



TSM/MoEF&CC/BS-01/2022-20/265
November 30, 2022

The Deputy Director General of Forests (C)

Ministry of Environment, Forest and Climate Change,
Integrated Regional Office,
A/3, Chandersekharpur,
Bhubaneswar-751023

Subject: Submission of six-monthly EC compliance reports of 5.6, 3.1 and 1.5 MTPA capacity of integrated steel plant of Tata Steel Limited, Meramandali for the period April 2022 to September 2022.

Reference: I.EC vide file no. J-11011/829/2008-IA-II (I), dated 20.07.2012 of 5.6 MTPA
II.EC vide file no. J-11011/405/2007-IA-II (I), dated 22.09.2008 of 3.1 MTPA
III.EC vide file no. J-11011/8/2005-IA-II (I), dated 29.06.2005 of 1.5 MTPA

Dear Sir,

This has reference to the captioned subject and cited references, It is to inform that we are herewith submitting six monthly compliance reports for the conditions stipulated in the Environment Clearance of 5.6 MTPA, 3.1 MTPA and 1.5 MTPA integrated steel plant of Tata Steel Ltd., Meramandali for the period from April 2022 to September 2022 along with monitoring data report for your kind consideration.

The copy of above compliance report is also being sent in soft format through email (roez.bsr-mef@nic.in) for your kind perusal. Also copy of 5.6 MTPA, 3.1 MTPA and 1.5 MTPA EC compliance is being uploaded on MoEF&CC website on portal <http://environmentalclearance.nic.in>.

Hope the above are in line with the statutory requirements.

Thanking you,

Yours faithfully,
For Tata Steel Limited

Anoop Srivastava

Anoop Srivastava
Chief Environment -TSM

Encl: As above

Copy to:

1. The Zonal Officer, Central Pollution Control Board, Southern Conclave Block 502, 5th & 6th Floors, 1582 Rajdanga Main Road, Kolkata - 700107.
2. The Member Secretary, SPCB, Parivesh Bhawan, A/118, Nilakahanta Nagar, Unit- VIII, Odisha, Bhubaneswar-751012
3. The Regional Officer, State Pollution Control Board, Odisha, Angul.

TATA STEEL LIMITED

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Registered Office Bombay House 24 Homi Mody Street Fort Mumbai 400 001 India Tel 91 22 66654282 Fax 91 22 66657724
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Compliance Status of Environmental Clearance for Expansion of Integrated Steel Plant (3.1 MTPA to 5.6 MTPA at Tata Steel Limited, Meramandali, District Dhenkanal, Odisha vide MoEF&CC File no. J-11011/829/2008-IA-II (I) dated 20.07.2012 and subsequent amendment dated 10.09.2015, 11.05.2015, 17.09.2019 & 15.07.2022.

SPECIFIC CONDITION:

SL	CONDITIONS	COMPLIANCE STATUS
i	Compliance to all the specific and general conditions stipulated for the existing plant by the Central / State Government shall be ensured and regular reports submitted to the Ministry's Regional Office at Bhubaneswar / SPCB.	<ul style="list-style-type: none"> Compliance reports including monitoring data are being sent to MOEF&CC, CPCB and SPCB regularly. The last half yearly compliance report was submitted vide letter no. TSM/MoEF&CC/BS-01/2022-10/210 dated 31.05.2022.
ii	The target dates / schedule given for compliance to the conditions of environmental clearance for 3.1 MTPA Steel Plant to the State Pollution Control Board and to the Ministry shall be adhered to and reports regularly submitted to MoEF Regional Office at Bhubaneswar.	<ul style="list-style-type: none"> Six monthly compliance report including monitoring data for the conditions stipulated in EC for 3.1 MTPA capacity integrated steel plant is being sent to MOEF&CC, CPCB and SPCB regularly. The last half yearly compliance report was submitted vide letter no. TSM/MoEF&CC/BS-01/2022-10/210 dated 31.05.2022.
iii	The 'Consent to Operate' shall be granted by SPCB only after satisfactory compliance of the conditions stipulated in the environmental clearance and Consent granted by the SPCB for the 3.1 MTPA steel plant. A joint visit shall be conducted by MoEF Regional Office at Bhubaneswar and SPCB in this regard. Periodic review of the project regarding compliance to the conditions stipulated shall be undertaken based on the compliance report submitted by the proponent within four months. The compliance status shall be monitored by the Regional Office of the Ministry at Bhubaneswar.	<ul style="list-style-type: none"> Consent to Operate for 5.6 MTPA integrated steel plant has been obtained from SPCB vide letter no 4049/IND-I-CON-5440, dated.17.03.2021 and is valid up to 31.03.2023.
iv	Measures shall be undertaken to mitigate particulate matter levels in the ambient air and a time bound action plan shall be submitted. On-line ambient air quality monitoring and continuous stack monitoring facilities for all the stacks shall be provided and sufficient air pollution control devices viz. Electro Static Precipitator (ESP), Gas cleaning plant (GCP), Bag Filter (BF) etc. shall be provided to keep the emission levels	<ul style="list-style-type: none"> 72 nos. of bag filters, 29 nos. of ESP have been installed with each operating unit to reduce particulate matter levels in ambient air. Details list of pollution control devices is enclosed as Annexure-I. 08 numbers of Gas Cleaning scrubbers have been installed at Coke Oven I&II, Blast Furnace I&II and BOF. To monitor the ambient air quality, 7 numbers of Continuous Ambient Air Quality

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	below by installing energy efficient technology.	<p>Monitoring Stations (CAAQMS) have been installed in the different locations of Tata Steel Limited in consultation with SPCB, Odisha.</p> <ul style="list-style-type: none"> Implemented various improvement projects e.g. installation of new technology power supply controller at Sinter plant (HFTR- High frequency transformer rectifier in process ESP & Micropulse in dedusting ESP of sinter plant is the first of its kind technology application in ESP).
v	The bag filter shall be installed at the coal crusher and the screening area. Pneumatic dust handling system shall be provided at ESP hoppers in the sinter plant. The existing bag filters shall be upgraded. Fixed type water sprinklers shall be installed in the internal roads and at the material handling area to control the fugitive emission. Dry fog system shall be installed in the coal handling area. Dry sweeping (vacuum process) shall be carried out prior to water sprinkling on roads.	<ul style="list-style-type: none"> Two Bag filters, adequate no. of Dry Fog Dust Suppression System (DFDS) and Single Fluid Dedusting System (SFDS) have been provided at the coal circuit. Five numbers of bag filters have also been provided in the iron ore circuit at crushing and screening points of raw material handling areas at the following locations. Pneumatic dust handling system has been provided at ESP hoppers in the Sinter Plant-I. Chain conveyor dust handling system has been provided at ESP hoppers of sinter plants II and III. 04 Nos. of Mechanized Road sweepers have been deployed for dry sweeping of roads and shop floors with dust suction facility. Double lip seals with dual sealing system have been installed in the conveying route of RMHS and in junction houses to minimize material spillage. 5 Nos. of dust collectors (Potable bag filter) have also been installed in the sinter conveyor line.
vi	The National Ambient Air Quality Standards issued by the Ministry vide G.S.R. No. 826(E) dated 16 th November, 2009 shall be followed.	<ul style="list-style-type: none"> National Ambient Air Quality Standards (NAAQS) are being followed. Online real-time data is being transmitted from all seven CAAQMS. All monitoring parameters are within the norms except PM10 and PM2.5 in two locations for few days depending on the

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		meteorological conditions and external factors.
vii	Gaseous emission levels including secondary fugitive emissions from all the sources shall be controlled within the latest permissible limits issued by the Ministry and regularly monitored. Guidelines / Code of Practice issued by the CPCB shall be followed.	<ul style="list-style-type: none"> • 72 nos.of bag filter, 29 nos. of ESP have been installed with each operating unit to reduce particulate matter levels in ambient air. Details list of pollution control devices is enclosed as Annexure-I. • 08 numbers of Gas Cleaning scrubbers have been installed at Coke Oven I&II, Blast Furnace I&II and BOF. • Fugitive emission and stack emission monitoring is being carried out as per CPCB guidelines and record is being maintained. Monitoring report for the period Apr'22 to Sep'22 is attached as Annexure-II and Annexure-III respectively.
viii	Proper PPE shall be provided to all the workers including contract workers.	<ul style="list-style-type: none"> • Necessary PPEs such as safety helmet, safety shoes, gloves, goggles, ear plugs and ear muffs etc. are being provided to all the workers working in the shop floors including contract workers. This is now a mandatory requirement and one of the conditions of employment in our company & also a part of personal safety action plan for each employee. • The company has institutionalized Safety excellence management system in line with M/s. Du Pont (World benchmark in safety excellence) safety management system.
ix	The natural drain / nallah present on the northern side of the project site shall not be disturbed. The main gate of the plant beyond the nallah shall be shifted and the area should be developed into garden for public use.	<ul style="list-style-type: none"> • The natural nallah present on the northern side of the plant has not been disturbed. • A drop gate has been provided on the main road beyond nallah to control traffic.
x	Water requirement for expansion from River Brahmani shall not exceed 3,400m ³ /hr. All the effluent should be treated and used for ash handling, dust suppression and green belt development. No effluent shall be discharged and 'zero discharge' shall be adopted. Sanitary sewage should be treated in septic tank followed by soak pit for treatment of	<ul style="list-style-type: none"> • Rate of water consumption during the period Apr'22 to Sep'22 water consumption for the Steel plant is approx. 2228 m³/hr. • All effluents are being treated in primary treatment plants (19 nos.) in steel plant attached with respective units and Effluent Treatment Plants (3 nos.) centrally.

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	effluent run-off from the coal washery area, settling pond shall be de-silted regularly and additional settling tank shall be constructed.	<ul style="list-style-type: none"> • Treated effluent is being reused for dust suppression, ash handling, make up for DRI & cooling towers and for green area development. • Process effluent after treatment is being reused. During the period Apr'22 to Sep'22, 3388658 m³ of water has been recycled. However, we are further improving the efficiency of the water management system by technology intervention to increase the utilization. • The sanitary sewage is being treated in 4 Sewage Treatment Plants and used for green belt development and low-end application in plant. • Rainwater harvesting pond of capacity 50000m³ with HDPE liner has been constructed to store & reuse rainwater. • Zero Effluent Discharge (ZED) project will be implemented by March 2024.
xi	Efforts shall be made to make use of rain water harvested. If needed, capacity of the reservoir should be enhanced to meet the maximum water requirement. Only balance water requirement shall be met from other sources.	<ul style="list-style-type: none"> • Lagoons and HDPE pond have been constructed to harvest rainwater. This water is reused in the operation process when required. During the period April'22 to September'22, 49520 m³ of rainwater has been utilized in process. • RWH potential has been studied by engaging an expert agency & the suggested projects are being implemented in phases. In the first phase 50000 m³ capacity storage pond has been constructed in the year 2021. Also, rainwater collected from DRI & RMHS area are channelized through drains into a series of storage pond (3 nos lagoons are in operation).
xii	Regular monitoring of influent and effluent, surface, sub-surface and ground water (including chromite) should be ensured and treated wastewater should meet the norms prescribed by the State Pollution Control Board or described under the Environment (Protection) Act whichever are more	<ul style="list-style-type: none"> • Monitoring of influent, effluent, surface and groundwater quality is being carried out regularly in Environment laboratory which has been accredited by NABL vide certificate no. TC-10959 dated 02.09.2022 for 42 nos. Parameters. NABL certificate is attached as Annexure-IV

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	stringent. Leachate study for the effluent generated and analysis shall also be regularly carried out and report submitted to the Ministry's Regional Office at Bhubaneswar, SPCB and CPCB.	<ul style="list-style-type: none"> • The monitoring reports are enclosed as Annexure- V.
xiii	All the blast furnace (BF) slag shall be provided to the cement manufacturers. Scrap shall be used in steel melting shop (SMS) and SMS slag and kiln accretions shall be properly utilized. All the other solid waste including broken refractory mass shall be properly disposed off in environment-friendly manner. Fly ash shall be utilized for the cement manufacturing and filling of mined out area after carrying geo hydrological study to prevent ground water pollution.	<ul style="list-style-type: none"> • The entire quantity of blast furnace slag is dispatched to cement manufacturers based on long term MoU with the cement manufacturer. • Details of generation and utilization of Blast Furnace slag are given as Annexure-VI. • The SMS slag (LD slag) is processed in material recovery plant (MRP) for separation of metallic from the non-magnetic part and sized for various applications. Some of the key applications of LD slag product are <ul style="list-style-type: none"> ➤ recovered metallics used in steel making process as a scrap, ➤ recovered fines used in sinter making process for replacement of lime, ➤ non-metallic utilization in cement manufacturing, road making, and hard sand applications. • Fly ash brick and paver block have been manufactured inside the plant for use in construction activities including road construction etc. This is also helping in maximum utilization of fly ash. During the period Apr'22 to Sep'22, 254236 Nos. of fly ash brick has been manufactured and utilized. • 525932 Nos. of paver block has been manufactured and used in road construction in the plant. • Fly ash is also being supplied to <ul style="list-style-type: none"> ○ nearby fly ash brick manufacturing units, free of cost, for maximum utilization of ash. ○ Cement plants through rake & bulker. ○ Construction of national highway (NH-55).

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		Balance if any is being utilised in reclamation of low lying areas & abandoned stone quarries as per guidelines of CPCB/OSPCB after grant of necessary consents.
xiv	Proper handling, storage, utilization and disposal of all the solid waste shall be ensured and regular report regarding toxic metal content in the waste material and its composition, end use of solid / hazardous waste should be submitted to the Ministry's Regional Office at Bhubaneswar, SPCB and CPCB.	<ul style="list-style-type: none"> • Solid waste handling, storage, utilization and disposal are being done scientifically. The toxic metal content and compositional analysis of solid waste are being carried out regularly. The analysis report of solid waste is attached as Annexure-VII. • Annual return of hazardous waste is being regularly submitted to SPCB Odisha. A copy of HW annual return for the period Apr'21 to Mar'22 is attached as Annexure-VIII.
xv	Vehicular pollution due to transportation of raw material and finished products shall be controlled. Proper arrangements shall also be made to control dust emissions during loading and unloading of the raw material and finished product.	<ul style="list-style-type: none"> • Vehicles carrying raw materials are being covered with tarpaulin to proact during transportation. • Water sprinkling arrangement has been made by installation of 128 numbers of rotary gun sprinklers at raw material handling areas to control dust emissions during loading and unloading of raw materials at site. • Additionally, dry fog dust suppression system having 266 nos. of nozzles have been installed in entire coal circuit and at the unloading points of raw material handling area to control fugitive dust. • Four Nos. of wheel washing systems have been installed at RMHS, BFPP1 and BFPP2 and WHRB. • 04 Nos. of mechanized road sweepers have been deployed for dry sweeping of internal roads and shop floors with dust suction facility.
xvi	The raw materials should regularly (six monthly) be monitored for trace metals and management plan shall be submitted to SPCB and MOEF Regional Office at Bhubaneswar.	<ul style="list-style-type: none"> • The analysis of trace metals in raw materials is being done by CSIR-IMMT, Bhubaneswar. Copy of the same is enclosed as Annexure-IX.

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xvii	All internal roads shall be black topped. The roads shall be regularly cleaned with mechanical sweepers. A 3-tier avenue plantation using native species shall be developed along the roads.	<ul style="list-style-type: none"> • 41 km of internal roads have been concreted/paved. All internal roads are being cleaned regularly by using mechanical road sweepers. • Avenue plantation using native species has been developed along the roads.
xviii	An action plan for transfer from wet to dry quenching shall be submitted to the SPCB and MOEF Regional Office at Bhubaneswar within three months. The target date shall not be more than six years from the date of environmental clearance accorded for 3.1 MTPA Steel Plant i.e. 22.9.2008. Adequate space shall be provided for the retro fitting the dry coke quenching facility.	<ul style="list-style-type: none"> • Dry quenching has been commissioned at Coke Oven – II and now in operation. However, commissioning of Dry Quenching at Coke Oven – I is in advance stage of progress and expected to be start operation by July 2023.
xix	Risk and tragedy Management Plan along with the mitigation measures shall be prepared and a copy submitted to the Ministry's Regional Office at Bhubaneswar, SPCB and CPCB within three months of issue of environment clearance letter.	<ul style="list-style-type: none"> • Risk and tragedy Management plan (on-site emergency plan) has been approved by the Directorate of Factories and Boilers, Odisha vide letter no. IV(IH)(3-149/11/3143 dated 19.10.2022. The approval letter is attached as Annexure-X
xx	As proposed, green belt shall be developed in 33 % of plant area as per the CPCB guidelines in consultation with the DFO.	<ul style="list-style-type: none"> • Green belt development is under progress in and around the plant complex by planting indigenous species as per CPCB guidelines. Till Mar'22, 33.66% of area (This includes Plant, R&R and CSR) has been covered under green belt. Rapid afforestation using MiyaWaki method in consultation with IIT, Kharagpur has been initiated. • Plantation of saplings are done regularly based on the availability of vacant area. During the period Apr,22 to Sep,22 is 19478 nos. has been planted and details plantation is Annexure-XI • Proper maintenance of green coverage is being ensured throughout the year by a dedicated horticulture team.
xxi	All the recommendations made in the Charter on Corporate Responsibility for Environment Protection (CREP) for the Steel Plants should be implemented	<ul style="list-style-type: none"> • Tata Steel Limited has implemented all CREP recommendations.

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xxii	All the commitments made to the public during the Public Hearing in Public Consultation meeting held on 28th October, 2010 should be satisfactorily implemented and a separate budget for implementing the same should be allocated and information submitted to the Ministry's Regional Office at Bhubaneswar.	<ul style="list-style-type: none"> • Compliance to the commitments made to the public during Public Hearing are being complied with.
xxiii	At least 5 % of the total cost of the project should be earmarked towards the Enterprise Social Commitment (ESC) based on Public Hearing issues and item-wise details along with time bound action plan should be prepared and submitted to the Ministry's Regional Office at Bhubaneswar. Implementation of such program should be ensured accordingly in a time bound manner.	<ul style="list-style-type: none"> • Various CSR activities have been undertaken since the inception of the plant by providing facilities of sanitation, drinking water, education, health care, road, communication etc. Further, CSR activities and its related expenditure has been substantially increased after acquisition of the industry by Tata Steel Limited. • Detail CSR expenditure for the year Apr'22 to Sep'22 is enclosed as Annexure-XII.
xxiv	The company shall provide housing for construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, safe drinking water, medical health care, creche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	<ul style="list-style-type: none"> • All necessary infrastructure and housing facilities were provided for workers during construction phase of the plant within the site.
xxv	The company shall set up State-of-the-art-environment control/monitoring and research lab with R& D facilities for waste utilization studies. The laboratory staff shall be provided with adequate training for use and maintenance of the equipment's. An action plan in this regard shall be submitted to SPCB and MOEF Regional Office at Bhubaneswar within three months.	<ul style="list-style-type: none"> • Monitoring of influent, effluent, surface and groundwater quality is being carried out regularly in internal Environment laboratory which has been accredited by NABL vide certificate no. TC-10959 dated 02.09.2022. for 42 nos. Parameters. An environment research group is also working for research activity in environment technology.

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GENERAL CONDITION:

SL	CONDITIONS	COMPLIANCE STATUS
i	The project authorities must strictly adhere to the stipulations made by the Orissa State Pollution Control Board and the State Government.	<ul style="list-style-type: none"> All relevant stipulations made by State Pollution Control Board, Odisha and the State Government are being complied with.
ii	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests.	<ul style="list-style-type: none"> As per MoEF&CC notification as per the MoEF& CC Notification No. S.O.980(E) dated: 02.03.2021“no increase in pollution load” (NIPL) was studied by expert agency for the followings and the same were verified by State Pollution Control Board. <ol style="list-style-type: none"> Enhancement of Hot Metal production from 3.919 MTPA to 5.0 MTPA vide OSPCB letter no. 246/IND-II-NOC-NIPL/24 dated 04.01.2022. CTO was granted vide letter No 16814/IND-I-CON-5440 dated 15.09.2022 with validity upto 31.03.2023 Installation of one no. of LRF of 190 T/heat and expansion of carrying capacity of two nos. of existing ladle from 180 T/heat to 190 T/heat vide OSPCB letter no.886/IND-II-NOC-NIPL/27 dated 20.01.2022. CTE application has been submitted.
iii	The gaseous emissions from various process units shall conform to the load/mass-based standards notified by this Ministry on 19th May, 1993 and standards prescribed from time to time. The State Board may specify more stringent standards for the relevant parameters keeping in view the nature of the industry and its size and location\	<ul style="list-style-type: none"> 72 nos. of bag filter, 29 nos. of ESP have been installed with each operating unit to reduce particulate matter levels in ambient air. Details list of pollution control devices is enclosed as Annexure-I. 08 numbers of Gas Cleaning scrubbers have been installed at Coke Oven I&II, Blast Furnace I&II and BOF.
iv	At least four ambient air quality monitoring stations shall be established in the downward direction as well as where maximum ground level concentration of PM ₁₀ , SO ₂ and NO _x are anticipated in consultation with the SPCB. Data on ambient air quality and stack	<ul style="list-style-type: none"> Seven CAAQM stations have been established in consultation with the SPCB in Tata Steel Ltd. Meramandali complex. Half yearly reports are being submitted to the Regional Office of MoEF&CC, SPCB and CPCB at regular intervals. Summary of AAQ

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	emission shall be regularly submitted to this Ministry including its Regional Office at Bhubaneswar and the SPCB/CPCB once in six months.	monitoring report is attached as Annexure-XIII . The last half yearly compliance report was submitted vide letter no. TSM/MoEF&CC/BS-01/2022-10/210 dated 31.05.2022.
v	Industrial waste water shall 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. The treated waste water shall be utilized for plantation purpose.	<ul style="list-style-type: none"> The industrial as well as domestic wastewater is being treated and reused for various purposes like slag quenching, coke quenching, dust suppression and green belt development inside the plant premises. <p>The monitoring reports of Industrial wastewater are being submitted to SPCB/CPCB/MOEF&CC at regular intervals.</p>
vi	The overall noise levels in and around the plant area shall be kept well within the standards 85 dB(A) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA Rules, 1989 viz. 75 dB (A) (daytime) and 70 dB (A) (nighttime).	<ul style="list-style-type: none"> Acoustic hoods, silencers, enclosures etc. on all sources of noise generation have been provided. Work zone noise monitoring is being carried out and maintain record. The ambient and work zone noise level monitoring report is enclosed as Annexure-XIV.
vii	Occupational health surveillance of the workers should be done on a regular basis and records maintained as per the Factories Act. The workers including the contract workers shall be provided with proper personal protection equipment.	<ul style="list-style-type: none"> Occupational health surveillance of the workers is being periodically done. PME once in a year, Food handler test : Once in a year. Necessary PPEs are provided to all the employees including the contractual workers.
viii	The company shall develop surface water harvesting structures to harvest the rain water for utilization in the lean season besides recharging the ground water table.	<ul style="list-style-type: none"> Lagoons and HDPE pond have been constructed to harvest rainwater. This water is reused in the process when required. During the period April'22 to September'22, 49520 m3 of rainwater has been utilized in process. RWH potential has been studied by engaging an expert agency & the suggested projects are being implemented in phases. In the first phase 50000 Cum capacity

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		storage pond has been constructed in the year 2021. Also, rainwater collected from DRI & RMHS area are channelized through drains into a series of storage pond (3 nos. of lagoons are in operation).
ix	The project proponent shall also comply with all the environmental protection measures and safeguards recommended in the EIA/EMP report. Further, the company must undertake socio-economic development activities in the surrounding villages like community development programmes, educational programmes, drinking water supply and health care etc.	<ul style="list-style-type: none"> • Compliance to all environmental protection measures as recommended in EIA / EMP report is ensured. • Various socio-economic development programs covering education, safe drinking water, sports, health care etc. are undertaken in nearby villages. • Details of breakup of CSR initiatives are enclosed as Annexure-XII.
x	The requisite funds shall be earmarked towards capital cost and recurring cost/annum for environment pollution control measures to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government. An implementation schedule for implementing all the conditions stipulated herein shall be submitted to the Regional Office of the Ministry at Bhubaneswar. The funds so provided shall not be diverted for any other purpose.	<ul style="list-style-type: none"> • Adequate funds are being provided by the management for pollution control and to meet recurring costs. Environmental requirements are given top priority for fund allocation and approval of capital projects. • The funds earmarked for environment pollution control measures are not diverted for any other purpose. • The company has invested adequate capital expenditure to improve mix of clean power & also reduction of carbon emissions.
xi	A copy of clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parishad/Municipal Corporation, Urban Local Body and the local NGO, If any, from whom suggestions/representations, if any, were received while processing the proposal. The clearance letter shall also be put on the web site of the company by the proponent.	<ul style="list-style-type: none"> • Clearance letter was sent to all concerned and uploaded in our Company web site, which can be viewed at http://www.tatasteel.com.
xii	The project proponent shall upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the MOEF at Bhubaneswar. The respective Zonal Office of CPCB and the	<ul style="list-style-type: none"> • Compliance status is uploaded in the Company's web site at http://www.tatasteel.com. The compliance report including results of monitored data is periodically submitted to the Regional Office of MoEF&CC, CPCB and SPCB, Odisha.

Compliance Status of Environmental Clearance for Expansion of Integrated Steel Plant (3.1 MTPA to 5.6 MTPA at Tata Steel Limited, Meramandali, District Dhenkanal, Odisha vide MoEF&CC File no. J-11011/829/2008-IA-II (I) dated 20.07.2012 and subsequent amendment dated 10.09.2015, 11.05.2015, 17.09.2019 & 15.07.2022.

	SPCB. The criteria pollutant levels namely PM ₁₀ , SO ₂ , NO _x (ambient levels as well as stack emissions) or critical sectoral parameters, indicated for the projects, shall be monitored and displayed at a convenient location near the main gate of the Company in the public domain.	<ul style="list-style-type: none"> Parameters being monitored in ambient air and stack emission are being displayed near the main gate of the Company.
xiii	The project proponent shall also submit six monthly reports on the status of the compliance of the stipulated environmental conditions including results of monitored data (both in hard copies as well as by e-mail) to the Regional Office of MOEF&CC, the respective Zonal Office of CPCB and the SPCB. The Regional Office of this Ministry at Bhubaneswar / CPCB / SPCB shall monitor the stipulated conditions	<ul style="list-style-type: none"> The half yearly compliance report is being submitted to the Regional Office of the MoEF&CC, CPCB and SPCB. The last half yearly compliance report was submitted vide our letter no. TSM/MoEF&CC/BS-01/2022-10/210 dated 31.05.2022.
xiv	The environmental statement for each financial year ending 31 st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental conditions and shall also be sent to the respective Regional Office of the MOEF at Bhubaneswar by e-mail.	<ul style="list-style-type: none"> The Environmental Statement in Form-V is being submitted to SPCB/CPCB/MOEF&CC regularly. The Environment Statement for the FY 2020-21 was submitted vide letter no. TSL/SPCB/BS-03/2022-14/249, dated 29.09.2022.
xv	The Project Proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB and may also be seen at Website of the Ministry of Environment and Forests at http://envfor.nic.in . This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same should be	<ul style="list-style-type: none"> The advertisement was published in both Odia & English newspapers named "The Sambad" and "The New Indian Express" respectively on dated 24.07.2012. The same has already been communicated to the Regional Office of MOEF&CC, Bhubaneswar vide our letter no. BSL/MoEF&CC/BS-01/2012-08 dated 24.07.2012.

Compliance Status of Environmental Clearance for Expansion of Integrated Steel Plant (3.1 MTPA to 5.6 MTPA at Tata Steel Limited, Meramandali, District Dhenkanal, Odisha vide MoEF&CC File no. J-11011/829/2008-IA-II (I) dated 20.07.2012 and subsequent amendment dated 10.09.2015, 11.05.2015, 17.09.2019 & 15.07.2022.

	forwarded to the Regional office at Bhubaneswar.	
xvi	Project authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of commencing the land development work.	<ul style="list-style-type: none">• This is an existing plant where project activities are going on. We shall inform the Regional Office as well as the Ministry about the financial closure, when it is completed.

