

Name : Mr. Sukanta Palai

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

Report No. MSKGL/ED/2024-25/001423

Date: 22.05.2024

ANALYSIS REPORT OF MINE WATER

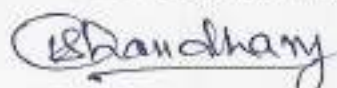
Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	07.05.2024
Location	D-Quarry Seepage Water (JWIMM)

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	---	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	---	10
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	5.9
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	75
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	---	1.9
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	---	0.04
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	4
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	16
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	46
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	28
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	2.8
18	pH value at 23.7 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	7.0

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-695024000009118F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/F146C0

Date :

22/05/2024

Sample No. :

MSKNB/FD/2024-25/05MDL77H

Date of receipt of sample:

08/05/2024

Date(s) of performance:

08/05/2024 - 22/05/2024

Location of performance of

Permanent Facility

Reference No. & Date :

3000156017/056, Date - 16/06/2023

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	07/05/2024
5. Place of sampling	Gangeiguda Pit Water (JWIMM)
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	Pranab Ku Sathi

Report No. : MSKPL/FD/2024-25/F146C0

Sample No. : MSKNB/FD/2024-25/05/4DL77H

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: *Abhijit Saha P. Ganguly*
Name: Mr. Abhijit Saha, Mr. Priti Ganguly
Designation: Dr. Executive Chemist

Authorized Signatory:

Signature: *Dr. Souradeep Mukherjee*
Name: Dr. Souradeep Mukherjee
Designation: Lab. in charge

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-6950



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ULR: TC-695024000009118F

Reviewed By:

Signature: *Abaya Sam P. Gayen*
Name: Mr. Abaya Sam P. Gayen
Designation: Sr. Executive Chemist

Authorized Signatory:

Signature: *J. Bhattacharya*
Name: Dr. Gourdeep Bhattacharya
Designation: Lab In charge

This report is valid only for 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 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-8850



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ULR: TC-895024000009118F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/F146C0

Date :

22/05/2024

Sample No. :

MSKNB/FD/2024-25/05/4DL77H

Date of receipt of sample:

08/05/2024

Date(s) of performance:

08/05/2024 - 13/05/2024

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	07/05/2024
5. Place of sampling	Gangeiguda Pit Water (JWIMM)
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 Ku Sethi

Report No. : MSKPL/FD/2024-25/F146C0

Sample No. : MSKNB/FD/2024-25/05/4DL77H

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	11

Opinion : NA

Statement of Conformity NA

END

Reviewed By:

Signature :

Name : Ms. Malleswari Chakraborty

Designation : Executive Microbiologist

Authorized Signatory:

Signature :

Name : Mr. Sukanta Patra

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: Shreeji Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel. : 91 33 40143000 / 22609007 Fax : 91 33 22699008
Email : info@mitrask.com Website : www.mitrask.com

Report No. MSKGL/ED/2024-25/001432

Date: 22.05.2024

ANALYSIS REPORT OF MINE WATER

Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	07.05.2024
Location	Ganguiguda Seepage Water (JWIMM)

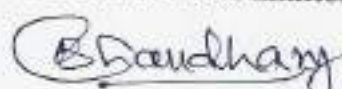
CHEMICAL ANALYSIS OF WATER AS PER IS: 2490

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	---	14
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	---	4.9
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	120
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	0.18
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	8.6
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	---	0.06
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	3.5
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	51
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	75
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	71
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	13
18	pH value at 23.7 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	6.2

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-695024000009119F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd. (MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/JB46CJ

Date :

22/05/2024

Sample No. :

MSKNB/FD/2024-25/05/8L3799

Date of receipt of sample:

08/05/2024

Date(s) of performance:

08/05/2024 - 22/05/2024

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	07/05/2024
5. Place of sampling	H-Quarry Pit Water (JWIMM)
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	Pranab Ku Sethi

Report No. : MSKPL/FD/2024-25/JB46CJ

Sample No. : MSKNB/FD/2024-25/05/8L3799

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

Authorized Signatory:

Signature: *[Signature]*
Name: Dr. Sourajdeep 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-695024000009119F

Reviewed By:

Signature : *Ashwini Sam P. Ganguly*
Name : Ms. Ashwini Saha, Ms. Priat Ganguly
Designation : Sr. Executive Chemist

Authorized Signatory:

Signature : *[Signature]*
Name : Dr. Soumyadeep Mukherjee
Designation : Lab In charge

The results relate only to the sample(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 (Solid, Sealed & 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. 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-695024000009119F

TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/JB46CJ

Date :

22/05/2024

Sample No. :

MSKNB/FD/2024-25/05/BL3799

Date of receipt of sample:

08/05/2024

Date(s) of performance:

08/05/2024 - 13/05/2024

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	07/05/2024
5. Place of sampling	H-Quarry Pit Water (JWIMM)
6. Environmental conditions during sampling & Transport	(2-5) deg C Cold chain maintained
7. Sampling Plan & Method used	IS:17814(P-25) 2022
8. Identification of the personnel performing sampling by MSK	Pranab KJ Sethi

Report No. : MSKPL/FD/2024-25/JB46CJ**Sample No. :** MSKNB/FD/2024-25/05/BL3799

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, 0221B	4.5

Opinion : NA**Statement of Conformity** NA

— END —

Reviewed By:**Signature :****Name :** Ms. Mahesee Chakraborty**Designation :** Executive Microbiologist**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), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel : 91 33 40143000 / 22880007 Fax: 91 33 22830038
Email : info@mitrask.com Website : www.mitrask.com

Report No. MSKGL/ED/2023-24/001433

Date: 22.05.2024

ANALYSIS REPORT OF MINE WATER

Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	07.05.2024
Location	H-Quarry Seepage Water (JWIMM)

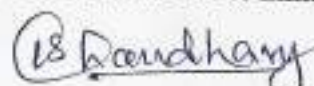
CHEMICAL ANALYSIS OF WATER AS PER IS: 2490

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	---	5
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	---	5.9
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	83
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	0.22
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	---	0.03
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ 2-E	---	3
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	12
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	39
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	20
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	18
18	pH value at 23.7 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	5.81

Checked by:-



For Mitra S. K. Private Limited



Authorized Signatory

Report No. MSKGL/ED/2024-25/002105

Date: 22.06.2024

ANALYSIS REPORT OF WASTE/EFFLUENT WATER

Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	12.06.2024
Location	Near Joda West BS Mining Garage Oil Separation Water (JWIMM)

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	6
2	Calcium (as CaCo ₃)	mg/l	APHA (24th Edition), 2340 C	---	29
3	Chemical Oxygen Demand (COD)	mg/l	APHA (24th Edition), 5220B	250	21
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	---	5.1
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	174
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	1.63
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	4
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	---	0.09
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ 2-E	---	37
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	28
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	108
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	87
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	18
18	pH value at 23.7 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	6.78

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



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West
At/Po. - Joda, Dist. - Keonjhar, Odisha - 758034 India

Report No. :

MSKPL/FD/2024-25/L054CE_1

Date :

27/06/2024

Sample No. :

MSKNB/FD/2024-25/06/UFR82C_1

Date of receipt of sample:

12/06/2024

Date(s) of performance:

12/06/2024 - 27/06/2024

Reference No. & Date :

3000156017/056, Date - 18/09/2023

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 (Mine Water)
3. Unique Identification of sample(if any)	NA
4. Date of sampling	11/06/2024
5. Place of sampling	Ganguiguda Mine Water (JWMM)
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	Dhambudhar Das

Report No. : MSKPL/FD/2024-25/L054CE_1

Sample No. : MSKNB/FD/2024-25/06/UFR82C_1

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	0.81
13	Zinc as Zn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)

Opinion : NA

— END —

Reviewed By:

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

Authorized Signatory:

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

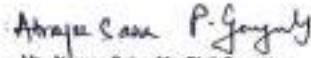
Address of Laboratory :

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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Reviewed By:

Signature : 
Name : Ms. Aranya Saha, Ms. Palli Ganguly
Designation : Sr. 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 - 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. 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



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/L054CE_1

Date :

27/06/2024

Sample No. :

MSKNB/FD/2024-25/06/UFR82C_1

Date of receipt of sample:

12/06/2024

Date(s) of performance:

12/06/2024 - 15/06/2024

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	Water & Residue in Water
2. Description of sample	Surface Water (Mine Water)
3. Unique Identification of sample(if any)	NA
4. Date of sampling	11/06/2024
5. Place of sampling	Ganguiguda Mine Water (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	Dhambrudhar Das

Report No. : MSKPL/FD/2024-25/L054CE_1**Sample No. :** MSKNB/FD/2024-25/06/UFR82C_1

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	<1.8

Opinion : NA

— END —

Reviewed By:

Signature :

Name : Mr. Maitreyee Chakraborty

Designation : Executive Microbiologist

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.

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

Report No. MSKGL/ED/2024-25/002102

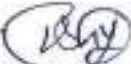
Date: 22.06.2024

ANALYSIS REPORT OF MINE WATER

Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	11.06.2024
Location	Ganguiguda Seepage Water (JWIMM)

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	---	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	---	2
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	5
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	112
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	0.17
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	5
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 2-E	---	<1.0
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	60
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	70
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	59
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	23
18	pH value at 23.7 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	6.2

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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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:

Reference No. & Date :

MSKPL/FD/2024-25/3454CX_1

27/06/2024

MSKNB/FD/2024-25/06/7YX81W_1

12/06/2024

12/06/2024 - 27/06/2024

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	Water & Residue in Water
2. Description of sample	Surface Water (Mine Water)
3. Unique Identification of sample(if any)	NA
4. Date of sampling	11/06/2024
5. Place of sampling	D-Quarry Mine Water (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	Dhambudhar Das

Report No. : MSKPL/FD/2024-25/3454CX_1

Sample No. : MSKNB/FD/2024-25/06/7YX81W_1

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

----- END -----

Reviewed By:

Signature

Name

Designation

Ms. Anayee Saha, Ms. Piali Ganguly
Sr. Executive Chemist

Authorized Signatory:

Signature

Name

Designation

Dr. Soumyajit Mukherjee
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 22650000
Email : info@mitrask.com Website : www.mitrask.com

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



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Reviewed By:

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

Authorized Signatory:

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

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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. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

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

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Address of Laboratory :

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

Report No. :

MSKPL/FD/2024-25/3454CX_1

Date :

27/06/2024

Sample No. :

MSKNB/FD/2024-25/06/7YX81W_1

Date of receipt of sample:

12/06/2024

Date(s) of performance:

12/06/2024 - 17/06/2024

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	Water & Residue in Water
2. Description of sample	Surface Water (Mine Water)
3. Unique Identification of sample(if any)	NA
4. Date of sampling	11/06/2024
5. Place of sampling	D-Quarry Mine Water (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	Dhambrudhar Das

Report No. : MSKPL/FD/2024-25/3454CX_1

Sample No. : MSKNB/FD/2024-25/06/7YX81W_1

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

----- END -----

Reviewed By:

Signature :
Name : Mr. Maitreyee Chakraborty

Designation : Executive Microbiologist

Authorized Signatory:

Signature :
Name : Mr. Sukanta Palu

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: Shreeji Centre (5th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel. : 91 33 42143000 / 22650007 Fax : 91 33 22650006
Email : info@mitrask.com Website : www.mitrask.com

Report No. MSKGL/ED/2024-25/002100


Date: 22.06.2024

ANALYSIS REPORT OF MINE WATER

Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	11.06.2024
Location	D-Quarry Seepage Water (JWIMM)

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	<2.0
2	Calcium (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	10
3	Chemical Oxygen Demand (COD)	mg/l	APHA (24th Edition), 5220B	250	4.2
4	Chloride (as Cl)	mg/l	APHA (24th Edition), 4500 -Cl B	---	6
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	5.2
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	78
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	1.53
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	2
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	---	0.04
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	2
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	28
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	49
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	76
18	pH value at 23.7 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	6.46

Checked by: 

For Mitra S. K. Private Limited


Authorized Signatory

Mitra S. K. Private Limited

Address of Laboratory :

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

Report No. :

Date :

Sample No. :

Date of receipt of sample:

Date(s) of performance:

Reference No. & Date :

MSKPL/FD/2024-25/RF54CA_1

27/06/2024

MSKNB/FD/2024-25/06/979806_1

12/06/2024

12/06/2024 - 27/06/2024

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	Water & Residue in Water
2. Description of sample	Surface Water (Mine Water)
3. Unique Identification of sample(if any)	NA
4. Date of sampling	11/06/2024
5. Place of sampling	H-Quarry Mine Water (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	Dhambudhar Das

Report No. : MSKPL/FD/2024-25/RF54CA_1

Sample No. : MSKNB/FD/2024-25/06/979806_1

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	1.02
13	Zinc as Zn	mg/l	IS 3025 (Part 2)	BDL(DL:0.02)

Opinion : NA

----- END -----

Reviewed By:

Signature

Name

Designation

Amita Saha P. Ganguly

Ms. Amita Saha, Ms. Piali Ganguly

Sr. Executive Chemist

Authorized Signatory:

Signature

Name

Designation

Dr. Soumyadeep Mukherjee

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 22650006
Email : info@mitrask.com Website : www.mitrask.com

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



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Reviewed By:

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

Authorized Signatory:

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

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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. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

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Tel : 91 33 40143000 / 22660007 Fax : 91 33 22660008
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: udayanlab@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

Report No. :

Date :

Sample No. :

Date of receipt of sample:

Date(s) of performance:

Reference No. & Date :

MSKPL/FD/2024-25/RF54CA_1

27/06/2024

MSKNB/FD/2024-25/06/979806_1

12/06/2024

12/06/2024 - 17/06/2024

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	Water & Residue in Water
2. Description of sample	Surface Water (Mine Water)
3. Unique Identification of sample(if any)	NA
4. Date of sampling	11/06/2024
5. Place of sampling	H-Quarry Mine Water (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	Dhambudhar Das