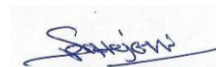
Annexure-I**DETAILS OF AIR POLLUTION CONTROL DEVICES**

SL	Process	Bag filters (Nos.)	ESP (Nos.)	Other Pollution Control Devices
1.	RMHS	02	-	Gun Sprinklers-128 nos.
2.	RMPP	07	-	DFS Nozzles-242 nos. Auto DFS-24nos.
3.	Coke oven - I	04	-	Scrubber-01 nos.
4.	Coke oven - II	11	-	Scrubber-04 nos.
5.	Sinter Plant-I	02	03	-
6.	Sinter plant - II	03	02	-
7.	Sinter plant - III	02	02	-
8.	DRI	03	15	-
9.	Blast Furnace-I	03	-	Scrubber-01 nos.
10.	Blast Furnace-II	04	-	Scrubber-01 nos.
11.	Lime Plant	10	-	-
12.	SMS-I	04	-	-
13.	SMS-II	07	-	-
14.	SMS-III	03	-	Scrubber-01 nos.
15.	BOF Briquetting Plant	07	-	-
16.	Blast Furnace Power Plant-I	-	03	-
17.	Blast Furnace Power Plant-II	-	04	-

SUMMARY OF FUGITIVE EMISSION RESULTS MONTHLY AVERAGE VALUES				
Period: April 2022 to September 2022				
TATA STEEL LIMITED				
Name of units	Location	PM 10 in µg/m³	Standard in µg/m³	
RMHS				
1.	Near JH-21 Yard-7 (Iron ore conveying)	836	2000	
2.	Coal Yard -7 Lucky Mineral Office	300		
3.	Infront of PCI building	316		
RMPP				
4.	Near tertiary Crushing & Screening Building Area	1343	2000	
5.	Near Iron Crusher Area	1540		
B.B. Plant				
6.	Storage building	1590	2000	
7.	Flux crushing and screen building	2415		
Coke Oven-I				
8.	Fine crusher station	542	4000	
9.	Secondary crusher	380		
Coke Oven-II				
10.	Coke treatment building	684	4000	
11.	Coal crushing building	1602		
DRI				
12.	Near PSB-1 building	3210	2000	
13.	Near PSB-2 building	3836		
14.	Near PSB-3 building	1873		
15.	Near PSB- 4 building	1373		
16.	Near PSB-5 building	1870		
Sinter Plant I				
17.	Near proportionating Building	570	2000	
18.	Near SP-1 Mixing House	1189		
Sinter Plant II				
19.	Near SP-2 chimney Backside area	1524		
20.	Near 7003 conveyor Belt	1410		
Sinter Plant III				
21.	Near cooler SP-3 D/15	426		
22.	Near Chiller Plant SP-2,3 & parking area	232		
Blast Furnace-I				
23.	Near Stock House	2213		4000
24.	Near Cast house Area	1045		
Blast Furnace-II				
25.	Near Cast house Entrance	300	3000	

Annexure-II

26.	Near Slug pit area	244	
27.	Stock House Near ECR Building	2318	
Lime Plant			
28.	Near Screen Area-1	1026	-
SMS-II			
29.	SMS-2 Furnace area	1225	4000
SMS-III			
30.	BOF Furnace area	638	3000
HSM			
31.	Near Coil Yard area	905	-
CRM			
32.	Near canteen area	125	-
BFPP-2			
33.	Near Ash silo Area	645	3000
BFPP-1			
34.	Near Ash silo Area	973	4000
110 MW			
35.	Near Ash silo Area	1220	-
IBMD			
36.	BOF sludge yard	105	
37.	Near Scarp dumping yard	253	-

**Authorized Signature**

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

SUMMARY OF STACK MONITORING

Period: From April to September 2022

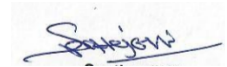
S.N.	Sampling Location	Apr'22	May'22	Jun'22	Jul'22	Aug'22	Sep'22	Standard
1	AFBC	SD						100
2	Sinter Plant -1(85 M2 ESP)	22	24	24	24	24	23	100
3	Blast Furnace –I, Cast House	12	12	11	10	13	10	100
4	Blast Furnace –I, Stock House	16	18	18	18	4	5	100
5	SMS- 1	SD						100
6	SMS 2 (FES 1)	21	14	8	4	5	4	100
7	SMS 2 (FES 2)	30	19	9	15	10	10	100
8	BFPP ESP 1	20	30	25	15	11	8	50
9	BFPP ESP 2	27	SD	26	17	SD	17	50
10	BFPP ESP 3	15	24	SD	8	19	34	50
11	Sinter Plant- 2	39	39	38	34	35	34	50
12	Sinter Plant- 3	38	40	38	39	37	39	50
13	SMS- 3 BOF (Secondary emission)	10	7	14	14	15	13	50
14	BFPP- 2 Boiler- 2 &3	15	12	14	9	10	12	50
15	Coke oven (Battery- 1)	33	35	35	35	36	37	50
16	Coke oven (Battery- 2)	21	29	28	25	19	14	50
17	Coke oven- 2 (Battery- 2)	35	31	33	31	32	33	50
18	Blast Furnace –2, Cast House	26	20	10	11	11	12	50
19	Blast Furnace –2, Stock House	6	9	5	4	5	3	50
20	WHRB-1	23	8	11	21	36	41	50
21	WHRB-2	SD						50
22	WHRB-3	43	34	32	SD		2	50
23	WHRB-4	31	15	13	12	20	SD	50
24	WHRB-5	22	18	24	22	29	42	50
25	WHRB-6	12	8	7	4	19	21	50
26	WHRB-7	30	17	SD	7	19	26	50
27	WHRB-8	22	4	6	8	18	SD	50
28	WHRB-9	15	13	13	SD	15	9	50
29	WHRB-10	9	21	17	11	18	14	50

SD- Shut Down

SUMMARY OF STACK MONITORING
 Period: From April 2022 to September 2022

S.N	Sampling Location	April'22		May'22		June'22		July'22		August'22		September'22	
		SO2	NOx	SO2	NOx	SO2	NOx	SO2	NOx	SO2	NOx	SO2	NOx
1	WHRB-1	SD		SD		SD		588	64.6	564	70.0	576	66.1
2	WHRB-2							SD		SD		SD	
3	WHRB-3			529	61.5	806	28.0						
4	WHRB-4			271	61.6	616	152	473	50.4	SD			
5	WHRB-5	815	60.6	765	43.9	745	26.3	793	138	748	87.9	729	46.7
6	WHRB-6	SD		451	46.9	1039	87.6	389	29.5	1081	36.8	812	42.6
7	WHRB-7	245	98.9	SD		SD		734	56.8	613	58.2	342	55.9
8	WHRB-8	UM		UM		UM		466	34.9	472	33.8	SD	
9	WHRB-9	233	53.3	86.0	119.0	48.3	85.8	SD		517	178.7	643	27.1
10	WHRB-10	789	49.2	918	72.8	945.9	82.7	841	69.7	639	62.5	658	66.4
11	Sinter Plant- 2	320	154	211	107.8	74.9	22.4	240	128	325	187.7	334	155
12	Sinter Plant- 3	UM		UM		266	67.5	211	43.5	149	51.0	226	101.1
13	BF PP-1 (Boiler-1)	721	196	756	167.0	842	172	502	90.4	754	112	304	33.9
14	BF PP-1 (Boiler-2)	600	334	SD		601	439	470	146	SD		618	313
15	BF PP-1 (Boiler-3)	1210	415	865	305	SD		925	174	990	340	988	423
16	BFPP- 2 Boiler- 2 &3	1348	50.0	731	51.3	731	51.4	976	65.0	745.5	62.9	738	30.2
17	Coke oven (Battery-1)	474	409	130	368.3	563.4	352	327	173	34.4	184.7	327	173
18	Coke oven (Battery-2)	73.0	445	71.0	371.2	76.4	412	82.7	438	87.7	347.4	82.7	438
19	Coke oven-2 Battery	49.1	78.2	34.7	65.3	85.6	70.87	124	77.8	130.0	65.8	124	77.8

SD: Shut Down; UM: Under Maintenance



Authorized Signature

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



National Accreditation Board for
Testing and Calibration Laboratories

CERTIFICATE OF ACCREDITATION

**ENVIRONMENT LABORATORY, TATA STEEL LIMITED,
MERAMANDALI**

has been assessed and accredited in accordance with the standard

ISO/IEC 17025:2017

**"General Requirements for the Competence of Testing &
Calibration Laboratories"**

for its facilities at

NARENDRAPUR, PO - KUSUPANGA, MERAMANDALI, DHENKANAL, ODISHA, INDIA

in the field of

TESTING

Certificate Number: TC-10959

Issue Date: 02/09/2022

Valid Until:

01/09/2024

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the relevant requirements of NABL.

(To see the scope of accreditation of this laboratory, you may also visit NABL website www.nabl-india.org)

Name of Legal Identity : TATA STEEL LIMITED

Signed for and on behalf of NABL



N. Venkateswaran
Chief Executive Officer

Summary of Surface Water Quality Analysis

Period: From April to September 2022

S.N	Parameter	Unit	Lingra Nala		Kisinda Nala	
			U/S	D/S	U/S	D/S
1	pH Value	-	7.66-8.21	7.35-7.97	6.95-8.11	7.41-8.17
2	Colour	Hazen	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:1.0)
3	Temperature	Deg C	25	25	25	25
4	Total Suspended Solids	mg/l	2.8-4.8	4.2-26	3.2-10.6	2.8-21
5	Ammoniacal Nitrogen	mg/l	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)
6	Arsenic as As	mg/l	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)
8	BOD, 3days at 27°C	mg/l	BDL(DL:2.0)	BDL(DL:2.0)	BDL(DL:2.0)	BDL(DL:2.0)
9	Boron as B	mg/l	BDL(DL:0.25)	BDL(DL:0.3)	BDL(DL:0.3)	BDL(DL:0.3)
10	Cadmium as Cd	mg/l	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)
11	Calcium as Ca	mg/l	31.68-39.6	32.64-102.96	40-110.88	19.8-48.96
12	Chlorides as Cl	mg/l	20.19-48.98	14.11-107.77	24.74-88.17	29.39-146.4
13	COD	mg/l	6.85-11.52	7.2-11.52	7.2-11.52	6.98-14.72
14	Copper (as Cu)	mg/l	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)
15	Cyanide as CN	mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)
16	Fluoride as F-	mg/l	0.26-0.61	0.33-0.58	2.18-4.7	1.73-2.9
17	Free Ammonia	mg/l	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)
18	Hexa Chromium as Cr +6	mg/l	0.032	BDL(DL:0.01)	0.052	0.088
19	Iron as Fe	mg/l	0.12-0.38	0.25-0.38	0.28-0.89	0.26-0.93
20	Lead (as Pb)	mg/l	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)
21	Manganese (as Mn)	mg/l	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)
22	Mercury (as Hg)	mg/l	BDL(DL:0.0002)	BDL(DL:0.0002)	BDL(DL:0.0002)	BDL(DL:0.0002)
23	Nickel (as Ni)	mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)
24	Nitrate as N	mg/l	0.5-0.92	0.62-1.45	0.52-1.02	0.61-1.01
25	O&G	mg/l	BDL(DL:1.4)	BDL(DL:1.4)	BDL(DL:1.4)	BDL(DL:1.4)
27	Phenolic Comp	mg/l	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)
28	Phosphate as P	mg/l	0.18-0.26	0.38-0.4	0.18-0.32	0.18-0.38
29	RFC	mg/l	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)

30	Selenium (as Se)	mg/l	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)
31	Sulphate mg/l	mg/l	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)
32	TKN	mg/l	BDL(DL:0.3)	BDL(DL:0.3)	BDL(DL:0.3)	BDL(DL:0.3)
33	Total Chromium,(as Cr)	mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)
34	Total Nitrogen Content	mg/l	BDL(DL:0.01)	1.02-5.1	0.86-42	0.9-3.9
35	Vanadium (as V)	mg/l	BDL(DL:0.05)	BDL(DL:0.05)	BDL(DL:0.05)	BDL(DL:0.05)
36	Zinc (as Zn)	mg/l	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)

Note: \$ - No specific standards, ND - Not detected, U/S: Upstream D/S: Downstream

Source: Monitoring/ Analysis report of S.K. Mitra Private Limited

Summary of Treated Domestic Effluent Analysis

Period: From April to September 2022

S.N.	Location	Parameters in Range		
		pH	Suspended Solid in mg/l	BOD (3 days at 27°C) in mg/l
1.	Colony STP	7.03-7.8	35-74	14.3-22
2.	AEL STP	7.22-7.99	36-58	15-24
3.	SMS-1 STP	7.55-8.26	27-68	12.2-21
4.	BF-1 STP	7.15-8.19	31-67	12.2-23
Standard		5.5-9.0	100	30

Summary of Effluent Treatment Plant Analysis

Period: From April to September 2022

S.N	Location	Parameters in Range					
		pH	Suspended Solid in mg/l	Chemical Oxygen Demand in mg/l	BOD (3days at 27°C) in mg/l	Oil & Grease	Iron as Fe
1.	ETP-1 (Outlet)	7.29-8.25	33-65	40-80	6.2-8.8	ND	0.15-0.47
2.	ETP-2 (Outlet)	6.64-8.08	30-72	42-68	6.3-7.9	ND	0.15-0.47
3.	ETP-3 (Outlet)	6.52-7.75	32-64	43-76	6.6-106.9	ND	0.1-0.22
4.	CRM (ETP Outlet)	6.76-7.72	32-60	144-188	16.7-25.5	ND	0.15-0.21
5.	BF-1 (Thickener Outlet)	6.35-7.1	44-76	32-64	6-9	ND	-
6.	BF-2 (Thickener Outlet)	6.97-8.05	60-74	36-64	4.8-7.54	ND	-
7.	SMS-3 (Thickener Outlet)	9.72-12.41	60-76	48-68	6-8.8	ND	-
Standard		5.5-9.0	100	250	30	10	1.0

S.N.	Location	Parameters in Range						
		pH	Suspended Solid in mg/l	Chemical Oxygen Demand in mg/l	BOD (3days at 27°C) in mg/l	Oil & Grease	TCN	Phenol
8.	Coke Oven-1(ETP Outlet)	7.44-8.25	41-68	172-220	19.5-26.8	4-7	0.11-0.15	0.55-0.81
9.	Coke Oven-2 (ETP Outlet)	6.63-7.28	32-67	148-240	18.3-27.8	5-6	0.1-0.18	0.65-0.88
Standard		5.5-9.0	100	250	30	10	0.2	1.0

Summary of ground water level monitoring report inside plant premises

Period: From April to September 2022

S.N.	Location with description	Depth of Monitoring Bore Well	Longitude	Latitude	Monitoring Point in m AGL	Water level in m BGL
						June-22
1	Near CRM	163ft	20°47.956'	85°15.076'	1.58	2.42
2	Colony near STP	165ft	20°49.045'	85°15.734'	1.19	1.15
3	RMHS Near Wagon Tippler	300ft	20°47.752'	85°15.993'	1.2	3.68
4	Near Blast Furnace-2	162ft	20°47.25'	85°15.613'	1.0	2.13
5	Near Gate no-10	166ft	20°48.653'	85°15.754'	0.9	3.05
6	Near Railway bridge	156ft	20°48.920'	85°15.858'	1.46	3.55

Ground Water Quality Analysis

S.N.	Parameter	Unit	GW-1	GW-2	GW-3	GW-4	GW-5	GW-6	Standard as per IS-10500-2012
1	p H	-	7.11	7.45	7.23	7.55	7.59	7.42	6.5-8.5
2	Odour	-	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	-
3	T. Hardness (as CaCO ₃)	mg/l	244	356	410	276	412	310	300
4	Calcium as Ca	mg/l	58.5	85.8	98.6	66.5	98.6	75.5	75
5	Magnesium as Mg	mg/l	23.91	34.65	40	26.8	40.5	30.3	30
6	Iron as Fe	mg/l	0.16	0.18	0.22	0.11	0.15	0.08	0.3
7	Chlorides as Cl	mg/l	64.6	159	207.7	188.9	228.6	159	250
8	Fluoride as F-	mg/l	0.77	0.85	0.66	0.48	0.88	0.52	1.0
9	Dissolved solids	mg/l	342	416	492	336	502	389	500
10	Nitrate as NO ₃ -	mg/l	2.8	3.5	3	2.7	4.4	1.5	45
11	Chromium as Cr+6	mg/l	0.016	0.018	0.018	0.008	0.02	0.011	0.05
12	Alkalinity as CaCO ₃	mg/l	52	66	58	52	78	36	200
13	Phosphate as PO ₄	mg/l	0.36	0.58	0.72	0.48	0.56	0.42	\$

N.B-GW-1-Near colony STP, GW-2-Near CRM, GW-3-Near Wagon Tippler area, GW-4- Near BF-2, GW-5-Near Gate Number-10,GW-6- Near Railway Bridge at material road

Ground Water Level

Period: June 2022

S.N	Location	Sample Code	Monitoring Point in m AGL	Longitude	Latitude	Water Level in m BGL
						June-22
1	Kharagprasad	GW-01	0.5	20° 49.299'	85° 18.923'	3.52
2	Charadagadia	GW-02	1	20° 47.768'	85° 17.083'	5.26
3	Sibpur	GW-03	0	20° 46.941'	85° 14.394'	5.68
4	Kochilamara	GW-04	0.21	20° 47.541'	85° 16.802'	5.92
5	Galpada	GW-05	0.39	20° 48.142'	85° 18.600'	6.12
6	Motonga	GW-06	0.64	20° 48.143'	85° 18.599'	4.36
7	Asanabania	GW-07	0.7	20° 47.534'	85° 16.802'	5.88
8	Narendrapur	GW-08	0.25	20° 49.483'	85° 15.530'	5.06
9	Khaliberena	GW-09	0.18	20° 46.946'	85° 14.396'	5.58
10	Ganthigadia	GW-10	0.52	20° 48.501'	85° 15.118'	4.10

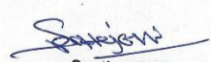
30	Alkalinity as CaCO3	mg/l	168	495	129	386	109	436	445	297	307	307
31	E. coli	/100 ml	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
32	Total coliform	/100 ml	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected

September 2022

S.N.	Parameters	unit	GW-01	GW-02	GW-03	GW-04	GW-07	GW-08	GW-09	GW-10
1	pH	None	6.40	7.17	7.24	7.28	7.34	7.12	7.21	7.90
2	Zinc as Zn	mg/l	BDL (DL:0.02)	BDL (DL:0.02)	BDL (DL:0.02)	BDL (DL:0.02)	BDL (DL:0.02)	BDL (DL:0.02)	BDL (DL:0.02)	BDL (DL:0.02)
3	Turbidity	N.T.U.	1.6	2.1	2.8	1.4	2.0	1.8	1.4	1.9
4	Total Hardness as CaCO3	mg/l	119	317	149	307	198	287	178	139
5	Total Dissolved Solids (as TDS)	mg/l	172	560	180	380	386	320	210	360
6	Sulphate as SO4	mg/l	4.62	7.64	3.68	5.92	4.80	5.40	4.20	5.68
7	Selenium as Se	mg/l	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)
8	Residual Free Chlorine	mg/l	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)
9	Potassium as K	mg/l	BDL (DL:0.5)	BDL (DL:0.5)	BDL (DL:0.5)	BDL (DL:0.5)	BDL (DL:0.5)	BDL (DL:0.5)	BDL (DL:0.5)	BDL (DL:0.5)
10	Phenolic Compounds as C6H5OH	mg/l	BDL (DL:0.001)	BDL (DL:0.001)	BDL (DL:0.001)	BDL (DL:0.001)	BDL (DL:0.001)	BDL (DL:0.001)	BDL (DL:0.001)	BDL (DL:0.001)
11	Odour	None	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
12	Nitrate as NO3	mg/l	1.08	1.80	1.20	1.32	0.98	1.10	1.40	1.22

13	Nickel (as Ni)	mg/l	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)
14	Mineral Oil	mg/l	BDL (DL:0.5)	BDL (DL:0.5)	BDL (DL:0.5)	BDL (DL:0.5)	BDL (DL:0.5)	BDL (DL:0.5)	BDL (DL:0.5)	BDL (DL:0.5)
15	Mercury as Hg	mg/l	BDL (DL:0.0002)	BDL (DL:0.0002)	BDL (DL:0.0002)	BDL (DL:0.0002)	BDL (DL:0.0002)	BDL (DL:0.0002)	BDL (DL:0.0002)	BDL (DL:0.0002)
16	Manganese as Mn	mg/l	BDL (DL:0.02)	BDL (DL:0.02)	BDL (DL:0.02)	BDL (DL:0.02)	BDL (DL:0.02)	BDL (DL:0.02)	BDL (DL:0.02)	BDL (DL:0.02)
17	Magnesium as Mg	mg/l	9.50	23.76	11.88	23.76	19.01	23.76	19.01	9.5
18	Lead as Pb	mg/l	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)
19	Iron as Fe	mg/l	0.08	0.16	0.18	0.07	0.09	0.09	0.07	0.11
20	Fluoride as F	mg/l	0.26	0.34	BDL (DL:0.2)	0.30	BDL (DL:0.2)	BDL (DL:0.2)	BDL (DL:0.2)	BDL (DL:0.2)
21	Cyanide as CN	mg/l	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)
22	Copper as Cu	mg/l	BDL (DL:0.02)	BDL (DL:0.02)	BDL (DL:0.02)	BDL (DL:0.02)	BDL (DL:0.02)	BDL (DL:0.02)	BDL (DL:0.02)	BDL (DL:0.02)
23	Colour	mg/l	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:1.0)
24	Chloride as Cl	mg/l	39.19	142.06	29.39	48.98	53.88	39.19	29.39	53.88
25	Calcium as Ca	mg/l	31.68	87.12	39.60	83.16	47.52	75.24	39.60	39.60
26	Cadmium as Cd	mg/l	BDL (DL:0.001)	BDL (DL:0.001)	BDL (DL:0.001)	BDL (DL:0.001)	BDL (DL:0.001)	BDL (DL:0.001)	BDL (DL:0.001)	BDL (DL:0.001)
27	Boron as B	mg/l	BDL (DL:0.3)	BDL (DL:0.3)	BDL (DL:0.3)	BDL (DL:0.3)	BDL (DL:0.3)	BDL (DL:0.3)	BDL (DL:0.3)	BDL (DL:0.3)
28	Anionic Surface Active Agents as (MBAS)	mg/l	BDL (DL:0.05)	BDL (DL:0.05)	BDL (DL:0.05)	BDL (DL:0.05)	BDL (DL:0.05)	BDL (DL:0.05)	BDL (DL:0.05)	BDL (DL:0.05)
29	Aluminium as Al	mg/l	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)
30	Alkalinity as	mg/l	98.0	313	68.6	274	186	235	98.0	284

	CaCO3									
31	E. coli	/100ml	Detected	Detected	Detected	Detected	Detected	Detected	Detected	Not Detected
32	Total coliform	/100ml	Detected	Detected	Detected	Detected	Detected	Detected	Detected	Detected

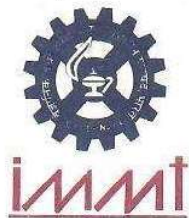


Authorized Signature

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

**Details of Slag Generation and Utilization
In
Blast Furnace – 1 & 2**

Month	Quantity Generated (MT)	Quantity Dispatched (MT)
Apr'22	154096	203659
May'22	150892	160272
Jun'22	152170	143344
Jul'22	155192	153186
Aug'22	137648	109875
Sep'22	140012	163967
Total	890010	934303



सीएसआइआर - खनिज एवं पदार्थ प्रौद्योगिकी संस्थान

(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद)

भुवनेश्वर-751013, ओडिशा, भारत

CSIR - INSTITUTE OF MINERALS & MATERIALS TECHNOLOGY

(Council of Scientific & Industrial Research)

Bhubaneswar - 751013, Odisha, INDIA

TEST REPORT

Ref. No. IMMT/CCD/07/2021

Date: 30.07.2021

Name & Address of the Party:

Tata Steel BSL Ltd.
At-Narendrapur, P.O.-Kusupanga
Via-Meramandali, Dist-Dhenkanal

Sample Details:

1. Fly ash, BFPP-1 2. Bed ash, BFPP-1
3. Fly ash, BFPP-2 4. Bed ash, BFPP-2

Date of Receiving:

25.06.2021

Date(s) of Conducting Test:

30.06.2021

Date of Completion of Test:

23.07.2021

Method Adopted: 1. Major element analysis of ash samples through wet chemical route by using Volumetric, gravimetric, photometric, nephelometric, AAS and ICP-OES techniques.
2. TCLP study of ash samples as per US-EPA method 1311 or ASTM-D5233-92. Leaching solution analysis by ICP-OES and AAS.

Detail Report: Following data tables are enclosed

Table-1. Chemical composition analysis of fly ash and bed ash samples.

Table-2. Experimental variables for Toxicity Characteristic Leaching Procedure (TCLP) study of Ash samples conducted as per US-EPA method 1311.

Table-3. Trace element analysis of TCLP or WET Procedure solutions of Ash samples; leaching studies conducted as per US-EPA method 1311 and Appendix II of section 66261 of Title 22 of California Code Regulations (CCR).

(J. Das)

Principal Technical Officer
Central Characterization Dept.

N.B.- The samples are not drawn by CSIR-IMMT. Liability, if any, for CSIR/IMMT arising in connection with the testing shall be subject to ceiling of amount received by the institute from the client. The report should not be interpreted in part.



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(Council of Scientific & Industrial Research)
Bhubaneswar - 751013, Odisha, INDIA

TEST REPORT

Ref. No. IMMT/CCD/07/2021

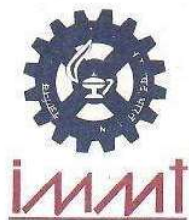
Date: 30.07.2021

Table-1. Chemical composition analysis of fly ash and bed ash samples.

Sl. No.	Component	Concentration in Test Samples, %			
		Fly Ash, BFPP-1	Bed Ash, BFPP-1	Fly Ash, BFPP-2	Bed Ash, BFPP-2
1	SiO ₂	49.85	52.45	56.4	54.9
2	Al ₂ O ₃	25.8	24.6	16.8	17.5
3	Fe ₂ O ₃	2.64	3.66	4.35	5.18
4	TiO ₂	1.38	1.41	0.88	0.79
5	MnO ₂	0.02	0.04	0.11	0.16
6	CaO	1.66	2.34	4.99	7.67
7	MgO	0.97	1.12	1.10	2.21
8	Na ₂ O	1.39	1.37	1.21	1.16
9	K ₂ O	1.18	1.29	1.20	1.14
10	Cr ₂ O ₃	0.018	0.017	0.031	0.027
11	NiO	0.004	0.005	0.005	0.003
12	CuO	0.009	0.009	0.007	0.004
13	ZnO	0.008	0.009	0.017	0.007
14	BaO	0.046	0.049	0.036	0.031
15	P ₂ O ₅	0.38	0.34	0.32	0.21
16	SO ₃	0.27	0.10	0.15	0.43
17	Cl ⁻	0.38	0.64	0.21	0.42
18	LOI	6.56	2.37	3.34	3.70
19	F ⁻ , mg/L	0.94	1.23	1.65	1.79

(J. Das)

Principal Technical Officer
Central Characterization Dept.



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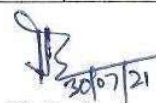
TEST REPORT

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Date: 30.07.2021

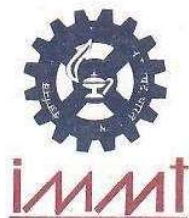
Table-2. Experimental variables for Toxicity Characteristic Leaching Procedure (TCLP) study of Ash samples conducted as per US-EPA method 1311.

Sl. No.	TCLP study Variables	Variable Data			
		Fly Ash, BFPP-1	Bed Ash, BFPP-1	Fly Ash, BFPP-2	Bed Ash, BFPP-2
1	TCLP study method	US-EPA Method-1311			
2	Sample type	Dust, Particle size < 100 µm	Dust and Gravels, Particle size < 8 mm	Dust, Particle size < 100 µm	Dust and Gravels, Particle size < 8 mm
3	Sample particle size taken for leaching	Original sample	Original sample	Original sample	Original sample
4	Initial pH of samples	9.11	12.29	10.30	12.41
5	pH after HCl + heat	2.04	10.13	2.37	11.29
6	Extraction fluid used	Extraction fluid -1	Extraction fluid -2	Extraction fluid -1	Extraction fluid -2
7	pH of Extraction fluids	4.94	2.90	4.94	2.90
8	Sample taken for leaching, gm	50			
9	Volume of extraction fluid used, ml	1000			
10	Liquid/solid ratio	20:1			
11	Head space	10 %			
12	Extraction Temperature °C	28			
13	Extraction Time, hour	18			
14	Filter	Glass micro fiber, Whatman GF/C			
15	Washing of filters	With dil. HNO ₃ and distilled water			
16	pH of recovered extraction fluid	5.12	4.78	4.95	5.66



(J. Das)

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TEST REPORT


Ref. No. IMMT/CCD/07/2021

Date: 30.07.2021

Table-3. Trace element analysis of TCLP or WET Procedure solutions of Ash samples; leaching studies conducted as per US-EPA method 1311 and Appendix II of section 66261 of Title 22 of California Code Regulations (CCR).

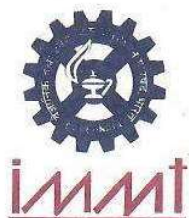
Sl. No.	Component	Concentrations in TCLP or WET* leaching solutions of Ash test samples (mg/L)				Waste constituents concentration limits of TCLP or STLC. US-EPA and California Code of Regulations (mg/L)
		Fly Ash, BFPP-1	Bed Ash, BFPP-1	Fly Ash, BFPP-2	Bed Ash, BFPP-2	
1	Hg	0.005	0.004	0.004	0.003	0.2
2	As	0.034	0.054	0.041	0.025	5.0
3	Se	0.080	0.044	0.085	0.047	1.0
4	Sb*	0.056	0.049	0.038	0.021	15.0
5	Ba	0.46	0.20	0.38	0.27	100.0
6	Cd	0.001	0.002	0.001	0.002	1.0
7	Cr	0.026	0.021	0.031	0.025	5.0
8	Cr (VI)	0.012	0.009	0.015	0.010	5.0
9	Pb	0.024	0.028	0.024	0.016	5.0
10	Mn	0.42	0.31	0.69	0.27	10.0
11	Ag	0.012	0.009	0.034	0.008	5.0
12	Co*	0.18	0.14	0.16	0.13	80.0
13	Cu*	0.51	0.16	0.55	0.12	25.0
14	Mo*	0.19	0.54	0.29	0.06	350
15	Ni*	0.31	0.19	0.31	0.16	20.0
16	V*	1.23	0.39	1.72	0.31	24.0
17	Zn*	0.64	0.13	1.12	0.09	250

Remark: The TCLP and WET leaching solution analyses of fly ash and bed ash samples reveal that trace element concentrations are much below the Waste constituent concentration limits. Therefore, the ash samples are non-hazardous materials and their use as land filling or mine void dumping will not have any adverse effect on the ground water quality in respect of the analyzed parameters and no separate lining is required for dumping of the tested ash samples.


30/07/21

(J. Das)

Principal Technical Officer
Central Characterization Dept.



सीएसआइआर - खनिज एवं पदार्थ प्रौद्योगिकी संस्थान

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Bhubaneswar - 751013, Odisha, INDIA

TEST REPORT

Ref. No. IMMT/CCD/08/2021

Date: 03.08.2021

Name & Address of the Party:

Tata Steel BSL Ltd.
At-Narendrapur, P.O.-Kusupanga
Via-Meramandali, Dist-Dhenkanal

Sample Details:

Solid Waste samples (17 Nos.)

Date of Receiving:

02.06.2021

Date(s) of Conducting Test:

07.06.2021

Date of Completion of Test:

23.07.2021

Method Adopted: 1. Major element analysis of Solid waste samples through wet chemical route by using Volumetric, gravimetric, photometric, nephelometric, AAS and ICP-OES techniques.
2. TCLP study of waste samples as per US-EPA method 1311 or ASTM-D5233-92.
Leaching solution analysis by ICP-OES and AAS.

Detail Report: Following data tables are enclosed

Table-1. Physical characteristics analysis of Solid Waste samples of Tata Steel BSL Limited, Meramandali

Table-2. Size (Sieve) analysis of Solid Waste samples of Tata Steel BSL Limited, Meramandali

Table-3. Chemical composition analysis of Solid Waste samples of Tata Steel BSL Limited, Meramandali

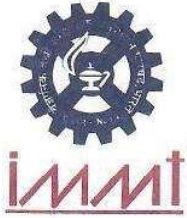
Table-4(a) Experimental variables for Toxicity Characteristic Leaching Procedure (TCLP) study of Solid Waste samples (SW1, SW2, SW3, SW4, SW5 & SW8) conducted as per US-EPA method 1311.

Table-4(b) Trace element analysis of TCLP or WET Procedure solutions of Solid waste samples(SW1, SW2, SW3, SW4, SW5 & SW8); Leaching studies conducted as per US-EPA method 1311 and Appendix II of section 66261 of Title 22 of California Code Regulations (CCR).

Table-5(a) Experimental variables for Toxicity Characteristic Leaching Procedure (TCLP) study of Solid Waste samples (SW9, SW10, SW11, SW12, SW13 & SW14) conducted as per US-EPA method 1311.

Table-5(b) Trace element analysis of TCLP or WET Procedure solutions of Solid waste samples(SW9, SW10, SW11, SW12, SW13 & SW14); Leaching studies conducted as per US-EPA method 1311 and Appendix II of section 66261 of Title 22 of California Code Regulations (CCR).