Report No. : MSKPL/FD/2024-25/RF54CA_1

Sample No. : MSKNB/FD/2024-25/06/979806_1

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	39

Opinion : NA

— END —

Reviewed By:

Signature :

Name : Ms. Malloyee Chakraborty

Designation : Executive Microbiologist

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: 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/2024-25/002101


Date: 22.06.2024

ANALYSIS REPORT OF MINE WATER

Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	11.06.2024
Location	H-Quarry Seepage Water (JWIMM)

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	---	38
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, 2023 4500-O-C/G	---	6.1
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	305
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	2.2
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	19
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	---	0.15
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	12
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	140
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	190
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	174
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	26
18	pH value at 23.7 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	7.12

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



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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

At/Po. - Joda, Dist. - Keonjhar, Odisha - 759034 India

Report No. :

MSKPL/FD/2024-25/WY5EE0_1

Date :

09/07/2024

Sample No. :

MSKNB/FD/2024-25/07/E25A1L_1

Date of receipt of sample:

02/07/2024

Date(s) of performance:

02/07/2024 - 09/07/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	Surface Water
4. Date of sampling	01/07/2024
5. Place of sampling	H Quarry Pit Water (JW/MM)
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	Pranab Ku. Sethi

Report No. : MSKPL/FD/2024-25/WY5EE0_1**Lab Sample Id. :** MSK/KOL/2024-25/17

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
1	Arsenic as As	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
2	Boron as B	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	7.1
3	Cadmium as Cd	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
4	Colour	Hazen	IS 3025 (Part 4)	BDL(DL:1.0)
5	Copper as Cu	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	10.5
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	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
10	Manganese as Mn	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	26
11	Mercury as Hg	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
12	Nitrate as NO3	mg/l	IS 3025 (Part 34)	1.52
13	Zinc as Zn	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	4.3

Reviewed By:

Signature

Name

: Ms. Abirya Saha, Ms. Pooi Ganguly

Designation

: Sr. Executive Chemist

Authorized Signatory:

Signature

Name

Designation

Dr. Souryadeep Mukhopadhyay
Lab in charge

Head Office:

Shreeji Centre (3th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel. : 91 35 40149000 / 22650007 Fax : 91 35 22950008
Email : info@mitrask.com Website : www.mitrask.com

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



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Opinion : NA

— END —

Reviewed By:

Signature : *Atreyee Saha P. Ganguly*
Name : Ms. Atreyee Saha, Mr. Pali Ganguly
Designation : Sr. Executive Chemist

Authorized Signatory:

Signature : *Dr. Souradip Mukherjee*
Name : Dr. Souradip 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 & (No) 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.

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

Report No. :**Date :****Sample No. :****Date of receipt of sample:****Date(s) of performance:****Reference No. & Date :**

MSKPL/FD/2024-25/WY5EE0_1

09/07/2024

MSKNB/FD/2024-25/07/E25A1L_1

02/07/2024

02/07/2024 - 04/07/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	Surface Water
4. Date of sampling	01/07/2024
5. Place of sampling	H Quarry Pit Water (JWMM)
6. Environmental conditions during sampling & Transport	(2 - 5) deg C Cold Chain Maintained
7. Sampling Plan & Method used	IS: 17514(P-25) 2022
8. Identification of the personnel performing sampling by MSK	Pranab Ku. Sethi

Report No. : MSKPL/FD/2024-25/WY5EE0_1**Lab Sample Id.** MSK/KOL/2024-25/17

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	<1.8

Opinion : NA

----- END -----

Reviewed By:

Signature :

Name : Ms. Malleswari Chakravarty

Designation : Executive Microbiologist

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

Report No. MSKGL/ED/2024-25/002733


Date: 16.07.2024

ANALYSIS REPORT OF MINE WATER


Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	01.07.2024
Location	H-Quarry Seepage Water (JWIMM)

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	---	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	---	6
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	5.6
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	93
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	3.9
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	0.9
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	---	0.04
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO42-E	---	7.2
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	20
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	98
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	43
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	143
18	pH value at 23.7 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	7.43

Checked by: 

For Mitra S. K. Private Limited


Authorized Signatory

Address of Laboratory :

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3, Pagladanga Road, Kolkata 700015
West Bengal
Tel : +91 7044038120
Email: udayanlab@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

Report No. :

Date :

Sample No. :

Date of receipt of sample:

Date(s) of performance:

Reference No. & Date :

MSKPL/FD/2024-25/7M5EE0_1

09/07/2024

MSKNB/FD/2024-25/07/E0FX3P_1

02/07/2024

02/07/2024 - 09/07/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	Surface Water
4. Date of sampling	01/07/2024
5. Place of sampling	Ganguiguda Pit Water (JWMM)
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	Pranab Ku. Sethi

Report No. : MSKPL/FD/2024-25/7M5EE0_1

Lab Sample Id. : MSK/KOL/2024-25/16

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
1	Arsenic as As	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
2	Boron as B	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	8.2
3	Cadmium as Cd	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
4	Colour	Hazen	IS 3025 (Part 4)	BDL(DL:1.0)
5	Copper as Cu	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
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	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
10	Manganese as Mn	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	41.7
11	Mercury as Hg	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
12	Nitrate as NO3	mg/l	IS 3025 (Part 34)	3.96
13	Zinc as Zn	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	1.7

Reviewed By:

Signature

Name : Ms. Aranya Saha, Ms. Preeti Ganguly

Designation : Sr. Executive Chemist

Authorized Signatory:

Signature :

Name : Dr. Soumyadeep Mukhopadhyay

Designation : Lab In charge

Address of Laboratory :

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



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Opinion : NA

— END —

Reviewed By:

Signature

Name

Designation

Mr. Anupam P. Ganguly

Mr. Anupam Saha, Mr. Pankaj Ganguly

Sr. Executive Chemist

Authorized Signatory:

Signature

Name

Designation

Dr. Souravdeep Mukhopadhyay

Dr. Souravdeep Mukhopadhyay

Lab in charge

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

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The retained part of sample(s) for chemical analysis (Soil, Solid & Liquid Waste) shall be retained for 15 days as per CPCB guideline 6 (A) 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. Perishable sample(s) shall be retained 2 days from the date of issue of the Test Report.

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Address of Laboratory :

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3, Pagladanga Road, Kolkata 700015
West Bengal
Tel. : +91 7044038120
Email: udayanlab@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

Report No. :

MSKPL/FD/2024-25/7M5EE0_1

Date :

09/07/2024

Sample No. :

MSKNB/FD/2024-25/07/E0FX3P_1

Date of receipt of sample:

02/07/2024

Date(s) of performance:

02/07/2024 - 04/07/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	Surface Water
4. Date of sampling	01/07/2024
5. Place of sampling	Ganguliguda Pit Water (JWMM)
6. Environmental conditions during sampling & Transport	(2 - 5) deg C Cold Chain Maintained
7. Sampling Plan & Method used	IS: 17514(P-25) 2022
8. Identification of the personnel performing sampling by MSK	Pranab Ku. Sethi

Report No. : MSKPL/FD/2024-25/7M5EE0_1

Lab Sample Id. MSK/KOL/2024-25/16

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	<1.8

Opinion : NA

— END —

Reviewed By :

Signature :

Name : Ms. Sastreyee Chatterjee

Designation : Executive Microbiologist

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.

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Tel. : 91 33 40143000 / 22550007 Fax : 91 33 22550008
Email: info@mitrask.com Website : www.mitrask.com

Report No. MSKGL/ED/2024-25/002644


Date: 16.07.2024

ANALYSIS REPORT OF MINE WATER


Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	01.07.2024
Location	Ganguiguda Seepage Water (JWIMM)

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	---	22
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
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	205
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	2.2
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	<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	---	0.1
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	6
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	95
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	128
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	122
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	1053
18	pH value at 23.7 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	7.25

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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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:

Reference No. & Date :

MSKPL/FD/2024-25/Z55EE0_1

09/07/2024

MSKNB/FD/2024-25/07/K8RT2A_1

02/07/2024

02/07/2024 - 09/07/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	Surface Water
4. Date of sampling	01/07/2024
5. Place of sampling	D Quarry Pit Water (JWIMM)
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	Pranab Ku. Sethi

Report No. : MSKPL/FD/2024-25/Z55EE0_1

Lab Sample Id. : MSK/KOL/2024-25/18

RESULT

Chemical				
Sl No.	Parameter	UOM	Method	Result
1	Arsenic as As	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
2	Boron as B	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	5.3
3	Cadmium as Cd	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
4	Colour	Hazen	IS 3025 (Part 4)	BDL(DL:1.0)
5	Copper as Cu	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
6	Cyanide as CN	mg/l	IS 3025 (Part 27) Sec:1	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 62) Sec:2	BDL(DL:0.01)
9	Lead as Pb	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
10	Manganese as Mn	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	11.7
11	Mercury as Hg	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)
12	Nitrate as NO3	mg/l	IS 3025 (Part 34)	1.66
13	Zinc as Zn	microgram/l	TPM/MSK/INST./93; Issue No. 1 Issue date: 20/01	BDL(DL:1.0)

Reviewed By:

Signature

Name : Ms. Aranya Saha, Ms. Pali Ganguly

Designation : Sr. Executive Chemist

Authorized Signatory:

Signature

Name : Dr. Gouryadeep Mukhopadhyay

Designation : Lab in charge

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Opinion : NA

— END —

Reviewed By:

Signature : *Abayee Sam P. Ganguly*

Name : Mr. Abayee Sam P. Ganguly

Designation : Sr. Executive Chemist

Authorized Signatory:

Signature :

Name :

Designation :

Dr. Soumyajit Mukhopadhyay

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 (like - 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 (like - 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.

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TEST REPORT

Name & Address of Customer :

Tata Steel Ltd.(MGM)_Joda West

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

Report No. :

MSKPL/FD/2024-25/Z55EE0_1

Date :

09/07/2024

Sample No. :

MSKNB/FD/2024-25/07/K8RT2A_1

Date of receipt of sample:

02/07/2024

Date(s) of performance:

02/07/2024 - 04/07/2024

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	Water & Residue in Water
2. Description of sample	Surface Water
3. Unique Identification of sample(if any)	Surface Water
4. Date of sampling	01/07/2024
5. Place of sampling	D Quarry Pit Water (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	Pranab Ku. Sethi

Report No. : MSKPL/FD/2024-25/Z55EE0_1**Lab Sample Id.** MSK/KOL/2024-25/18

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	<1.8

Opinion : NA

— END —

Reviewed By:

Signature :

Name : Ms. Malreyee Chakraborty

Designation : Executive Microbiologist

Authorized Signatory:

Signature :

Name : Mr. Sukanta Paki

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 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.

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Report No. MSKGL/ED/2024-25/002734


Date: 15.07.2024

ANALYSIS REPORT OF MINE WATER

Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	01.07.2024
Location	D-Quarry Seepage Water (JWIMM)

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	---	14
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	---	6.4
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	102
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	---	3.8
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	---	0.05
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	4.8
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	32
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	64
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	51
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	7.4
18	pH value at 23.7 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	7.38

Checked by: 

For Mitra S. K. Private Limited


Authorized Signatory

Report No. MSKGL/ED/2024-25/003425


Date: 31.08.2024

ANALYSIS REPORT OF MINE WATER

Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	24.08.2024
Location	D Quarry Pit Water (JWIMM)

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	---	6.3
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	---	9.9
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	6.2
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	71
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	0.06
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	1.9
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	---	0.04 PSU
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	1.8
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	15
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	---	24
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	8.9
18	pH value at 23.7 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	6.46

Checked by: 

For Mitra S. K. Private Limited


Authorized Signatory

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Report No. MSKGL/ED/2024-25/003425

Date: 31.08.2024

ANALYSIS REPORT OF MINE WATER

Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	24.08.2024
Location	D Quarry Pit Water (JWIMM)

CHEMICAL ANALYSIS OF WATER AS PER IS: 2490

Sl. No.	Test Parameters	Unite	Max. Tolerance Limit as per CPCB	Results
1	Arsenic as As	mg/l	0.2	<1.0
2	Boron as B	mg/l	---	5.1
3	Cadmium as Cd	mg/l	2	<1.0
4	Colour	Hazen	5	<1.0
5	Copper as Cu	mg/l	3	<1.0
6	Cyanide as CN	mg/l	0.2	<0.02
7	Fluoride as F	mg/l	2	<0.2
8	Hexavalent Chromium (as Cr+6)	mg/l	0.1	<0.01
9	Lead as Pb	mg/l	0.1	<1.0
10	Mercury as Hg	mg/l	0.01	<1.0
11	Manganese as Mn	mg/l	2	11.2
12	Nitrate as NO3	mg/l	10	1.54
13	Zinc as Zn	mg/l	5	4.2
14	Total coliform	/100ml	---	Present

Checked by: 

For Mitra S. K. Private Limited



Authorized Signatory

Report No. MSKGL/ED/2024-25/003424


Date: 31.08.2024

ANALYSIS REPORT OF MINE WATER

Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	24.08.2024
Location	H Quarry Pit Water (JWIMM)

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	<2.0
2	Calcium (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	—	7.8
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	—	5.9
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	—	5.3
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	—	76
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	0.09
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	—	3.8
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	—	0.04 PSU
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	—	1.6
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	—	27
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	—	50
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	—	35
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	168
18	pH value at 23.7 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	6.01

Checked by: 

For Mitra S. K. Private Limited


Authorized Signatory

Report No. MSKGL/ED/2024-25/003424


Date: 31.08.2024

ANALYSIS REPORT OF MINE WATER

Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	24.08.2024
Location	H Quarry Pit Water (JWIMM)