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(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद)

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Bhubaneswar - 751013, Odisha, INDIA

Table-6(a) Experimental variables for Toxicity Characteristic Leaching Procedure (TCLP) study of Solid Waste samples (SW15, SW17, SW18, SW19 & SW20) conducted as per US-EPA method 1311.

Table-6(b) Trace element analysis of TCLP or WET Procedure solutions of Solid waste samples (SW15, SW17, SW18, SW19 & SW20); Leaching studies conducted as per US-EPA method 1311 and Appendix II of section 66261 of Title 22 of California Code Regulations (CCR).

(J. Das)

Principal Technical Officer
Central Characterization Dept.

N.B.:- The samples are not drawn by CSIR-IMMT. Liability, if any, for CSIR/IMMT arising in connection with the testing shall be subject to ceiling of amount received by the institute from the client. The report should not be interpreted in part.



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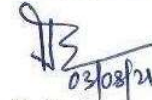
TEST REPORT

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Date: 03.08.2021

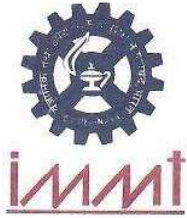
Table-1. Physical characteristics analysis of Solid Waste samples of Tata Steel BSL Limited, Meramandali.

Sl. No.	Sample ID.	Concentration in Test Solid waste samples			
		pH	Bulk Density, (g/cc)	Dry Matter, %	Volatile Matter, %
1	SW-1 (ETP-1 Sludge)	7.86	0.62	97.5	14.7
2	SW-2 (ETP-2 Sludge)	8.07	0.69	98.1	12.0
3	SW-3 (ETP-3 Sludge)	8.31	0.71	98.4	18.9
4	SW-4 (CRM ETP Sludge)	8.45	0.65	94.5	37.8
5	SW-5 (BOD -1 Sludge)	6.71	0.75	86.5	47.8
6	SW-8 (BF-1 Flue Dust)	9.08	2.04	99.5	3.18
7	SW-9 (BF-2 Flue Dust)	10.4	1.61	99.6	3.44
8	SW-10 (BOF GCP Dust)	11.2	1.15	99.0	2.75
9	SW-11 (DRI Cold ESP Dust)	10.9	0.76	98.1	4.50
10	SW-12 ((DRI Wet Scrapper Dust)	9.57	0.85	97.7	4.67
11	SW-13 (SMS Slag)	12.2	1.86	99.9	0.47
12	SW-14 (BF Granulated Slag)	9.60	1.29	99.8	0.41
13	SW-15 (Lime Plant De-dusting Dust)	12.5	0.78	99.7	14.3
14	SW-17 (Mill Scale)	8.61	2.89	99.9	0.09
15	SW-18 (SMS-II FES Dust)	12.6	1.41	99.8	4.24
16	SW-19 (BF-1 GCP Dust)	9.26	1.02	99.5	4.16
17	SW-20 (BF-2 GCP Dust)	9.47	1.25	99.2	5.17



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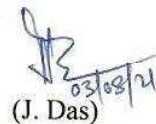
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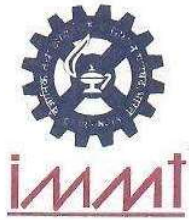
Table-2. Size (Sieve) analysis of Solid Waste samples of Tata Steel BSL Limited, Meramandali

Sl. No.	Sample ID	Seive Fractions							
		+2 mm	-2+1 mm	-1+500 micron	-500+250 micron	-250+150 micron	-150+75 micron	-75+45 micron	-45 micron
1	SW-1	73.95	9.31	5.62	3.50	0.80	1.32	1.42	4.08
2	SW-2	62.59	16.21	8.68	4.09	0.42	0.38	0.90	6.74
3	SW-3	36.28	11.91	10.09	9.46	6.25	6.67	11.89	7.46
4	SW-4	88.51	6.70	2.84	0.93	0.52	0.50	0	0
5	SW-5	83.54	11.30	3.49	0.42	0.87	0.16	0.10	0.11
6	SW-8	6.05	3.02	3.77	3.75	4.78	11.69	13.44	53.48
7	SW-9	0	0.09	0.25	0.51	1.91	29.37	56.56	11.30
8	SW-10	33.52	15.92	15.29	11.98	5.10	6.67	8.29	3.22
9	SW-11	6.40	7.13	4.61	5.65	3.44	14.33	40.13	18.31
10	SW-12	5.12	4.75	7.91	10.29	11.28	23.15	17.61	19.89
11	SW-13	57.97	9.22	6.74	4.73	3.00	5.44	3.53	9.38
12	SW-14	2.31	12.91	43.91	16.23	4.56	6.46	5.05	8.57
13	SW 15	0.93	0.63	0.96	1.47	2.50	15.33	52.18	26.00
14	SW-17	39.15	13.71	12.83	16.48	8.68	6.29	2.09	0.77
15	SW-18	0.49	1.06	2.55	7.33	47.34	21.35	12.43	7.46
16	SW-19	45.08	3.33	2.71	3.70	7.08	17.62	10.22	10.26
17	SW-20	29.96	12.53	5.22	3.78	7.02	17.35	13.72	10.42

N. B.: SW1-ETP-1 Sludge, SW2-ETP-2 Sludge, SW3-ETP-3 Sludge, SW4-CRM ETP Sludge, SW5-BOD-1 Sludge, SW8-BF-1 Flue Dust, SW9-BF-2 Flue Dust, SW10-BOF GCP Dust, SW11-DRI Cold ESP Dust, SW12-DRI Wet Scrapper Dust, SW13-SMS Slag, SW14-BF Granulated Slag, SW15-Lime Plant De-dusting Dust, SW17-Mill Scale, SW18-SMS-II FES Dust, SW19-BF-1 GCP Dust & SW20-BF-2 GCP Dust


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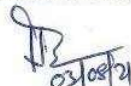
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Table-3. Chemical composition analysis of Solid Waste samples of Tata Steel BSL Limited, Meramandali.

Sl. No.	Sample Ids.	Concentration in Test Solid waste samples, %													
		SiO ₂	Al ₂ O ₃	Fe (T)	TiO ₂	MnO	CaO	MgO	Na ₂ O	K ₂ O	P ₂ O ₅	SO ₃	C	Cl	LOI
1	SW-1	39.21	23.32	10.3	0.36	0.049	0.78	1.21	0.41	1.65	0.06	0.28	3.51	0.23	16.28
2	SW-2	37.91	19.30	12.5	0.94	0.085	5.07	1.40	0.65	1.24	0.16	0.07	6.02	0.29	16.46
3	SW-3	9.07	4.01	5.11	0.21	0.038	3.16	0.94	0.40	0.69	0.001	0.85	56.0	0.16	73.22
4	SW-4	2.40	1.15	3.72	0.03	0.10	21.81	2.54	1.22	0.52	0.45	0.17	17.5	1.13	42.75
5	SW-5	1.29	2.02	16.2	0.19	0.021	0.69	0.62	1.29	0.65	0.001	7.70	30.6	0.48	75.98
6	SW-8	4.17	1.88	59.15	0.10	0.093	2.09	0.58	1.47	1.02	0.001	0.82	2.12	0.40	3.18
7	SW-9	4.18	1.79	57.7	0.09	0.056	2.28	0.74	1.13	1.37	0.001	1.78	10.24	0.13	11.4
8	SW-10	4.32	1.78	53.1	0.12	0.095	12.45	4.02	1.16	0.97	0.001	0.31	0.85	0.075	2.75
9	SW-11	24.28	12.61	10.98	0.56	0.039	5.36	2.32	1.29	1.16	0.35	2.49	33.4	0.09	35.57
10	SW-12	12.76	7.96	22.74	0.39	0.025	2.60	0.71	1.19	0.99	0.20	0.42	30.3	0.03	46.21
11	SW-13	13.42	1.78	26.7	0.84	0.022	45.22	10.80	1.58	0.88	1.20	0.20	0.07	0.27	0.52
12	SW-14	32.99	15.58	1.10	0.71	0.065	31.77	9.14	1.55	1.34	0.001	1.61	0.24	0.14	0.61
13	SW-15	2.41	1.12	2.68	0.10	0.066	45.63	12.8	3.01	0.89	0.03	0.26	5.01	0.58	23.15
14	SW-17	0.09	0.32	65.4	0.01	0.012	0.20	0.99	1.33	0.74	0.001	0.03	0.13	0.05	2.47
15	SW-18	1.94	0.96	54.7	0.08	0.011	11.51	3.38	1.81	1.87	0.001	1.28	1.50	2.68	4.24
16	SW-19	10.84	3.21	32.9	0.17	0.046	2.74	1.31	1.36	0.93	0.001	1.01	27.7	0.31	31.6
17	SW-20	14.65	1.94	29.3	0.15	0.049	3.44	1.45	1.33	0.87	0.001	1.46	30.7	0.45	35.71

N. B.: SW1-ETP-1 Sludge, SW2-ETP-2 Sludge, SW3-ETP-3 Sludge, SW4-CRM ETP Sludge, SW5-BOD-1 Sludge, SW8-BF-1 Flue Dust, SW9-BF-2 Flue Dust, SW10-BOF GCP Dust, SW11-DRI Cold ESP Dust, SW12-DRI Wet Scrapper Dust, SW13-SMS Slag, SW14-BF Granulated Slag, SW15-Lime Plant De-dusting Dust, SW17-Mill Scale, SW18-SMS-II FES Dust, SW19-BF-1 GCP Dust & SW20-BF-2 GCP Dust


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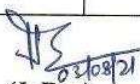
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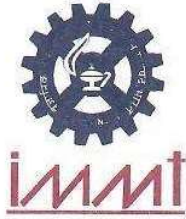
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Table-4(a). Experimental variables for Toxicity Characteristic Leaching Procedure (TCLP) study of Solid Waste samples conducted as per US-EPA method 1311.

Sl. No.	TCLP study Variables	Variable Data					
		SW 1	SW 2	SW3	SW 4	SW 5	SW 8
1	TCLP study method	US-EPA Method-1311					
2	Sample type	Dust and Gravels, Particle size < 8 mm	Dust and Gravels, Particle size < 8 mm	Dust and Gravels, Particle size < 8 mm	Dust and Gravels, Particle size < 8 mm	Dust and Gravels, Particle size < 8 mm	Dust and Gravels, Particle size < 8 mm
3	Sample particle size taken for leaching	Original sample	Original sample	Original sample	Original sample	Original sample	Original sample
4	Initial pH of samples	7.86	8.07	8.31	8.45	6.71	9.08
5	pH after HCl + heat	3.01	5.69	6.82	7.15	4.16	3.67
6	Extraction fluid used	Extraction fluid -1	Extraction fluid -2	Extraction fluid -2	Extraction fluid -2	Extraction fluid -1	Extraction fluid -1
7	pH of Extraction fluid	4.91	2.88	2.88	2.88	4.91	4.91
8	Sample taken for leaching, gm	50					
9	Volume of extraction fluid used, ml	1000					
10	Liquid/solid ratio	20:1					
11	Head space	10 %					
12	Extraction Temperature °C	28					
13	Extraction Time, hour	18					
14	Filter	Glass micro fiber, Whatman GF/C					
15	Washing of filters	With dil. HNO ₃ and distilled water					
16	pH of recovered extraction fluid	4.75	4.47	4.46	4.52	4.65	4.78


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Table-4(b). Trace element analysis of TCLP or WET Procedure solutions of Solid waste samples; leaching studies conducted as per US-EPA method 1311 and Appendix II of section 66261 of Title 22 of California Code Regulations (CCR).

Sl. No.	Component	Concentrations in TCLP or WET* leaching solutions of Solid Waste test samples (mg/L)						Waste constituents concentration limits of TCLP or STLC. US-EPA and California Code of Regulations (mg/L)
		SW1	SW2	SW3	SW4	SW5	SW8	
1	Hg	0.002	0.004	0.003	0.002	0.002	0.004	0.2
2	As	0.019	0.037	0.032	0.010	0.015	0.001	5.0
3	Se	0.047	0.067	0.056	0.036	0.169	0.011	1.0
4	Sb*	0.044	0.039	0.045	1.13	0.001	0.11	15.0
5	Ba	0.37	1.39	1.16	0.08	0.13	0.07	100.0
6	Cd	0.002	0.002	0.008	0.001	0.001	0.001	1.0
7	Cr	0.019	0.018	0.026	0.513	0.023	0.025	5.0
8	Pb	0.021	0.027	0.126	0.021	0.025	0.013	5.0
9	Mn	0.29	5.04	3.66	1.72	0.57	2.12	10.0
10	Ag	0.001	0.001	0.001	0.003	0.002	0.003	5.0
11	Co*	0.21	0.18	0.15	0.21	0.19	0.21	80.0
12	Cu*	0.53	0.02	9.6	0.04	12.3	0.05	25.0
13	Mo*	0.071	0.074	0.052	0.175	0.002	0.008	350
14	Ni*	0.27	0.22	0.25	1.04	0.49	0.24	20.0
15	V*	1.07	1.32	0.46	0.23	0.001	0.74	24.0
16	Zn*	2.62	1.05	3.39	2.33	0.73	2.86	250
17	F*	0.67	1.03	1.21	2.69	38.6	19.5	180

Remark: The TCLP and WET leaching solution analyses of Solid Waste samples reveal that trace element concentrations are much below the Waste constituent concentration limits.


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Table-5(a). Experimental variables for Toxicity Characteristic Leaching Procedure (TCLP) study of Solid Waste samples conducted as per US-EPA method 1311.

Sl. No.	TCLP study Variables	Variable Data					
		SW9	SW10	SW11	SW12	SW13	SW14
1	TCLP study method	US-EPA Method-1311					
2	Sample type	Dust and Gravels, Particle size < 8 mm	Dust and Gravels, Particle size < 8 mm	Dust and Gravels, Particle size < 8 mm	Dust and Gravels, Particle size < 8 mm	Dust and Gravels, Particle size < 8 mm	Dust and Gravels, Particle size < 8 mm
3	Sample particle size taken for leaching	Original sample	Original sample	Original sample	Original sample	Original sample	Original sample
4	Initial pH of samples	10.3	11.2	10.9	9.57	12.2	9.60
5	pH after HCl + heat	3.34	5.61	9.64	8.13	11.9	3.81
6	Extraction fluid used	Extraction fluid -1	Extraction fluid -2	Extraction fluid -2	Extraction fluid -2	Extraction fluid -2	Extraction fluid -1
7	pH of Extraction fluid	4.91	2.88	2.88	2.88	2.88	4.91
8	Sample taken for leaching, gm	50					
9	Volume of extraction fluid used, ml	1000					
10	Liquid/solid ratio	20:1					
11	Head space	10 %					
12	Extraction Temperature °C	28					
13	Extraction Time, hour	18					
14	Filter	Glass micro fiber, Whatman GF/C					
15	Washing of filters	With dil. HNO ₃ and distilled water					
16	pH of recovered extraction fluid	4.95	5.09	5.04	4.82	4.54	4.55

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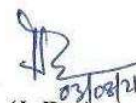
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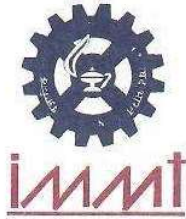
Table-5(b). Trace element analysis of TCLP or WET Procedure solutions of Solid waste samples; leaching studies conducted as per US-EPA method 1311 and Appendix II of section 66261 of Title 22 of California Code Regulations (CCR).

Sl. No.	Component	Concentrations in TCLP or WET* leaching solutions of Solid Waste test samples (mg/L)						Waste constituents concentration limits of TCLP or STLC. US-EPA and California Code of Regulations (mg/L)
		SW9	SW10	SW11	SW12	SW13	SW14	
1	Hg	0.002	0.004	0.004	0.003	0.005	0.001	0.2
2	As	0.002	0.006	0.002	0.029	0.003	0.023	5.0
3	Se	0.049	0.011	0.002	0.063	0.052	0.051	1.0
4	Sb*	0.10	0.11	0.07	0.04	0.04	0.05	15.0
5	Ba	0.38	0.06	0.88	1.02	0.05	0.29	100.0
6	Cd	0.001	0.001	0.001	0.001	0.001	0.001	1.0
7	Cr	0.024	0.016	0.027	0.030	0.031	0.023	5.0
8	Pb	1.14	0.011	0.003	0.024	0.015	0.022	5.0
9	Mn	1.96	0.07	2.58	1.66	3.04	0.39	10.0
10	Ag	0.003	0.001	0.003	0.001	0.002	0.001	5.0
11	Co*	0.21	0.13	0.22	0.19	0.16	0.17	80.0
12	Cu*	0.04	0.03	0.03	0.16	0.04	0.02	25.0
13	Mo*	0.024	0.01	0.001	0.01	0.001	0.001	350
14	Ni*	0.18	0.06	0.07	0.21	0.15	0.18	20.0
15	V*	0.79	0.36	0.23	0.14	1.72	0.16	24.0
16	Zn*	4.01	2.54	0.14	0.42	0.05	1.38	250
17	F*	18.0	0.07	2.07	1.33	0.16	7.74	180

Remark: Remark: The TCLP and WET leaching solution analyses of Solid Waste samples reveal that trace element concentrations are much below the Waste constituent concentration limits.


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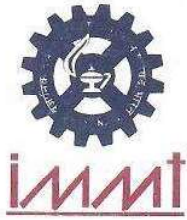
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Table-6(a). Experimental variables for Toxicity Characteristic Leaching Procedure (TCLP) study of Solid Waste samples conducted as per US-EPA method 1311.

Sl. No.	TCLP study Variables	Variable Data				
		SW15	SW17	SW18	SW19	SW20
1	TCLP study method	US-EPA Method-1311				
2	Sample type	Dust and Gravels, Particle size < 8 mm	Dust and Gravels, Particle size < 8 mm	Dust and Gravels, Particle size < 8 mm	Dust and Gravels, Particle size < 8 mm	Dust and Gravels, Particle size < 8 mm
3	Sample particle size taken for leaching	Original sample	Original sample	Original sample	Original sample	Original sample
4	Initial pH of samples	12.5	8.61	12.5	9.26	9.47
5	pH after HCl + heat	12.3	1.71	12.2	3.02	6.32
6	Extraction fluid used	Extraction fluid -2	Extraction fluid -1	Extraction fluid -2	Extraction fluid -1	Extraction fluid -2
7	pH of Extraction fluids	2.88	4.91	2.88	4.91	2.88
8	Sample taken for leaching, gm	50				
9	Volume of extraction fluid used, ml	1000				
10	Liquid/solid ratio	20:1				
11	Head space	10 %				
12	Extraction Temperature °C	28				
13	Extraction Time, hour	18				
14	Filter	Glass micro fiber, Whatman GF/C				
15	Washing of filters	With dil. HNO ₃ and distilled water				
16	pH of recovered extraction fluid	8.21	4.64	7.85	4.57	4.60


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Table-6(b). Trace element analysis of TCLP or WET Procedure solutions of Solid waste samples; leaching studies conducted as per US-EPA method 1311 and Appendix II of section 66261 of Title 22 of California Code Regulations (CCR).

Sl. No.	Component	Concentrations in TCLP or WET* leaching solutions of Solid Waste test samples (mg/L)					Waste constituents concentration limits of TCLP or STLC, US-EPA and California Code of Regulations (mg/L)
		SW15	SW17	SW18	SW19	SW20	
1	Hg	0.002	0.004	0.002	0.003	0.002	0.2
2	As	0.018	0.018	0.026	0.018	0.003	5.0
3	Se	0.055	0.054	0.181	0.057	0.019	1.0
4	Sb*	0.014	0.079	0.070	0.063	0.015	15.0
5	Ba	0.35	0.16	0.22	0.17	0.59	100.0
6	Cd	0.001	0.001	0.002	0.080	0.030	1.0
7	Cr	0.057	0.021	0.038	0.022	0.027	5.0
8	Pb	0.025	0.019	0.021	21.5	22.4	5.0
9	Mn	0.02	0.27	0.12	0.39	0.97	10.0
10	Ag	0.001	0.001	0.005	0.002	0.001	5.0
11	Co*	0.16	0.17	0.17	0.19	0.19	80.0
12	Cu*	0.07	0.02	0.14	0.19	0.01	25.0
13	Mo*	0.014	0.057	0.067	0.021	0.039	350
14	Ni*	0.08	0.27	0.10	0.18	0.14	20.0
15	V*	0.01	0.06	0.75	0.77	0.59	24.0
16	Zn*	0.03	0.18	2.06	3.87	4.98	250
17	F**	19.7	0.61	18.8	9.57	17.8	180

Remark: Remark: The TCLP and WET leaching solution analyses of Solid Waste samples reveal that trace element concentrations are much below the Waste constituent concentration limits.


(J. Das)

Principal Technical Officer
Central Characterization Dept.

OC



Annexure-VIII

TSM/SPCB/BS-07/2022-16/203
May 23, 2022

The Member Secretary
State Pollution Control Board, Odisha
A/118, Paribesh Bhawan
Nilakanthanagar, Unit-VIII
Bhubaneswar -751012

Subject: Submission of hazardous waste annual return for the period April'21 to March'22.
Reference: Authorization no. IND-IV-HW-622/12122 dated 03.12.2021

Dear Sir,

In reference to the captioned subject and letter cited above. As per the provision of Hazardous and Other Wastes (Management & Transboundary Movement) Rules, 2016; we are submitting herewith annual returns (Form-4) of said rules for the period April 1, 2021 to March 31, 2022 of TATA Steel Ltd. At : Narendpur, PO: Kusupanga Via.: Meramandali, Dhenkanal (attached as **Annexure-I**).

Hope, the information furnished is in line with the requirement.

Thanking you,

Yours faithfully,
For Tata Steel Limited

Anoop Srivastava

Anoop Srivastava
Head Environment

Enclosure: As above

Copy to: The Regional Officer, State Pollution Control Board, Odisha, Angul



TATA STEEL LIMITED

Narendrapur Kusupanga Meramandali Dhenkanal 759 121 Odisha India Tel 91 6762 352000
Registered Office Bombay House 24 Homi Mody Street Fort Mumbai 400 001 India Tel 91 22 66654282 Fax 91 22 66657724
Corporate Identity Number L27100MH1907PLC000260 Website www.tatasteel.com

FORM 4

[See rules 6(5), 13(8), 16(6) and 20 (2)]

FORM FOR FILING ANNUAL RETURNS

[To be submitted to State Pollution Control Board by 30th day of June of every year for the preceding period April to March]

1. Name and address of facility:

Tata Steel Limited Meramandali
At-Narendrapur, PO- Kusupanga
Via- Meramandali, Dist-Dhenkanal
PIN-759121, Odisha (India)
Tel: 91-6762-300000
Fax: 011-66173997

2. Authorisation no. and date of issue: Authorization no. IND-IV-HW-622/12122 dated 03.12.2020

3. Name of the authorised person and full address with telephone, fax and e-mail:

Anoop Srivastava
Head-Environment
At-Narendrapur, Po- Kusupanga
Via- Meramandali, Dist-Dhenkanal
PIN-759121, Odisha (India)
Tel: 91-6762-300000
Fax: 011- 66173997

4. Production during the year:

Total Production (Crude Steel) during 2021-22: 4891179 T

Part A. To be filled by hazardous waste generators

1. Total quantity of waste generated category wise:

SL	Waste Description	Schedule and Waste Stream/Class	Quantity (in Tonnes/KL)
1	Used /Spent Oil	Schedule -I Stream -5.1	295.04 KL
2	Waste/Residue Containing Oil	Schedule -I Stream -5.2	25.86 T
3	Oil and grease skimming (Oily Sludge)	Schedule -I Stream -35.4	101.6 T
4	Residue from Coke Oven by-product plant (BOD Plant Sludge)	Schedule- I Stream-13.6	2496.53 T

5	Decanter tank sludge and tar sludge tank residue	Schedule- I Stream-13.4 & 13.5	1396 T
6	Acidic & Alkali Residues/Spent Acid and Alkali	Schedule- I Stream-12.1 & 12.2	23.17 T
7	ETP Sludge/ Chemical Sludge from wastewater Treatment Plant	Schedule- I Stream-35.3	694.38 T
8	Spent Ion Exchange Resin containing toxic metals.	Schedule- I Stream-35.2	3 T
9	Process wastes, Residues and sludges/ Spent Solvent (Waste Thinner–Oily Waste)	Schedule -I Stream -21.1 & 21.2	39.63 T
10	Insulation material (Glass wool)	Schedule -II Class-C	114.21 T
11	Empty Barrels/Containers/Liners contaminated with Hazardous chemicals/wastes	Schedule -I Stream -33.1	18.22 T
12	Exhaust Air or Gas Cleaning Residue /LD Sludge	Schedule -I Stream -35.1 & Schedule -II Stream -C2	164247 T
13	Zinc Dross/ Ash/ Skimmings/ Residues	Schedule -IV Stream – (11 to 15)	471.41 T

2. Quantity dispatched

(i) to disposal facility:

SL	Waste Description	Quantity (in Tonnes/KL)	Name of the Disposal Facilities
1	Oil and grease skimming (Oily Sludge)	101.6 T	M/s RE Sustainability Ltd. (Formerly M/s Ramky Enviro Engineers Ltd.), Jajpur, Odisha
2	Insulation material (Glass wool)	114.21 T	
3	Acidic & Alkali Residues/Spent Acid and Alkali	23.17 T	
4	ETP Sludge of CRM/Chemical Sludge from wastewater Treatment Plant	694.38 T	
5	Process wastes, Residues and sludges/ Spent Solvent (Waste Thinner–Oily Waste)	37.54 T	Adityapur Waste Management Pvt. Ltd.

(i) to recycler or co-processors or pre-processor:

SL	Waste Description	Quantity (in Tonnes/KL)	Name of the Reprocessing Facilities
1	Used /Spent Oil	247.2 T	M/s Bristol Petroleum Pvt. Ltd. At-26/5/D E,A.M.Ghosh Road,Budge,24 Parganas (S),WB
2	Empty Barrels/Containers/Liners contaminated with Hazardous chemicals/wastes	18.22 T	Eco Resource Solution, Daleiput, Khurda, Odisha
3	Zinc Dross/ Ash/ Skimmings/ Residues	471.41 T	1. M/s Neelam Metal Products 2. M/s Cosmo Agromet Industries 3. M/s East Coast Bio-Tech Project.

(ii) Others: Not Applicable

3. Quantity utilised in-house if any:

SL	Waste Description	Quantity (in Tonnes/KL)	Mode of utilization
1	Waste/Residue Containing Oil	25.86 T	Feed to boiler along with coal
2	Residue from Coke Oven by-product plant (BOD Plant Sludge)	2496.53 T	Internally reused in coke oven plant
3	Decanter tank sludge and tar sludge tank residue	1396 T	Internally reused in coke oven plant
4	Exhaust Air or Gas Cleaning Residue /LD Sludge	179882 T	Internally reused in sinter plant

4. Quantity in storage at the end of the year –

SL	Waste Description	Quantity (in Tonnes/KL)
1	Spent Ion Exchange Resin containing toxic metals.	3 T
2	Process wastes, Residues and sludges/ Spent Solvent (Waste Thinner – Oily Waste) *	2.09 T

*Presently, in Odisha CHWTSDF is not available for disposal of incinerable material.

Date: 19.05.2022

Place: TSL Meramandali

Anoop Srivastava

For Signature of the Occupier or Operator of the disposal facility



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(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद)
भुवनेश्वर-751013, ओडिशा, भारत
CSIR - INSTITUTE OF MINERALS & MATERIALS TECHNOLOGY
(Council of Scientific & Industrial Research)
Bhubaneswar - 751013, Odisha, INDIA

TEST REPORT

Ref. No. IMMT/CCD/11/2022

Date: 18.11.2022

Name & Address of the Party:

Tata Steel Ltd.
At-Narendrapur, P.O.-Kusupanga
Via-Meramandali, Dist-Dhenkanal
Pin-759121, Odisha.

Your Ref. No.:
Sample Details:

Work Order No.: 3000145884/A06, Date: 30.06.2022
1. Indian Coal (01 No.) 2. Imported Coal (01 No.)
3. Iron Ore (01 No.) 4. Lime stone (01 No.)
5. Dolomite (01 No.)

Date of Receiving:
Date(s) of Conducting Test:
Date of Completion of Test:

14.09.2022
10.10.2022
28.10.2022

Method Adopted:

1. Proximate analysis of coal samples by classical methods.
2. Major and trace element analysis of Coal, Iron ore, lime stone and Dolomite samples through wet chemical route by gravimetric, nephelometric, AAS and ICP-OES techniques.
3. Coal samples were leached with distilled water at a solid:liquid ratio of 1:20 for fluoride analysis.

Detail Report: Following data tables are enclosed:

Table-1. Proximate analysis of coal samples.


Table-2. Chemical composition analysis of coal samples.

Table-3. Trace element analysis of coal samples.

Table-4. Chemical composition analysis of Iron ore, Lime stone and Dolomite samples.

Table-5. Trace element analysis of Iron ore, Lime stone and Dolomite samples.

(Dr. B. Nayak)
Chief Scientist
PL & Head, CCD


 (J. Das)
 Pr. Technical Officer
 Central Characterization Dept.

N.B.: The samples are not drawn by CSIR-IMMT. Liability, if any, for the institute arising in connection with the testing shall be subject to ceiling of amount received by the institute from the client. The report should not be interpreted in part.



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(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद)

भुवनेश्वर-751013, ओडिशा, भारत

CSIR - INSTITUTE OF MINERALS & MATERIALS TECHNOLOGY

(Council of Scientific & Industrial Research)

Bhubaneswar - 751013, Odisha, INDIA

TEST REPORT

Ref. No. IMMT/CCD/11/2022

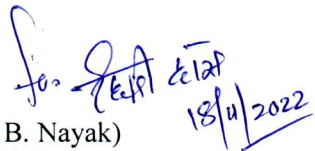
Date: 18.11.2022

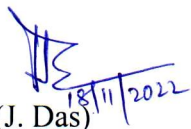
Table-1. Proximate analysis of coal samples.

Sample ID	Moisture (%)	Volatile Matter (%)	Ash (%)	Fixed Carbon (%)
Indian coal	3.16	32.27	32.95	31.62
Imported coal	3.30	24.05	19.39	53.26

Table-2. Chemical composition analysis of coal samples.

Sl. No.	Component	Concentration in Test Samples, %	
		Indian Coal	Imported Coal
1	SiO ₂	19.64	11.02
2	Al ₂ O ₃	7.37	6.75
3	Fe ₂ O ₃	1.48	0.284
4	TiO ₂	0.55	0.365
5	MnO	0.025	0.003
6	CaO	0.28	0.039
7	MgO	0.14	0.057
8	Na ₂ O	0.11	0.048/
9	K ₂ O	0.40	0.17
10	P ₂ O ₅	0.31	0.06
11	S/SO ₃	0.36/0.89	0.49/1.22
12	LOI	67.05	78.80


(Dr. B. Nayak)
Chief Scientist
PL & Head, CCD


(J. Das)
Pr. Technical Officer
Central Characterization Dept.