CHEMICAL ANALYSIS OF WATER AS PER IS: 2490

Sl. No.	Test Parameters	Unit	Max. Tolerance Limit as per CPCB	Results
1	Arsenic as As	mg/l	0.2	<1.0
2	Boron as B	mg/l	---	7.2
3	Cadmium as Cd	mg/l	2	<1.0
4	Colour	Hazen	5	<1.0
5	Copper as Cu	mg/l	3	10.4
6	Cyanide as CN	mg/l	0.2	<0.02
7	Fluoride as F	mg/l	2	<0.2
8	Hexavalent Chromium (as Cr+6)	mg/l	0.1	<0.01
9	Lead as Pb	mg/l	0.1	<1.0
10	Mercury as Hg	mg/l	0.01	<1.0
11	Manganese as Mn	mg/l	2	28
12	Nitrate as NO ₃	mg/l	10	1.48
13	Zinc as Zn	mg/l	5	4.4
14	Total coliform	/100ml	---	Present

Checked by: 

For Mitra S. K. Private Limited


 Authorized Signatory

Report No. MSKGL/ED/2024-25/003426


Date: 31.08.2024

ANALYSIS REPORT OF MINE WATER

Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	24.08.2024
Location	Gangeiguda Pit Water (JWIMM)

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	---	13
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	---	6
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	6.1
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	107
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	0.1
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	5.6
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	---	0.05 PSU
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ 2-E	---	3
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	42
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	64
16	Total Hardness (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	55
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	948
18	pH value at 23.7 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	6.29

Checked by:- 

For Mitra S. K. Private Limited


Authorized Signatory

Report No. MSKGL/ED/2024-25/003426

Date: 31.08.2024

ANALYSIS REPORT OF MINE WATER

Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	24.08.2024
Location	Gangeiguda Pit Water (JWIMM)

CHEMICAL ANALYSIS OF WATER AS PER IS: 2490

Sl. No.	Test Parameters	Unite	Max. Tolerance Limit as per CPCB	Results
1	Arsenic as As	mg/l	0.2	<1.0
2	Boron as B	mg/l	—	7.8
3	Cadmium as Cd	mg/l	2	<1.0
4	Colour	Hazen	5	<1.0
5	Copper as Cu	mg/l	3	<1.0
6	Cyanide as CN	mg/l	0.2	<0.02
7	Fluoride as F	mg/l	2	<0.2
8	Hexavalent Chromium (as Cr+6)	mg/l	0.1	<0.01
9	Lead as Pb	mg/l	0.1	<1.0
10	Mercury as Hg	mg/l	0.01	<1.0
11	Manganese as Mn	mg/l	2	39.8
12	Nitrate as NO3	mg/l	10	3.88
13	Zinc as Zn	mg/l	5	1.67
14	Total coliform	/100ml	—	Absent

Checked by:- *Sanku*

For Mitra S. K. Private Limited

[Signature]
Authorized Signatory

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Report No. MSKGL/ED/2024-25/004104


Date: 01.10.2024

ANALYSIS REPORT OF MINE WATER

Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	17.09.2024
Location	H Quarry Pit Water (JWIMM)

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	<2.0
2	Calcium (as CaCO ₃)	mg/l	APHA (24th Edition), 2340 C	---	10
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	---	4.4
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	102
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	0.22
8	Magnesium (as Mg)	mg/l	APHA (24th Edition), 3500 Mg B	---	3.9
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	---	0.05 PSU
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ 2-E	---	<1.0
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	38
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	63
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	153
18	pH value at 25 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	6.32

Checked by: 

For Mitra S. K. Private Limited


 Authorized Signatory

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Report No. MSKGL/ED/2024-25/004104


Date: 01.10.2024

ANALYSIS REPORT OF MINE WATER

Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	17.09.2024
Location	H Quarry Pit Water (JWIMM)

CHEMICAL ANALYSIS OF WATER AS PER IS: 2490

Sl.No	Test Parameter	Test Method	Limit as per CPCB for discharge of effluents to Inland Surface Water	Result
1.	Colour in Hazen Units	IS 3025 (Part 4): 2021	All efforts should be made to remove colour as far as practicable	10
2.	Copper(as Cu) in mg/l	IS 3025 (Part 42): 1992; RA 2019	3.0	0.07
3.	Fluoride(as F) in mg/l	APHA 24th Edition 2023, 4500 F D	2.0	0.14
4.	Manganese (as Mn) in mg/l	IS 3025 (Part 59): 2023	2.0	1.09
5.	Nitrate (as NO ₃) in mg/l	IS 3025 (Part 34)-1986, RA: 2019	10.0	<0.5
6.	Cadmium (as Cd) in mg/l	IS 3025 (Part 41): 2023	2.0	<0.002
7.	Cyanide (as CN) in mg/l	IS 3025 (Part 27): 1986(RA 2019)	0.2	<0.02
8.	Lead (as Pb) in mg/l	IS 3025 (Part 47): 1994 (RA 2019)	0.1	<0.01
9.	Mercury (as Hg) in mg/l	IS 3025 (Part 48): 1994(RA 2019)	0.01	<0.001
10.	Total Arsenic (as As) in mg/l	IS 3025 (Part 37): 2022	0.2	<0.01
11.	Boron(as B) in mg/l	IS 13428-2005(Annex L); RA:2018	---	<0.5
12.	Hexavalent Chromium in mg/l	APHA 24th Edition 2023; 3500 Cr B	0.1	<0.05
13.	Total Coliform in MPN/100 ml	Standard methods for the examination of water & waste water, 24 th edtn. 9221B	---	<1.8

Checked by: 

For Mitra S. K. Private Limited


Authorized Signatory

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

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Report No. MSKGL/ED/2024-25/004104


Date: 01.10.2024

ANALYSIS REPORT OF MINE WATER

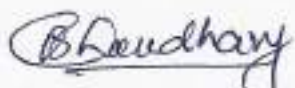
Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	17.09.2024
Location	D Quarry Pit Water (JWIMM)

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	---	4.8
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	---	10
5	DO	mg/l	APHA 24th Edition, 2023 4500-O-C/G	---	6.5
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	71
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	0.2
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	---	0.04 PSU
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ 2-E	---	<1.0
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	17
15	Total Dissolved Solids (as TDS)	mg/l	APHA (24th Edition), 2540C	---	44
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	9.8
18	pH value at 25 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	6.68

Checked by: 

For Mitra S. K. Private Limited


 Authorized Signatory

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Report No. MSKGL/ED/2024-25/004104

Date: 01.10.2024

ANALYSIS REPORT OF MINE WATER

Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	17.09.2024
Location	D Quarry Pit Water (JWIMM)

CHEMICAL ANALYSIS OF WATER AS PER IS: 2490

Sl.No	Test Parameter	Test Method	Limit as per CPCB for discharge of effluents to Inland Surface Water	Result
1.	Colour in Hazen Units	IS 3025 (Part 4): 2021	All efforts should be made to remove colour as far as practicable	15
2.	Copper(as Cu) in mg/l	IS 3025 (Part 42): 1992; RA 2019	3.0	<0.02
3.	Fluoride(as F) in mg/l	APHA 24th Edition 2023, 4500 F D	2.0	<0.1
4.	Manganese (as Mn) in mg/l	IS 3025 (Part 59): 2023	2.0	1.12
5.	Nitrate (as NO ₃) in mg/l	IS 3025 (Part 34)-1986, RA: 2019	10.0	<0.5
6.	Cadmium (as Cd) in mg/l	IS 3025 (Part 41): 2023	2.0	<0.002
7.	Cyanide (as CN) in mg/l	IS 3025 (Part 27): 1986(RA 2019)	0.2	<0.02
8.	Lead (as Pb) in mg/l	IS 3025 (Part 47): 1994 (RA 2019)	0.1	<0.01
9.	Mercury (as Hg) in mg/l	IS 3025 (Part 48): 1994(RA 2019)	0.01	<0.001
10.	Total Arsenic (as As) in mg/l	IS 3025 (Part 37): 2022	0.2	<0.01
11.	Boron(as B) in mg/l	IS 13428-2005(Annex L); RA:2018	---	<0.5
12.	Hexavalent Chromium in mg/l	APHA 24th Edition 2023; 3500 Cr B	0.1	<0.05
13.	Total Coliform in MPN/100 ml	Standard methods for the examination of water & waste water, 24 th edn. 9221B	---	<1.8

Checked by:- 

For Mitra S. K. Private Limited


 Authorized Signatory

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Report No. MSKGL/ED/2024-25/004106


Date: 01.10.2024

ANALYSIS REPORT OF MINE WATER

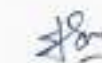
Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	17.09.2024
Location	Gangeiguda Pit Water (JWIMM)

CHEMICAL ANALYSIS OF WATER AS PER IS: 2490

SLNo	Test Parameter	Test Method	Limit as per CPCB for discharge of effluent to Inland Surface Water	Result
1.	Colour in Hazen Units	IS 3025 (Part 4): 2021	All efforts should be made to remove colour as far as practicable	10
2.	Copper(as Cu) in mg/l	IS 3025 (Part 42): 1992; RA 2019	3.0	0.04
3.	Fluoride(as F) in mg/l	APHA 24th Edition 2023, 4500 F D	2.0	<0.1
4.	Manganese (as Mn) in mg/l	IS 3025 (Part 59): 2023	2.0	1.16
5.	Nitrate (as NO ₃) in mg/l	IS 3025 (Part 34)-1986, RA: 2019	10.0	<0.5
6.	Cadmium (as Cd) in mg/l	IS 3025 (Part 41): 2023	2.0	<0.002
7.	Cyanide (as CN) in mg/l	IS 3025 (Part 27): 1986(RA 2019)	0.2	<0.02
8.	Lead (as Pb) in mg/l	IS 3025 (Part 47): 1994 (RA 2019)	0.1	<0.01
9.	Mercury (as Hg) in mg/l	IS 3025 (Part 48): 1994(RA 2019)	0.01	<0.001
10.	Total Arsenic (as As) in mg/l	IS 3025 (Part 37): 2022	0.2	<0.01
11.	Boron(as B) in mg/l	IS 13428-2005(Annex L); RA:2018	---	<0.5
12.	Hexavalent Chromium in mg/l	APHA 24th Edition 2023; 3500 Cr B	0.1	<0.05
13.	Total Coliform in MPN/100 ml	Standard methods for the examination of water & waste water, 24 th edn. 9221B	---	<1.8

Checked by: 

For Mitra S. K. Private Limited



Authorized Signatory

Report No. MSKGL/ED/2024-25/004106


Date: 01.10.2024

ANALYSIS REPORT OF MINE WATER

Name of the Client	M/s. TATA STEEL LIMITED
Name of the Mines	JODA WEST IRON & MANGANESE MINES (JWIMM)
Date of sampling	17.09.2024
Location	Gangeiguda Pit Water (JWIMM)

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	---	13
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	---	6.4
6	Electrical conductivity	us/cm	APHA (24th Edition), 2510B	---	110
7	Iron (as Fe)	mg/l	APHA (24th Edition), 3500 Fe B	3	0.21
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	---	0.06 PSU
13	Sulphate (as SO ₄)	mg/l	APHA (24th Edition), 4500 SO ₄ -E	---	<1.0
14	Total Alkalinity	mg/l	APHA (24th Edition), 5210B	---	42
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	---	53
17	Total Suspended Solid (as TSS)	mg/l	APHA (24th Edition), 2540D	50/100	968
18	pH value at 25 deg C	None	APHA 24th Edition, 2023 4500-H+B	5.5-9.0	6.39

Checked by 

For Mitra S. K. Private Limited


Authorized Signatory



BY REGD. POST WITH AD

STATE POLLUTION CONTROL BOARD, ODISHA

[DEPARTMENT OF FOREST, ENVIRONMENT & CLIMATE CHANGE, GOVERNMENT OF 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. 4234 /

IND-I-CON- 186

Dt. 17.03.2022 /

CONSENT ORDER NO. 67

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.3236687, Dated 02.12.2020 and your 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: JODA WEST MANGANESE MINES OF M/S. TATA STEEL LTD.

Name of the Occupier & Designation: SRI AWNISH KUMAR, CHIEF AND AGENT

Address: AT/PO: BICHHAKUNDI, VIA: JODA, DIST: KEONJHAR, PIN:758034

This consent order is valid for the period up to **31/03/2026.**

This consent order supersedes the earlier consent order issued vide letter No. 5334, dated 27.03.2021.

Details of Products Manufactured

Sl. No	Product	Quantity
01.	Manganese Ore	0.18 MTPA

Details of Mineral Handling Plants /Units

01 Operation of stationery screening plant 1X70 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

Out let 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)
01	Septic tank (Domestic effluent)	Soak pit	-	5.5-9.0	200	--	100
02	Mine drainage water/ surface runoff/other wastewater	On land / inland surface water body.	19634 (Monsoon period)	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



D. 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.



CONSENT ORDER

JODA WEST MANGANESE MINES OF M/S. TATA STEEL LIMITED

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.
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 ion of 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 no 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.



CONSENT ORDER

JODA WEST MANGANESE MINES OF M/S. TATA STEEL LIMITED

Page 5 of 12

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 alkalis 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) The validity of the Consent to Operate is subject to availability of valid mining scheme from IBM, Govt. of India.
- 4) Mining operation is subject to availability of all other statutory clearances.
- 5) Drills shall either be operated with dust extractors or equipped with water injection system to minimize dust generation in the work environment.
- 6) Controlled blasting shall be practiced to minimize generation of dust and fly rocks.
- 7) 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.
- 8) 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.
- 9) 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.
- 10) The vehicles carrying ore for transportation from the mine shall be covered with tarpaulin (both bottom & top).
- 11) 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.
- 12) Four Ambient Air Quality Monitoring Stations shall be established in core zone and buffer zone for monitoring of ambient air quality and location of the stations shall be decided in consultation with the Regional Officer, State Pollution Control Board based on the metrological data, topographical features and environmentally and ecologically sensitive targets.
- 13) 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.
- 14) The ambient air quality shall remain within prescribed national ambient air quality standards.
- 15) 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.



CONSENT ORDER

JODA WEST MANGANESE MINES OF M/S. TATA STEEL LIMITED

Page 7 of 12

- 16) 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.
- 17) The project proponent shall ensure that no natural watercourse and / or water resources are obstructed due to any mining operations.
- 18) 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.
- 19) 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.
- 20) 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.
- 21) 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. The treated wastewater quality of STP shall remain within the following standards and shall be used for plantation:

pH	-	6.5 -9.0
TSS	-	<100 mg/l
BOD	-	30 mg/l
Fecal Coliform	-	<1000 MPN/100 ml.
- 22) 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.
- 23) 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.
- 24) 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.
- 25) The mine shall take necessary action for compliance with the air and water quality standards as stipulated in this order.
- 26) Adequate measures shall be taken for control of noise levels below the following limits.

(6.00 AM - 9.00 PM) - Leq 75 dB(A)

(9.00PM - 6.00 AM) - Leq 70 dB(A)



CONSENT ORDER

Page 8 of 12

JODA WEST MANGANESE MINES OF M/S. TATA STEEL LIMITED

- 27) 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.
- 28) 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.
- 29) 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.
- 30) 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
JODA WEST MANGANESE MINES OF
M/S. TATA STEEL LIMITED,
AT/PO: BICHHAKUNDI, 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) Addl. Chief Env. Engineer, (Hazardous Waste Management Cell)
- viii) Sr. Env. Scientist, Central Lab. SPCB, Bhubaneswar
- ix) Consent Register


CHIEF ENV. ENGINEER (M)
STATE POLLUTION CONTROL BOARD, ODISHA



**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

JODA WEST MANGANESE MINES OF M/S. TATA STEEL LIMITED

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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 * 24 Hours **	50 80	20 80	-Improved west and Gaeke - Ultraviolet fluorescence
2.	Nitrogen Dioxide (NO ₂), µg/m ³	Annual * 24 Hours **	40 80	30 80	- Modified Jacob & Hochheiser (Na-Arsenite) - Chemiluminescence
3.	Particulate Matter (size less than 10µm) or PM ₁₀ µg/m ³	Annual * 24 Hours **	60 100	60 100	-Gravimetric - TOEM - Beta Attenuation
4.	Particulate Matter (size less than 2.5µm) or PM _{2.5} µg/m ³	Annual * 24 Hours **	40 60	40 60	-Gravimetric - TOEM - Beta Attenuation
5.	Ozone (O ₃) µg/m ³	8 Hours ** 1 Hours **	100 180	100 180	- UV Photometric - Chemiluminescence - Chemical Method
6.	Lead (Pb) µg/m ³	Annual * 24 Hours **	0.50 1.0	0.50 1.0	-AAS/ICP method after sampling on EMP 2000 or equivalent filter paper. - ED-XRF using Teflon filter
7.	Carbon Monoxide (CO) mg/m ³	8 Hours ** 1 Hours **	02 04	02 04	- Non Dispersive Infra Red (NDIR) Spectroscopy
8.	Ammonia (NH ₃) µg/m ³	Annual* 24 Hours**	100 400	100 400	-Chemiluminescence - Indophenol Blue Method
9.	Benzene (C ₆ H ₆) µg/m ³	Annul *	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. **7.726** /1 WL-SSP-93/2015 Dated, Bhubaneswar, the **31** Aug, 2015

To

The Principal Chief Conservator of Forests, Odisha,
Bhubaneswar

Sub: Approval of Site Specific Wildlife Conservation Plan in respect of Joda West 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 Joda West 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-11015/86/2004-IA.II(M) dated 13.9.2005.

2. The Site Specific Wildlife Conservation Plan in respect of the above project has been approved by the undersigned with financial forecast of **₹1130.08 lakh** (Rupees eleven crore thirty lakh eight thousand) only for the following activities.

a.	For activities to be implemented by the user agency in project area	₹150.60 lakh
b.	For activities to be implemented by DFO, Keonjhar Division in project impact area	₹979.48 lakh
Grand Total:		₹1130.08 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 ₹979.48 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.

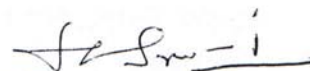
4. The User Agency may be advised to note the following conditions for future compliance.

- 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. 7727 /date 31-08-2015

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.5699 dt 16.7.2015 of the DFO, Keonjhar Division
3. Divisional Forest Officer, Keonjhar Division with reference to his memo No.5698 dt 16.7.2015 alongwith a copy of the approved site specific wildlife conservation plan
- ✓ 4. The Head, M/s Joda West 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**



**The Dy. Director General of Forest (FC)
Ministry of Environment, Forest & Climate Change,
Regional Office (EZ), Government of India,
A-3, Rail Vihar, Chandrasekharpur,
Bhubaneswar – 751023**

Ref. No. MGM / P&E / 106 / 23
Date: 31.03.2023

**Sub: Submission of Approved Review of Mining for Joda West Iron & Manganese
Mine over an area of 1437.719 ha for the period 2023-24 to 2027-28.**

Dear Sir,

With reference to above cited subject, we would like to inform you that the Review of Mining Plan & Progressive Mine Closure Plan in respect of Joda West Iron & Mn. Mine was submitted to Indian Bureau of Mines under Rule 17(2) of the MCR 2016 & Rule 23 of MCDR 2017 and duly approved vide letter no. MCDR-MiFL0Mn/3/2022-BBS-IBM_RO_BBS, Dtd. 28.03.2023.

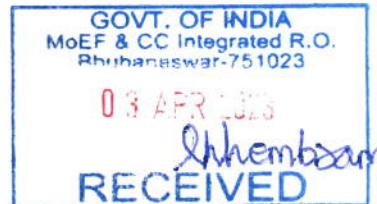
Hence, we are enclosing herewith the approved copy of the Review of Mining Plan for your kind perusal.

Thanking you,

Yours faithfully,
F: Tata Steel Ltd.


(Sabyasachi Mishra)
Qualified Person &
Head (Mine & Production Planning),
Ferro Alloys & Minerals Division,

Encl: As above.



TATA STEEL LTD.

Ferro Alloys & Minerals Division, Manganese Group of Mines, At/P.O. Bichakundi, Via – Joda,
Dist. Keonjhar, Odisha – 758034, Tel. +91 6372901872, e-mail: mnminesadmin@tatasteel.com
Regd. Office - Bombay House 24 Homi Mody Street Fort Mumbai 400 001 India Tel 91 22 6665 8282 Fax 91 22 66657724
Corporate Identity Number L27100MH1907PLC000260 Website www.tatasteel.com

Manual Ambient Air Quality Report (Core Zone)								
Reporting period :- Apr-24 to Sep-24								
Location	Parameter	UoM	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24
Near Time Office	Particulate Matter (<10um)	µg/m ³	227.3	226.2	226.5	103.5	61.6	66.0
	Particulate Matter (<2.5um)	µg/m ³	104.9	114.4	116.5	51.3	30.6	33.4
	Sulphur Dioxide (SO2)	µg/m ³	8.3	7.8	7.3	6.0	<6	6.1
	Nitrogen Dioxide (NO2)	µg/m ³	22.0	22.7	23.2	17.6	14.5	17.2
	Carbon Monoxide (CO)	mg/m ³	0.57	0.56	0.53	0.25	0.14	0.22
	Ozone (O3)	µg/m ³	<20	<20	<20	<20	<20	<20
	Ammonia (NH3)	µg/m ³	16.0	17.0	18.4	13.0	11.3	13.4
	Arsenic as (As)	ng/m ³	<1	<1	<1	<1	<1	<1
	Benzo(a)Pyrene	ng/m ³	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Benzene	µg/m ³	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2
	Lead (as Pb)	µg/m ³	0.03	0.03	0.03	0.04	0.04	0.02
	Manganese as Mn	µg/m ³	0.32	0.31	0.30	0.35	0.35	0.10
	Nickel as Ni	ng/m ³	10.9	6.0	<5	5.3	5.3	<5
D Quarry Sorting Yard	Particulate Matter (<10um)	µg/m ³	215.8	217.1	221.0	90.5	54.8	54.6
	Particulate Matter (<2.5um)	µg/m ³	100.6	109.7	113.8	44.8	27.0	27.8
	Sulphur Dioxide (SO2)	µg/m ³	8.0	7.4	7.2	6.1	<6	<6
	Nitrogen Dioxide (NO2)	µg/m ³	21.1	22.9	22.9	16.8	15.2	15.1
	Carbon Monoxide (CO)	mg/m ³	0.52	0.52	0.52	0.25	0.17	0.16
	Ozone (O3)	µg/m ³	<20	<20	<20	<20	<20	<20
	Ammonia (NH3)	µg/m ³	14.7	16.4	17.0	13.7	12.4	9.5
	Arsenic as (As)	ng/m ³	<1	<1	<1	<1	<1	<1
	Benzo(a)Pyrene	ng/m ³	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Benzene	µg/m ³	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2
	Lead (as Pb)	µg/m ³	0.02	0.04	0.03	0.02	0.02	0.04
	Manganese as Mn	µg/m ³	0.18	0.24	0.25	0.24	0.24	0.05
	Nickel as Ni	ng/m ³	5.2	5.0	<5	<5	<5	<5
D Quarry Screen Plant	Particulate Matter (<10um)	µg/m ³	217.2	220.7	222.3	96.2	56.7	52.3
	Particulate Matter (<2.5um)	µg/m ³	100.6	111.7	114.8	47.1	27.9	26.6
	Sulphur Dioxide (SO2)	µg/m ³	7.8	7.2	7.4	6.0	<6	<6
	Nitrogen Dioxide (NO2)	µg/m ³	21.6	22.7	22.9	18.1	13.7	15.0
	Carbon Monoxide (CO)	mg/m ³	0.55	0.43	0.53	0.24	0.14	0.16
	Ozone (O3)	µg/m ³	<20	<20	<20	<20	<20	<20
	Ammonia (NH3)	µg/m ³	15.4	16.6	16.8	12.2	10.4	9.1
	Arsenic as (As)	ng/m ³	<1	<1	<1	<1	<1	<1
	Benzo(a)Pyrene	ng/m ³	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Benzene	µg/m ³	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2
	Lead (as Pb)	µg/m ³	0.02	0.03	0.02	0.03	0.03	0.02
	Manganese as Mn	µg/m ³	0.25	0.29	0.26	0.25	0.25	0.07

	Nickel as Ni	ng/m ³	6.5	6.4	<5	5.2	5.2	<5
H Quarry Rest Shelter	Particulate Matter (<10um)	µg/m ³	203.8	208.2	211.9	91.7	50.0	47.7
	Particulate Matter (<2.5um)	µg/m ³	96.2	105.3	109.1	44.7	24.8	24.3
	Sulphur Dioxide (SO2)	µg/m ³	7.1	7.3	7.2	6.1	<6	<6
	Nitrogen Dioxide (NO2)	µg/m ³	21.5	21.5	22.3	16.9	15.0	15.3
	Carbon Monoxide (CO)	mg/m ³	0.53	0.51	0.50	0.26	0.15	0.15
	Ozone (O3)	µg/m ³	<20	<20	<20	<20	<20	<20
	Ammonia (NH3)	µg/m ³	14.9	16.5	17.0	13.1	10.4	10.9
	Arsenic as (As)	ng/m ³	<1	<1	<1	<1	<1	<1
	Benzo(a)Pyrene	ng/m ³	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Benzene	µg/m ³	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2
	Lead (as Pb)	µg/m ³	0.02	0.02	0.02	0.02	0.02	0.03
	Manganese as Mn	µg/m ³	0.20	0.21	0.20	0.19	0.19	0.04
	Nickel as Ni	ng/m ³	6.3	<5	<5	<5	<5	6.3
Near Railway Siding	Particulate Matter (<10um)	µg/m ³	217.7	218.2	223.5	109.9	69.1	67.5
	Particulate Matter (<2.5um)	µg/m ³	102.8	110.3	115.3	54.2	34.1	33.8
	Sulphur Dioxide (SO2)	µg/m ³	7.8	7.5	7.4	6.1	<6	6.0
	Nitrogen Dioxide (NO2)	µg/m ³	22.1	22.6	23.2	18.8	16.3	19.4
	Carbon Monoxide (CO)	mg/m ³	0.53	0.49	0.52	0.28	0.20	0.21
	Ozone (O3)	µg/m ³	<20	<20	<20	<20	<20	<20
	Ammonia (NH3)	µg/m ³	16.9	16.4	17.6	13.6	13.0	13.5
	Arsenic as (As)	ng/m ³	<1	<1	<1	<1	<1	<1
	Benzo(a)Pyrene	ng/m ³	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Benzene	µg/m ³	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2
	Lead (as Pb)	µg/m ³	0.02	0.04	0.04	0.03	0.03	0.01
	Manganese as Mn	µg/m ³	0.27	0.40	0.39	0.31	0.31	0.07
	Nickel as Ni	ng/m ³	7.3	7.5	6.0	5.1	5.1	<5
Near Gangaigora Pit	Particulate Matter (<10um)	µg/m ³	212.1	204.6	208.9	84.5	48.5	53.2
	Particulate Matter (<2.5um)	µg/m ³	98.2	103.4	107.8	41.6	24.2	27.1
	Sulphur Dioxide (SO2)	µg/m ³	7.6	7.1	7.2	6.1	<6	<6
	Nitrogen Dioxide (NO2)	µg/m ³	21.0	21.0	23.2	17.9	15.4	15.9
	Carbon Monoxide (CO)	mg/m ³	0.50	0.47	0.44	0.25	0.16	0.14
	Ozone (O3)	µg/m ³	<20	<20	<20	<20	<20	<20
	Ammonia (NH3)	µg/m ³	15.6	15.3	16.5	13.8	11.7	10.0
	Arsenic as (As)	ng/m ³	<1	<1	<1	<1	<1	<1
	Benzo(a)Pyrene	ng/m ³	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Benzene	µg/m ³	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2
	Lead (as Pb)	µg/m ³	0.02	0.03	0.04	0.02	0.02	0.02
	Manganese as Mn	µg/m ³	0.20	0.26	0.11	0.22	0.22	0.04
	Nickel as Ni	ng/m ³	5.3	5.4	<5	5.4	5.4	5.0