TEST REPORT

Ref. No. IMMT/CCD/11/2022

Date: 18.11.2022

Table-3. Trace element analysis of coal samples

Sl. No.	Parameters	Trace element concentrations in test samples		
		Unit	Indian coal	Imported coal
1	Pb	mg/kg	23.75	0.62
2	Cd	mg/kg	0.14	0.006
3	Cu	mg/kg	32.21	4.52
4	Ni	mg/kg	26.89	8.47
5	Co	mg/kg	33.15	4.93
6	Cr	mg/kg	40.25	22.20
7	Zn	mg/kg	15.18	7.80
8	Ag	mg/kg	0.56	0.36
9	Sb	mg/kg	3.68	0.75
10	Mo	mg/kg	2.73	0.24
11	V	mg/kg	38.86	3.01
12	Se	mg/kg	0.89	0.24
13	Ba	mg/kg	127.2	20.72
14	As	mg/kg	32.45	3.08
15	Hg	mg/kg	1.48	0.65
16	B	%	0.15	0.08
17	F ⁻ in water leaching (1:20) solutions.	mg/L	0.08	0.04

for Report dated 18/11/2022
(Dr. B. Nayak)
Chief Scientist
PL & Head, CCD

J. Das
(J. Das)
Pr. Technical Officer
Central Characterization Dept.




TEST REPORT

Ref. No. IMMT/CCD/11/2022

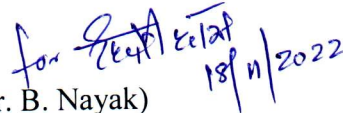
Date: 18.11.2022

Table-4. Chemical composition analysis of Iron ore, Lime stone and Dolomite samples.

Sl. No.	Component	Concentration in Test Samples, %		
		Iron Ore	Lime Stone	Dolomite
1	SiO ₂	0.72	0.40	15.22
2	Al ₂ O ₃	1.52	0.70	2.66
3	Fe ₂ O ₃	93.45	0.14	2.71
4	TiO ₂	0.05	0.008	0.167
5	MnO	0.016	0.004	0.07
6	CaO	0.04	49.85	34.0
7	MgO	0.01	6.71	7.24
8	Na ₂ O	0.37	1.17	1.24
9	K ₂ O	0.017	0.23	0.37
10	P ₂ O ₅	0.09	0.012	0.017
11	S/SO ₃	0.05/0.13	0.07/0.17	0.15/0.38
12	LOI	1.65	38.43	33.87


(J. Das)
18/11/2022

Pr. Technical Officer
Central Characterization Dept.


(Dr. B. Nayak)
Chief Scientist
PL & Head, CCD
18/11/2022



सीएसआईआर - खनिज एवं पदार्थ प्रौद्योगिकी संस्थान
(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद)
भुवनेश्वर-751013, ओडिशा, भारत

CSIR - INSTITUTE OF MINERALS & MATERIALS TECHNOLOGY
(Council of Scientific & Industrial Research)
Bhubaneswar - 751013, Odisha, INDIA

TEST REPORT

Ref. No. IMMT/CCD/11/2022

Date: 18.11.2022

Table-5. Trace element analysis of Iron ore, Lime stone and Dolomite samples.

Sl. No.	Parameters	Trace element concentrations in test samples			
		Unit	Iron Ore	Lime Stone	Dolomite
1	Pb	mg/kg	4.28	0.46	1.25
2	Cd	mg/kg	0.09	0.08	0.11
3	Cu	mg/kg	4.77	0.67	4.92
4	Ni	mg/kg	0.83	13.65	17.76
5	Co	mg/kg	18.07	21.34	16.57
6	Cr	mg/kg	65.24	41.0	53.64
7	Zn	mg/kg	16.34	3.68	27.41
8	Ag	mg/kg	0.14	0.25	0.29
9	Sb	mg/kg	0.68	0.29	0.20
10	Mo	mg/kg	0.08	0.18	0.06
11	V	mg/kg	12.88	2.47	16.85
12	Se	mg/kg	0.1	0.06	0.04
13	Ba	mg/kg	45.87	8.29	11.25
14	As	mg/kg	7.39	9.84	12.25
15	Hg	mg/kg	0.36	0.26	0.38
16	B	%	0.43	0.72	0.64

for Sectt 18/11/2022
(Dr. B. Nayak)
Chief Scientist
PL & Head, CCD

(J. Das)
Pr. Technical Officer
Central Characterization Dept.



Government of Odisha
DIRECTORATE OF FACTORIES AND BOILERS, ODISHA.
 KHARAVEL NAGAR, UNIT-3, BHUBANESWAR-751001, PH. NO. 2396070.

Letter No. IV (IH) (3)-149/11/ 3143 / Dated, the 19/10/2022

To

✓ The Occupier,
 M/s. TATA Steel Meramundali,
 At- Narendrapur, PO- Kusupanga, Meramundali,
 Dist. - Dhenkanal.

Sub: Acceptance of Updated On-Site Emergency Plan

Ref: Your letter Your L. No. TSM/DFBC/22/62 dated 12.08.2022.

Sir,

In inviting the reference on the subject cited above & in pursuance of provision under Rule 12 of the Odisha Factories (Control of Major Accident Hazard) Rules, 2001, the updated On-Site Emergency Plan of your MAH factory having identified **Hazardous substances LDO, HSD, LPG, LIQUID OXYGEN, HYDROGEN, NaOH, H₂SO₄ & TRANSFORMER OIL** bearing Sl.No. **176/22** is hereby provisionally accepted, subject to conditions as mentioned hereunder:-

01. Consequent upon any modification / alteration in future the On-Site Emergency plan shall be prepared and submitted for acceptance.
02. The **possible hazards** associated with the factory and '**Dos**' and '**Don'ts**' shall be displayed in prominent place adjacent to main gate & conspicuous places inside the factory with the measures to be taken in case of such incident.
03. Each key personnel of the command structure shall be provided with a **worksheet** containing their duties and responsibilities.
04. **Mock Drill** shall be scheduled through PARESHRAM portal at least once in every six months involving zonal Asst. Director of Factories and Boilers / Divisional Dy. Directors of Factories and Boilers concerned & DCG members.
05. Annual report on hold of Mock Drills shall be submitted to the authorities of District Administration under intimation to Assistant Director of Factories & Boilers/Deputy Director of Factories & Boilers/Director of Factories & Boilers
06. Awareness programmes on hazard & mitigation shall be made amongst workers and people living in the vicinity


The accepted copy of the updated On-Site Plan is sent herewith, the receipt of which may please be acknowledged and photocopy of the same be provided to the following authorities.

- Addl. Secretary to Govt. of Odisha, Home (Special Section) Department, Bhubaneswar.
- Principal Secretary to Govt. of Odisha, Labour & ESI Department, Bhubaneswar
- Collector & District Magistrate, Dhenkanal.
- Superintendent of Police, Dhenkanal.

F.T.O.

- District Fire Office, Dhenkanal.
- Chief Medical Officer, Dhenkanal.
- Asst. Director of Factories & Boilers, Dhenkanal Zone.
- Dy. Director of Factories & Boilers, Angul Division.

Yours faithfully,

Memo No. 3144 / Dated, the 19/10/2022  Director of Factories and Boilers, Odisha
Copy to the Asst. Director of Factories and Boilers Dhenkanal Zone / Dy. Director of Factories and Boilers, Angul Division for information and necessary action.


Dy. Director of Factories and Boilers, Safety

(-) copy to renewal file

PLANTATION DETAILS
(From April 2022 to September 2022)

S.NO	Month	Plantation in number		Cumulative In FY23
		Inside	Outside	
1	April 2022	40	0	40
2	May 2022	0	0	40
3	June 2022	643	0	683
4	July 2022	5915	0	6598
5	August 2022	12810	10	19418
6	September 2022	60	0	19478

CSR EXPENDITURE AND ACTIVITY HIGHLIGHTS (Around Tata Steel Limited, Meramandali) For Period April 2022 to September 2022		
PROGRAM HEAD	Expenditure in Lakhs	MAJOR INTERVENTIONS/REMARKS
Health	4.98	Mobile Medical Unit; Adolescent empowerment; Dengue/Malaria control
Drinking Water	54.20	Installation of tubewells; deep bore wells with overhead tank and pipeline system
EDUCATION	157.79	School infrastructure; Education project: QUEST
LIVELIHOOD	45.68	WEE Project; Other livelihood activities
INFRASTRUCTURE & MISC.	20.52	Construction & repair of road; Installation of solar lights
SPORTS	0.90	Volleyball coaching; Sports tournaments
TOTAL	284.07	Rs. 2.84 crores

**SUMMARY OF AMBIENT AIR QUALITY
MONTHLY AVERAGE VALUES**

Month	Pollutant	Standard	CAAQMS						
			# 01	# 02	# 03	# 04	# 05	# 06	# 07
April 2022	PM 10	100	59.7	211	112	103	66.0	71.2	90.0
	PM 2.5	60	9.8	60.5	29.1	34.1	31.3	30.9	34.5
	SO ₂	80	12.0	29.1	25.7	6.48	14.8	23.7	12.1
	NO _x	80	15.2	9.4	19.0	22.0	6.4	12.0	32.8
	CO	2	0.2	0.62	0.85	0.51	0.64	0.78	UM
May 2022	PM 10	100	42.3	186	51.8	77.0	54.0	78.4	71.3
	PM 2.5	60	11.8	52.8	21.5	30.5	27.7	41.3	28.1
	SO ₂	80	14.2	24.6	9.2	6.65	11.1	32.5	12.7
	NO _x	80	14.9	9.4	18.2	18.6	9.23	13.6	32.2
	CO	2	0.58	0.69	0.46	0.45	0.36	0.82	UM
June 2022	PM 10	100	30.6	133	73.6	89.6	46.8	96.6	59.8
	PM 2.5	60	9.1	40.7	14.8	32.5	23.9	38.7	23.0
	SO ₂	80	12.8	26.1	10.7	6.4	10.9	21.2	8.2
	NO _x	80	15.3	9.4	18.3	17.6	10.5	12.8	32.1
	CO	2	0.31	0.74	0.33	0.29	0.52	0.88	UM
July 2022	PM 10	100	17.3	37.4	31.1	58.1	31	55.9	62.0
	PM 2.5	60	6.6	12	8.5	21	14.9	22.6	27.2
	SO ₂	80	11.5	11.4	10.7	7.3	7.7	5.7	14.1
	NO _x	80	15.3	9.3	18.6	19.6	19.3	26.2	32.8
	CO	2	0.4	0.9	0.5	0.3	1.1	0.5	UM
August 2022	PM 10	100	15.4	43.2	27.1	62.2	33.8	69.2	86.4
	PM 2.5	60	8.3	13.6	19.5	27.0	16.6	21.8	57.4
	SO ₂	80	12.2	20.3	11.1	6.6	7.6	9.9	15.6
	NO _x	80	15.3	9.2	19.4	24.6	22.1	29.2	22.7
	CO	2	0.3	0.7	0.4	0.5	0.7	0.6	UM
September 2022	PM 10	100	50.9	94.5	46.2	77.6	38.6	87.5	83.0
	PM 2.5	60	27.5	27.7	28.5	23.0	22.7	23.2	36.2
	SO ₂	80	12.6	12.9	10.2	5.7	10.7	16.0	15.7
	NO _x	80	16.1	9.9	18.1	22.0	21.0	20.0	32.4
	CO	2	0.67	0.65	0.33	0.22	0.49	0.8	1.2

CAAQMS 1: Near Township; CAAQMS 2: Near Utility Department; CAAQMS 3: Near CRM; CAAQMS 4: Near Water Complex; CAAQMS 5: Near Coke Oven 2; CAAQMS 6: Near Wagon Tippler; CAAQMS 7: Near Material Gate, UM: Under Maintenance.

All values are in $\mu\text{g}/\text{m}^3$ except CO values are in mg/m^3 . All Values are derived from 24 hourly average data except CO values which are derived from 8 hourly average data.

SUMMARY OF WORK ZONE NOISE MONITERING

TATA STEEL LIMITED, MERAMANDALI

Period: From April to September 2022

SL	Name of the Unit	Location	Noise level in dB at 3 m.	Standard as per Factory Rule Govt of Odisha 1950 (8 Hrs.)
			Range	
1.	RMHS	Near RMHS-2EP-2Electrical building Area	80.2 to 84.2	90
		Near RMHS -2Yard No-4 ,5,6&7 Area	81.3 to 85	
		Near Yard No-2/3 Area	80.3 to 84.5	
2.	RMPP	Near CSB-1 I D Fan	84.2 to 85.2	90
		Near CSB-2 I D Fan	83.6 to 84.5	
		Near Pump house	73.2 to 83.6	
		Near Flip Flop Screen Area	78.4 to 84	
3.	Base Blending Plant	Near BB Plant Bunker ID fan-1	78.4 to 83.1	90
		Near BB Plant flux building ID fan-2	77.4 to 84.2	
		Near BB Plant coke screening building	68.9 to 85.7	
		Near BB Plant compressor house 1 &2	83.4 to 84.5	
		Near BB Plant Side Office	55.9 to 83.6	
4.	Coke Oven-1	Near Coal Pushing I D Fan area	75.4 to 76.9	90
		Near Stone Cutter Building area	75.3 to 89.6	
		Near M.H.S I.D fan	82.7 to 84.3	
		Near Battery-1 area	77.7 to 89.3	
		Near Battery-2 area	70.5 to 83.6	
5.	Coke Oven-02	Near Pusher car Emission control system I D Fan 1/2	80.2 to 82.7	90
		Near Guide car emission I D Fan 1/2	82.3 to 84.1	
		Near Exhauster house area	83.6 to 91.3	
		Near Water pumphouse area	83 to 88.2	
		Near Chemical Dosing E.T.P room area	73.8 to 83.6	
		Near Battery cellar ventilation blower	85.2 to 86.4	
		Near Battery coke oven gas de-graphitizing blower	81.2 to 86.3	
		Pushing emission control system ID fan	80.4 to 86.1	
6.	Sinter Plant-1	Near Main ID Fan-1	92.7 to 93.4	90.0
		Near Proper ting building area	71.4 to 84.7	
		Near Cooler fan area-1	84.2 to 84.5	
		Near Cooler fan area-2	83.6 to 84.4	
		Near Cooler fan area-3	84.2 to 85	
		Near Cooler fan area-4	84.8 to 85.7	
		Near 85m2 ESP IN D Fan area	84.3 to 88.1	
		Near 110m2 ESP ID fan area	84.2 to 84.8	
		Near Pump House Building area	80.4 to 86.4	
		Near bag filter ID fan area	83.2 to 85	

7.	Sinter Plant-02	Near Main ESP ID	83.1 to 85.4	90
		Near PD ESP ID fan	83.6 to 85.1	
		Near Cooler fan-1	84.1 to 85.6	
		Near Cooler fan-2	84.2 to 86.2	
		Near Cooler fan-3	84.3 to 86	
		Near M. N. D Area	69.3 to 84.7	
8.	Sinter Plant-03	Near Main ESP ID	84.2 to 85.4	90
		Near PD ESP ID fan	82.7 to 84.2	
		Near Cooler fan-1	83.1 to 85	
		Near Cooler fan-2	84.9 to 86	
		Near Cooler fan-3	84.3 to 85.7	
		Near M. N. D Area	69.4 to 84	
		Near I.D. fan-1 area	81.4 to 84	
9.	DRI	KILN NO-1		90
		Near Cooling tower area	84.3 to 85.1	
		Near De-dusting 01 ID Fan	83.2 to 90.2	
		KILN NO-2		
		Near Cooling tower area	75.4 to 79.4	
		KILN NO-3		
		Near Cooling tower area	77.3 to 85.4	
		Near De-dusting 02 ID Fan	83.3 to 85.6	
		KILN NO-4		
		Near Cooling tower area	82.7 to 85.1	
		KILN NO-5		
		Near Cooling tower area	77.4 to 85.1	
		Near De-dusting 03 ID Fan	83.7 to 86.3	
		KILN NO-6		
		Near Cooling tower area	76.7 to 85	
		KILN NO-7		
		Near Cooling tower area	73.4 to 85.3	
		Near De-dusting 04 ID Fan	82.7 to 87	
		KILN NO-8		
		Near Cooling tower area	82.7 to 85.2	
KILN NO-9				
Near Cooling tower area	80.2 to 85.1			
Near De-dusting 05 ID Fan	83.4 to 88.4			
KILN NO-10				
Near Cooling tower area	83.2 to 85			
10.	BF-2 Stock House	Near Motor I D fan-1	83.2 to 84.7	90
		Near Motor I D fan-2	83.6 to 85.1	
		Near Motor I D fan-3	84.1 to 85.2	
		Near Cooling tower area	76.5 to 85.3	
		Near Fire Pump House Building area	84.4 to 96.3	
		Near B F-2 Furnace area	79 to 84.3	
11.	BF-2 Stock House	Near ID fan -1	83.1 to 85.6	90
		Near ID fan -2	85.1 to 86.2	
12.	BF-1 Cast House	Near Motor I D fan-1 area	83.1 to 85.3	90
		Near Motor I D fan-2 area	84.1 to 85.3	
		Near Motor I D fan-3 area	83.4 to 85.3	
		Near Motor I D fan-4 area	82.7 to 85.4	
		Near secondary Cooling tower area	80.1 to 85	

		Near Mein Pump House Building area	83.6 to 89.6	
		Near B F-1 Furness area	76.4 to 84.2	
13.	BF-1 Stock House	Near Motor I D fan-1 area	84.2 to 85.4	90
		Near Motor I D fan-2 area	84.2 to 85.5	
		Near Fines building Area	73.4 to 84.6	
		Near Boiler-1 Area	83.6 to 84.7	
14.	Lime Plant	Near De dusting-2 ID fan	83.1 to 88.1	90
		Near Blower room area	88.5 to 113.6	
		Near Cooling tower area	75.9 to 89.7	
		Near De dusting-3 ID fan	73.5 to 83.7	
		Near Pump House area	83.4 to 88.1	
		Near Compressor building area	84.6 to 88.4	
15.	BOF Shop	Near Secondary ID fan area-1	85.4 to 88.5	90
		Near Secondary ID fan area-2	86.2 to 88.4	
		Near Secondary ID fan area-3	84.4 to 87.4	
		Near Secondary ID fan area-4	87.5 to 88.4	
		Near Cooling Tower area	85.2 to 99.8	
		Near Primary/ Secondary ID fan area-1/2	80.3 to 88.2	
		Near Weigh bridge area	79.9 to 84.2	
16.	SMS-2 FES 1&2	Near Motor ID fan -1	86.4 to 90.2	90
		Near Motor ID fan -3	86.5 to 90	
		Near Motor ID fan -4	86.3 to 92.4	
		Near Motor ID fan -5	86.1 to 91.2	
17.	HSM	Near COG Fan area-1/2	80.1 to 83	90
		Near RHF Office area	79.3 to 84.5	
		Near Roughing Mill area	82.7 to 89.1	
		Near Roll Shot area	80.7 to 88.1	
		Near Roll Shop area	75.8 to 83	
		Near HSM Quality Lab area	84.2 to 97.7	
		Near B F G Motor fan RHF area	78.4 to 88.8	
		Near Combustion fan area	84.3 to 86.2	
		Near Re-heating furnace area	78.9 to 84.3	
		Near COG Fan area-1/2	80.4 to 81.7	
18.	CRM	Near Air Receiver Tank area	84.7 to 97.3	90
		Near Fire water pump house area	82.7 to 86	
		Near ETP area	80.8 to 86.7	
		Near JP-1 Coil yard area	83.1 to 86.3	
		Near JP-2 Coil yard area	83 to 88	
		Near JP-3 Coil yard area	84.2 to 90.3	
		Near Hot Generator Area	83.2 to 85	
19.	BFPP-1 Boiler-2	Near ID Fan -1	80.4 to 84.2	90
		Near ID Fan-2	82.4 to 85.3	
		Near FD fan	86.5 to 88.4	
		Near Boiler-2 Area	84.2 to 92.5	
20.	BFPP-1 Boiler-3	Near ID Fan -1	83.1 to 85.4	90
		Near ID Fan -2	84.7 to 85.4	
		Near FD fan	86.4 to 88.4	
		Near Boiler-3 Area	85.2 to 90.3	
21.	BFPP-1 Compressor House	Near Entrance Point	90.5 to 95.2	90
		Near Equipment	98 to 99.1	

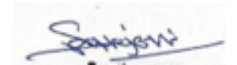
22.	BFPP-2 Boiler No-3	Near I.D. fan-2 area	82.7 to 85.2	90
		Near P.A. fan- area	86.4 to 88.5	
		Near S.A. fan- area	86.6 to 88.9	
		Near Boiler -3 area	83.4 to 86.6	
		Near cooling tower-area	82.1 to 86.2	
		Near I.D. fan-1 area	82.6 to 84.3	
		Near I.D. fan-2 area	83.3 to 84.3	
23.	BFPP-2 Boiler No-2	Near P.A. fan- area	85.4 to 87	90
		Near S.A. fan- area	85.3 to 87.1	
		Near Boiler -3 area	84.3 to 86.2	
		Near cooling tower-area	83.6 to 85.2	
24.	Gas fired boiler 60 TPH Area	Near ID fan -1	81.8 to 84.3	90
		Near ID fan -2	83.6 to 84.8	
		Near FD fan -1	82.5 to 85	
		Near FD fan -2	81.4 to 85	
		Near Boiler area	74.9 to 84.1	
25.	Gas fired boiler 125 TPH Area	Near ID fan -1	84.6 to 88.4	90
		Near ID fan -2	85.4 to 88.3	
		Near FD fan -1	85.1 to 88.2	
		Near FD fan -2	86.7 to 88.5	
		Near Boiler area	80.4 to 85.3	
26.	Gas fired boiler 250 TPH Area	Near ID fan -1/2 area	83.4 to 85.4	90
		Near FD fan -1/2 area	84.2 to 86.7	
		Near Boiler area	80.1 to 85.3	
27.	110 MW Power Plant	Boiler-01		90
		Near ID fan area	80.4 to 84.5	
		Near Boiler area	80.2 to 85.2	
		Boiler-02		
		Near Boiler area	88.6 to 91.9	
		Boiler-03		
		Near ID fan	82.7 to 84.8	
		Near Boiler area	79.2 to 85.6	
		Boiler-04		
		Near ID fan	83.1 to 85.3	
		Near Boiler area	84.5 to 86.2	
		Boiler-5		
		Near ID fan	80.4 to 82	
		Near Boiler area	76.4 to 85.4	
		Boiler-6		
		Near ID fan	82.7 to 84.3	
		Near Boiler area	81 to 86.3	
		Boiler-7		
		Near ID fan	83 to 85	
		Near Boiler area	79.3 to 86.1	
		Boiler-8		
		Near ID fan	81.4 to 84.5	
		Near Boiler area	84.5 to 86.4	
Boiler-9				
Near ID fan	82.5 to 85.3			
Near Boiler area	73.3 to 86.2			
Boiler-10				

		Near ID fan	83.1 to 84.8	
		Near Boiler area	75.6 to 85.4	
28.	Oxygen Plant-02	Near Nitrogen compressor House-1	105.3 to 108.2	90
		Near Nitrogen compressor House-2	105.4 to 108.5	
		Near Nitrogen compressor House-3	105.3 to 108.5	
		Near Air compressor House area-1	102.4 to 105.3	
		Near Control room office area	92.7 to 100.6	
		Near A/ C Package room area	82.1 to 85.4	
		Near Argon cold box area	80.7 to 84.9	
		Near Turbine-1 area	84.2 to 86.2	
29.	Centralize Compressor House -2	Near Entrance Point	88.4 to 90.5	90
		Near Exit Point	82.3 to 86.5	
		Near Equipment	88.1 to 97.1	
		Inside Shift office	60.4 to 64	
		Inside Operator office	66.3 to 71.3	
		Inside Store	67.3 to 76	

AMBIENT NOISE MONITERING
TATA STEEL LIMITED, MERAMANDALI

Period: April 2022 to September 2022

S.N	Location	Noise level in dB(A) Leq (Day time Range)	Standard dB(A) Leq (Day Time)	Noise level in dB(A) Leq (Night time Range)	Standard dB(A) Leq (Night Time)
1	Colony	51.3-53.9	55	43.6-46.9	45
2	CRM	56.6-69.2	75	53.9-63.3	70
3	Material Gate	56.9-67.8		52.7-61.4	
4	AEL	56.7-70.1		52.5-64.8	
5	Wagon Tripler	57.4-67.2		53.5-64.7	
6	Coke Oven-2	53.7-68.6		50.8-65.6	
7	Water Complex	55.8-69.5		50.2-65.1	



Authorized Signature

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

SPECIFIC CONDITION:

SL	CONDITIONS	COMPLIANCE STATUS
i	Efforts shall be made to reduce RSPM levels in the ambient air and a time bound action plan shall be submitted. Online ambient air quality monitoring and continuous stack monitoring facilities for all the stacks and sufficient air pollution control devices like ESP and Bag house etc. shall be provided to keep the emission levels below 100 mg/Nm ³ . Bag filters should be provided to the induction furnace to control the particulate emission below 100 mg/Nm ³ . Inter-locking system shall be provide to ESP's. Monitoring reports shall be submitted to the Ministry's Regional office at BBSR, CPCB, and OPCB on six monthly basis.	<ul style="list-style-type: none"> • 72 nos. of bag filter,29 nos. of ESP have been installed with each operating unit to reduce particulate matter levels in ambient air. Details list of pollution control devices is enclosed as Annexure-I. • 20 nos. online CEMS w.r.t gas and 37 nos. online CEMS w.r.t dust have been installed and operated continuously. • To monitor the ambient air quality, we have installed 7 numbers of Continuous Ambient Air Quality Monitoring Stations (CAAQMS) in the entire complex of Tata Steel Limited in consultation with SPCB, Odisha. • Six monthly monitoring report is being submitted regularly to MoEF&CC, CPCB and SPCB. • During FY21, detail analysis was done on the various point sources, line sources & area sources & implemented various improvement project e.g. installation of new technology power supply controller at Sinter plant (HFTR- High frequency transformer rectifier in process ESP & Micro pulse in dedusting ESP of sinter plant is the first of its kind technology application in ESP).
ii	Electrostatic precipitators (ESP's) to DRI plant, waste heat recovery boiler (WHRB) and fluidized bed boiler (FBB) and bag house to blast furnace (BF) shall be provided to control gaseous emission within 100 mg/Nm ³ . The gases from the DRI Kilns and BF after recovery of heat in WHRB shall be passed through ESP to control gaseous emissions. Smoke hood and fume extraction system with cyclone and bag filters should provided to IF, LRF and CCM to keep the dust in work zone environment within the permissible limit. Cyclone and bag filters shall be provided to SMS.	<p>Following facilities have been installed to control dust emissions:</p> <p>DRI & WHRB:</p> <ul style="list-style-type: none"> • The Plant has installed 10 nos. of DRI Kiln of 500 TPD each with WHRB system connected to 10 nos. of ESP at the hot end of the DRI Kiln and 5 nos. of De-dusting system at the cold end of the DRI kiln. <p>BLAST FURNACE:</p> <ul style="list-style-type: none"> • Two nos. of bag filter have been installed in Cast House and stock house. To keep the emission well within the norms. <p>IF, LRF & CCM:</p>

Compliance Status of Environmental Clearance for Expansion of Integrated Steel Plant (1.5 MTPA to 3.1 MTPA at Tata Steel Limited, Meramandali, District Dhenkanal, Odisha vide MoEF&CC File no. J-11011/829/2008-IA-II (I) dated 27.09.2008.

		<ul style="list-style-type: none"> Smoke hood and fume extraction system of adequate capacity have been provided to IF, LRF & CCM to keep the dust in work zone environment within the permissible limit. <p>SMS II:</p> <ul style="list-style-type: none"> Two nos. of fume extraction system along with cyclonic system and bag filters have been installed to take care of the fugitive emissions in the Steel Making Shop.
iii	All the standards prescribed for the coke oven plants shall be followed as per the latest guidelines. Proper and full utilization of coke oven gases in power plant using waste heat recovery steam generators shall be ensured and no flue gases should be discharged into the air.	<ul style="list-style-type: none"> All efforts are being taken to comply with the prescribed standards and guidelines for the coke oven facility, for which 4 and 11 nos. of bag filter installed in coke oven-1 and coke oven-2 respectively. Also, wastewater treatment plant (BOD plant) has been installed at both coke oven plant. The cleaned Coke Oven Gas (COG) is utilized in HSM, CO battery heating, Lime Plant, BF power plant and gas fired boiler for power generation. Provisions have also been made for storage of COG in gas holder tank of capacity 50,000 m³.
iv	Dry coke quenching method shall be adopted in the proposed recovery type of the coke oven within 5 years of grant of environmental clearance.	<ul style="list-style-type: none"> Dry quenching has been commissioned for Coke Oven – II and now in operation. However, commissioning of Dry Quenching at Coke Oven – I is in advance stage of progress and expected to be start operation by July 2023.
v	Gaseous emission levels including secondary fugitive emissions from all the sources shall be controlled within the latest permissible limits issued by the Ministry and regularly monitored. Guidelines / Code of Practice issued by the CPCB shall be followed.	<ul style="list-style-type: none"> 72 nos. of bag filter, 29 nos. of ESP have been installed with each operating unit to reduce particulate matter levels in ambient air. Details list of pollution control devices is enclosed as Annexure-I. Fugitive emission and stack emission monitoring is being carried out as per CPCB guidelines and record is being maintained. Monitoring report for the period April'22 to

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		September'22 is attached as Annexure-II and Annexure-III respectively.
vi	Bag filters, dust suppression system and extraction system shall be provided to raw materials handling areas, crusher house, junction towers, feed points, etc. to control fugitive emissions. Water sprinkling shall be done at loading and unloading points.	<ul style="list-style-type: none"> • Two bag filters, and adequate no. of DFDS and SFDS have been provided at coal circuit. • Five numbers of bag filters have also been provided in the iron ore circuit at crushing and screening points of raw material handling areas at the following locations: <ul style="list-style-type: none"> • Pneumatic dust handling system has been provided at ESP hoppers in the Sinter Plant-I. • Chain conveyor dust handling system has been provided at ESP hoppers of sinter plants II and III. • 266 numbers of nozzles in dry fog dust suppression system have been provided at 46 numbers of junction houses of raw material handling area to control dust emissions during loading and unloading of raw materials at site. • Further, 128 nos. of rotary gun sprinklers have been installed throughout the raw material handling yards. • 4 Nos. of mechanized road sweepers have been deployed for dry sweeping of roads and shop floors with dust suction facility.
vii	Vehicular pollution due to transportation of raw material and finished products shall be controlled. Proper arrangements shall also be made to control dust emissions during loading and unloading of the raw material and finished product.	<ul style="list-style-type: none"> • Vehicles carrying raw materials are being covered with tarpaulin. • Water sprinkling arrangement has been made by installation of 128 numbers of rotary gun sprinklers at raw material handling areas to control dust emissions during loading and unloading of raw materials at site. • Additionally, dry fog dust suppression system having 266 nos. of nozzles have been installed in entire coal circuit and at the unloading points of raw material handling area to control fugitive dust. • Four Nos. of wheel washing systems have been installed at RMHS, BFPP1, BFPP2 and DRI.