Photographs of Fugitive Dust control Measures deployed at site





Fixed
Sprinklers

FUGITIVE AIR QUALITY MONITORING REPORT

Address of Branch :

P.O. Barbil Dt Koonjhar Orissa 758 035



Scan for Portal

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/2024-25/001607

Date :

28/05/2024

Sample No. :

MSKGL/ED/2024-25/05/01199

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)	Joda West Iron & Mn. Mines (JWIMM)
4. Date of sampling	22/05/2024
5. Place of sampling	Gengsiguda Pit
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2024-25/001607

Sample No. : MSKGL/ED/2024-25/05/01199

RESULT

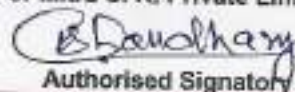
Chemical					
Sl No.	Parameter	UOM	Method	Limit	Result
1	Nitrogen Dioxides (as NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)		23.8
2	PM10/RPM	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012) (O)		276
3	PM2.5	micro gm/m ³	IS 5182 (Part 24)		124
4	Respirable Suspended Particulate Matter (RSPM)	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012) (O)		276
5	Sulphur Dioxide (as SO ₂)	micro gm/m ³	IS 5182: Part 2 (O)		8.6
6	Suspended Particulate Matter (SPM)	micro gm/m ³	IS 5182: Part 4:1999 (Reaff. 2014) (O)		549

— END —

Report Verified By



For Mitra S. K. Private Limited



Authorised Signatory

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

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

Report No. :

MSKGL/ED/2024-25/001606

Date :

28/05/2024

Sample No. :

MSKGL/ED/2024-25/05/01198

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)	Joda West Iron & Mn. Mines (JWMM)
4. Date of sampling	22/05/2024
5. Place of sampling	Haul-Road Near H-Quarry
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2024-25/001606

Sample No. : MSKGL/ED/2024-25/05/01198

RESULT

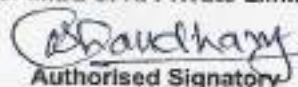
Chemical					
Sl No.	Parameter	UOM	Method	Limit	Result
1	Nitrogen Dioxides (as NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)		19.5
2	PM10/RPM	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012) (O)		254
3	PM2.5	micro gm/m ³	IS 5182 (Part 24)		115
4	Respirable Suspended Particulate Matter (RSPM)	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012) (O)		254
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 6:1999 (Reaff. 2014) (O)		483

— END —

Report Verified By



For Mitra S. K. Private Limited


Authorised Signatory

FUGITIVE AIR



Scan for Portal

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/2024-25/002135

Date :

02/07/2024

Sample No. :

MSKGL/ED/2024-25/06/01976

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:

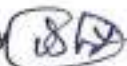
1. Group	AIR
2. Description of sample	Fugitive Air
3. Unique Identification of sample(if any)	Joda West Iron & Mn. Mines (JWIMM)
4. Date of sampling	26/06/2024
5. Place of sampling	Near Gangeiguda PH JWIMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2024-25/002135**Sample No. :** MSKGL/ED/2024-25/06/01976**RESULT**

Chemical					
Sl No.	Parameter	UOM	Method	Limit	Result
1	Nitrogen Dioxides (as NO ₂)	micro gm/m ³	IS: 5182 (Part 6)_(O)		21.3
2	PM10/RPM	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012)_(O)		261
3	PM2.5	micro gm/m ³	IS 5182 (Part 24)		126
4	Respirable Suspended Particulate Matter (RSPM)	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012)_(O)		261
5	Sulphur Dioxide (as SO ₂)	micro gm/m ³	IS 5182: Part 2_(O)		6.8
6	Suspended Particulate Matter (SPM)	micro gm/m ³	IS 5182: Part 4:1999 (Reaff.2014)_(O)		497

— END —

Report Verified By



For Mitra S.K. Private Limited

Authorised Signatory



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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/2024-25/002134

Date :

02/07/2024

Sample No. :

MSKGL/ED/2024-25/06/01975

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	Fugitive Air
3. Unique Identification of sample(if any)	Joda West Iron & Mn. Mines (JWIMM)
4. Date of sampling	26/06/2024
5. Place of sampling	Near Haul Road, Time Office, JWIMM
6. Environmental conditions during sampling & Transport	Clear & Sunny
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2024-25/002134**Sample No. :** MSKGL/ED/2024-25/06/01975**RESULT**

Chemical					
Sl No.	Parameter	UOM	Method	Limit	Result
1	Nitrogen Dioxides (as NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)		19.6
2	PM10/RPM	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012) (O)		239
3	PM2.5	micro gm/m ³	IS 5182 (Part 24)		117
4	Respirable Suspended Particulate Matter (RSPM)	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012) (O)		239
5	Sulphur Dioxide (as SO ₂)	micro gm/m ³	IS 5182: Part 2 (O)		6.4
6	Suspended Particulate Matter (SPM)	micro gm/m ³	IS 5182: Part 4:1999 (Reaff. 2014) (O)		459

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

FUGITIVE AIR QUALITY MONITORING 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/2024-25/002747

Date :

16/07/2024

Sample No. :

MSKGL/ED/2024-25/07/00431

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	Fugitive Air
3. Unique Identification of sample(if any)	Joda West Iron & Mn Mine (JWIMM)
4. Date of sampling	03/07/2024
5. Place of sampling	Near Screen Plant, D-Quarry (JWIMM)
6. Environmental conditions during sampling & Transport	Rainy
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2024-25/002747

Sample No. : MSKGL/ED/2024-25/07/00431

RESULT

Chemical					
Sl No.	Parameter	UOM	Method	Limit	Result
1	Nitrogen Dioxides (as NO ₂)	micro gm/m ³	IS: 5182 (Part 6)_(O)		17.8
2	PM10/RPM	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012)_(O)		107
3	PM2.5	micro gm/m ³	IS 5182 (Part 24)		52.8
4	Respirable Suspended Particulate Matter (RSPM)	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012)_(O)		107
5	Sulphur Dioxide (as SO ₂)	micro gm/m ³	IS 5182: Part 2_(O)		BDL(DL:6.0)
6	Suspended Particulate Matter (SPM)	micro gm/m ³	IS 5182: Part4:1999 (Reaff.2014)_(O)		215

— END —

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For Mitra S. K. Private Limited

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Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

AtPo, - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

TEST REPORT

Report No. :

Date :

Sample No. :

Reference No. & Date :

MSKGL/ED/2024-25/002746

16/07/2024

MSKGL/ED/2024-25/07/00430

3000158017/066, Date - 15/08/2023

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)	Joda West Iron & Mn Mine
4. Date of sampling	03/07/2024
5. Place of sampling	Near Ganguguda Pit
6. Environmental conditions during sampling & Transport	Rainy
7. Sampling Plan & Method used	Na

Report No. : MSKGL/ED/2024-25/002746

Sample No. : MSKGL/ED/2024-25/07/00430


RESULT

Chemical					
Sl No.	Parameter	UDM	Method	Limit	Result
1	Nitrogen Dioxide (as NO ₂)	micro gm/m ³	IS: 5182 (Part 6)_(O)		
2	PM10/RPM	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012)_(O)		18.6
3	PM2.5	micro gm/m ³	IS 5182 (Part 24)		112
4	Respirable Suspended Particulate Matter (RSPM)	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012)_(O)		54.9
5	Sulphur Dioxide (as SO ₂)	micro gm/m ³	IS 5182: Part 2_(O)		112
6	Suspended Particulate Matter (SPM)	micro gm/m ³	IS 5182: Part 4:1999 (Reaff.2014)_(O)		6.4
					229

— END —


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For Mitra S. K. Private Limited


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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/2024-25/002755

Date :

29/07/2024

Sample No. :

MSKGL/ED/2024-25/07/00833

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)	Joda West Iron & Mn Mine
4. Date of sampling	17/07/2024
5. Place of sampling	Haul Road Near Time Office
6. Environmental conditions during sampling & Transport	Rainy
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2024-25/002755

Sample No. : MSKGL/ED/2024-25/07/00833

RESULT

Chemical					
Sl No.	Parameter	UOM	Method	Limit	Result
1	Nitrogen Dioxides (as NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)		
2	PM ₁₀ /RPM	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012) (O)		14.1
3	PM _{2.5}	micro gm/m ³	IS 5182 (Part 24)		95.6
4	Respirable Suspended Particulate Matter (RSPM)	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012) (O)		46.8
5	Sulphur Dioxide (as SO ₂)	micro gm/m ³	IS 5182: Part.2 (O)		95.6
6	Suspended Particulate Matter (SPM)	micro gm/m ³	IS 5182: Part4:1999 (Reaff.2014) (O)		BOL(DL-6.0) 201

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory



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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/2024-25/002756

Date :

29/07/2024

Sample No. :

MSKGL/ED/2024-25/07/00834

Reference No. & Date :

3000156017/056, Date - 15/05/2023

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)	Joda West Iron & Mn Mine
4. Date of sampling	17/07/2024
5. Place of sampling	Haul Road Near H- Quarry
6. Environmental conditions during sampling & Transport	Rainy
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2024-25/002756**Sample No. :** MSKGL/ED/2024-25/07/00834

RESULT

Chemical

Sl No.	Parameter	UOM	Method	Limit	Result
1	Nitrogen Dioxides (as NO ₂)	micro gm/m ³	IS: 5182 (Part 6) (O)		12.5
2	PM10/RPM	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012) (O)		101.9
3	PM2.5	micro gm/m ³	IS 5182 (Part 24)		49.7
4	Respirable Suspended Particulate Matter (RSPM)	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012) (O)		101.9
5	Sulphur Dioxide (as SO ₂)	micro gm/m ³	IS 5182: Part 2 (O)		BOL(DL:6.0)
6	Suspended Particulate Matter (SPM)	micro gm/m ³	IS 5182: Part 4:1999 (Reaff.2014) (O)		210

— END —


Report Verified By

For Mitra S. K. Private Limited


Authorised Signatory

FUGITIVE AIR QUALITY 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/2024-25/003373

Date :

13/08/2024

Sample No. :

MSKGL/ED/2024-25/08/00363

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	Fugitive Air
3. Unique Identification of sample(if any)	Joda West Iron & Mn. Mines (JWIMM)
4. Date of sampling	07/08/2024
5. Place of sampling	Haul Road Near Time Office
6. Environmental conditions during sampling & Transport	Rainy
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2024-25/003373

Sample No. : MSKGL/ED/2024-25/08/00363

RESULT

Chemical					
Sl No.	Parameter	UOM	Method	Limit	Result
1	Nitrogen Dioxides (as NO ₂)	micro gm/m ³	IS: 5182 (Part 6)_(O)		
2	PM10/RPM	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012)_(O)		15.2
3	PM2.5	micro gm/m ³	IS 5182 (Part 24)		98.7
4	Respirable Suspended Particulate Matter (RSPM)	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012)_(O)		48.6
5	Sulphur Dioxide (as SO ₂)	micro gm/m ³	IS 5182: Part 2_(O)		98.7
6	Suspended Particulate Matter (SPM)	micro gm/m ³	IS 5182: Part4:1999 (Reaff.2014)_(O)		BDL(DL:6.0)
					205

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory



Scan for Portal

Name & Address of Customer :

Tata Steel Ltd.(MGM) Joda West

AtPo. - Joda, Dist. - Keonjhar, Odisha - 758034 India Pin

TEST REPORT**Report No. :**

MSKGL/ED/2024-25/003347

Date :

14/08/2024

Sample No. :

MSKGL/ED/2024-25/08/00216

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	Fugitive Air
3. Unique Identification of sample(if any)	Joda West Iron & Mn. Mines (JWMM)
4. Date of sampling	03/08/2024
5. Place of sampling	Near Screen Plant D Quarry (JWMM)
6. Environmental conditions during sampling & Transport	Rainy
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2024-25/003347**Sample No. :** MSKGL/ED/2024-25/08/00216**RESULT**

Chemical					
Sl No.	Parameter	UOM	Method	Limit	Result
1	Nitrogen Dioxides (as NO ₂)	micro gm/m ³	IS 11255 (Part 7) :2005 RA2017_(O)		13.2
2	PM10/RPM	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012)_(O)		86.3
3	PM2.5	micro gm/m ³	IS 5182 (Part 24)		42.5
4	Respirable Suspended Particulate Matter (RSPM)	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012)_(O)		86.3
5	Sulphur Dioxide (as SO ₂)	micro gm/m ³	IS 11255 (Part 2): 1985_(O)		BDL(DL6.0)
6	Suspended Particulate Matter (SPM)	micro gm/m ³	APHA(23rd Edition)2540D_(O)		178

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Mitra S. K. Private Limited

Address of Branch :

P.O. Barbel Dt Keonjhar Orissa 758 035



Scan for Portal

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/2024-25/003346

Date :

14/08/2024

Sample No. :

MSKGL/ED/2024-25/08/00215

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	Fugitive Air
3. Unique Identification of sample(if any)	Joda West Iron & Mn. Mines (JWIMM)
4. Date of sampling	03/08/2024
5. Place of sampling	Near Gangeiguda Pili (JWIMM)
6. Environmental conditions during sampling & Transport	Rainy
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2024-25/003346