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viii	<p>Total water requirement should not exceed 1, 29,600 m³/day. Permission for drawl of 2,40,000 m³/day is obtained from Department of water resources, Govt. of Orissa, vide letter dated 4th December, 2003. No ground water shall be used. Closed circuit circulating/ cooling water shall be provided to reduce the water consumption. The wastewater from the de-mineralized (DM) plant shall be neutralized in neutralization pit. The wastewater from BF-GCP and coal washery shall be treated in thickener and used in the pig casting machine. Acidic and alkaline effluent from DM water plant shall be neutralized and reused in the plant through ash pond. Blow down from boilers and cooling tower shall be reused in the plant itself. All the other effluent shall be treated in effluent treated plant (ETP) and all the treated wastewater from process or for dust suppression, green belt development and various other activities at the sites. No wastewater shall be discharged outside the premises and zero effluent discharge shall be ensured. Domestic effluent shall be treated in existing sewage treatment plant (ETP) and used for green belt development.</p>	<ul style="list-style-type: none"> • Rate of water consumption during the period Apr'22 to Sep'22 water consumption for the Steel plant is approx. 2228 m³/hr. • All effluents are being treated in primary treatment plants (19 nos.) in steel plant attached with respective units and Effluent Treatment Plants (3 nos.) centrally. • Treated effluent is being reused for dust suppression, ash handling, make up for DRI & cooling towers and for green area development. • Process effluent after treatment is being reused. During the period Apr'22 to Sep'22, 3388658 m³ of water has been recycled. However, we are further improving the efficiency of the water management system by technology intervention to increase the utilization. • The sanitary sewage is being treated in 4 Sewage Treatment Plants and used for green belt development and low-end application in plant. • Rainwater harvesting pond of capacity 50000m³ with HDPE liner has been constructed to store & reuse rainwater. • Zero Effluent Discharge (ZED) project will be implemented by March 2024.
ix	<p>Phenolic effluent shall be treated in BOD plant and used for quenching of hot coke. Continuous monitoring of total organic compounds shall be done at the outlet of ETP (BOD plant)</p>	<ul style="list-style-type: none"> • The Phenolic effluent is being treated in the BOD plant and treated effluent is being reused for quenching of hot Coke at Coke Oven-I. • Online analyzer has been installed to have a check on the treated water quality of the effluent generated from the BOD Plant.

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x	DRI fines, coke breeze, sinter dust, GCP dust, SMS dust, Scale, Iron ore fines shall be used in sinter plant. The coal washery rejects and middling shall be used in AFBC based power plant and shall not be disposed off anywhere else. All the blast furnace slag shall be granulated and provided to cement manufactures for further utilization.	<ul style="list-style-type: none"> • DRI fines are being used in SMS and Sinter Dust, GCP dust, SMS dust, Scales, Iron Ore Fines are used in Sinter plant. • The entire quantity of blast furnace slag is dispatched to cement manufacturers based on long term MoU with the cement manufacturer. • Details of generation and utilization of Blast Furnace slag is given as Annexure-IV. • SMS slag is being used in sinter plant after processing in metal recovery plant. • Balance slag is being used for the soling of roads.
xi	AFBC plant shall be installed before installation of sponge iron plant so that utilization of char in the AFBC boiler is ensured. All the char from DRI plant shall be utilized in AFBC boiler of power plant and no char shall be disposed off anywhere else. Unusable scrap, coal and iron ore fines will be used in SMS. All the other solid wastes including broken refractory mass and kiln accretions shall be properly disposed off in environment- friendly manner.	<ul style="list-style-type: none"> • AFBC plant is not in operation. • Char is being stored in demarcated places and utilized in CFBC boiler. • All unusable scrap, coal and iron ore fines are being utilized in SMS. • Refractory mass and kiln accretions are being properly disposed off.
xii	All the slag from SMS, EAF, LRF and IF shall be used for land filling and road making only after passing through Toxic Chemical Leachability Potential (TCLP) test. Otherwise, slag shall be disposed in secured landfill as per CPCB guidelines. Used oil shall be sold to authorized recyclers/ re-processors only.	<ul style="list-style-type: none"> • The SMS slag (LD slag) is processed in material recovery plant (MRP) for separation of metallic from the non-magnetic part and sized for various applications. Some of the key applications of LD slag product are <ul style="list-style-type: none"> ➤ recovered metallics used in steel making process as a scrap, ➤ recovered fines used in sinter making process for replacement of lime, ➤ non-metallic utilization in cement manufacturing, road making, and hard sand applications. • Used oil is being sold to authorised recyclers/re-processors.

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xiii	Proper handling, storage, utilization and disposal of all the solid waste shall be ensured and regular report regarding toxic metal content in the waste material and its composition, end use of solid/hazardous waste shall be submitted to Ministry's Regional office at BBSR, CPCB and OPCB.	<ul style="list-style-type: none"> • Solid waste handling, storage, utilization and disposal are being done scientifically. The toxic metal content and compositional analysis of solid waste are being carried out regularly. The analysis report of solid waste is attached as Annexure-V. • Annual return of hazardous waste is being regularly submitted to SPCB Odisha. A copy of HW annual return for the period April'21 to March'22 is enclosed as Annexure-VI.
xiv	A time bound action plan shall be submitted to reduce solid waste its proper utilization and disposal.	<ul style="list-style-type: none"> • The solid wastes generated from various plant units are being efficiently recycled back within the plant processes. During FY22 overall solid utilization was 98%. Necessary steps are being taken for maximum utilization of solid waste.
xv	Proper utilization of fly ash shall be ensured as per Fly Ash Notification 1999 as amendment in 2003.	<ul style="list-style-type: none"> • The entire quantity of blast furnace slag is dispatched to cement manufacturers based on long term MoU with the cement manufacturer. • Details of generation and utilization of Blast Furnace slag are given as Annexure-IV. • The SMS slag (LD slag) is processed in material recovery plant (MRP) for separation of metallic from the non-magnetic part and sized for various applications. Some of the key applications of LD slag product are <ul style="list-style-type: none"> ➤ recovered metalics used in steel making process as a scrap, ➤ recovered fines used in sinter making process for replacement of lime, ➤ non-mag utilization in cement manufacturing, road making, and hard sand applications. • Fly ash brick and paver block have been manufactured inside the plant for use in construction activities including road construction etc. This is also helping in maximum utilization of fly ash. During the

Compliance Status of Environmental Clearance for Expansion of Integrated Steel Plant (1.5 MTPA to 3.1 MTPA at Tata Steel Limited, Meramandali, District Dhenkanal, Odisha vide MoEF&CC File no. J-11011/829/2008-IA-II (I) dated 27.09.2008.

		<p>period Apr'22 to Sep'22, 254236 Nos. of fly ash brick has been manufactured and utilized.</p> <ul style="list-style-type: none"> • 525932 Nos. of paver block has been manufactured and used in road construction in the plant. • Fly ash is also being supplied to <ul style="list-style-type: none"> ○ nearby fly ash brick manufacturing units, free of cost, for maximum utilization of ash. ○ Cement plants through rake & bulker. ○ Construction of national highway (NH-55). <p>Balance if any is being utilised in reclamation of low lying areas & abandoned stone quarries as per guidelines of CPCB/OSPCB after grant of necessary consents.</p>
xvi	As proposed, green belt shall be developed in 550 acres (33%) out of total 1, 664.5 acres in and around the plant as per the CPCB guidelines in consultation with DFO.	<ul style="list-style-type: none"> • Green belt development is under progress in and around the plant complex by planting indigenous species as per CPCB guidelines. Till Mar'22, 33.66% of area (This includes Plant, R&R and CSR) has been covered under green belt. Rapid afforestation using MiyaWaki method in consultation with IIT, Kharagpur has been initiated. • Plantation of saplings are done regularly based on the availability of vacant area. During the period Apr,22 to Sep,22 is 19478 nos. has been planted and details plantation is Annexure-VII • Proper maintenance of green coverage is being ensured throughout the year by a dedicated horticulture team.
xvii	All the recommendations made in the Charter on Corporate Responsibility for Environment Protection (CREP) for the steel plants shall be implemented.	<ul style="list-style-type: none"> • Tata Steel Limited has implemented all CREP recommendations.

Compliance Status of Environmental Clearance for Expansion of Integrated Steel Plant (1.5 MTPA to 3.1 MTPA at Tata Steel Limited, Meramandali, District Dhenkanal, Odisha vide MoEF&CC File no. J-11011/829/2008-IA-II (I) dated 27.09.2008.

GENERAL CONDITIONS:

SL	CONDITIONS	COMPLIANCE STATUS
i	The project authorities must strictly adhere to the stipulations made by the Orissa State Pollution Control Board and the State Government.	All relevant stipulations made by SPCB and the State Government are being complied with.
ii	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests.	<ul style="list-style-type: none"> • As per MoEF&CC notification as per the MoEF& CC Notification No. S.O.980(E) dated: 02.03.2021 “no increase in pollution load” (NIPL) was studied by expert agency for the followings and the same were verified by State Pollution Control Board. <ol style="list-style-type: none"> I. Enhancement of Hot Metal production from 3.919 MTPA to 5.0 MTPA vide OSPCB letter no. 246/IND-II-NOC-NIPL/24 dated 04.01.2022. CTO was granted vide letter No 16814/IND-I-CON-5440 dated 15.09.2022 with validity upto 31.03.2023 II. Installation of one no. of LRF of 190 T/heat and expansion of carrying capacity of two nos. of existing ladle from 180 T/heat to 190 T/heat vide OSPCB letter no.886/IND-II-NOC-NIPL/27 dated 20.01.2022. CTE application has been submitted.
iii	The gaseous emissions from various process units shall conform to the load/mass-based standards notified by this Ministry on 19th May, 1993 and standards prescribed from time to time. The State Board may specify more stringent standards for the relevant parameters keeping in view the nature of the industry and its size and location. At no time the emission level shall go beyond the prescribed standards. Interlocking facility shall be provided so that process can be automatically stopped in case emission level exceeds the limit.	<ul style="list-style-type: none"> • All the existing units have been provided with adequate air pollution control devices to keep the emission within the stipulated standards. • Results of gaseous emission levels from various stacks conform to the standards and a detailed monitoring report is enclosed as Annexure-III.
iv	At least four ambient air quality monitoring stations shall be established in the	<ul style="list-style-type: none"> • Seven CAAQM stations have been established in consultation with the SPCB

Compliance Status of Environmental Clearance for Expansion of Integrated Steel Plant (1.5 MTPA to 3.1 MTPA at Tata Steel Limited, Meramandali, District Dhenkanal, Odisha vide MoEF&CC File no. J-11011/829/2008-IA-II (I) dated 27.09.2008.

	downward direction as well as where maximum ground level concentration of PM10, SO2 and NOx are anticipated in consultation with the SPCB. Data on ambient air quality and stack emission shall be regularly submitted to this Ministry including its Regional Office at Bhubaneswar and the SPCB/CPCB once in six months.	in Tata Steel Meramandali complex. Half yearly reports are being submitted to the Regional Office of MoEF&CC, SPCB and CPCB at regular intervals. Summary of AAQ monitoring report is attached as Annexure-VIII . <ul style="list-style-type: none"> The last half yearly compliance report was submitted vide letter no. TSM/MoEF&CC/BS-01/2022-10/210 dated 31.05.2022.
v	In-plant control measures for checking fugitive emissions from all the vulnerable sources shall be provided. Further, specific measures like water sprinkling around the coal stock piles and asphaltting or concreting of the roads shall be done to control fugitive emission.	To have a control on fugitive emissions, following measures have taken: <ul style="list-style-type: none"> Installation of 10 nos. of bag filters at various junction houses. Continuous sprinkling of water is being done around the coal stockpiles. Water sprinkling arrangement has been made by installation of 128 numbers of rotary gun sprinklers at raw material handling areas to control dust emissions during loading and unloading of raw materials at site. Construction of Paved Quality Concrete (PQC) roads are being made within the plant premises and is being cleaned and maintained through mechanized housekeeping systems. Periodical water sprinkling on all the internal roads within the plant premises is being done as per the planned schedule. Double lip seals with dual sealing system have been installed. Installed dust collector system in conveyor line.
vi	Industrial waste water shall 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 form time to time. The treated waste water shall be utilized for plantation purpose.	<ul style="list-style-type: none"> The industrial as well as domestic wastewater is being treated and utilized for various purposes like slag quenching, coke quenching, dust suppression and green belt development inside the plant premises. The monitoring reports of Industrial wastewater are being submitted to SPCB/CPCB/MOEF&CC at regular intervals.

Compliance Status of Environmental Clearance for Expansion of Integrated Steel Plant (1.5 MTPA to 3.1 MTPA at Tata Steel Limited, Meramandali, District Dhenkanal, Odisha vide MoEF&CC File no. J-11011/829/2008-IA-II (I) dated 27.09.2008.

vii	The overall noise levels in and around the plant area shall be kept well within the standards 85 dB(A) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA Rules, 1989 viz. 75 dB (A) (daytime) and 70 dB (A) (night time).	<ul style="list-style-type: none"> Acoustic hoods, silencers, enclosures etc. on all sources of noise generation have been provided. Work zone noise monitoring is being carried out and record is being maintained. A report of ambient noise levels recorded within the premises is enclosed as Annexure-IX.
viii	Occupational health surveillance of the workers should be done on a regular basis and records maintained as per the Factories Act.	<ul style="list-style-type: none"> Occupational health surveillance of the workers is being periodically done. PME once in a year, Food handler test : Once in a year. Necessary PPEs are provided to all the employees including the contractual workers.
ix	The company shall develop surface rain water harvesting structures to harvest the rain water for utilization in the lean season besides recharging the ground water table.	<ul style="list-style-type: none"> Lagoons and HDPE pond have been constructed to harvest rainwater. This water is reused in the process when required. During the period April'22 to September'22, 49520 m3 of rainwater has been utilized in process. RWH potential has been studied by engaging an expert agency & the suggested projects are being implemented in phases. In the first phase 50000 Cum capacity storage pond has been constructed in the year 2021. Also, rainwater collected from DRI & RMHS area are channelized through drains into a series of storage pond (3 nos lagoons are in operation).
x	The project proponent shall also comply with all the environmental protection measures and safeguards recommended in the EIA/EMP report. Further, the company must undertake socio-economic development activities in the surrounding villages like community development programmes, educational programmes, drinking water supply and health care etc.	<ul style="list-style-type: none"> Compliance with all environmental protection measures as recommended in EIA / EMP report is ensured. Various socio-economic development programs covering education, safe drinking water, sports and health care etc are undertaken in nearby villages. A detailed breakup of CSR initiatives is enclosed as Annexure- X.
xi	The adequate funds shall be earmarked towards capital cost and recurring cost /	<ul style="list-style-type: none"> Adequate funds are being provided by the management for pollution control and to

Compliance Status of Environmental Clearance for Expansion of Integrated Steel Plant (1.5 MTPA to 3.1 MTPA at Tata Steel Limited, Meramandali, District Dhenkanal, Odisha vide MoEF&CC File no. J-11011/829/2008-IA-II (I) dated 27.09.2008.

	annum for environment pollution control measures to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government. The funds so provided shall not be diverted for any other purpose.	<p>meet recurring costs. Environmental requirements are given top priority for fund allocation and approval of capital projects.</p> <ul style="list-style-type: none"> • The funds earmarked for environment pollution control measures are not diverted for any other purpose. • The company has invested adequate capital expenditure to improve mix of clean power & also reduction of carbon emissions.
xii	The Regional Office of this Ministry at Bhubaneswar / CPCB/ OPCB shall monitor the stipulated conditions. A six monthly compliance report and the monitored data along with statistical interpretation shall be submitted to them regularly.	<ul style="list-style-type: none"> • The half yearly compliance report is being submitted to the Regional Office of the MoEF&CC, CPCB and SPCB. • The last half yearly compliance report was submitted vide our letter no. TSL/MoEF&CC/BS-01/2022-10/210 dated 31.05.2022.
xiii	The Project Proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB and may also be seen at Website of the Ministry of Environment and Forests at http://envfor.nic.in . This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same should be forwarded to the Regional office at Bhubaneswar.	<ul style="list-style-type: none"> • The advertisement was published in both Odia & English newspapers named “The Sambad” and “The New Indian Express” respectively. • The same has already been communicated to the Regional Office of MOEF&CC, Bhubaneswar vide letter no. BSL/ENV/10/08 dated 17.10.2008.
xiv	Project authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of commencing the land development work.	<ul style="list-style-type: none"> • Project was completed and in operation. Consent to Operate was granted vide letter no. 302/IND-I-CON-5440(Vol-VIII) dated 07.01.2014.

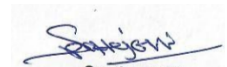
Annexure-I**DETAILS OF AIR POLLUTION CONTROL DEVICES**

SL	Process	Bag filters (Nos.)	ESP (Nos.)	Other Pollution Control Devices
1.	RMHS	02	-	Gun Sprinklers-128 nos.
2.	RMPP	07	-	DFS Nozzles-242 nos. Auto DFS-24nos.
3.	Coke oven - I	04	-	Scrubber-01 nos.
4.	Coke oven - II	11	-	Scrubber-04 nos.
5.	Sinter Plant-I	02	03	-
6.	Sinter plant - II	03	02	-
7.	Sinter plant - III	02	02	-
8.	DRI	03	15	-
9.	Blast Furnace-I	03	-	Scrubber-01 nos.
10.	Blast Furnace-II	04	-	Scrubber-01 nos.
11.	Lime Plant	10	-	-
12.	SMS-I	04	-	-
13.	SMS-II	07	-	-
14.	SMS-III	03	-	Scrubber-01 nos.
15.	BOF Briquetting Plant	07	-	-
16.	Blast Furnace Power Plant-I	-	03	-
17.	Blast Furnace Power Plant-II	-	04	-

SUMMARY OF FUGITIVE EMISSION RESULTS MONTHLY AVERAGE VALUES				
Period: April 2022 to September 2022				
TATA STEEL LIMITED				
Name of units	Location	PM 10 in µg/m³	Standard in µg/m³	
RMHS				
1.	Near JH-21 Yard-7 (Iron ore conveying)	836	2000	
2.	Coal Yard -7 Lucky Mineral Office	300		
3.	Infront of PCI building	316		
RMPP				
4.	Near tertiary Crushing & Screening Building Area	1343	2000	
5.	Near Iron Crusher Area	1540		
B.B. Plant				
6.	Storage building	1590	2000	
7.	Flux crushing and screen building	2415		
Coke Oven-I				
8.	Fine crusher station	542	4000	
9.	Secondary crusher	380		
Coke Oven-II				
10.	Coke treatment building	684	4000	
11.	Coal crushing building	1602		
DRI				
12.	Near PSB-1 building	3210	2000	
13.	Near PSB-2 building	3836		
14.	Near PSB-3 building	1873		
15.	Near PSB- 4 building	1373		
16.	Near PSB-5 building	1870		
Sinter Plant I				
17.	Near proportionating Building	570	2000	
18.	Near SP-1 Mixing House	1189		
Sinter Plant II				
19.	Near SP-2 chimney Backside area	1524		
20.	Near 7003 conveyor Belt	1410		
Sinter Plant III				
21.	Near cooler SP-3 D/15	426		
22.	Near Chiller Plant SP-2,3 & parking area	232		
Blast Furnace-I				
23.	Near Stock House	2213		4000
24.	Near Cast house Area	1045		
Blast Furnace-II				
25.	Near Cast house Entrance	300	3000	

Annexure-II

26.	Near Slug pit area	244	
27.	Stock House Near ECR Building	2318	
Lime Plant			
28.	Near Screen Area-1	1026	-
SMS-II			
29.	SMS-2 Furnace area	1225	4000
SMS-III			
30.	BOF Furnace area	638	3000
HSM			
31.	Near Coil Yard area	905	-
CRM			
32.	Near canteen area	125	-
BFPP-2			
33.	Near Ash silo Area	645	3000
BFPP-1			
34.	Near Ash silo Area	973	4000
110 MW			
35.	Near Ash silo Area	1220	-
IBMD			
36.	BOF sludge yard	105	
37.	Near Scarp dumping yard	253	-

**Authorized Signature**

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

SUMMARY OF STACK MONITORING

Period: From April to September 2022

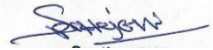
S.N.	Sampling Location	Apr'22	May'22	Jun'22	Jul'22	Aug'22	Sep'22	Standard
1	AFBC	SD						100
2	Sinter Plant -1(85 M2 ESP)	22	24	24	24	24	23	100
3	Blast Furnace –I, Cast House	12	12	11	10	13	10	100
4	Blast Furnace –I, Stock House	16	18	18	18	4	5	100
5	SMS- 1	SD						100
6	SMS 2 (FES 1)	21	14	8	4	5	4	100
7	SMS 2 (FES 2)	30	19	9	15	10	10	100
8	BFPP ESP 1	20	30	25	15	11	8	50
9	BFPP ESP 2	27	SD	26	17	SD	17	50
10	BFPP ESP 3	15	24	SD	8	19	34	50
11	Sinter Plant- 2	39	39	38	34	35	34	50
12	Sinter Plant- 3	38	40	38	39	37	39	50
13	SMS- 3 BOF (Secondary emission)	10	7	14	14	15	13	50
14	BFPP- 2 Boiler- 2 &3	15	12	14	9	10	12	50
15	Coke oven (Battery- 1)	33	35	35	35	36	37	50
16	Coke oven (Battery- 2)	21	29	28	25	19	14	50
17	Coke oven- 2 (Battery- 2)	35	31	33	31	32	33	50
18	Blast Furnace –2, Cast House	26	20	10	11	11	12	50
19	Blast Furnace –2, Stock House	6	9	5	4	5	3	50
20	WHRB-1	23	8	11	21	36	41	50
21	WHRB-2	SD						50
22	WHRB-3	43	34	32	SD		2	50
23	WHRB-4	31	15	13	12	20	SD	50
24	WHRB-5	22	18	24	22	29	42	50
25	WHRB-6	12	8	7	4	19	21	50
26	WHRB-7	30	17	SD	7	19	26	50
27	WHRB-8	22	4	6	8	18	SD	50
28	WHRB-9	15	13	13	SD	15	9	50
29	WHRB-10	9	21	17	11	18	14	50

SD- Shut Down

SUMMARY OF STACK MONITORING
 Period: From April 2022 to September 2022

S.N	Sampling Location	April'22		May'22		June'22		July'22		August'22		September'22	
		SO2	NOx	SO2	NOx	SO2	NOx	SO2	NOx	SO2	NOx	SO2	NOx
1	WHRB-1	SD		SD		SD		588	64.6	564	70.0	576	66.1
2	WHRB-2							SD		199	154		
3	WHRB-3			529	61.5	806	28.0						
4	WHRB-4			271	61.6	616	152	473	50.4				
5	WHRB-5	815	60.6	765	43.9	745	26.3	793	138	748	87.9	729	46.7
6	WHRB-6	SD		451	46.9	1039	87.6	389	29.5	1081	36.8	812	42.6
7	WHRB-7	245	98.9	SD		SD		734	56.8	613	58.2	342	55.9
8	WHRB-8	UM		UM		UM		466	34.9	472	33.8	SD	
9	WHRB-9	233	53.3	86.0	119.0	48.3	85.8	SD		517	178.7	643	27.1
10	WHRB-10	789	49.2	918	72.8	945.9	82.7	841	69.7	639	62.5	658	66.4
11	Sinter Plant- 2	320	154	211	107.8	74.9	22.4	240	128	325	187.7	334	155
12	Sinter Plant- 3	UM		UM		266	67.5	211	43.5	149	51.0	226	101.1
13	BF PP-1 (Boiler-1)	721	196	756	167.0	842	172	502	90.4	754	112	304	33.9
14	BF PP-1 (Boiler-2)	600	334	SD		601	439	470	146	SD		618	313
15	BF PP-1 (Boiler-3)	1210	415	865	305	SD		925	174	990	340	988	423
16	BFPP- 2 Boiler- 2 & 3	1348	50.0	731	51.3	731	51.4	976	65.0	745.5	62.9	738	30.2
17	Coke oven (Battery-1)	474	409	130	368.3	563.4	352	327	173	34.4	184.7	327	173
18	Coke oven (Battery-2)	73.0	445	71.0	371.2	76.4	412	82.7	438	87.7	347.4	82.7	438
19	Coke oven-2 Battery	49.1	78.2	34.7	65.3	85.6	70.87	124	77.8	130.0	65.8	124	77.8

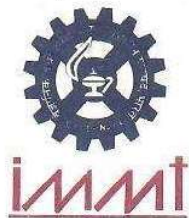
SD: Shut Down; UM: Under Maintenance


Authorized Signature

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

**Details of Slag Generation and Utilization
In
Blast Furnace – 1 & 2**

Month	Quantity Generated (MT)	Quantity Dispatched (MT)
Apr'22	154096	203659
May'22	150892	160272
Jun'22	152170	143344
Jul'22	155192	153186
Aug'22	137648	109875
Sep'22	140012	163967
Total	890010	934303



सीएसआइआर - खनिज एवं पदार्थ प्रौद्योगिकी संस्थान

(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद)

भुवनेश्वर-751013, ओडिशा, भारत

CSIR - INSTITUTE OF MINERALS & MATERIALS TECHNOLOGY

(Council of Scientific & Industrial Research)

Bhubaneswar - 751013, Odisha, INDIA

TEST REPORT

Ref. No. IMMT/CCD/07/2021

Date: 30.07.2021

Name & Address of the Party:

Tata Steel BSL Ltd.
At-Narendrapur, P.O.-Kusupanga
Via-Meramandali, Dist-Dhenkanal

Sample Details:

1. Fly ash, BFPP-1 2. Bed ash, BFPP-1
3. Fly ash, BFPP-2 4. Bed ash, BFPP-2

Date of Receiving:

25.06.2021

Date(s) of Conducting Test:

30.06.2021

Date of Completion of Test:

23.07.2021

Method Adopted: 1. Major element analysis of ash samples through wet chemical route by using Volumetric, gravimetric, photometric, nephelometric, AAS and ICP-OES techniques.
2. TCLP study of ash samples as per US-EPA method 1311 or ASTM-D5233-92. Leaching solution analysis by ICP-OES and AAS.

Detail Report: Following data tables are enclosed

Table-1. Chemical composition analysis of fly ash and bed ash samples.

Table-2. Experimental variables for Toxicity Characteristic Leaching Procedure (TCLP) study of Ash samples conducted as per US-EPA method 1311.

Table-3. Trace element analysis of TCLP or WET Procedure solutions of Ash samples; leaching studies conducted as per US-EPA method 1311 and Appendix II of section 66261 of Title 22 of California Code Regulations (CCR).

(J. Das)

Principal Technical Officer
Central Characterization Dept.

N.B.- The samples are not drawn by CSIR-IMMT. Liability, if any, for CSIR/IMMT arising in connection with the testing shall be subject to ceiling of amount received by the institute from the client. The report should not be interpreted in part.



सीएसआईआर - खनिज एवं पदार्थ प्रौद्योगिकी संस्थान
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TEST REPORT

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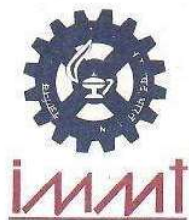
Date: 30.07.2021

Table-1. Chemical composition analysis of fly ash and bed ash samples.

Sl. No.	Component	Concentration in Test Samples, %			
		Fly Ash, BFPP-1	Bed Ash, BFPP-1	Fly Ash, BFPP-2	Bed Ash, BFPP-2
1	SiO ₂	49.85	52.45	56.4	54.9
2	Al ₂ O ₃	25.8	24.6	16.8	17.5
3	Fe ₂ O ₃	2.64	3.66	4.35	5.18
4	TiO ₂	1.38	1.41	0.88	0.79
5	MnO ₂	0.02	0.04	0.11	0.16
6	CaO	1.66	2.34	4.99	7.67
7	MgO	0.97	1.12	1.10	2.21
8	Na ₂ O	1.39	1.37	1.21	1.16
9	K ₂ O	1.18	1.29	1.20	1.14
10	Cr ₂ O ₃	0.018	0.017	0.031	0.027
11	NiO	0.004	0.005	0.005	0.003
12	CuO	0.009	0.009	0.007	0.004
13	ZnO	0.008	0.009	0.017	0.007
14	BaO	0.046	0.049	0.036	0.031
15	P ₂ O ₅	0.38	0.34	0.32	0.21
16	SO ₃	0.27	0.10	0.15	0.43
17	Cl ⁻	0.38	0.64	0.21	0.42
18	LOI	6.56	2.37	3.34	3.70
19	F ⁻ , mg/L	0.94	1.23	1.65	1.79

(J. Das)

Principal Technical Officer
Central Characterization Dept.



सीएसआइआर - खनिज एवं पदार्थ प्रौद्योगिकी संस्थान
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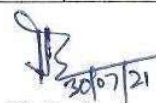
TEST REPORT

Ref. No. IMMT/CCD/07/2021

Date: 30.07.2021

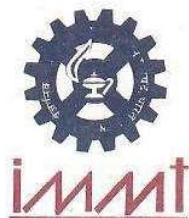
Table-2. Experimental variables for Toxicity Characteristic Leaching Procedure (TCLP) study of Ash samples conducted as per US-EPA method 1311.

Sl. No.	TCLP study Variables	Variable Data			
		Fly Ash, BFPP-1	Bed Ash, BFPP-1	Fly Ash, BFPP-2	Bed Ash, BFPP-2
1	TCLP study method	US-EPA Method-1311			
2	Sample type	Dust, Particle size < 100 µm	Dust and Gravels, Particle size < 8 mm	Dust, Particle size < 100 µm	Dust and Gravels, Particle size < 8 mm
3	Sample particle size taken for leaching	Original sample	Original sample	Original sample	Original sample
4	Initial pH of samples	9.11	12.29	10.30	12.41
5	pH after HCl + heat	2.04	10.13	2.37	11.29
6	Extraction fluid used	Extraction fluid -1	Extraction fluid -2	Extraction fluid -1	Extraction fluid -2
7	pH of Extraction fluids	4.94	2.90	4.94	2.90
8	Sample taken for leaching, gm	50			
9	Volume of extraction fluid used, ml	1000			
10	Liquid/solid ratio	20:1			
11	Head space	10 %			
12	Extraction Temperature °C	28			
13	Extraction Time, hour	18			
14	Filter	Glass micro fiber, Whatman GF/C			
15	Washing of filters	With dil. HNO ₃ and distilled water			
16	pH of recovered extraction fluid	5.12	4.78	4.95	5.66



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Date: 30.07.2021

Table-3. Trace element analysis of TCLP or WET Procedure solutions of Ash samples; leaching studies conducted as per US-EPA method 1311 and Appendix II of section 66261 of Title 22 of California Code Regulations (CCR).

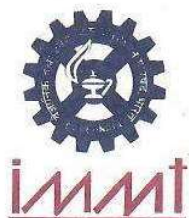
Sl. No.	Component	Concentrations in TCLP or WET* leaching solutions of Ash test samples (mg/L)				Waste constituents concentration limits of TCLP or STLC. US-EPA and California Code of Regulations (mg/L)
		Fly Ash, BFPP-1	Bed Ash, BFPP-1	Fly Ash, BFPP-2	Bed Ash, BFPP-2	
1	Hg	0.005	0.004	0.004	0.003	0.2
2	As	0.034	0.054	0.041	0.025	5.0
3	Se	0.080	0.044	0.085	0.047	1.0
4	Sb*	0.056	0.049	0.038	0.021	15.0
5	Ba	0.46	0.20	0.38	0.27	100.0
6	Cd	0.001	0.002	0.001	0.002	1.0
7	Cr	0.026	0.021	0.031	0.025	5.0
8	Cr (VI)	0.012	0.009	0.015	0.010	5.0
9	Pb	0.024	0.028	0.024	0.016	5.0
10	Mn	0.42	0.31	0.69	0.27	10.0
11	Ag	0.012	0.009	0.034	0.008	5.0
12	Co*	0.18	0.14	0.16	0.13	80.0
13	Cu*	0.51	0.16	0.55	0.12	25.0
14	Mo*	0.19	0.54	0.29	0.06	350
15	Ni*	0.31	0.19	0.31	0.16	20.0
16	V*	1.23	0.39	1.72	0.31	24.0
17	Zn*	0.64	0.13	1.12	0.09	250

Remark: The TCLP and WET leaching solution analyses of fly ash and bed ash samples reveal that trace element concentrations are much below the Waste constituent concentration limits. Therefore, the ash samples are non-hazardous materials and their use as land filling or mine void dumping will not have any adverse effect on the ground water quality in respect of the analyzed parameters and no separate lining is required for dumping of the tested ash samples.


30/07/21

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TEST REPORT

Ref. No. IMMT/CCD/08/2021

Date: 03.08.2021

Name & Address of the Party:

Tata Steel BSL Ltd.
At-Narendrapur, P.O.-Kusupanga
Via-Meramandali, Dist-Dhenkanal

Sample Details:

Solid Waste samples (17 Nos.)

Date of Receiving:

02.06.2021

Date(s) of Conducting Test:

07.06.2021

Date of Completion of Test:

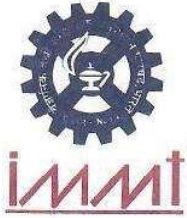
23.07.2021

Method Adopted: 1. Major element analysis of Solid waste samples through wet chemical route by using Volumetric, gravimetric, photometric, nephelometric, AAS and ICP-OES techniques.
2. TCLP study of waste samples as per US-EPA method 1311 or ASTM-D5233-92.
Leaching solution analysis by ICP-OES and AAS.

Detail Report: Following data tables are enclosed

- Table-1.** Physical characteristics analysis of Solid Waste samples of Tata Steel BSL Limited, Meramandali
- Table-2.** Size (Sieve) analysis of Solid Waste samples of Tata Steel BSL Limited, Meramandali
- Table-3.** Chemical composition analysis of Solid Waste samples of Tata Steel BSL Limited, Meramandali
- Table-4(a)** Experimental variables for Toxicity Characteristic Leaching Procedure (TCLP) study of Solid Waste samples (SW1, SW2, SW3, SW4, SW5 & SW8) conducted as per US-EPA method 1311.
- Table-4(b)** Trace element analysis of TCLP or WET Procedure solutions of Solid waste samples(SW1, SW2, SW3, SW4, SW5 & SW8); Leaching studies conducted as per US-EPA method 1311 and Appendix II of section 66261 of Title 22 of California Code Regulations (CCR).
- Table-5(a)** Experimental variables for Toxicity Characteristic Leaching Procedure (TCLP) study of Solid Waste samples (SW9, SW10, SW11, SW12, SW13 & SW14) conducted as per US-EPA method 1311.
- Table-5(b)** Trace element analysis of TCLP or WET Procedure solutions of Solid waste samples(SW9, SW10, SW11, SW12, SW13 & SW14); Leaching studies conducted as per US-EPA method 1311 and Appendix II of section 66261 of Title 22 of California Code Regulations (CCR).

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Table-6(a) Experimental variables for Toxicity Characteristic Leaching Procedure (TCLP) study of Solid Waste samples (SW15, SW17, SW18, SW19 & SW20) conducted as per US-EPA method 1311.

Table-6(b) Trace element analysis of TCLP or WET Procedure solutions of Solid waste samples (SW15, SW17, SW18, SW19 & SW20); Leaching studies conducted as per US-EPA method 1311 and Appendix II of section 66261 of Title 22 of California Code Regulations (CCR).

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N.B.:- The samples are not drawn by CSIR-IMMT. Liability, if any, for CSIR/IMMT arising in connection with the testing shall be subject to ceiling of amount received by the institute from the client. The report should not be interpreted in part.



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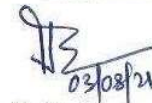
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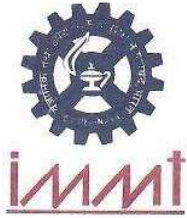
Table-1. Physical characteristics analysis of Solid Waste samples of Tata Steel BSL Limited, Meramandali.

Sl. No.	Sample ID.	Concentration in Test Solid waste samples			
		pH	Bulk Density, (g/cc)	Dry Matter, %	Volatile Matter, %
1	SW-1 (ETP-1 Sludge)	7.86	0.62	97.5	14.7
2	SW-2 (ETP-2 Sludge)	8.07	0.69	98.1	12.0
3	SW-3 (ETP-3 Sludge)	8.31	0.71	98.4	18.9
4	SW-4 (CRM ETP Sludge)	8.45	0.65	94.5	37.8
5	SW-5 (BOD -1 Sludge)	6.71	0.75	86.5	47.8
6	SW-8 (BF-1 Flue Dust)	9.08	2.04	99.5	3.18
7	SW-9 (BF-2 Flue Dust)	10.4	1.61	99.6	3.44
8	SW-10 (BOF GCP Dust)	11.2	1.15	99.0	2.75
9	SW-11 (DRI Cold ESP Dust)	10.9	0.76	98.1	4.50
10	SW-12 ((DRI Wet Scrapper Dust)	9.57	0.85	97.7	4.67
11	SW-13 (SMS Slag)	12.2	1.86	99.9	0.47
12	SW-14 (BF Granulated Slag)	9.60	1.29	99.8	0.41
13	SW-15 (Lime Plant De-dusting Dust)	12.5	0.78	99.7	14.3
14	SW-17 (Mill Scale)	8.61	2.89	99.9	0.09
15	SW-18 (SMS-II FES Dust)	12.6	1.41	99.8	4.24
16	SW-19 (BF-1 GCP Dust)	9.26	1.02	99.5	4.16
17	SW-20 (BF-2 GCP Dust)	9.47	1.25	99.2	5.17



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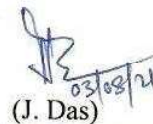
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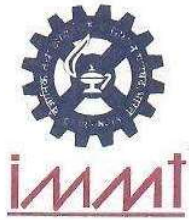
Table-2. Size (Sieve) analysis of Solid Waste samples of Tata Steel BSL Limited, Meramandali

Sl. No.	Sample ID	Sieve Fractions							
		+2 mm	-2+1 mm	-1+500 micron	-500+250 micron	-250+150 micron	-150+75 micron	-75+45 micron	-45 micron
1	SW-1	73.95	9.31	5.62	3.50	0.80	1.32	1.42	4.08
2	SW-2	62.59	16.21	8.68	4.09	0.42	0.38	0.90	6.74
3	SW-3	36.28	11.91	10.09	9.46	6.25	6.67	11.89	7.46
4	SW-4	88.51	6.70	2.84	0.93	0.52	0.50	0	0
5	SW-5	83.54	11.30	3.49	0.42	0.87	0.16	0.10	0.11
6	SW-8	6.05	3.02	3.77	3.75	4.78	11.69	13.44	53.48
7	SW-9	0	0.09	0.25	0.51	1.91	29.37	56.56	11.30
8	SW-10	33.52	15.92	15.29	11.98	5.10	6.67	8.29	3.22
9	SW-11	6.40	7.13	4.61	5.65	3.44	14.33	40.13	18.31
10	SW-12	5.12	4.75	7.91	10.29	11.28	23.15	17.61	19.89
11	SW-13	57.97	9.22	6.74	4.73	3.00	5.44	3.53	9.38
12	SW-14	2.31	12.91	43.91	16.23	4.56	6.46	5.05	8.57
13	SW 15	0.93	0.63	0.96	1.47	2.50	15.33	52.18	26.00
14	SW-17	39.15	13.71	12.83	16.48	8.68	6.29	2.09	0.77
15	SW-18	0.49	1.06	2.55	7.33	47.34	21.35	12.43	7.46
16	SW-19	45.08	3.33	2.71	3.70	7.08	17.62	10.22	10.26
17	SW-20	29.96	12.53	5.22	3.78	7.02	17.35	13.72	10.42

N. B.: SW1-ETP-1 Sludge, SW2-ETP-2 Sludge, SW3-ETP-3 Sludge, SW4-CRM ETP Sludge, SW5-BOD-1 Sludge, SW8-BF-1 Flue Dust, SW9-BF-2 Flue Dust, SW10-BOF GCP Dust, SW11-DRI Cold ESP Dust, SW12-DRI Wet Scrapper Dust, SW13-SMS Slag, SW14-BF Granulated Slag, SW15-Lime Plant De-dusting Dust, SW17-Mill Scale, SW18-SMS-II FES Dust, SW19-BF-1 GCP Dust & SW20-BF-2 GCP Dust


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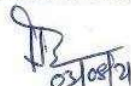
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Table-3. Chemical composition analysis of Solid Waste samples of Tata Steel BSL Limited, Meramandali.

Sl. No.	Sample Ids.	Concentration in Test Solid waste samples, %													
		SiO ₂	Al ₂ O ₃	Fe (T)	TiO ₂	MnO	CaO	MgO	Na ₂ O	K ₂ O	P ₂ O ₅	SO ₃	C	Cl	LOI
1	SW-1	39.21	23.32	10.3	0.36	0.049	0.78	1.21	0.41	1.65	0.06	0.28	3.51	0.23	16.28
2	SW-2	37.91	19.30	12.5	0.94	0.085	5.07	1.40	0.65	1.24	0.16	0.07	6.02	0.29	16.46
3	SW-3	9.07	4.01	5.11	0.21	0.038	3.16	0.94	0.40	0.69	0.001	0.85	56.0	0.16	73.22
4	SW-4	2.40	1.15	3.72	0.03	0.10	21.81	2.54	1.22	0.52	0.45	0.17	17.5	1.13	42.75
5	SW-5	1.29	2.02	16.2	0.19	0.021	0.69	0.62	1.29	0.65	0.001	7.70	30.6	0.48	75.98
6	SW-8	4.17	1.88	59.15	0.10	0.093	2.09	0.58	1.47	1.02	0.001	0.82	2.12	0.40	3.18
7	SW-9	4.18	1.79	57.7	0.09	0.056	2.28	0.74	1.13	1.37	0.001	1.78	10.24	0.13	11.4
8	SW-10	4.32	1.78	53.1	0.12	0.095	12.45	4.02	1.16	0.97	0.001	0.31	0.85	0.075	2.75
9	SW-11	24.28	12.61	10.98	0.56	0.039	5.36	2.32	1.29	1.16	0.35	2.49	33.4	0.09	35.57
10	SW-12	12.76	7.96	22.74	0.39	0.025	2.60	0.71	1.19	0.99	0.20	0.42	30.3	0.03	46.21
11	SW-13	13.42	1.78	26.7	0.84	0.022	45.22	10.80	1.58	0.88	1.20	0.20	0.07	0.27	0.52
12	SW-14	32.99	15.58	1.10	0.71	0.065	31.77	9.14	1.55	1.34	0.001	1.61	0.24	0.14	0.61
13	SW-15	2.41	1.12	2.68	0.10	0.066	45.63	12.8	3.01	0.89	0.03	0.26	5.01	0.58	23.15
14	SW-17	0.09	0.32	65.4	0.01	0.012	0.20	0.99	1.33	0.74	0.001	0.03	0.13	0.05	2.47
15	SW-18	1.94	0.96	54.7	0.08	0.011	11.51	3.38	1.81	1.87	0.001	1.28	1.50	2.68	4.24
16	SW-19	10.84	3.21	32.9	0.17	0.046	2.74	1.31	1.36	0.93	0.001	1.01	27.7	0.31	31.6
17	SW-20	14.65	1.94	29.3	0.15	0.049	3.44	1.45	1.33	0.87	0.001	1.46	30.7	0.45	35.71

N. B.: SW1-ETP-1 Sludge, SW2-ETP-2 Sludge, SW3-ETP-3 Sludge, SW4-CRM ETP Sludge, SW5-BOD-1 Sludge, SW8-BF-1 Flue Dust, SW9-BF-2 Flue Dust, SW10-BOF GCP Dust, SW11-DRI Cold ESP Dust, SW12-DRI Wet Scrapper Dust, SW13-SMS Slag, SW14-BF Granulated Slag, SW15-Lime Plant De-dusting Dust, SW17-Mill Scale, SW18-SMS-II FES Dust, SW19-BF-1 GCP Dust & SW20-BF-2 GCP Dust


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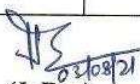
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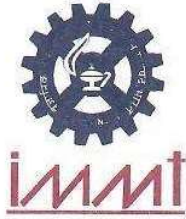
Date: 03.08.2021

Table-4(a). Experimental variables for Toxicity Characteristic Leaching Procedure (TCLP) study of Solid Waste samples conducted as per US-EPA method 1311.

Sl. No.	TCLP study Variables	Variable Data					
		SW 1	SW 2	SW3	SW 4	SW 5	SW 8
1	TCLP study method	US-EPA Method-1311					
2	Sample type	Dust and Gravels, Particle size < 8 mm	Dust and Gravels, Particle size < 8 mm	Dust and Gravels, Particle size < 8 mm	Dust and Gravels, Particle size < 8 mm	Dust and Gravels, Particle size < 8 mm	Dust and Gravels, Particle size < 8 mm
3	Sample particle size taken for leaching	Original sample	Original sample	Original sample	Original sample	Original sample	Original sample
4	Initial pH of samples	7.86	8.07	8.31	8.45	6.71	9.08
5	pH after HCl + heat	3.01	5.69	6.82	7.15	4.16	3.67
6	Extraction fluid used	Extraction fluid -1	Extraction fluid -2	Extraction fluid -2	Extraction fluid -2	Extraction fluid -1	Extraction fluid -1
7	pH of Extraction fluid	4.91	2.88	2.88	2.88	4.91	4.91
8	Sample taken for leaching, gm	50					
9	Volume of extraction fluid used, ml	1000					
10	Liquid/solid ratio	20:1					
11	Head space	10 %					
12	Extraction Temperature °C	28					
13	Extraction Time, hour	18					
14	Filter	Glass micro fiber, Whatman GF/C					
15	Washing of filters	With dil. HNO ₃ and distilled water					
16	pH of recovered extraction fluid	4.75	4.47	4.46	4.52	4.65	4.78


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Table-4(b). Trace element analysis of TCLP or WET Procedure solutions of Solid waste samples; leaching studies conducted as per US-EPA method 1311 and Appendix II of section 66261 of Title 22 of California Code Regulations (CCR).

Sl. No.	Component	Concentrations in TCLP or WET* leaching solutions of Solid Waste test samples (mg/L)						Waste constituents concentration limits of TCLP or STLC. US-EPA and California Code of Regulations (mg/L)
		SW1	SW2	SW3	SW4	SW5	SW8	
1	Hg	0.002	0.004	0.003	0.002	0.002	0.004	0.2
2	As	0.019	0.037	0.032	0.010	0.015	0.001	5.0
3	Se	0.047	0.067	0.056	0.036	0.169	0.011	1.0
4	Sb*	0.044	0.039	0.045	1.13	0.001	0.11	15.0
5	Ba	0.37	1.39	1.16	0.08	0.13	0.07	100.0
6	Cd	0.002	0.002	0.008	0.001	0.001	0.001	1.0
7	Cr	0.019	0.018	0.026	0.513	0.023	0.025	5.0
8	Pb	0.021	0.027	0.126	0.021	0.025	0.013	5.0
9	Mn	0.29	5.04	3.66	1.72	0.57	2.12	10.0
10	Ag	0.001	0.001	0.001	0.003	0.002	0.003	5.0
11	Co*	0.21	0.18	0.15	0.21	0.19	0.21	80.0
12	Cu*	0.53	0.02	9.6	0.04	12.3	0.05	25.0
13	Mo*	0.071	0.074	0.052	0.175	0.002	0.008	350
14	Ni*	0.27	0.22	0.25	1.04	0.49	0.24	20.0
15	V*	1.07	1.32	0.46	0.23	0.001	0.74	24.0
16	Zn*	2.62	1.05	3.39	2.33	0.73	2.86	250
17	F*	0.67	1.03	1.21	2.69	38.6	19.5	180

Remark: The TCLP and WET leaching solution analyses of Solid Waste samples reveal that trace element concentrations are much below the Waste constituent concentration limits.


(J. Das)

Principal Technical Officer
Central Characterization Dept.



सीएसआइआर - खनिज एवं पदार्थ प्रौद्योगिकी संस्थान

(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद)

भुवनेश्वर-751013, ओडिशा, भारत

CSIR - INSTITUTE OF MINERALS & MATERIALS TECHNOLOGY

(Council of Scientific & Industrial Research)

Bhubaneswar - 751013, Odisha, INDIA

TEST REPORT

Ref. No. IMMT/CCD/08/2021

Date: 03.08.2021

Table-5(a). Experimental variables for Toxicity Characteristic Leaching Procedure (TCLP) study of Solid Waste samples conducted as per US-EPA method 1311.

Sl. No.	TCLP study Variables	Variable Data					
		SW9	SW10	SW11	SW12	SW13	SW14
1	TCLP study method	US-EPA Method-1311					
2	Sample type	Dust and Gravels, Particle size < 8 mm	Dust and Gravels, Particle size < 8 mm	Dust and Gravels, Particle size < 8 mm	Dust and Gravels, Particle size < 8 mm	Dust and Gravels, Particle size < 8 mm	Dust and Gravels, Particle size < 8 mm
3	Sample particle size taken for leaching	Original sample	Original sample	Original sample	Original sample	Original sample	Original sample
4	Initial pH of samples	10.3	11.2	10.9	9.57	12.2	9.60
5	pH after HCl + heat	3.34	5.61	9.64	8.13	11.9	3.81
6	Extraction fluid used	Extraction fluid -1	Extraction fluid -2	Extraction fluid -2	Extraction fluid -2	Extraction fluid -2	Extraction fluid -1
7	pH of Extraction fluid	4.91	2.88	2.88	2.88	2.88	4.91
8	Sample taken for leaching, gm	50					
9	Volume of extraction fluid used, ml	1000					
10	Liquid/solid ratio	20:1					
11	Head space	10 %					
12	Extraction Temperature °C	28					
13	Extraction Time, hour	18					
14	Filter	Glass micro fiber, Whatman GF/C					
15	Washing of filters	With dil. HNO ₃ and distilled water					
16	pH of recovered extraction fluid	4.95	5.09	5.04	4.82	4.54	4.55

J. Das
(J. Das)

Principal Technical Officer
Central Characterization Dept.



सीएसआइआर - खनिज एवं पदार्थ प्रौद्योगिकी संस्थान

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TEST REPORT

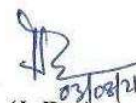
Ref. No. IMMT/CCD/08/2021

Date: 03.08.2021

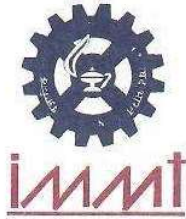
Table-5(b). Trace element analysis of TCLP or WET Procedure solutions of Solid waste samples; leaching studies conducted as per US-EPA method 1311 and Appendix II of section 66261 of Title 22 of California Code Regulations (CCR).

Sl. No.	Component	Concentrations in TCLP or WET* leaching solutions of Solid Waste test samples (mg/L)						Waste constituents concentration limits of TCLP or STLC. US-EPA and California Code of Regulations (mg/L)
		SW9	SW10	SW11	SW12	SW13	SW14	
1	Hg	0.002	0.004	0.004	0.003	0.005	0.001	0.2
2	As	0.002	0.006	0.002	0.029	0.003	0.023	5.0
3	Se	0.049	0.011	0.002	0.063	0.052	0.051	1.0
4	Sb*	0.10	0.11	0.07	0.04	0.04	0.05	15.0
5	Ba	0.38	0.06	0.88	1.02	0.05	0.29	100.0
6	Cd	0.001	0.001	0.001	0.001	0.001	0.001	1.0
7	Cr	0.024	0.016	0.027	0.030	0.031	0.023	5.0
8	Pb	1.14	0.011	0.003	0.024	0.015	0.022	5.0
9	Mn	1.96	0.07	2.58	1.66	3.04	0.39	10.0
10	Ag	0.003	0.001	0.003	0.001	0.002	0.001	5.0
11	Co*	0.21	0.13	0.22	0.19	0.16	0.17	80.0
12	Cu*	0.04	0.03	0.03	0.16	0.04	0.02	25.0
13	Mo*	0.024	0.01	0.001	0.01	0.001	0.001	350
14	Ni*	0.18	0.06	0.07	0.21	0.15	0.18	20.0
15	V*	0.79	0.36	0.23	0.14	1.72	0.16	24.0
16	Zn*	4.01	2.54	0.14	0.42	0.05	1.38	250
17	F*	18.0	0.07	2.07	1.33	0.16	7.74	180

Remark: Remark: The TCLP and WET leaching solution analyses of Solid Waste samples reveal that trace element concentrations are much below the Waste constituent concentration limits.


(J. Das)

Principal Technical Officer
Central Characterization Dept.



सीएसआइआर - खनिज एवं पदार्थ प्रौद्योगिकी संस्थान

(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद)

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Ref. No. IMMT/CCD/08/2021

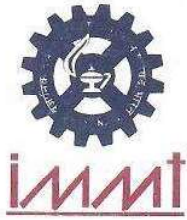
Date: 03.08.2021

Table-6(a). Experimental variables for Toxicity Characteristic Leaching Procedure (TCLP) study of Solid Waste samples conducted as per US-EPA method 1311.

Sl. No.	TCLP study Variables	Variable Data				
		SW15	SW17	SW18	SW19	SW20
1	TCLP study method	US-EPA Method-1311				
2	Sample type	Dust and Gravels, Particle size < 8 mm	Dust and Gravels, Particle size < 8 mm	Dust and Gravels, Particle size < 8 mm	Dust and Gravels, Particle size < 8 mm	Dust and Gravels, Particle size < 8 mm
3	Sample particle size taken for leaching	Original sample	Original sample	Original sample	Original sample	Original sample
4	Initial pH of samples	12.5	8.61	12.5	9.26	9.47
5	pH after HCl + heat	12.3	1.71	12.2	3.02	6.32
6	Extraction fluid used	Extraction fluid -2	Extraction fluid -1	Extraction fluid -2	Extraction fluid -1	Extraction fluid -2
7	pH of Extraction fluids	2.88	4.91	2.88	4.91	2.88
8	Sample taken for leaching, gm	50				
9	Volume of extraction fluid used, ml	1000				
10	Liquid/solid ratio	20:1				
11	Head space	10 %				
12	Extraction Temperature °C	28				
13	Extraction Time, hour	18				
14	Filter	Glass micro fiber, Whatman GF/C				
15	Washing of filters	With dil. HNO ₃ and distilled water				
16	pH of recovered extraction fluid	8.21	4.64	7.85	4.57	4.60


 (J. Das)

Principal Technical Officer
Central Characterization Dept.



सीएसआइआर - खनिज एवं पदार्थ प्रौद्योगिकी संस्थान
(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद)
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CSIR - INSTITUTE OF MINERALS & MATERIALS TECHNOLOGY
(Council of Scientific & Industrial Research)
Bhubaneswar - 751013, Odisha, INDIA

TEST REPORT

Ref. No. IMMT/CCD/08/2021

Date: 03.08.2021

Table-6(b). Trace element analysis of TCLP or WET Procedure solutions of Solid waste samples; leaching studies conducted as per US-EPA method 1311 and Appendix II of section 66261 of Title 22 of California Code Regulations (CCR).

Sl. No.	Component	Concentrations in TCLP or WET* leaching solutions of Solid Waste test samples (mg/L)					Waste constituents concentration limits of TCLP or STLC, US-EPA and California Code of Regulations (mg/L)
		SW15	SW17	SW18	SW19	SW20	
1	Hg	0.002	0.004	0.002	0.003	0.002	0.2
2	As	0.018	0.018	0.026	0.018	0.003	5.0
3	Se	0.055	0.054	0.181	0.057	0.019	1.0
4	Sb*	0.014	0.079	0.070	0.063	0.015	15.0
5	Ba	0.35	0.16	0.22	0.17	0.59	100.0
6	Cd	0.001	0.001	0.002	0.080	0.030	1.0
7	Cr	0.057	0.021	0.038	0.022	0.027	5.0
8	Pb	0.025	0.019	0.021	21.5	22.4	5.0
9	Mn	0.02	0.27	0.12	0.39	0.97	10.0
10	Ag	0.001	0.001	0.005	0.002	0.001	5.0
11	Co*	0.16	0.17	0.17	0.19	0.19	80.0
12	Cu*	0.07	0.02	0.14	0.19	0.01	25.0
13	Mo*	0.014	0.057	0.067	0.021	0.039	350
14	Ni*	0.08	0.27	0.10	0.18	0.14	20.0
15	V*	0.01	0.06	0.75	0.77	0.59	24.0
16	Zn*	0.03	0.18	2.06	3.87	4.98	250
17	F**	19.7	0.61	18.8	9.57	17.8	180

Remark: Remark: The TCLP and WET leaching solution analyses of Solid Waste samples reveal that trace element concentrations are much below the Waste constituent concentration limits.


(J. Das)

Principal Technical Officer
Central Characterization Dept.



TSM/SPCB/BS-07/2022-16/203
May 23, 2022

The Member Secretary
State Pollution Control Board, Odisha
A/118, Paribesh Bhawan
Nilakanthanagar, Unit-VIII
Bhubaneswar -751012

Subject: Submission of hazardous waste annual return for the period April'21 to March'22.
Reference: Authorization no. IND-IV-HW-622/12122 dated 03.12.2021

Dear Sir,

In reference to the captioned subject and letter cited above. As per the provision of Hazardous and Other Wastes (Management & Transboundary Movement) Rules, 2016; we are submitting herewith annual returns (Form-4) of said rules for the period April 1, 2021 to March 31, 2022 of TATA Steel Ltd. At : Narendpur, PO: Kusupanga Via.: Meramandali, Dhenkanal (attached as **Annexure-I**).

Hope, the information furnished is in line with the requirement.

Thanking you,

Yours faithfully,
For Tata Steel Limited

Anoop Srivastava

Anoop Srivastava
Head Environment

Enclosure: As above

Copy to: The Regional Officer, State Pollution Control Board, Odisha, Angul



TATA STEEL LIMITED

Narendrapur Kusupanga Meramandali Dhenkanal 759 121 Odisha India Tel 91 6762 352000
Registered Office Bombay House 24 Homi Mody Street Fort Mumbai 400 001 India Tel 91 22 66654282 Fax 91 22 66657724
Corporate Identity Number L27100MH1907PLC000260 Website www.tatasteel.com

FORM 4

[See rules 6(5), 13(8), 16(6) and 20 (2)]

FORM FOR FILING ANNUAL RETURNS

[To be submitted to State Pollution Control Board by 30th day of June of every year for the preceding period April to March]

1. Name and address of facility:

Tata Steel Limited Meramandali
At-Narendrapur, PO- Kusupanga
Via- Meramandali, Dist-Dhenkanal
PIN-759121, Odisha (India)
Tel: 91-6762-300000
Fax: 011-66173997

2. Authorisation no. and date of issue: Authorization no. IND-IV-HW-622/12122 dated 03.12.2020

3. Name of the authorised person and full address with telephone, fax and e-mail:

Anoop Srivastava
Head-Environment
At-Narendrapur, Po- Kusupanga
Via- Meramandali, Dist-Dhenkanal
PIN-759121, Odisha (India)
Tel: 91-6762-300000
Fax: 011- 66173997

4. Production during the year:

Total Production (Crude Steel) during 2021-22: 4891179 T

Part A. To be filled by hazardous waste generators

1. Total quantity of waste generated category wise:

SL	Waste Description	Schedule and Waste Stream/Class	Quantity (in Tonnes/KL)
1	Used /Spent Oil	Schedule -I Stream -5.1	295.04 KL
2	Waste/Residue Containing Oil	Schedule -I Stream -5.2	25.86 T
3	Oil and grease skimming (Oily Sludge)	Schedule -I Stream -35.4	101.6 T
4	Residue from Coke Oven by-product plant (BOD Plant Sludge)	Schedule- I Stream-13.6	2496.53 T

5	Decanter tank sludge and tar sludge tank residue	Schedule- I Stream-13.4 & 13.5	1396 T
6	Acidic & Alkali Residues/Spent Acid and Alkali	Schedule- I Stream-12.1 & 12.2	23.17 T
7	ETP Sludge/ Chemical Sludge from wastewater Treatment Plant	Schedule- I Stream-35.3	694.38 T
8	Spent Ion Exchange Resin containing toxic metals.	Schedule- I Stream-35.2	3 T
9	Process wastes, Residues and sludges/ Spent Solvent (Waste Thinner–Oily Waste)	Schedule -I Stream -21.1 & 21.2	39.63 T
10	Insulation material (Glass wool)	Schedule -II Class-C	114.21 T
11	Empty Barrels/Containers/Liners contaminated with Hazardous chemicals/wastes	Schedule -I Stream -33.1	18.22 T
12	Exhaust Air or Gas Cleaning Residue /LD Sludge	Schedule -I Stream -35.1 & Schedule -II Stream -C2	164247 T
13	Zinc Dross/ Ash/ Skimmings/ Residues	Schedule -IV Stream – (11 to 15)	471.41 T

2. Quantity dispatched

(i) to disposal facility:

SL	Waste Description	Quantity (in Tonnes/KL)	Name of the Disposal Facilities
1	Oil and grease skimming (Oily Sludge)	101.6 T	M/s RE Sustainability Ltd. (Formerly M/s Ramky Enviro Engineers Ltd.), Jajpur, Odisha
2	Insulation material (Glass wool)	114.21 T	
3	Acidic & Alkali Residues/Spent Acid and Alkali	23.17 T	
4	ETP Sludge of CRM/Chemical Sludge from wastewater Treatment Plant	694.38 T	
5	Process wastes, Residues and sludges/ Spent Solvent (Waste Thinner–Oily Waste)	37.54 T	Adityapur Waste Management Pvt. Ltd.