Sample No. : MSKGL/ED/2024-25/08/00215

RESULT

Chemical					
Sl No.	Parameter	UOM	Method	Limit	Result
1	Nitrogen Dioxide (as NO ₂)	micro gm/m ³	IS 11255 (Part 7) :2005 RA2017 (O)		
2	PM10/RPM	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012) (O)		12.8
3	PM2.5	micro gm/m ³	IS 5182 (Part 24)		98.7
4	Respirable Suspended Particulate Matter (RSPM)	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012) (O)		48.3
5	Sulphur Dioxide (as SO ₂)	micro gm/m ³	IS 11255 (Part 2): 1985 (O)		98.7
6	Suspended Particulate Matter (SPM)	micro gm/m ³	APHA(23rd Edition)2540D (O)		BDL(DL:6.0)
					202

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Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

Head Office: Skochi Centre (2th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel. : 91 33 40143000 / 22650007 Fax : 91 33 22650068
Email : info@mitrask.com Website : www.mitrask.com

Page 1 of 1

FUGITIVE AIR QUALITY REPORT



Scan for Portal

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/2024-25/003702

Date :

18/09/2024

Sample No. :

MSKGL/ED/2024-25/09/00420

Reference No. & Date :

3000158017/056, 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	Fugitive Air
3. Unique Identification of sample(if any)	Joda West Iron & Mn. Mines (JWIMM)
4. Date of sampling	04/09/2024
5. Place of sampling	Near D-Quarry screen plant
6. Environmental conditions during sampling & Transport	Rainy
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2024-25/003702**Sample No. :** MSKGL/ED/2024-25/09/00420**RESULT**

Sl No.	Parameter	UOM	Method	Result
1	Nitrogen Dioxides (as NO ₂)	micro gm/m ³	IS 5182 : Part 6 : 2006 (Reaff.2012)	18.9
2	Respirable Suspended Particulate Matter (RSPM)	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012)	109
3	Sulphur Dioxide (as SO ₂)	micro gm/m ³	IS 5182: Part.2	6.3
4	Suspended Particulate Matter (SPM)	micro gm/m ³	IS 5182: Part4:1999 (Reaff.2014)	225

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Report Verified By



For Mitra S. K. Private Limited


Authorised Signatory

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



Scan for Portal

Name & Address of Customer :

Tata Steel Ltd (MGM) Joda West

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

TEST REPORT**Report No. :**

MSKGL/ED/2024-25/003791

Date :

16/09/2024

Sample No. :

MSKGL/ED/2024-25/09/00419

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	Fugitive Air
3. Unique Identification of sample(if any)	Joda West Iron & Mn. Mines (JWIMM)
4. Date of sampling	04/09/2024
5. Place of sampling	Haul road near H-quarry
6. Environmental conditions during sampling & Transport	Rainy
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2024-25/003791**Sample No. :** MSKGL/ED/2024-25/09/00419**RESULT**

Sl No.	Parameter	UOM	Method	Result
1	Nitrogen Dioxide (as NO ₂)	micro gm/m ³	IS 5182: Part 6 :2006 (Reaff.2012)	16.7
2	Respirable Suspended Particulate Matter (RSPM)	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012)	102
3	Sulphur Dioxide (as SO ₂)	micro gm/m ³	IS 5182: Part.2	6.4
4	Suspended Particulate Matter (SPM)	micro gm/m ³	IS 5182: Part6:1999 (Reaff.2014)	215

— END —

Report Verified By**For Mitra S. K. Private Limited****Authorised Signatory**

- This results relate only to the item(s) tested.
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Head Office: Service Centre (3th Floor), 74B, A.J.C. Bose Road, Kolkata - 700016, West Bengal, India.
Tel. : 91 33 40143000 / 22650067 Fax : 91 33 22650066
Email : info@mitrask.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

AtPo. - Joda, Dist. - Keonjhar, Orissa - 758034 India Pin

Report No.:

MSKGL/ED/2024-25/003790

Date:

18/09/2024

Sample No.:

MSKGL/ED/2024-25/09/00418

Reference No. & Date:

3000150317/056, 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)	Joda West Iron & Mn. Mines (JWIMM)
4. Date of sampling	04/09/2024
5. Place of sampling	Haul road near time office
6. Environmental conditions during sampling & Transport	Rainy
7. Sampling Plan & Method used	NA

Report No.: MSKGL/ED/2024-25/003790**Sample No.:** MSKGL/ED/2024-25/09/00418**RESULT**

Sl No.	Parameter	UOM	Method	Result
1	Nitrogen Dioxides (as NO ₂)	micro gm/m ³	IS 5182: Part 6 :2006 (Reaff.2012)	17.4
2	Respirable Suspended Particulate Matter (RSPM)	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012)	105
3	Sulphur Dioxide (as SO ₂)	micro gm/m ³	IS 5182: Part 2	6.2
4	Suspended Particulate Matter (SPM)	micro gm/m ³	IS 5182: Part4:1999 (Reaff.2014)	214

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

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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/2024-25/003793

Date :

18/09/2024

Sample No. :

MSKGL/ED/2024-25/09/00421

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	Fugitive Air
3. Unique Identification of sample(if any)	Joda West Iron & Mn. Mines (JWIMM)
4. Date of sampling	04/09/2024
5. Place of sampling	Near Gangalguda pit
6. Environmental conditions during sampling & Transport	Rainy
7. Sampling Plan & Method used	NA

Report No. : MSKGL/ED/2024-25/003793

Sample No. : MSKGL/ED/2024-25/09/00421

RESULT

Sl No.	Parameter	UOM	Method	Result
1	Nitrogen Dioxides (as NO ₂)	micro gm/m ³	IS 5182: Part 6 :2006 (Reaff.2012)	16.8
2	Respirable Suspended Particulate Matter (RSPM)	micro gm/m ³	IS 5182: Part 23:2006 (Reaff. 2012)	98.8
3	Sulphur Dioxide (as SO ₂)	micro gm/m ³	IS 5182: Part.2	6.1
4	Suspended Particulate Matter (SPM)	micro gm/m ³	IS 5182: Part4:1999 (Reaff.2014)	210

— END —

Report Verified By

For Mitra S. K. Private Limited

Authorised Signatory

- * This results relate only to the item(s) tested.
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		Apr-24				May-24				Jun-24			
SL. NO.	Monitoring Location	Date of Monitoring	Noise Level in dB (A)			Date of Monitoring	Noise Level in dB (A)			Date of Monitoring	Noise Level in dB (A)		
			Ld	Ln	Ldn		Ld	Ln	Ldn		Ld	Ln	Ldn
1	Inside Garage	22.04.2024	62.5	49.4	60.9	13.05.2024	62.7	45.5	60.9	17.06.2024	61.8	66.3	55.2
2	In Front of Admin Office	22.04.2024	47.6	40.8	46.2	13.05.2024	50	38.9	48.3	17.06.2024	58.3	64.3	45.8
3	In Front of Canteen	22.04.2024	47.9	46.1	47.4	13.05.2024	49.6	45.4	48.5	17.06.2024	52.4	65.2	44.7
4	Sorting Yard Rest Shelter	22.04.2024	61.2	46.9	59.4	13.05.2024	60.5	46.3	58.7	17.06.2024	51.9	53.5	48.6
5	250 meter from Screen Plant	23.04.2024	65.4	57.7	64	14.05.2024	65.9	55.2	64.3	18.06.2024	73.9	76.5	63.2
6	D-Quarry Sorting Yard	23.04.2024	62.7	54.9	61.3	14.05.2024	63	5405	61.5	18.06.2024	64.3	67	53.5

		July-24				Aug-24				Sept-24			
SL. NO.	Monitoring Location	Date of Monitoring	Noise Level in dB (A)			Date of Monitoring	Noise Level in dB (A)			Date of Monitoring	Noise Level in dB (A)		
			Ld	Ln	Ldn		Ld	Ln	Ldn		Ld	Ln	Ldn
1	Inside Garage	15.07.2024	90.5	92.3	48.2	19.08.2024	65.4	66.7	59.8	23.09.2024	67.3	69.5	46.9
2	In Front of Admin Office	15.07.2024	46.7	48.1	40.1	19.08.2024	63.3	65	46.7	23.09.2024	49.2	5.9	38.1
3	In Front of Canteen	15.07.2024	73.5	75.2	55.9	19.08.2024	54.7	56.3	42.9	23.09.2024	52.6	54.3	38
4	Sorting Yard Rest Shelter	15.07.2024	79.5	81.2	66.6	20.08.2024	69.6	71.4	47.9	24.09.2024	56.4	58	45.9
5	250 meter from Screen Plant	16.07.2024	68.5	70.3	44.4	20.08.2024	69	70.7	49.9	24.09.2024	64.2	66	47.7
6	D-Quarry Sorting Yard	16.07.2024	66.8	68.4	55.3	20.08.2024	70.4	72	61	24.09.2024	63.1	64.9	46.3

Noise

A/P.O.: BARBIL Ward No-6
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Report No. MSKGL/ED/2024-25/000860

Date: 06.05.2024


MONITORING REPORT OF AMBIENT NOISE

Name of the Client		M/s. TATA STEEL LIMITED			
Name of the Mines		JODA WEST IRON & MANGANESE MINES (JWIMM)			
SL. NO.	Monitoring Location	Date Monitoring	Noise Level in dB (A)		
			Ld	Ln	Ldn
1.	In side Garage	22.04.2024	62.5	49.4	60.9
2.	In Front of Admin Office	22.04.2024	47.6	40.8	46.2
3.	In Front of Canteen	22.04.2024	47.9	46.1	47.4
4.	Shorting Yard Rest Shelter	22.04.2024	61.2	46.9	59.4
5.	250 meter from Screen Plant	23.04.2024	65.4	57.7	64.0
6.	D-Quarry Shorting Yard	23.04.2024	62.7	54.9	61.3


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

NOISE MONITORING REPORT

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Report No. MSKGL/ED/2024-25/001656

Date: 05.06.2024

MONITORING REPORT OF AMBIENT NOISE

Name of the Client		M/s. TATA STEEL LIMITED			
Name of the Mines		JODA WEST IRON & MANGANESE MINES (JWIMM)			
SL. NO.	Monitoring Location	Date Monitoring	Noise Level in dB (A)		
			Ld	Ln	Ldn
1.	In side Garage	13.05.2024	62.7	45.5	60.9
2.	In Front of Admin Office	13.05.2024	50.0	38.9	48.3
3.	In Front of Canteen	13.05.2024	49.6	45.4	48.5
4.	H Quarry Rest Shelter	13.05.2024	60.5	46.3	58.7
5.	250 meter from Screen Plant	14.05.2024	65.9	55.2	64.3
6.	D-Quarry Shorting Yard	14.05.2024	63.0	54.5	61.5

Note : Day Time : 6.00 AM -10.00 PM, Night Time: 10.00PM- 6.00AM

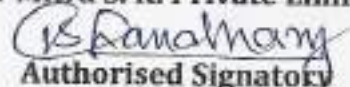
AMBIENT AIR QUALITY STANDARDS IN RESPECT OF NOISE AS PER CPCB GUIDELINES

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

NOISE

Mitra S. K. Private Limited

At/P.O. BARBIL Ward No-6
Dist.: Keonjhar, Odisha - 758035
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Report No. MSKGL/ED/2024-25/002167

Date: 07.07.2024

MONITORING REPORT OF AMBIENT NOISE

Name of the Client		M/s. TATA STEEL LIMITED			
Name of the Mines		JODA WEST IRON & MANGANESE MINES (JWIMM)			
SL. NO.	Monitoring Location	Date Monitoring	Noise Level in dB (A)		
			Ldn	Ld	Ln
1.	In side Garage	17.06.2024	61.8	66.3	55.2
2.	In Front of Admin Office	17.06.2024	58.3	64.3	45.8
3.	In Front of Canteen	17.06.2024	52.4	65.2	44.7
4.	H Quarry Rest Shelter	17.06.2024	51.9	53.5	48.6
5.	250 meters from Screen Plant	18.06.2024	73.9	76.5	63.2
6.	D-Quarry Shorting Yard	18.06.2024	64.3	67	53.5

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

Authorized Signatory

NOISE MONITORING REPORT

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 CIN: U51909WB1956PTC023037

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Report No. MSKGL/ED/2024-25/002862

Date: 03.08.2024


MONITORING REPORT OF AMBIENT NOISE

Name of the Client		M/s. TATA STEEL LIMITED			
Name of the Mines		JODA WEST IRON & MANGANESE MINES (JWIMM)			
SL. NO.	Monitoring Location	Date Monitoring	Noise Level in dB (A)		
			Ldn	Ld	Ln
1.	In side Garage	15.07.2024	90.5	92.3	48.2
2.	In Front of Admin Office	15.07.2024	46.7	48.1	40.1
3.	In Front of Canteen	15.07.2024	73.5	75.2	55.9
4.	H-Quarry Rest Shelter	15.07.2024	79.5	81.2	66.6
5.	250 meters from Screen Plant	16.07.2024	68.5	70.3	44.4
6.	D-Quarry Shorting Yard	16.07.2024	66.8	68.4	55.3

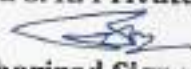
Note: Day Time: 6.00 AM -10.00 PM, Night Time: 10.00PM- 6.00AM

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


 Authorized Signatory

NOISE MONITORING REPORT

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


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Report No. MSKGL/ED/2024-25/003466				Date: 03.08.2024	
MONITORING REPORT OF AMBIENT NOISE					
Name of the Client		M/s. TATA STEEL LIMITED			
Name of the Mines		JODA WEST IRON & MANGANESE MINES (JWIMM)			
SL. NO.	Monitoring Location	Date Monitoring	Noise Level in dB (A)		
			Ldn	Ld	Ln
1.	In Side Garage	19.08.2024	65.4	66.7	59.8
2.	In Front of Canteen	19.08.2024	63.3	65	46.7
3.	In Front of Admin Office	19.08.2024	54.7	56.3	42.9
4.	H-Quarry Rest Shelter	20.08.2024	69.6	71.4	47.9
5.	D-Quarry Shorting Yard	20.08.2024	69	70.7	49.9
6.	D-Quarry Screen Plant	20.08.2024	70.4	72	61

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


 Authorized Signatory

NOISE MONITORING REPORT

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Report No. MSKGL/ED/2024-25/004107

Date: 01.10.2024

MONITORING REPORT OF AMBIENT NOISE

Name of the Client		M/s. TATA STEEL LIMITED			
Name of the Mines		JODA WEST IRON & MANGANESE MINES (JWIMM)			
SL. NO.	Monitoring Location	Date Monitoring	Noise Level in dB (A)		
			Ldn	Ld	Ln
1.	In Side Garage	23.09.2024	67.3	69.5	46.9
2.	In Front of Canteen	23.09.2024	49.2	50.9	38.1
3.	In Front of Admin Office	23.09.2024	52.6	54.3	38
4.	H-Quarry Rest Shelter	24.09.2024	56.4	58	45.9
5.	D-Quarry Shorting Yard	24.09.2024	64.2	66	47.7
6.	D-Quarry Screen Plant	24.09.2024	63.1	64.9	46.3

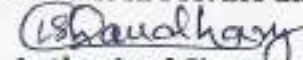
Note: Day Time: 6.00 AM -10.00 PM, Night Time: 10.00PM- 6.00AM

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


 Authorized Signatory

Personal Dust and Free Silica



TC-7882

**STARTECH LABS**

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ULR-TC7882240000000051E

Test Report

Test Report				
Name of the Industry	TATA Steel Limited	Date of Monitoring	15/04/2024	
	Mn Group of Mines, JODA, Odisha-India	Sample Received on	20/04/2024	
	Name of the Mine: Joda West Iron & Mn Mines	Date of Reporting	14/05/2024	
	Address	Through : Mitra SK Pvt Ltd AT/PO-Barbil Barbil – Keonjhar- 758035 India.	Report No.	STL/H/D20/074/24
		Standard Limit (DGMS) Respirable Dust 3 mg/m ³ If Free Silica Content is < 5 %		
Sampler Details		Method of Analysis	Sampling Flow Rate	Sampling Time
SKC Make Sidekick Pump Sr. No : 22553363, 22553359, 22553180, 22553181 & 22553360		(ST/H/GTP 001-05) Respirable Dust : NIOSH 600 Free Silica : NIOSH 7632	2.2 lpm	485 to 520 Mins.

S. No.	Date	Location / Sample ID	Activity	Employee Name, Designation & Employee ID	Equipment ID	Respirable Dust (mg/m ³)	Respirable Dust TWA (mg/m ³)	Free Silica Content (%)
1	15 th April 2024	D-Quarry Sorting yard ST-155	Supervisor	Mr. Animesh Kumar (TSP/250888/0324)	-	1.95	1.97	N.D
2		D-Quarry Sorting yard ST-156	worker	Mr. Ajaynaha (TSP/970737/1123)	-	2.06	2.10	N.D
3		D-Quarry Sorting yard / ST-157	Tipper Operator	Mr. Dibitsau (TSP/970781/1123)	Tipper (HD 09 P 3996	2.01	2.05	N.D
4		D-Quarry Main Gate/ ST-158	Security	Mr. Girija Nandandas (TSP/264577/0424)	-	1.93	1.97	N.D
5		H-Quarry ST-159	Foreman in side mines	Mr. Bisheswar Mahanta (P No.181701)	-	2.25	2.43	N.D

Environmental Condition: Temperature : 38.9 °C & RH : More than 45 %. (Detection Level = 0.0005 %) N.D : Not Detected.

CONCLUSION: From the above results it can be concluded that Respirable Dust TWA results for all the Personal samples are within the prescribed limit as per DGMS guidelines. Free Silica Content is not detected in all five samples.

	Compiled By	Authorised By
Name	S. Nagaraju	Y. Raghavendra Chary
Signature		
Date	14/05/2024	14/05/2024

STARTECH LABS PVT. LTD.

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TC-7882

**STARTECH LABS**

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ULR-TC788224222222222252E

Test Report

Name of the Industry	TATA Steel Limited	Date of Monitoring	16/04/2024	
Address	Mr Group of Mines JODA, Odisha-India.	Sample Received on	20/04/2024	
	Name of the Mine: Khonbond Iron & Mn Mines.	Date of Reporting	14/05/2024	
	Through: Mitra SK Pvt Ltd AT/PO-Barbil Barbil – Keonjhar- 758035 India.	Report No.	STL/IH/D201075/24	
	Standard Limit (DGMS) Respirable Dust 3 mg/m ³ If Free Silica Content is < 5 %			
Sampler Details		Method of Analysis	Sampling Flow Rate	Sampling Time
SKC Make Sidekick Pump Sr. No.: 22553363, 22553359 22553180, 22553181 & 22553360		(ST/IH/GTP 001-05) Respirable Dust : NIOSH 600 Free Silica : NIOSH 7602	2.2 lpm	485 to 490 Mints.

S. No.	Date	Location / Sample ID	Activity	Employee Name, Designation & Employee ID	Equipment ID	Respirable Dust (mg/m ³)	Respirable Dust TWA (mg/m ³)	Free Silica Content (%)
1	16 th April 2024	Khonbond Mn Mines Sorting yard / ST-160	Safety supervisor	Ms. Beanty Naik (TSP/912168/1023)	-	2.04	2.06	N.D
2		Khonbond Mn Mines Sorting yard / ST-161	supervisor	Mr. Parama Sunda Malanta (TSP/759089/6723)	-	1.72	1.74	N.D
3		Khonbond Mn Mines Sorting yard / ST-162	supervisor	Mr. Malawati Kachhap (TSP/912236/1023)	-	1.68	1.71	N.D
4		Khonbond Mn Mines Screening Plant Area / ST-163	Loader Operator	Mr. Rohit Kumar Mahanta (TSP/912254/1023)	Loader OD09U55 69	1.43	1.46	N.D
5		Khonbond Mn Mines, Back filling Dump / ST-164	Dumper Operator	Mr. Binimasan Nag (TSP/886946/1023)	Dumper ODO9U52 69	1.75	1.79	N.D

Environmental Condition: Temperature – 38.3 °C & RH – More than 43 %. [Detection Level = 0.0005 %] N. D: Not Detected

CONCLUSION: From the above results it can be concluded that Respirable Dust TWA results for all the Personal samples are within the prescribed limit as per DGMS guidelines. Free Silica Content is not detected in all five samples.

	Compiled By	Authorised By
Name	S. Nagaraju	Y. Raghavendra Chary
Signature		
Date	14/05/2024	14/05/2024



PERSONAL DUST SAMPLING



TC-7882

**STARTECH LABS**

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ULR-TC7882240000000063E

Test Report

Name of the Industry	TATA Steel Limited	Date of Monitoring	27/05/2024
Address	Mn Group of Mines, JODA, Odisha-India.	Sample Received on	03/06/2024
	Name of the Mine: Joda West Iron & Mn Mines	Date of Reporting	10/06/2024
	Through :	Report No.	STL/IH/F03/099/24
	Mitra SK Pvt Ltd AT/PO-Barbil Barbil – Keonjhar- 758035 India.	Standard Limit (DGMS) Respirable Dust 3 mg/m³ If Free Silica Content is < 5 %	
Sampler Details		Method of Analysis	Sampling Flow Rate
SKC Make Sidekick Pump Sr. No.: ST-EQ-IH-062, ST-EQ-IH-063, ST-EQ-IH-064, ST-EQ-IH-065 & ST-EQ-IH-066		(ST/IH/GTP 001-05) Respirable Dust : NIOSH 600 Free Silica : NIOSH 7602	2.2 lpm
			Sampling Time 473 to 490 Mints.

S. No.	Date	Location / Sample ID	Activity	Employee Name, Designation & Employee ID	Equipment ID	Respirable Dust (mg/m ³)	Respirable Dust TWA (mg/m ³)	Free Silica Content (%)
1	27 th May 2024	Ganniguda Sorting yard/ ST-199	Worker	Mr. Bijay maharana (TSP/950246/1123)		1.91	1.92	N.D.
2		D-Quarry Sorting yard/ ST-200	Supervisor	Mr. Bijay Kumar Das (TSP/988760/1123)		1.34	1.34	N.D.
3		H-Quarry Sorting yard / ST-201	Shovel operator	Mr. Tarinder Singh (TSP/970584/1123)	Valvo-487	1.51	1.52	N.D.
4		H-Quarry Main Gate/ ST-202	Dumper operator	Mr. Bhole Munda (TSP/995571/1223)	OD09P2765	1.54	1.52	N.D.
5		H- Quarry OB Dump yard/ ST-203	Dozer operator	Mr. Lokanath Patra (TSP/970581/1123)	D6R2	2.06	2.10	N.D.

Environmental Condition: Temperature – 36.2 °C & RH – 42 %, [Detection Level = 0.0005 %] N. D. : Not Detected

CONCLUSION: From the above results it can be concluded that Respirable Dust TWA results for all the Personal samples are within the prescribed limit as per DGMS guidelines. Free Silica Content is not detected in all five samples.

	Compiled By	Authorised By
Name	S. Nagaraju	Y. Raghavendra Chary
Signature		
Date	10/06/2024	10/06/2024



TC-7882

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ULR-TC788234000000064E

Test Report

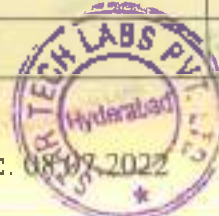
Test Report				
Name of the Industry	TATA Steel Limited	Date of Monitoring	28/05/2024	
Address	Mn Group of Mines, JODA, Odisha-India.	Sample Received on	03/06/2024	
	Name of the Mine: Khonbond Iron & Mn Mines.	Date of Reporting	10/06/2024	
	Through:	Report No.	STL/HH/F03/100/24	
	Mitra SK Pvt Ltd AT/PO-Barbil Barbil – Keonjhar- 758035 India.	Standard Limit (DGMS) Respirable Dust 3 mg/m ³ If Free Silica Content is < 5 %		
Sampler Details		Method of Analysis	Sampling Flow Rate	Sampling Time
SKC Make Sidekick Pump Sr. No.: ST-EQ-IH-062, ST-EQ-IH-063, ST-EQ-IH-064, ST-EQ-IH-065 & ST-EQ-IH-066		(ST/HH/GTP 001-05) Respirable Dust : NIOSH 600 Free Silica : NIOSH 7602	2.2 lpm	485 to 500 Mints.

S. No.	Date	Location / Sample ID	Activity	Employee Name, Designation & Employee ID	Equipment ID	Respirable Dust (mg/m ³)	Respirable Dust TWA (mg/m ³)	Free Silica Content (%)
1	28 th May 2024	Khonbond Mn mines, Sorting Plot/ ST-204	Safety supervisor	Ms. Beauty Naik (TSP/912168/1023)	-	1.85	1.87	0.0006
2		Khonbond Mn Mines Sorting yard / ST-205	Worker	Mr karan minj (TSP/916376/1023)	-	2.44	2.49	ND
3		Khonbond Mn Mines Sorting yard / ST-206	Supervisor	Mr. Ajay kumar Pradhan (TSP/912135/1023)	-	1.98	2.02	ND
4		Khonbond Mn Mines, Screening Plant Area / ST-207	Shovel Operator	Mr. Sanjaya Mahanta (TSP/912298/1023)	TATA 210	1.40	1.45	ND
5		Khonbond Mn mines, Screen plant/ ST-208	Dumper Operator	Mr Jagannath Dehury (TSP/912133/1023)	Dumper OD09U62 69	2.61	2.09	ND

Environmental Condition: Temperature - 37.3 °C & RH - 43.24 %. [Detection Level = 0.0015 %] N. D: Not Detected

CONCLUSION: From the above results it can be concluded that Respirable Dust TWA results for all the Personal samples are within the prescribed limit as per DGMS guidelines. Free Silica Content is detected in one sample but within the limit

	Compiled By	Authorised By
Name	S. Nagaraju	Y. Raghavendra Chary
Signature		
Date	10/06/2024	10/06/2024



PERSONAL DUST SAMPLING



TC-7882

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ULR-TC788224000000074F

Test Report

Name of the Industry TATA Steel Limited		Date of Monitoring 03/06/2024
Mn Group of Mines, JODA, Odisha-India.		Sample Received on 08/06/2024
Name of the Mine: Joda West Iron & Mn Mines		Date of Reporting 01/07/2024
Through :		Report No. STL/IH/F08/108/24
Address Mitra SK Pvt Ltd AT/PO-Barbil Barbil - Keonjhor- 758035 India.		Standard Limit : DGMS (Tech) Circular (MAMID)/08; Date: 29/04/2020 Respirable Dust 1 mg/m ³ If Free Silica Content is < 5 %
Sampler Details SKC Make Sidekick Pump Sr. No.: ST-EQ-IH-062, ST-EQ-IH-063, ST-EQ-IH-064, ST-EQ-IH-065 & ST-EQ-IH-046	Method of Analysis (ST/IH/GTP 001-05) Respirable Dust : NIOSH 600 Free Silica : NIOSH 7602	Sampling Flow Rate 2.2 lpm Sampling Time 485 to 495 Mints.

S. No.	Date	Location / Sample ID	Activity	Employee Name, Designation & Employee ID	Equipment ID	Respirable Dust (mg/m ³)	Respirable Dust TWA (mg/m ³)	Free Silica Content (%)
1	03 rd June 2024	Joda west, H. Quarry Sorting yard/ ST-222	Supervisor	Mr. Jalendra Giri (TSP/983564/1123)	-	0.83	0.84	N.D
2		H-Quarry Sorting yard/ ST-223	Shovel operator	Mr.BPiru nag (TSP/290978/0424)	-	0.93	0.94	N.D
3		H-Quarry Sorting yard / ST-224	Dumper operator	Mr. Rocky Purty (TSP/027252/1223)	VOLVO EC480DL	0.91	0.94	N.D
4		H-Quarry Main Gate/ ST-221	Security	Mr. Rajesh kumar (TSP/264471/0424)	OD09P3906	0.76	0.78	N.D
5		H-Quarry Sorting yard / ST-220	Supervisor	Mr. Suresh Naik (TSP/027265/1223)	-	0.89	0.90	N.D

Environmental Condition: Temperature - 34.9 °C & RH - More than 45.3 %, [Detection Level = 0.0005 %] N. D : Not Detected.