(i) to recycler or co-processors or pre-processor:

SL	Waste Description	Quantity (in Tonnes/KL)	Name of the Reprocessing Facilities
1	Used /Spent Oil	247.2 T	M/s Bristol Petroleum Pvt. Ltd. At-26/5/D E,A.M.Ghosh Road,Budge,24 Parganas (S),WB
2	Empty Barrels/Containers/Liners contaminated with Hazardous chemicals/wastes	18.22 T	Eco Resource Solution, Daleiput, Khurda, Odisha
3	Zinc Dross/ Ash/ Skimmings/ Residues	471.41 T	1. M/s Neelam Metal Products 2. M/s Cosmo Agromet Industries 3. M/s East Coast Bio-Tech Project.

(ii) Others: Not Applicable

3. Quantity utilised in-house if any:

SL	Waste Description	Quantity (in Tonnes/KL)	Mode of utilization
1	Waste/Residue Containing Oil	25.86 T	Feed to boiler along with coal
2	Residue from Coke Oven by-product plant (BOD Plant Sludge)	2496.53 T	Internally reused in coke oven plant
3	Decanter tank sludge and tar sludge tank residue	1396 T	Internally reused in coke oven plant
4	Exhaust Air or Gas Cleaning Residue /LD Sludge	179882 T	Internally reused in sinter plant

4. Quantity in storage at the end of the year –

SL	Waste Description	Quantity (in Tonnes/KL)
1	Spent Ion Exchange Resin containing toxic metals.	3 T
2	Process wastes, Residues and sludges/ Spent Solvent (Waste Thinner – Oily Waste) *	2.09 T

*Presently, in Odisha CHWTSDF is not available for disposal of incinerable material.

Date: 19.05.2022

Place: TSL Meramandali

Anoop Srivastava

For Signature of the Occupier or Operator of the disposal facility

PLANTATION DETAILS
(From April 2022 to September 2022)

S.NO	Month	Plantation in number		Cumulative In FY23
		Inside	Outside	
1	April 2022	40	0	40
2	May 2022	0	0	40
3	June 2022	643	0	683
4	July 2022	5915	0	6598
5	August 2022	12810	10	19418
6	September 2022	60	0	19478

**SUMMARY OF AMBIENT AIR QUALITY
MONTHLY AVERAGE VALUES**

Month	Pollutant	Standard	CAAQMS						
			# 01	# 02	# 03	# 04	# 05	# 06	# 07
April 2022	PM 10	100	59.71	211.09	112.28	103.14	65.95	71.24	90.02
	PM 2.5	60	9.8	60.53	29.1	34.1	31.31	30.88	34.49
	SO ₂	80	11.97	29.07	25.74	6.48	14.82	23.72	12.13
	NO _x	80	15.18	9.37	18.96	22.04	6.44	12.01	32.84
	CO	2	0.2	0.62	0.85	0.51	0.64	0.78	UM
May 2022	PM 10	100	42.34	185.6	51.81	77.03	53.96	78.41	71.28
	PM 2.5	60	11.81	52.8	21.48	30.5	27.72	41.34	28.08
	SO ₂	80	14.22	24.61	9.24	6.65	11.12	32.52	12.72
	NO _x	80	14.94	9.43	18.19	18.56	9.23	13.64	32.21
	CO	2	0.58	0.69	0.46	0.45	0.36	0.82	UM
June 2022	PM 10	100	30.56	133.48	73.62	89.61	46.75	96.6	59.78
	PM 2.5	60	9.09	40.74	14.81	32.54	23.85	38.74	22.97
	SO ₂	80	12.83	26.12	10.73	6.41	10.85	21.16	8.23
	NO _x	80	15.28	9.41	18.32	17.59	10.53	12.82	32.13
	CO	2	0.31	0.74	0.33	0.29	0.52	0.88	UM
July 2022	PM 10	100	17.3	37.4	31.1	58.1	31	55.9	61.9
	PM 2.5	60	6.6	12	8.5	21	14.9	22.6	27.2
	SO ₂	80	11.5	11.4	10.7	7.3	7.7	5.7	14.1
	NO _x	80	15.3	9.3	18.6	19.6	19.3	26.2	32.8
	CO	2	0.4	0.9	0.5	0.3	1.1	0.5	UM
August 2022	PM 10	100	15.43	43.18	27.07	62.21	33.8	69.19	86.43
	PM 2.5	60	8.33	13.64	19.49	26.97	16.55	21.82	57.44
	SO ₂	80	12.18	20.28	11.12	6.59	7.55	9.89	15.63
	NO _x	80	15.3	9.18	19.42	24.61	22.08	29.18	22.68
	CO	2	0.3	0.7	0.4	0.5	0.7	0.6	UM
September 2022	PM 10	100	50.89	94.5	46.15	77.62	38.6	87.46	83.01
	PM 2.5	60	27.5	27.7	28.48	23.01	22.67	23.17	36.23
	SO ₂	80	12.63	12.89	10.22	5.65	10.65	15.98	15.7
	NO _x	80	16.1	9.93	18.14	22.01	21.01	20.01	32.38
	CO	2	0.67	0.65	0.33	0.22	0.49	0.83	1.15

CAAQMS 1: Near Township; CAAQMS 2: Near Utility Department; CAAQMS 3: Near CRM
CAAQMS 4: Near Water Complex; CAAQMS 5: Near Coke Oven 2; CAAQMS 6: Near Wagon
Tippler; CAAQMS 7: Near Material Gate, UM: Under Maintenance.

All values are in $\mu\text{g}/\text{m}^3$ and CO values are in mg/m^3 . Values are derived from 24 hourly average data.

SUMMARY OF WORK ZONE NOISE MONITERING

TATA STEEL LIMITED, MERAMANDALI

Period: From April to September 2022

SL	Name of the Unit	Location	Noise level in dB at 3 m.	Standard as per Factory Rule Govt of Odisha 1950 (8 Hrs.)
			Range	
1.	RMHS	Near RMHS-2EP-2Electrical building Area	80.2 to 84.2	90
		Near RMHS -2Yard No-4 ,5,6&7 Area	81.3 to 85	
		Near Yard No-2/3 Area	80.3 to 84.5	
2.	RMPP	Near CSB-1 I D Fan	84.2 to 85.2	90
		Near CSB-2 I D Fan	83.6 to 84.5	
		Near Pump house	73.2 to 83.6	
		Near Flip Flop Screen Area	78.4 to 84	
3.	Base Blending Plant	Near BB Plant Bunker ID fan-1	78.4 to 83.1	90
		Near BB Plant flux building ID fan-2	77.4 to 84.2	
		Near BB Plant coke screening building	68.9 to 85.7	
		Near BB Plant compressor house 1 &2	83.4 to 84.5	
		Near BB Plant Side Office	55.9 to 83.6	
4.	Coke Oven-1	Near Coal Pushing I D Fan area	75.4 to 76.9	90
		Near Stone Cutter Building area	75.3 to 89.6	
		Near M.H.S I.D fan	82.7 to 84.3	
		Near Battery-1 area	77.7 to 89.3	
		Near Battery-2 area	70.5 to 83.6	
5.	Coke Oven-02	Near Pusher car Emission control system I D Fan 1/2	80.2 to 82.7	90
		Near Guide car emission I D Fan 1/2	82.3 to 84.1	
		Near Exhauster house area	83.6 to 91.3	
		Near Water pumphouse area	83 to 88.2	
		Near Chemical Dosing E.T.P room area	73.8 to 83.6	
		Near Battery cellar ventilation blower	85.2 to 86.4	
		Near Battery coke oven gas de-graphitizing blower	81.2 to 86.3	
		Pushing emission control system ID fan	80.4 to 86.1	
6.	Sinter Plant-1	Near Main ID Fan-1	92.7 to 93.4	90.0
		Near Proper ting building area	71.4 to 84.7	
		Near Cooler fan area-1	84.2 to 84.5	
		Near Cooler fan area-2	83.6 to 84.4	
		Near Cooler fan area-3	84.2 to 85	
		Near Cooler fan area-4	84.8 to 85.7	
		Near 85m2 ESP IN D Fan area	84.3 to 88.1	
		Near 110m2 ESP ID fan area	84.2 to 84.8	
		Near Pump House Building area	80.4 to 86.4	
		Near bag filter ID fan area	83.2 to 85	

7.	Sinter Plant-02	Near Main ESP ID	83.1 to 85.4	90
		Near PD ESP ID fan	83.6 to 85.1	
		Near Cooler fan-1	84.1 to 85.6	
		Near Cooler fan-2	84.2 to 86.2	
		Near Cooler fan-3	84.3 to 86	
		Near M. N. D Area	69.3 to 84.7	
8.	Sinter Plant-03	Near Main ESP ID	84.2 to 85.4	90
		Near PD ESP ID fan	82.7 to 84.2	
		Near Cooler fan-1	83.1 to 85	
		Near Cooler fan-2	84.9 to 86	
		Near Cooler fan-3	84.3 to 85.7	
		Near M. N. D Area	69.4 to 84	
		Near I.D. fan-1 area	81.4 to 84	
9.	DRI	KILN NO-1		90
		Near Cooling tower area	84.3 to 85.1	
		Near De-dusting 01 ID Fan	83.2 to 90.2	
		KILN NO-2		
		Near Cooling tower area	75.4 to 79.4	
		KILN NO-3		
		Near Cooling tower area	77.3 to 85.4	
		Near De-dusting 02 ID Fan	83.3 to 85.6	
		KILN NO-4		
		Near Cooling tower area	82.7 to 85.1	
		KILN NO-5		
		Near Cooling tower area	77.4 to 85.1	
		Near De-dusting 03 ID Fan	83.7 to 86.3	
		KILN NO-6		
		Near Cooling tower area	76.7 to 85	
		KILN NO-7		
		Near Cooling tower area	73.4 to 85.3	
		Near De-dusting 04 ID Fan	82.7 to 87	
		KILN NO-8		
		Near Cooling tower area	82.7 to 85.2	
KILN NO-9				
Near Cooling tower area	80.2 to 85.1			
Near De-dusting 05 ID Fan	83.4 to 88.4			
KILN NO-10				
Near Cooling tower area	83.2 to 85			
10.	BF-2 Stock House	Near Motor I D fan-1	83.2 to 84.7	90
		Near Motor I D fan-2	83.6 to 85.1	
		Near Motor I D fan-3	84.1 to 85.2	
		Near Cooling tower area	76.5 to 85.3	
		Near Fire Pump House Building area	84.4 to 96.3	
		Near B F-2 Furnace area	79 to 84.3	
11.	BF-2 Stock House	Near ID fan -1	83.1 to 85.6	90
		Near ID fan -2	85.1 to 86.2	
12.	BF-1 Cast House	Near Motor I D fan-1 area	83.1 to 85.3	90
		Near Motor I D fan-2 area	84.1 to 85.3	
		Near Motor I D fan-3 area	83.4 to 85.3	
		Near Motor I D fan-4 area	82.7 to 85.4	
		Near secondary Cooling tower area	80.1 to 85	

		Near Mein Pump House Building area	83.6 to 89.6	
		Near B F-1 Furness area	76.4 to 84.2	
13.	BF-1 Stock House	Near Motor I D fan-1 area	84.2 to 85.4	90
		Near Motor I D fan-2 area	84.2 to 85.5	
		Near Fines building Area	73.4 to 84.6	
		Near Boiler-1 Area	83.6 to 84.7	
14.	Lime Plant	Near De dusting-2 ID fan	83.1 to 88.1	90
		Near Blower room area	88.5 to 113.6	
		Near Cooling tower area	75.9 to 89.7	
		Near De dusting-3 ID fan	73.5 to 83.7	
		Near Pump House area	83.4 to 88.1	
		Near Compressor building area	84.6 to 88.4	
15.	BOF Shop	Near Secondary ID fan area-1	85.4 to 88.5	90
		Near Secondary ID fan area-2	86.2 to 88.4	
		Near Secondary ID fan area-3	84.4 to 87.4	
		Near Secondary ID fan area-4	87.5 to 88.4	
		Near Cooling Tower area	85.2 to 99.8	
		Near Primary/ Secondary ID fan area-1/2	80.3 to 88.2	
		Near Weigh bridge area	79.9 to 84.2	
16.	SMS-2 FES 1&2	Near Motor ID fan -1	86.4 to 90.2	90
		Near Motor ID fan -3	86.5 to 90	
		Near Motor ID fan -4	86.3 to 92.4	
		Near Motor ID fan -5	86.1 to 91.2	
17.	HSM	Near COG Fan area-1/2	80.1 to 83	90
		Near RHF Office area	79.3 to 84.5	
		Near Roughing Mill area	82.7 to 89.1	
		Near Roll Shot area	80.7 to 88.1	
		Near Roll Shop area	75.8 to 83	
		Near HSM Quality Lab area	84.2 to 97.7	
		Near B F G Motor fan RHF area	78.4 to 88.8	
		Near Combustion fan area	84.3 to 86.2	
		Near Re-heating furnace area	78.9 to 84.3	
		Near COG Fan area-1/2	80.4 to 81.7	
18.	CRM	Near Air Receiver Tank area	84.7 to 97.3	90
		Near Fire water pump house area	82.7 to 86	
		Near ETP area	80.8 to 86.7	
		Near JP-1 Coil yard area	83.1 to 86.3	
		Near JP-2 Coil yard area	83 to 88	
		Near JP-3 Coil yard area	84.2 to 90.3	
		Near Hot Generator Area	83.2 to 85	
19.	BFPP-1 Boiler-2	Near ID Fan -1	80.4 to 84.2	90
		Near ID Fan-2	82.4 to 85.3	
		Near FD fan	86.5 to 88.4	
		Near Boiler-2 Area	84.2 to 92.5	
20.	BFPP-1 Boiler-3	Near ID Fan -1	83.1 to 85.4	90
		Near ID Fan -2	84.7 to 85.4	
		Near FD fan	86.4 to 88.4	
		Near Boiler-3 Area	85.2 to 90.3	
21.	BFPP-1 Compressor House	Near Entrance Point	90.5 to 95.2	90
		Near Equipment	98 to 99.1	

22.	BFPP-2 Boiler No-3	Near I.D. fan-2 area	82.7 to 85.2	90
		Near P.A. fan- area	86.4 to 88.5	
		Near S.A. fan- area	86.6 to 88.9	
		Near Boiler -3 area	83.4 to 86.6	
		Near cooling tower-area	82.1 to 86.2	
		Near I.D. fan-1 area	82.6 to 84.3	
		Near I.D. fan-2 area	83.3 to 84.3	
23.	BFPP-2 Boiler No-2	Near P.A. fan- area	85.4 to 87	90
		Near S.A. fan- area	85.3 to 87.1	
		Near Boiler -3 area	84.3 to 86.2	
		Near cooling tower-area	83.6 to 85.2	
24.	Gas fired boiler 60 TPH Area	Near ID fan -1	81.8 to 84.3	90
		Near ID fan -2	83.6 to 84.8	
		Near FD fan -1	82.5 to 85	
		Near FD fan -2	81.4 to 85	
		Near Boiler area	74.9 to 84.1	
25.	Gas fired boiler 125 TPH Area	Near ID fan -1	84.6 to 88.4	90
		Near ID fan -2	85.4 to 88.3	
		Near FD fan -1	85.1 to 88.2	
		Near FD fan -2	86.7 to 88.5	
		Near Boiler area	80.4 to 85.3	
26.	Gas fired boiler 250 TPH Area	Near ID fan -1/2 area	83.4 to 85.4	90
		Near FD fan -1/2 area	84.2 to 86.7	
		Near Boiler area	80.1 to 85.3	
27.	110 MW Power Plant	Boiler-01		90
		Near ID fan area	80.4 to 84.5	
		Near Boiler area	80.2 to 85.2	
		Boiler-02		
		Near Boiler area	88.6 to 91.9	
		Boiler-03		
		Near ID fan	82.7 to 84.8	
		Near Boiler area	79.2 to 85.6	
		Boiler-04		
		Near ID fan	83.1 to 85.3	
		Near Boiler area	84.5 to 86.2	
		Boiler-5		
		Near ID fan	80.4 to 82	
		Near Boiler area	76.4 to 85.4	
		Boiler-6		
		Near ID fan	82.7 to 84.3	
		Near Boiler area	81 to 86.3	
		Boiler-7		
		Near ID fan	83 to 85	
		Near Boiler area	79.3 to 86.1	
		Boiler-8		
		Near ID fan	81.4 to 84.5	
		Near Boiler area	84.5 to 86.4	
Boiler-9				
Near ID fan	82.5 to 85.3			
Near Boiler area	73.3 to 86.2			
	Boiler-10			

		Near ID fan	83.1 to 84.8	
		Near Boiler area	75.6 to 85.4	
28.	Oxygen Plant-02	Near Nitrogen compressor House-1	105.3 to 108.2	90
		Near Nitrogen compressor House-2	105.4 to 108.5	
		Near Nitrogen compressor House-3	105.3 to 108.5	
		Near Air compressor House area-1	102.4 to 105.3	
		Near Control room office area	92.7 to 100.6	
		Near A/ C Package room area	82.1 to 85.4	
		Near Argon cold box area	80.7 to 84.9	
		Near Turbine-1 area	84.2 to 86.2	
29.	Centralize Compressor House -2	Near Entrance Point	88.4 to 90.5	90
		Near Exit Point	82.3 to 86.5	
		Near Equipment	88.1 to 97.1	
		Inside Shift office	60.4 to 64	
		Inside Operator office	66.3 to 71.3	
		Inside Store	67.3 to 76	

AMBIENT NOISE MONITERING
TATA STEEL LIMITED, MERAMANDALI

Period: April 2022 to September 2022

S.N	Location	Noise level in dB(A) Leq (Day time Range)	Standard dB(A) Leq (Day Time)	Noise level in dB(A) Leq (Night time Range)	Standard dB(A) Leq (Night Time)
1	Colony	51.3-53.9	55	43.6-46.9	45
2	CRM	56.6-69.2	75	53.9-63.3	70
3	Material Gate	56.9-67.8		52.7-61.4	
4	AEL	56.7-70.1		52.5-64.8	
5	Wagon Tripler	57.4-67.2		53.5-64.7	
6	Coke Oven-2	53.7-68.6		50.8-65.6	
7	Water Complex	55.8-69.5		50.2-65.1	

CSR EXPENDITURE AND ACTIVITY HIGHLIGHTS (Around Tata Steel Limited, Meramandali) For Period April 2022 to September 2022		
PROGRAM HEAD	Expenditure in Lakhs	MAJOR INTERVENTIONS/REMARKS
Health	4.98	Mobile Medical Unit; Adolescent empowerment; Dengue/Malaria control
Drinking Water	54.20	Installation of tubewells; deep bore wells with overhead tank and pipeline system
EDUCATION	157.79	School infrastructure; Education project: QUEST
LIVELIHOOD	45.68	WEE Project; Other livelihood activities
INFRASTRUCTURE & MISC.	20.52	Construction & repair of road; Installation of solar lights
SPORTS	0.90	Volleyball coaching; Sports tournaments
TOTAL	284.07	Rs. 2.84 crores

SPECIFIC CONDITION:

SL	CONDITIONS	COMPLIANCE STATUS
i	<p>The gaseous emissions from various process units shall conform to the load/mass based standards notified by the Ministry on 19th May, 1993 and standards prescribed from time to time. The state board may specify more stringent standards for the parameters keeping in the view the nature of the industry and its size and location. At no time the emission level should go beyond the prescribed standards. In the event of failure of any pollution control system adopted by the unit, the respective unit should not be restarted until the control measures are rectified to achieve the desired efficiency.</p>	<ul style="list-style-type: none"> • 72 nos. of bag filter, 29 nos. of ESP have been installed with each operating unit to reduce particulate matter levels in ambient air. Details list of pollution control devices is enclosed as Annexure-I. • Results of gaseous emission levels from various stacks conform to the standards and details are enclosed as Annexure-II. • 4 Nos. mechanized road sweepers have been deployed to clean all concrete roads, and shop floors of individual units. • Water tankers have been deployed for water sprinkling whenever it is required. • Due to all these latest and most efficient air pollution control measures, ambient air quality in the complex is as per the AAQ standard. • 20 numbers of online gas analyzers for gaseous parameters have been provided on stacks. • 37 numbers of online dust monitors have also been installed and commissioned at the stacks. • To monitor the ambient air quality, we have installed 7 numbers of Continuous Ambient Air Quality Monitoring Stations (CAAQMS) in the entire complex of Tata Steel Limited in consultation with SPCB, Odisha.
ii	<p>There shall be no discharge of process effluent. As reflected in the EIA/EMP report, the company shall undertake water conservation measures by recycling the water from the gas cleaning plant and cooling tower blow down. The plant design shall be based on 100% recirculation system to achieve zero discharge. The domestic waste water after treatment in STP shall be used for green belt development.</p>	<ul style="list-style-type: none"> • Rate of water consumption during the period Apr'22 to Sep'22 water consumption for the Steel plant is approx. 2228 m³/hr. • All effluents are being treated in primary treatment plants (19 nos.) in steel plant attached with respective units and Effluent Treatment Plants (3 nos.) centrally. • Treated water is being reused for dust suppression, ash handling, make up for DRI & cooling towers and for green area development.

Compliance Status of Environmental Clearance for Integrated Steel Plant of 1.5 MTPA capacity at Tata Steel Limited, Meramandali, District Dhenkanal, Odisha vide MoEF&CC File no. J-11011/829/2008-IA-II (I) dated 29.06.2005.

		<ul style="list-style-type: none"> • Process effluent after treatment is being reused. During the period Apr'22 to Sep'22, 3388658 m3 of water has been recycled. However, we are further improving the efficiency of the water management system by technology intervention to increase the utilization. • The sanitary sewage is being treated in 4 Sewage Treatment Plants and used for green belt development and low-end application in plant. • Rain water harvesting of capacity 50000m3 with HDPE liner has been constructed to store & reuse rainwater. • Zero Effluent Discharge (ZED) project will be implemented by March 2024.
iii	<p>In plant control measures for checking fugitive emissions from spillage/raw materials handling shall be provided. Further specific measures like provisions of dust extraction & dust suppression system for product & raw materials handling, conveyor transfer points, water sprinkling system at waste disposal area to control the fugitive emissions shall be provided. Data on fugitive emission shall be regularly monitored & records maintained.</p>	<ul style="list-style-type: none"> • Two Bag filter, adequate no. of Dry Fog Dust Suppression System (DFDS) and Single Fluid Dedusting System (SFDS) have been provided at the coal circuit. • Five numbers of bag filters have also been provided in the iron ore circuit at crushing and screening points of raw material handling areas at the following locations. • Pneumatic dust handling system has been provided at ESP hoppers in the Sinter Plant-I. • Chain conveyor dust handling system has been provided at ESP hoppers of sinter plants II and III. • 266 numbers of nozzles in dry fog dust suppression system have been provided at 46 numbers of junction houses of raw material handling area. • Further, 128 nos. of rotary gun sprinklers have been installed throughout the raw material handling yards. • Mechanized road sweepers have been deployed for dry sweeping on roads and shop floors. • Regular monitoring of fugitive emission is carried out and report being submitted.

Compliance Status of Environmental Clearance for Integrated Steel Plant of 1.5 MTPA capacity at Tata Steel Limited, Meramandali, District Dhenkanal, Odisha vide MoEF&CC File no. J-11011/829/2008-IA-II (I) dated 29.06.2005.

		<ul style="list-style-type: none"> To improve AQI further, the company is analyzing the various point sources, line sources & area sources & continuously working to reduce work place emission by standardizing maintenance practices, adopting new technology (HFTR, MFTR. Mist Gun water sprinklers, Portable Donaldson Dust extraction system) & also installation new dust extraction system wherever required.
iv	<p>The company shall use gas from the DRI for power generation & blast furnace gas for BF Stoves, sinter plant & furnace heating. The exhaust gas from the kiln shall be cleaned by dry gas cleaning system. The waste gas shall be passed through dust settling chamber to settle the coarse dust particulate & post combustion chamber to burn the CO in the flue gas. The boiler shall utilize the waste heat for steam generation. The particulate emissions shall be controlled by installation of ESP & the particulate emissions shall not exceed 100 mg/Nm³.</p>	<ul style="list-style-type: none"> The Plant has installed 10 nos. of DRI Kiln of 500 TPD each with WHRB system connected to 10 nos. of ESP at the hot end of the DRI Kiln and 5 nos. of De-dusting system at the cold end of the DRI kiln. The particulate emission from the Stack is well within the limit. The monitoring data are enclosed as Annexure-II.
v	<p>The company shall install centralized de-dusting system to control the primary emissions from the induction furnace top as canopy hood at the top of furnace to capture secondary emissions.</p>	<ul style="list-style-type: none"> The centralized de-dusting system has been established to control primary emissions from the induction furnace top as canopy hood to capture secondary emissions.
vi	<p>The company shall take measures for installation of continuous ambient air quality monitoring stations and data sent electronically to SPCB/CPCB.</p>	<ul style="list-style-type: none"> 07Nos. CAAQM stations have been established in consultation with the SPCB in Tata Steel Meramandali complex. Half yearly reports are being submitted to the Regional Office of MoEF&CC, SPCB and CPCB at regular intervals. Summary of AAQ monitoring report is enclosed as Annexure-III. The last half yearly compliance report was submitted vide letter no. TSM/MoEF&CC/BS-01/2022-10/210 dated 31.05.2022.

vii	<p>SMS slag from induction furnace, EAF & LF shall be used for road making and railway blast. Coal washery middling and char from DRI shall be used for power generation. BF Slag should be granulated & sold to cement manufacturers. Scrap, coal & iron ore fines shall be reused. Fly ash shall be used for bricks manufacturing.</p>	<ul style="list-style-type: none"> • The entire quantity of blast furnace slag is dispatched to cement manufacturers based on long term MoU with the cement manufacturer. • Details of generation and utilization of Blast Furnace slag are given as Annexure-IV. • The SMS slag (LD slag) is processed in material recovery plant (MRP) for separation of metallic from the non-magnetic part and sized for various applications. Some of the key applications of LD slag product are <ul style="list-style-type: none"> ➤ recovered metallics used in steel making process as a scrap, ➤ recovered fines used in sinter making process for replacement of lime, ➤ non-mag utilization in cement manufacturing, road making, and hard sand applications. • Fly ash brick and paver block have been manufactured inside the plant for use in construction activities including road construction etc. This is also helping in maximum utilization of fly ash. During the period Apr'22 to Sep'22, 254236 Nos. of fly ash brick has been manufactured and utilized. • 525932 Nos. of paver block has been manufactured and used in road construction in the plant. • Fly ash is also being supplied to <ul style="list-style-type: none"> ○ nearby fly ash brick manufacturing units, free of cost, for maximum utilization of ash. ○ Cement plants through rake & bulker. ○ Construction of national highway (NH-55). <p>Balance if any is being utilised in reclamation of low lying areas & abandoned stone quarries as per guidelines of CPCB/ OSPCB after grant of necessary consents.</p>
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Compliance Status of Environmental Clearance for Integrated Steel Plant of 1.5 MTPA capacity at Tata Steel Limited, Meramandali, District Dhenkanal, Odisha vide MoEF&CC File no. J-11011/829/2008-IA-II (I) dated 29.06.2005.

viii	Resettlement & Rehabilitation plan for displacement of families shall be as per the land acquisition Act & state government guidelines.	<ul style="list-style-type: none"> The Resettlement & Rehabilitation plan for displacement of families has already made as per the Land Acquisition Act & State Government guidelines.
ix	A green belt of adequate width density shall be developed in 195 acres of plant area. Selection of plant species as per the CPCB guidelines.	<ul style="list-style-type: none"> Green belt development is under progress in and around the plant complex by planting indigenous species as per CPCB guidelines. Till Mar'22, 33.66% of area (This includes Plant, R&R and CSR) has been covered under green belt. Rapid afforestation using MiyaWaki method in consultation with IIT, Kharagpur has been initiated. Plantation of saplings are done regularly based on the availability of vacant area. During the period Apr'22 to Sep'22 is 19478 nos. has been planted and details plantation is Annexure-V. Proper maintenance of green coverage is being ensured throughout the year by a dedicated horticulture team.
x	The company shall undertake community welfare measures for the local villagers & earmark separate funds for construction of schools, hospitals, community hall for peripheral development of all the villagers located around the plant site.	<ul style="list-style-type: none"> The following community welfare measures are being undertaken. <ol style="list-style-type: none"> Education: School Infrastructure, drinking water at schools Drinking Water in the village (Through pipeline, tube well and deep bore well). Health: Primary Health Service through mobile medical unit and control of Dengue & Malaria are being under taken.
xi	The company shall obtain forest clearance for diversion of 151.92 acres of village forest land under forest (conservation) act, 1980 before undertaking construction activity.	<ul style="list-style-type: none"> Necessary forest clearances have already been obtained vide file no. 8-84/2005-FC dated 13.11.2006 enclosed as Annexure-VI.

Compliance Status of Environmental Clearance for Integrated Steel Plant of 1.5 MTPA capacity at Tata Steel Limited, Meramandali, District Dhenkanal, Odisha vide MoEF&CC File no. J-11011/829/2008-IA-II (I) dated 29.06.2005.

xii	Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the factories act.	<ul style="list-style-type: none"> Occupational health surveillance of the workers is being periodically done. PME once in a year, Food handler test : Once in a year. Necessary PPEs are provided to all the employees including the contractual workers.
xiii	Recommendations made in the CREP shall be implemented	<ul style="list-style-type: none"> Tata Steel Limited has implemented all CREP recommendations.
xiv	Company shall keep proper housekeeping within the plant premises.	<ul style="list-style-type: none"> Various initiatives are being taken for proper housekeeping within the Plant premises. Mechanized Road Sweepers, truck mounted mist canon have also been deployed to clean up roads periodically.
xv	The company shall undertake rainwater harvesting measures to harvest the rainwater for utilization in the lean season as well as to recharge the ground water table.	<ul style="list-style-type: none"> Lagoons and HDPE pond have been constructed to harvest rainwater. This water is reused in the operation process when required. During the period April'22 to September'22, 49520 m3 of rainwater has been utilized in process. RWH potential has been studied by engaging an expert agency & the suggested projects are being implemented in phases. In the first phase 50000 Cum capacity storage pond has been constructed in the year 2021. Also, rainwater collected from DRI & RMHS area are channelized through drains into a series of storage pond (3 nos. lagoons are in operation).