CONCLUSION: From the above results it can be concluded that Respirable Dust TWA results for all the Personal samples are within the prescribed limit as per DGMS guidelines. Free Silica Content is not detected in all five samples.

Compiled By		Authorised By	
Name	S. Nagaraju	Name	Y. Raghavendra Chary
Signature		Signature	
Date	01/07/2024	Date	01/07/2024





TC-7882

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ULR-TC788224000000075F

Test Report

Name of the Industry TATA Steel Limited		Date of Monitoring 04/06/2024		
Address Mn Group of Mines, JODA, Odisha-India. Name of the Mine: Khonbond Iron & Mn Mines. Through: Mitra SK Pvt Ltd AT/PO-Barbil Barbil – Keonjhor- 758035 India.		Sample Received on 08/06/2024		
		Date of Reporting 01/07/2024		
		Report No. STL/IH/F08/109/24		
		Standard Limit : DGMS (Tech) Circular (MAMID)/08; Date: 29/04/2020 Respirable Dust 1 mg/m³ If Free Silica Content is < 5 %		
Sampler Details SKC Make Sidekick Pump Sr. No.: ST-EQ-IH-062, ST-EQ-IH-063, ST-EQ-IH-064, ST-EQ-IH-065 & ST-EQ-IH-046		Method of Analysis (ST/IH/GTP 001-05) Respirable Dust : NIOSH 600 Free Silica : NIOSH 7602	Sampling Flow Rate 2.2 lpm	Sampling Time 483 to 488 Mints.

S. No.	Date	Location / Sample ID	Activity	Employee Name, Designation & Employee ID	Equipment ID	Respirable Dust (mg/m ³)	Respirable Dust TWA (mg/m ³)	Free Silica Content (%)
1	04 th June 2024	Khonbond Mn Mines Rwe handling dump/ ST-225	Shovel operator	Ms. Beauty Naik (TSP/912168/1023)	VOLVO EC480DL	0.93	0.94	N.D
2		Khonbond Mn Mines Sorting yard / ST-226	Dumper Operator	Mr. Parama Nanda Mahanta (TSP/759089/0723)	Dumper OD09U64 69	0.93	0.94	N.D
3		Khonbond Mn Mines Sorting yard / ST-227	Worker	Mr. Malawati Kachhap (TSP/912236/1023)	-	0.90	0.92	0.002
4		Khonbond Mn Mines, Dump-4/ ST-228	Dozer operator	Mr. Rohit kumar Mahanta (TSP/912254/1023)	DOZER B21042	0.90	0.91	N.D
5		Khonbond Mn Mines, Main gate / ST-229	Security	Mr. Bhimasen Nag (TSP/886946/1023)	-	0.88	0.88	N.D

Environmental Condition: Temperature – 33.3°C & RH – More than 46.2 %, [Detection Level = 0.0005 %] N. D: Not Detected

CONCLUSION: From the above results it can be concluded that Respirable Dust TWA results for all the Personal samples are within the prescribed limit as per DGMS guidelines. Free Silica Content is detected in one sample but within the limit.

	Compiled By	Authorised By
Name	S. Nagaraju	Y. Raghavendra Chary
Signature		
Date	01/07/2024	01/07/2024



PERSONAL DUST SAMPLING REPORT


Test Report

Name of the Industry TATA Steel Limited		Date of Monitoring 08/07/2024
Mn Group of Mines, JODA, Odisha-India.		Sample Received on 13/07/2024
Name of the Mine: Joda West Iron & Mn Mines		Date of Reporting 06/08/2024
Through :		Report No. STL/IH/G13/126/24
Address Mitra SK Pvt Ltd AT/PO-Barbil Barbil - Keonjhor- 758035 India.		Standard Limit (DGMS) Respirable Dust 1 mg/m ³ If Free Silica Content is < 5 %
Sampler Details SKC Make Sidekick Pump Sr. No.: ST-EQ-IH-001, ST-EQ-IH-008, ST-EQ-IH-044, ST-EQ-IH-045 & ST-EQ-IH-046	Method of Analysis (ST/IH/GTP 001-05) Respirable Dust : NIOSH 600 Free Silica : NIOSH 7602	Sampling Flow Rate 2.2 lpm Sampling Time 485 to 500 Mints.

S. No.	Date	Location / Sample ID	Activity	Employee Name, Designation & Employee ID	Equipment ID	Respirable Dust (mg/m ³)	Respirable Dust TWA (mg/m ³)	Free Silica Content (%)
1	08 th July 2024	Joda west 'H' Quarry Screen Plant/ ST-307	Shovel Operator	Mr. Nihar Rangan Mohanta (TSP/950069/1123)	TATA hitachi EX210LC	0.90	0.93	N.D
2		Joda west 'H' Quarry Screen Plant/ ST-200	Loader Operator	Mr. Krishna Gupta (TSP/950068/1123)	OD04N4269	0.91	0.95	N.D
3		Joda west 'D' Quarry Sorting yard / ST-201	Worker	Mr. Banshilal Naik (TSP/950163/1123)	-	0.93	0.97	N.D
4		Joda west 'H' Quarry Sorting yard / ST-202	Supervisor	Mr. Jitendra Lohar (TSP/220575/0324)	-	0.81	0.81	N.D
5		Joda west 'H' Quarry Main Gate/ ST-203	Security	Mr. Champak Giri (TSP/269310/0424)	-	0.71	0.72	N.D

Environmental Condition: Temperature - 36.2 °C & RH - 42 %, [Detection Level = 0.0005 %] N. D : Not Detected

CONCLUSION: From the above results it can be concluded that Respirable Dust TWA results for all the Personal samples are within the prescribed limit as per DGMS guidelines. Free Silica Content is not detected in all five samples.

	Compiled By	Authorised By
Name	Ch. Venkatesh	Y. Raghavendra Chary
Signature	ch. V.	Y. R.
Date	06/08/2024	06/08/2024



TC-7882

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Test Report

Name of the Industry TATA Steel Limited		Date of Monitoring 09/07/2024
Mn Group of Mines, JODA, Odisha-India.		Sample Received on 13/07/2024
Name of the Mine: Khonbond Iron & Mn Mines.		Date of Reporting 06/08/2024
Through:		Report No. STL/H/G13/127/24
Address Mitra SK Pvt Ltd AT/PO-Barbil Barbil - Keonjhor- 758035 India.		Standard Limit (DGMS) Respirable Dust 1 mg/m ³ if Free Silica Content is < 5 %
Sampler Details SKC Make Sidekick Pump Sr. No.: ST-EQ-IH-001, ST-EQ-IH-008, ST-EQ-IH-044, ST-EQ-IH-045 & ST-EQ-IH-046	Method of Analysis (ST/IH/GTP 001-05) Respirable Dust : NIOSH 600 Free Silica : NIOSH 7602	Sampling Flow Rate 2.2 lpm Sampling Time 485 Mints.

S. No.	Date	Location / Sample ID	Activity	Employee Name, Designation & Employee ID	Equipment ID	Respirable Dust (mg/m ³)	Respirable Dust TWA (mg/m ³)	Free Silica Content (%)
1	09 th July 2024	Khonbond Mn mines, Sorting yard/ ST-312	Worker	Mr. Rama Chandra Naik (TSP/912317/1023)	-	0.95	0.96	N.D
2		Khonbond Mn Mines Sorting yard / ST-313	supervisor	Mr. Sukanta Kumar Bal (TSP/912401/1023)	-	0.82	0.83	N.D
3		Khonbond Mn Mines Sorting yard / ST-314	Safety supervisor	Mr. Tapan Kumar Naik (TSP/912368/1023)	-	0.83	0.84	N.D
4		Khonbond Mn Mines, Main gate / ST-315	security	Mr. Soman Kumar Singh (TSP/269301/0424)	-	0.61	0.62	N.D
5		Khonbond Mn Mines Screen plant Over Size Dump/ ST-316	Shovel operator	Mr. Chinmay Sethy (TSP/957005/1123)	210LC	0.78	0.79	N.D

Environmental Condition: Temperature = 34.3 °C & RH = 56.24 %, [Detection Level = 0.0005 %] N. D: Not Detected

CONCLUSION: From the above results it can be concluded that Respirable Dust TWA results for all the Personal samples are within the prescribed limit as per DGMS guidelines. Free Silica Content is not detected in all samples.

	Compiled By	Authorised By
Name	Ch. Venkatesh	Y. Raghavendra Chary
Signature	<i>Ch. V</i>	<i>Y. R</i>
Date	06/08/2024	06/08/2024



PERSONAL DUST SAMPLING REPORT



TC-7882

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ULR-TC788224000000113F

Test Report

Name of the Industry	TATA Steel Limited	Date of Monitoring	20/08/2024
Address	Mn Group of Mines, JODA, Odisha-India.	Sample Received on	26/08/2024
	Name of the Mine: Joda West Iron & Mn Mines	Date of Reporting	04/09/2024
	Through :	Report No.	STL/IH/H26/158/24
	Mitra SK Pvt Ltd	Standard Limit (DGMS) Respirable Dust 1 mg/m³ If Free Silica Content is < 5 %	
	AT/PO-Barbil Barbil – Keonjhor- 758035 India.		
Sampler Details		Method of Analysis	Sampling Flow Rate
Make Sidekick Pump Sr. No.: ST-EQ-IH-064, ST-EQ-IH-063, ST-EQ-IH-062, ST-EQ-IH-045 & ST-EQ-IH-046		(ST/IH/GTP 001-05) Respirable Dust : NIOSH 600 Free Silica : NIOSH 7602	2.2 lpm
			Sampling Time 482 to 490 Mints.

S. No.	Date	Location / Sample ID	Activity	Employee Name, Designation & Employee ID	Equipment ID	Respirable Dust (mg/m ³)	Respirable Dust TWA (mg/m ³)	Free Silica Content (%)
1	20 th Aug 2024	H Quarry Main Gate / ST-346	Security	Mr. Saran Kumar Giri (TSP/264752/0424)	-	0.61	0.62	N.D
2		H Quarry/ ST-347	Fore man	Mr. Subhakarata Patra (181693)	-	0.53	0.54	N.D
3		EN Quarry / ST-348	Dozer Operator	Mr. Mukunda Mahanta	OD04 N4269	0.43	0.44	N.D
4		Gangagudu Quarry / ST-349	Supervisor	Mr. Ranjan Munda (TSP/072881/0124)	-	0.53	0.53	N.D
5		D Quarry / ST-350	worker	Mr. Madan Munda (TSP/575909/0824)	-	0.52	0.52	N.D

Environmental Condition: Temperature – 25.6 °C & RH – More than 60 %, [Detection Level = 0.0005 %] N, D : Not Detected.

CONCLUSION: From the above results it can be concluded that Respirable Dust TWA results for all the Personal samples are within the prescribed limit as per DGMS guidelines. Free Silica Content is not detected in all five samples.

	Compiled By	Authorised By
Name	S. Nagaraju	Y. Raghavendra Chary
Signature		
Date	04/09/2024	04/09/2024



PERSONAL DUST SAMPLING REPORT

**Test Report**

Name of the Industry TATA Steel Limited		Date of Monitoring	18/09/2024
Address	Mn Group of Mines, JODA, Odisha-India.	Sample Received on	23/09/2024
	Name of the Mine: Joda West Iron & Mn Mines	Date of Reporting	04/10/2024
	Through :	Report No.	STL/IH/H23/166/24
	Mitra SK Pvt Ltd AT/PO-Barbil Barbil - Keonjhor- 758035 India.	Standard Limit (DGMS) Respirable Dust 1 mg/m³ If Free Silica Content is < 5 %	
Sampler Details Make Sidekick Pump Sr. No.: ST-EQ-IH-064, ST-EQ-IH-063, ST-EQ-IH-062, ST-EQ-IH-065 & ST-EQ-IH-066		Method of Analysis (ST/IH/GTP 001-05) Respirable Dust : NIOSH 600 Free Silica : NIOSH 7602	Sampling Flow Rate 2.2 lpm
			Sampling Time 485 to 490 Mints.

S. No.	Date	Location / Sample ID	Activity	Employee Name, Designation & Employee ID	Equipment ID	Respirable Dust (mg/m ³)	Respirable Dust TWA (mg/m ³)	Free Silica Content (%)
1	18 th Sept 2024	Gangaiguda sorting yard/ ST-375	Supervisor	Mr. Jadumani Mahanta (TSP/566759/0824)	-	0.68	0.69	N.D
2		Gangaiguda sorting yard/ ST-376	Dumper Operator	Mr. Pitrukhan Gait (TSP/566802/0824)	OD09AA 3169	0.82	0.83	N.D
3		Gangaiguda sorting yard/ ST-377	Shovel Operator	Mr. Fakira Mahanta (TSP/566723/0824)	VOLVO EC480DL	0.64	0.64	N.D
4		D Quarry / ST-378	Worker	Mr. Umend Kumar (TSP/566668/0824)	-	0.83	0.84	N.D
5		H Quarry / ST-379	Safety Supervisor	Mr. Motilal Giri (TSP/607096/0824)	-	0.60	0.61	N.D

Environmental Condition: Temperature = 29.6 °C & RH = More than 60 %, [Detection Level = 0.0005 %] N.D : Not Detected

CONCLUSION: From the above results it can be concluded that Respirable Dust TWA results for all the Personal samples are within the prescribed limit as per DGMS guidelines. Free Silica Content is not detected in all five samples.

	Compiled By	Authorised By
Name	S. Nagaraju	Y. Raghavendra Chary
Signature		
Date	04/10/2024	04/10/2024