GENERAL CONDITION:

SL	CONDITIONS	COMPLIANCE STATUS
i	The project authorities must strictly adhere to the stipulations made by the Orissa State Pollution Control Board and the State Government.	<ul style="list-style-type: none"> All relevant stipulations made by SPCB and the State Government are being complied.
ii	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests.	<ul style="list-style-type: none"> As per MoEF&CC notification as per the MoEF& CC Notification No. S.O.980(E) dated: 02.03.2021“no increase in pollution load” (NIPL) was studied by expert agency for the followings and the same were verified by State Pollution Control Board. <ol style="list-style-type: none"> I. Enhancement of Hot Metal production from 3.919 MTPA to 5.0 MTPA vide OSPCB letter no. 246/IND-II-NOC-NIPL/24 dated 04.01.2022. CTO was granted vide letter No 16814/IND-I-CON-5440 dated 15.09.2022 with validity upto 31.03.2023 II. Installation of one no. of LRF of 190 T/heat and expansion of carrying capacity of two nos. of existing ladle from 180 T/heat to 190 T/heat vide OSPCB letter no.886/IND-II-NOC-NIPL/27 dated 20.01.2022. CTE application has been submitted.
iii	At least four ambient air quality monitoring stations shall be established in the downward direction as well as where maximum ground level concentration of PM ₁₀ , SO ₂ and NO _x are anticipated in consultation with the SPCB. Data on ambient air quality and stack emission shall be regularly submitted to this Ministry including its Regional Office at Bhubaneswar and the SPCB/CPCB once in six months.	<ul style="list-style-type: none"> Seven CAAQM stations have been established in consultation with the SPCB in Tata Steel Meramandali integrated complex. Half yearly reports are being submitted to the Regional Office of MoEF&CC, SPCB and CPCB at regular intervals. Summary of AAQ monitoring report is attached as Annexure-III. The last half yearly compliance report was submitted vide letter no. TSM/MoEF&CC/BS-01/2022-10/210 dated 31.05.2022.
iv	Industrial wastewater shall be properly collected, treated so as to conform to the	The industrial as well as domestic wastewater is being treated and reused

Compliance Status of Environmental Clearance for Integrated Steel Plant of 1.5 MTPA capacity at Tata Steel Limited, Meramandali, District Dhenkanal, Odisha vide MoEF&CC File no. J-11011/829/2008-IA-II (I) dated 29.06.2005.

	standards prescribed under GSR 422 (E) dated 19th May, 1993 and 31st December, 1993 or as amended from time to time. The treated wastewater shall be utilized for plantation purpose.	<p>in various purposes like slag quenching, coke quenching, dust suppression and green belt development inside the plant premises.</p> <p>The monitoring reports of Industrial wastewater are being submitted to SPCB/CPCB/MOEF&CC at regular intervals.</p>
v	The overall noise levels in and around the plant area shall be kept well within the standards 85 dB(A) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA Rules, 1989 viz. 75 dB (A) (daytime) and 70 dB (A) (nighttime).	<ul style="list-style-type: none"> Acoustic hoods, silencers, enclosures etc. on all sources of noise generation have been provided. Work zone noise monitoring is being carried out and maintained record. A report of ambient noise levels recorded within the premises is enclosed as Annexure-VII.
vi	The project proponent shall also comply with all the environmental protection measures and safeguards recommended in the EIA/EMP report. Further, the company must undertake socio-economic development activities in the surrounding villages like community development programmes, educational programmes, drinking water supply and health care etc.	<ul style="list-style-type: none"> Compliance to all environmental protection measures as recommended in EIA / EMP report is ensured. Various socio-economic development programs covering education, safe drinking water, sports and health care etc. are undertaken in nearby villages. A detailed breakup of CSR initiatives is enclosed as Annexure- VIII.
vii	The project authority will provide separate fund both recurring and non-recurring to implement the conditions stipulated by the MoEF as well as the State Govt. along with the implementation schedule for all the conditions stipulated therein. The funds so provided should not be diverted for any other purposes.	<ul style="list-style-type: none"> Adequate funds are being provided by the management for pollution control and to meet recurring costs. Environmental requirements are given top priority for fund allocation and approval of capital projects. The funds earmarked for environment pollution control measures are not diverted for any other purpose. The company has invested adequate capital expenditure to improve mix of clean power & also reduction of carbon emissions.
viii	The Regional Office of the Ministry at Bhubaneswar / CPCB / SPCB will monitor the stipulated conditions. A six monthly compliance	<ul style="list-style-type: none"> Six monthly compliance report and monitoring data are being submitted

Compliance Status of Environmental Clearance for Integrated Steel Plant of 1.5 MTPA capacity at Tata Steel Limited, Meramandali, District Dhenkanal, Odisha vide MoEF&CC File no. J-11011/829/2008-IA-II (I) dated 29.06.2005.

	report and monitoring data along with statistical interpretation should be submitted to them regularly.	regularly. Last report has been submitted on 31.05.2022.
ix	The Project Proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB and may also be seen at Website of the Ministry of Environment and Forests at http://envfor.nic.in . This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same should be forwarded to the Regional office at Bhubaneswar.	<ul style="list-style-type: none"> • Published in Times of India (English) dated 06.07.2005 and in Samaya (Oriya) dated 07.07.2005. • The same has already been communicated to the Regional Office of MOEF&CC, Bhubaneswar.
x	Project authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of commencing the land development work.	<ul style="list-style-type: none"> • Project was completed and in operation. Consent to Operate was granted vide letter no. 23568/IND-I-CON-5440 dated 27.11.2012.

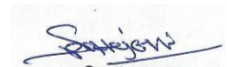
Annexure-I**DETAILS OF AIR POLLUTION CONTROL DEVICES**

SL	Process	Bag filters (Nos.)	ESP (Nos.)	Other Pollution Control Devices
1.	RMHS	02	-	Gun Sprinklers-128 nos.
2.	RMPP	07	-	DFS Nozzles-242 nos. Auto DFS-24nos.
3.	Coke oven - I	04	-	Scrubber-01 nos.
4.	Coke oven - II	11	-	Scrubber-04 nos.
5.	Sinter Plant-I	02	03	-
6.	Sinter plant - II	03	02	-
7.	Sinter plant - III	02	02	-
8.	DRI	03	15	-
9.	Blast Furnace-I	03	-	Scrubber-01 nos.
10.	Blast Furnace-II	04	-	Scrubber-01 nos.
11.	Lime Plant	10	-	-
12.	SMS-I	04	-	-
13.	SMS-II	07	-	-
14.	SMS-III	03	-	Scrubber-01 nos.
15.	BOF Briquetting Plant	07	-	-
16.	Blast Furnace Power Plant-I	-	03	-
17.	Blast Furnace Power Plant-II	-	04	-

SUMMARY OF FUGITIVE EMISSION RESULTS MONTHLY AVERAGE VALUES				
Period: April 2022 to September 2022				
TATA STEEL LIMITED				
Name of units	Location	PM 10 in µg/m³	Standard in µg/m³	
RMHS				
1.	Near JH-21 Yard-7 (Iron ore conveying)	836	2000	
2.	Coal Yard -7 Lucky Mineral Office	300		
3.	Infront of PCI building	316		
RMPP				
4.	Near tertiary Crushing & Screening Building Area	1343	2000	
5.	Near Iron Crusher Area	1540		
B.B. Plant				
6.	Storage building	1590	2000	
7.	Flux crushing and screen building	2415		
Coke Oven-I				
8.	Fine crusher station	542	4000	
9.	Secondary crusher	380		
Coke Oven-II				
10.	Coke treatment building	684	4000	
11.	Coal crushing building	1602		
DRI				
12.	Near PSB-1 building	3210	2000	
13.	Near PSB-2 building	3836		
14.	Near PSB-3 building	1873		
15.	Near PSB- 4 building	1373		
16.	Near PSB-5 building	1870		
Sinter Plant I				
17.	Near proportionating Building	570	2000	
18.	Near SP-1 Mixing House	1189		
Sinter Plant II				
19.	Near SP-2 chimney Backside area	1524		
20.	Near 7003 conveyor Belt	1410		
Sinter Plant III				
21.	Near cooler SP-3 D/15	426		
22.	Near Chiller Plant SP-2,3 & parking area	232		
Blast Furnace-I				
23.	Near Stock House	2213		4000
24.	Near Cast house Area	1045		
Blast Furnace-II				
25.	Near Cast house Entrance	300	3000	

Annexure-II

26.	Near Slug pit area	244	
27.	Stock House Near ECR Building	2318	
Lime Plant			
28.	Near Screen Area-1	1026	-
SMS-II			
29.	SMS-2 Furnace area	1225	4000
SMS-III			
30.	BOF Furnace area	638	3000
HSM			
31.	Near Coil Yard area	905	-
CRM			
32.	Near canteen area	125	-
BFPP-2			
33.	Near Ash silo Area	645	3000
BFPP-1			
34.	Near Ash silo Area	973	4000
110 MW			
35.	Near Ash silo Area	1220	-
IBMD			
36.	BOF sludge yard	105	
37.	Near Scarp dumping yard	253	-

**Authorized Signature**

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

**SUMMARY OF AMBIENT AIR QUALITY
MONTHLY AVERAGE VALUES**

Month	Pollutant	Standard	CAAQMS						
			# 01	# 02	# 03	# 04	# 05	# 06	# 07
April 2022	PM 10	100	59.71	211.09	112.28	103.14	65.95	71.24	90.02
	PM 2.5	60	9.8	60.53	29.1	34.1	31.31	30.88	34.49
	SO2	80	11.97	29.07	25.74	6.48	14.82	23.72	12.13
	NOx	80	15.18	9.37	18.96	22.04	6.44	12.01	32.84
	CO	2	0.2	0.62	0.85	0.51	0.64	0.78	UM
May 2022	PM 10	100	42.34	185.6	51.81	77.03	53.96	78.41	71.28
	PM 2.5	60	11.81	52.8	21.48	30.5	27.72	41.34	28.08
	SO2	80	14.22	24.61	9.24	6.65	11.12	32.52	12.72
	NOx	80	14.94	9.43	18.19	18.56	9.23	13.64	32.21
	CO	2	0.58	0.69	0.46	0.45	0.36	0.82	UM
June 2022	PM 10	100	30.56	133.48	73.62	89.61	46.75	96.6	59.78
	PM 2.5	60	9.09	40.74	14.81	32.54	23.85	38.74	22.97
	SO2	80	12.83	26.12	10.73	6.41	10.85	21.16	8.23
	NOx	80	15.28	9.41	18.32	17.59	10.53	12.82	32.13
	CO	2	0.31	0.74	0.33	0.29	0.52	0.88	UM
July 2022	PM 10	100	17.3	37.4	31.1	58.1	31	55.9	61.9
	PM 2.5	60	6.6	12	8.5	21	14.9	22.6	27.2
	SO2	80	11.5	11.4	10.7	7.3	7.7	5.7	14.1
	NOx	80	15.3	9.3	18.6	19.6	19.3	26.2	32.8
	CO	2	0.4	0.9	0.5	0.3	1.1	0.5	UM
August 2022	PM 10	100	15.43	43.18	27.07	62.21	33.8	69.19	86.43
	PM 2.5	60	8.33	13.64	19.49	26.97	16.55	21.82	57.44
	SO2	80	12.18	20.28	11.12	6.59	7.55	9.89	15.63
	NOx	80	15.3	9.18	19.42	24.61	22.08	29.18	22.68
	CO	2	0.3	0.7	0.4	0.5	0.7	0.6	UM
September 2022	PM 10	100	50.89	94.5	46.15	77.62	38.6	87.46	83.01
	PM 2.5	60	27.5	27.7	28.48	23.01	22.67	23.17	36.23
	SO2	80	12.63	12.89	10.22	5.65	10.65	15.98	15.7
	NOx	80	16.1	9.93	18.14	22.01	21.01	20.01	32.38
	CO	2	0.67	0.65	0.33	0.22	0.49	0.83	1.15

CAAQMS 1: Near Township; CAAQMS 2: Near Utility Department; CAAQMS 3: Near CRM
CAAQMS 4: Near Water Complex; CAAQMS 5: Near Coke Oven 2; CAAQMS 6: Near Wagon
Tippler; CAAQMS 7: Near Material Gate, UM: Under Maintenance.

All values are in $\mu\text{g}/\text{m}^3$ and CO values are in mg/m^3 . Values are derived from 24 hourly average data.

**Details of Slag Generation and Utilization
In
Blast Furnace – 1 & 2**

Month	Quantity Generated (MT)	Quantity Dispatched (MT)
Apr'22	154096	203659
May'22	150892	160272
Jun'22	152170	143344
Jul'22	155192	153186
Aug'22	137648	109875
Sep'22	140012	163967
Total	890010	934303

PLANTATION DETAILS
(From April 2022 to September 2022)

S.NO	Month	Plantation in number		Cumulative In FY23
		Inside	Outside	
1	April 2022	40	0	40
2	May 2022	0	0	40
3	June 2022	643	0	683
4	July 2022	5915	0	6598
5	August 2022	12810	10	19418
6	September 2022	60	0	19478

Stage - II

(9)

F. No. 8-84/2005-FC
Government of India
Ministry of Environment & Forests
(FC Division)

Paryavaran Bhawan
CGO Complex, Lodhi Road
New Delhi-110 003

Dated : 13th November 2006

To

The Secretary (Forests),
Government of Orissa,
Bhubaneswar.

Sub: **Diversion of 61.48 ha of Revenue Forest/DPF in Dhenkanal and Angul Districts of Orissa for setting up of an Integrated Steel Plant by M/s Bhusan Steel and Strips Limited.**

Sir,

I am directed to refer to your letter No. 10F(Cons)52/2005/6686/F&E, Bhubaneswar dated 22.09.2005 whereunder the above mentioned proposal was submitted seeking prior approval of the Central Government in accordance with Section-2 of the Forest (Conservation) Act, 1980 and to say that the above proposal was examined by the Forest Advisory Committee (FAC) constituted under Section-3 of the Act.

2. After careful consideration of the proposal of the State Government and on the basis of recommendations of the above mentioned Advisory Committee, the Central Government granted in-principle approval vide letter dated 25.11.2005 subject to certain conditions. The compliance of these conditions was submitted vide your letter No. 10F(Cons)52/2005/17702/F&E dated 28.10.2006. After consideration of the proposal and compliance of various conditions by the State Government, the Central Government hereby conveys its approval under Section-2 of the Forest (Conservation) Act, 1980 for **diversion of 61.48 ha of Revenue Forest/DPF** in Dhenkanal and Angul Districts of Orissa for setting up of an Integrated Steel Plant by M/s Bhusan Steel and Strips Limited, subject to the fulfilment of following conditions :-

- (i) Legal status of the forest shall remain unchanged.
- (ii) Compensatory Afforestation shall be raised and maintained over non-forest land equal in extent to the forest land being diverted, at the project cost.
- (iii) The non-forest land identified for Compensatory Afforestation shall be declared as Reserved/Protected Forests. The Nodal Officer shall report compliance within three months.
- (iv) RCC pillars of 4 feet height shall be erected and maintained to demarcate the area by the user agency at the project cost and will be marked with forward and back bearings.
- (v) An undertaking from the user agency may also be obtained stating that in case the rates of Net Present Value (NPV) are revised upwards, the additional/differential amount shall be paid by the user agency.
- (vi) The State Government shall deposit Net Present Value and all other funds with the Ad-hoc Body of Compensatory Afforestation Fund Management and Planning Authority (CAMPA), in Account No. CA 1585 of Corporation Bank (A Government of India Enterprises), Block-11, Ground Floor, C.G.O. Complex, Phase-1, Lodhi Road, New Delhi-

110003, as per the instructions communicated vide letter No. 5-2/2006-FC dated 20.05.2006.

- (vii) The Conservation Plan, as submitted by the State Government shall be implemented at the project cost under supervision of Chief Wild Life Warden of the State.
- (viii) All efforts should be made for improvement of wildlife habitat around leasehold area in consultation with the Chief Wild Life Warden of the State Forest Department, as per the Wildlife Management Plan and at the project cost.
- (ix) The rehabilitation of displaced persons should not be done on forest land. The Rehabilitation and Resettlement Plan shall be implemented for settlement of displaced persons, at the project cost.
- (x) Trees shall be felled only when it becomes necessary and that too under strict supervision of State Forest Department, and at the cost of the project.
- (xi) No labour camps shall be established on the forest land.
- (xii) All necessary measures should be taken by the user agency to protect the environment.
- (xiii) Sufficient firewood shall be provided by the user agency to the labourers at the project cost after purchase from the State Forest Department/Forest Development Corporation.
- (xiv) The user agency shall ensure that there should be no damage to the available wildlife.
- (xv) The forest land shall not be used for any purpose other than that specified in the proposal.
- (xvi) The forest land thus diverted shall be non-transferable. Whenever and whatever extent of forest land is not required by the user agency, it shall be surrendered to the State Forest Department under intimation to this Ministry.

The State Government shall ensure compliance of all the above conditions.

Yours faithfully,

(Pankaj Asthana)
Assistant Inspector General of Forests

Copy to :-

1. The Principal Chief Conservator of Forests, Government of Orissa, Bhubaneswar.
2. The Nodal Officer, Forest Department, Government of Orissa, Bhubaneswar.
3. The Chief Conservator of Forests (Central), Regional Office, Bhubaneswar.
4. User Agency.
5. Guard File.
6. Monitoring Cell of FC Section.

(Pankaj Asthana)
Assistant Inspector General of Forests

SUMMARY OF WORK ZONE NOISE MONITERING

TATA STEEL LIMITED, MERAMANDALI

Period: From April to September 2022

SL	Name of the Unit	Location	Noise level in dB at 3 m.	Standard as per Factory Rule Govt of Odisha 1950 (8 Hrs.)
			Range	
1.	RMHS	Near RMHS-2EP-2Electrical building Area	80.2 to 84.2	90
		Near RMHS -2Yard No-4 ,5,6&7 Area	81.3 to 85	
		Near Yard No-2/3 Area	80.3 to 84.5	
2.	RMPP	Near CSB-1 I D Fan	84.2 to 85.2	90
		Near CSB-2 I D Fan	83.6 to 84.5	
		Near Pump house	73.2 to 83.6	
		Near Flip Flop Screen Area	78.4 to 84	
3.	Base Blending Plant	Near BB Plant Bunker ID fan-1	78.4 to 83.1	90
		Near BB Plant flux building ID fan-2	77.4 to 84.2	
		Near BB Plant coke screening building	68.9 to 85.7	
		Near BB Plant compressor house 1 &2	83.4 to 84.5	
		Near BB Plant Side Office	55.9 to 83.6	
4.	Coke Oven-1	Near Coal Pushing I D Fan area	75.4 to 76.9	90
		Near Stone Cutter Building area	75.3 to 89.6	
		Near M.H.S I.D fan	82.7 to 84.3	
		Near Battery-1 area	77.7 to 89.3	
		Near Battery-2 area	70.5 to 83.6	
5.	Coke Oven-02	Near Pusher car Emission control system I D Fan 1/2	80.2 to 82.7	90
		Near Guide car emission I D Fan 1/2	82.3 to 84.1	
		Near Exhauster house area	83.6 to 91.3	
		Near Water pumphouse area	83 to 88.2	
		Near Chemical Dosing E.T.P room area	73.8 to 83.6	
		Near Battery cellar ventilation blower	85.2 to 86.4	
		Near Battery coke oven gas de-graphitizing blower	81.2 to 86.3	
		Pushing emission control system ID fan	80.4 to 86.1	
6.	Sinter Plant-1	Near Main ID Fan-1	92.7 to 93.4	90.0
		Near Proper ting building area	71.4 to 84.7	
		Near Cooler fan area-1	84.2 to 84.5	
		Near Cooler fan area-2	83.6 to 84.4	
		Near Cooler fan area-3	84.2 to 85	
		Near Cooler fan area-4	84.8 to 85.7	
		Near 85m2 ESP IN D Fan area	84.3 to 88.1	
		Near 110m2 ESP ID fan area	84.2 to 84.8	
		Near Pump House Building area	80.4 to 86.4	
		Near bag filter ID fan area	83.2 to 85	

7.	Sinter Plant-02	Near Main ESP ID	83.1 to 85.4	90
		Near PD ESP ID fan	83.6 to 85.1	
		Near Cooler fan-1	84.1 to 85.6	
		Near Cooler fan-2	84.2 to 86.2	
		Near Cooler fan-3	84.3 to 86	
		Near M. N. D Area	69.3 to 84.7	
8.	Sinter Plant-03	Near Main ESP ID	84.2 to 85.4	90
		Near PD ESP ID fan	82.7 to 84.2	
		Near Cooler fan-1	83.1 to 85	
		Near Cooler fan-2	84.9 to 86	
		Near Cooler fan-3	84.3 to 85.7	
		Near M. N. D Area	69.4 to 84	
		Near I.D. fan-1 area	81.4 to 84	
9.	DRI	KILN NO-1		90
		Near Cooling tower area	84.3 to 85.1	
		Near De-dusting 01 ID Fan	83.2 to 90.2	
		KILN NO-2		
		Near Cooling tower area	75.4 to 79.4	
		KILN NO-3		
		Near Cooling tower area	77.3 to 85.4	
		Near De-dusting 02 ID Fan	83.3 to 85.6	
		KILN NO-4		
		Near Cooling tower area	82.7 to 85.1	
		KILN NO-5		
		Near Cooling tower area	77.4 to 85.1	
		Near De-dusting 03 ID Fan	83.7 to 86.3	
		KILN NO-6		
		Near Cooling tower area	76.7 to 85	
		KILN NO-7		
		Near Cooling tower area	73.4 to 85.3	
		Near De-dusting 04 ID Fan	82.7 to 87	
		KILN NO-8		
		Near Cooling tower area	82.7 to 85.2	
KILN NO-9				
Near Cooling tower area	80.2 to 85.1			
Near De-dusting 05 ID Fan	83.4 to 88.4			
KILN NO-10				
Near Cooling tower area	83.2 to 85			
10.	BF-2 Stock House	Near Motor I D fan-1	83.2 to 84.7	90
		Near Motor I D fan-2	83.6 to 85.1	
		Near Motor I D fan-3	84.1 to 85.2	
		Near Cooling tower area	76.5 to 85.3	
		Near Fire Pump House Building area	84.4 to 96.3	
		Near B F-2 Furnace area	79 to 84.3	
11.	BF-2 Stock House	Near ID fan -1	83.1 to 85.6	90
		Near ID fan -2	85.1 to 86.2	
12.	BF-1 Cast House	Near Motor I D fan-1 area	83.1 to 85.3	90
		Near Motor I D fan-2 area	84.1 to 85.3	
		Near Motor I D fan-3 area	83.4 to 85.3	
		Near Motor I D fan-4 area	82.7 to 85.4	
		Near secondary Cooling tower area	80.1 to 85	

		Near Mein Pump House Building area	83.6 to 89.6	
		Near B F-1 Furness area	76.4 to 84.2	
13.	BF-1 Stock House	Near Motor I D fan-1 area	84.2 to 85.4	90
		Near Motor I D fan-2 area	84.2 to 85.5	
		Near Fines building Area	73.4 to 84.6	
		Near Boiler-1 Area	83.6 to 84.7	
14.	Lime Plant	Near De dusting-2 ID fan	83.1 to 88.1	90
		Near Blower room area	88.5 to 113.6	
		Near Cooling tower area	75.9 to 89.7	
		Near De dusting-3 ID fan	73.5 to 83.7	
		Near Pump House area	83.4 to 88.1	
		Near Compressor building area	84.6 to 88.4	
15.	BOF Shop	Near Secondary ID fan area-1	85.4 to 88.5	90
		Near Secondary ID fan area-2	86.2 to 88.4	
		Near Secondary ID fan area-3	84.4 to 87.4	
		Near Secondary ID fan area-4	87.5 to 88.4	
		Near Cooling Tower area	85.2 to 99.8	
		Near Primary/ Secondary ID fan area-1/2	80.3 to 88.2	
		Near Weigh bridge area	79.9 to 84.2	
16.	SMS-2 FES 1&2	Near Motor ID fan -1	86.4 to 90.2	90
		Near Motor ID fan -3	86.5 to 90	
		Near Motor ID fan -4	86.3 to 92.4	
		Near Motor ID fan -5	86.1 to 91.2	
17.	HSM	Near COG Fan area-1/2	80.1 to 83	90
		Near RHF Office area	79.3 to 84.5	
		Near Roughing Mill area	82.7 to 89.1	
		Near Roll Shot area	80.7 to 88.1	
		Near Roll Shop area	75.8 to 83	
		Near HSM Quality Lab area	84.2 to 97.7	
		Near B F G Motor fan RHF area	78.4 to 88.8	
		Near Combustion fan area	84.3 to 86.2	
		Near Re-heating furnace area	78.9 to 84.3	
		Near COG Fan area-1/2	80.4 to 81.7	
18.	CRM	Near Air Receiver Tank area	84.7 to 97.3	90
		Near Fire water pump house area	82.7 to 86	
		Near ETP area	80.8 to 86.7	
		Near JP-1 Coil yard area	83.1 to 86.3	
		Near JP-2 Coil yard area	83 to 88	
		Near JP-3 Coil yard area	84.2 to 90.3	
		Near Hot Generator Area	83.2 to 85	
19.	BFPP-1 Boiler-2	Near ID Fan -1	80.4 to 84.2	90
		Near ID Fan-2	82.4 to 85.3	
		Near FD fan	86.5 to 88.4	
		Near Boiler-2 Area	84.2 to 92.5	
20.	BFPP-1 Boiler-3	Near ID Fan -1	83.1 to 85.4	90
		Near ID Fan -2	84.7 to 85.4	
		Near FD fan	86.4 to 88.4	
		Near Boiler-3 Area	85.2 to 90.3	
21.	BFPP-1 Compressor House	Near Entrance Point	90.5 to 95.2	90
		Near Equipment	98 to 99.1	

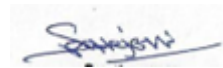
22.	BFPP-2 Boiler No-3	Near I.D. fan-2 area	82.7 to 85.2	90
		Near P.A. fan- area	86.4 to 88.5	
		Near S.A. fan- area	86.6 to 88.9	
		Near Boiler -3 area	83.4 to 86.6	
		Near cooling tower-area	82.1 to 86.2	
		Near I.D. fan-1 area	82.6 to 84.3	
		Near I.D. fan-2 area	83.3 to 84.3	
23.	BFPP-2 Boiler No-2	Near P.A. fan- area	85.4 to 87	90
		Near S.A. fan- area	85.3 to 87.1	
		Near Boiler -3 area	84.3 to 86.2	
		Near cooling tower-area	83.6 to 85.2	
24.	Gas fired boiler 60 TPH Area	Near ID fan -1	81.8 to 84.3	90
		Near ID fan -2	83.6 to 84.8	
		Near FD fan -1	82.5 to 85	
		Near FD fan -2	81.4 to 85	
		Near Boiler area	74.9 to 84.1	
25.	Gas fired boiler 125 TPH Area	Near ID fan -1	84.6 to 88.4	90
		Near ID fan -2	85.4 to 88.3	
		Near FD fan -1	85.1 to 88.2	
		Near FD fan -2	86.7 to 88.5	
		Near Boiler area	80.4 to 85.3	
26.	Gas fired boiler 250 TPH Area	Near ID fan -1/2 area	83.4 to 85.4	90
		Near FD fan -1/2 area	84.2 to 86.7	
		Near Boiler area	80.1 to 85.3	
27.	110 MW Power Plant	Boiler-01		90
		Near ID fan area	80.4 to 84.5	
		Near Boiler area	80.2 to 85.2	
		Boiler-02		
		Near Boiler area	88.6 to 91.9	
		Boiler-03		
		Near ID fan	82.7 to 84.8	
		Near Boiler area	79.2 to 85.6	
		Boiler-04		
		Near ID fan	83.1 to 85.3	
		Near Boiler area	84.5 to 86.2	
		Boiler-5		
		Near ID fan	80.4 to 82	
		Near Boiler area	76.4 to 85.4	
		Boiler-6		
		Near ID fan	82.7 to 84.3	
		Near Boiler area	81 to 86.3	
		Boiler-7		
		Near ID fan	83 to 85	
		Near Boiler area	79.3 to 86.1	
		Boiler-8		
		Near ID fan	81.4 to 84.5	
		Near Boiler area	84.5 to 86.4	
Boiler-9				
Near ID fan	82.5 to 85.3			
Near Boiler area	73.3 to 86.2			
	Boiler-10			

		Near ID fan	83.1 to 84.8	
		Near Boiler area	75.6 to 85.4	
28.	Oxygen Plant-02	Near Nitrogen compressor House-1	105.3 to 108.2	90
		Near Nitrogen compressor House-2	105.4 to 108.5	
		Near Nitrogen compressor House-3	105.3 to 108.5	
		Near Air compressor House area-1	102.4 to 105.3	
		Near Control room office area	92.7 to 100.6	
		Near A/ C Package room area	82.1 to 85.4	
		Near Argon cold box area	80.7 to 84.9	
		Near Turbine-1 area	84.2 to 86.2	
29.	Centralize Compressor House -2	Near Entrance Point	88.4 to 90.5	90
		Near Exit Point	82.3 to 86.5	
		Near Equipment	88.1 to 97.1	
		Inside Shift office	60.4 to 64	
		Inside Operator office	66.3 to 71.3	
		Inside Store	67.3 to 76	

AMBIENT NOISE MONITORING
TATA STEEL LIMITED, MERAMANDALI

Period: April 2022 to September 2022

S.N	Location	Noise level in dB(A) Leq (Day time Range)	Standard dB(A) Leq (Day Time)	Noise level in dB(A) Leq (Night time Range)	Standard dB(A) Leq (Night Time)
1	Colony	51.3-53.9	55	43.6-46.9	45
2	CRM	56.6-69.2	75	53.9-63.3	70
3	Material Gate	56.9-67.8		52.7-61.4	
4	AEL	56.7-70.1		52.5-64.8	
5	Wagon Tripler	57.4-67.2		53.5-64.7	
6	Coke Oven-2	53.7-68.6		50.8-65.6	
7	Water Complex	55.8-69.5		50.2-65.1	



Authorized Signature

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

CSR EXPENDITURE AND ACTIVITY HIGHLIGHTS (Around Tata Steel Limited, Meramandali) For Period April 2022 to September 2022		
PROGRAM HEAD	Expenditure in Lakhs	MAJOR INTERVENTIONS/REMARKS
Health	4.98	Mobile Medical Unit; Adolescent empowerment; Dengue/Malaria control
Drinking Water	54.20	Installation of tubewells; deep bore wells with overhead tank and pipeline system
EDUCATION	157.79	School infrastructure; Education project: QUEST
LIVELIHOOD	45.68	WEE Project; Other livelihood activities
INFRASTRUCTURE & MISC.	20.52	Construction & repair of road; Installation of solar lights
SPORTS	0.90	Volleyball coaching; Sports tournaments
TOTAL	284.07	Rs. 2.84 crores