



Ref. No. TSL/FAMD/FAPT/FY26/2571

Date:29/05/2025

To

The Director, MOEF & CC
Impact Assessment Division (EAC-Industry-1)
Ministry of Environment, Forest & Climate Change,
Indira Paryavaran Bhavan, Jor Bagh Road, Aliganj,
New Delhi-110003

Subject: Submission of Half Yearly EC Compliance for a period of October' 2024 to March' 2025 considering the financial year from 1st April 2024 to 31st March 2025.

Ref:

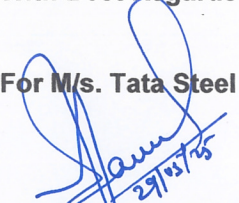
1. EC Vide File No.- J-11011/372/2009-IA II (I) dated 30th September 2010
2. EC Vide File No. J-11011/372 /2009-IA II (I) dated 21st September 2012.

Dear Sir,

With reference to the subject and reference number cited above, we are herewith submitting the "**Half Yearly Compliance Report of Environment Clearance conditions for the period of October' 2024 to March' 2025**" for your kind perusal and needful .

With Best Regards

For M/s. Tata Steel Limited


Alok Kumar Panda
Plant Head
Ferro Alloys Plant, Jajpur

Amar Panda
Ferro Alloys Plant, Jajpur
TATA STEEL LTD.
C.P.O.-Manatira, Via-Danagadi
Pin-755026, Odisha

Enclosure: As Enclosed

Cc: The Regional Officer, Kalinganagar, Jajpur Road.
The MOEF, Regional Office, Bhubaneswar
The State Pollution Control Board, Bhubaneswar

TATA STEEL LIMITED

Registered Office Bombay House 24 Homi Mody Street Fort Mumbai 400 001 India
Tel 91 22 6665 8282 Fax 91 22 6665 7724 Website www.tatasteel.com
Corporate Identity Number L27100MH1907PLC000260

Your (**Half Yearly Compliance Report**) has been **Submitted** with following details

Proposal No	IA/OR/IND/4594/2010
Compliance ID	128218754
Compliance Number(For Tracking)	EC/M/COMPLIANCE/128218754/2025
Reporting Year	2025
Reporting Period	01 Jun(01 Oct - 31 Mar)
Submission Date	31-05-2025
RO/SRO Name	Shri Senthil Kumar Sampath
RO/SRO Email	agmu156@ifs.nic.in
State	ODISHA
RO/SRO Office Address	Integrated Regional Offices, Bhubaneswar

Note:- SMS and E-Mail has been sent to Shri Senthil Kumar Sampath, ODISHA with Notification to Project Proponent.

**Half Yearly Compliance Report
2025
01 Jun(01 Oct - 31 Mar)**

Acknowledgement

Proposal Name	Expansion of Ferro Alloys Plant (Submerged Arc Furnace 4*16.5 MVA (existing), 1*33 MVA (Proposed) along with Captive Power Plant (67.5MW) at Kalinganagar Industrial Complex (Growth Centre), Village: Kanchrigaon & Chandia, Mouza Duburi, Tehsil: Sukinda, District :Jajpur, Odisha.		
Name of Entity / Corporate Office	Ferro Alloys Plant,Jajpur,Tata Steel Limited		
Village(s)	N/A		
District	JAJAPUR		
Proposal No.	IA/OR/IND/4594/2010	Category	Industrial Projects - 1
Plot / Survey / Khasra No.	N/A	Sub-District	N/A
State	ODISHA	Entity's PAN	*****2803M
MoEF File No.	J-11011/372/2009-IA-II(I)	Entity name as per PAN	UTSAV KASHYAP

Compliance Reporting Details

Reporting Year	2025
Remarks (if any)	Submission of Half Yearly EC Compliance for a period of October 2024 to March 2025 in details as below.
Reporting Period	01 Jun(01 Oct - 31 Mar)

Details of Production and Project Area

Name of Entity / Corporate Office Ferro Alloys Plant,Jajpur,Tata Steel Limited

	Project Area as per EC Granted	Actual Project Area in Possession
Private	24.29	24.29
Revenue Land	0	0
Forest	0	0
Others	0	0
Total	24.29	24.29

Production Capacity

Sr. no	Product Name	units	Valid Upto	Capacity	Production last year	Capacity as per CTO
1	Ferro Manganese, Silico Manganese, Ferro Silicon, Ferro Chrome	Tons per Annum (TPA)	31/03/2027	100000	45228	100000

Conditions

Specific Conditions

Sr.No.	Condition Type	Condition Details
1	ENERGY PRESERVATION MEASURES	No charcoal shall be used as fuel. Pet coke shall be used as fuel instead of charcoal from unknown sources.
PPs Submission: Complied Low Ash Metallurgical Coke (LAM Coke) is used for Ferro Chrome manufacturing in place of Pet Coke. Therefore, as a replacement, for more clean option met coke is used.		Date: 30/05/2025
2	AIR QUALITY MONITORING AND PRESERVATION	Continuous monitoring facilities for all the stacks and sufficient air pollution control equipments viz. fume extraction system with bag filters, ID fan and stack of adequate height to submerged arc furnace shall be provided to control emissions below 50 mg/Nm3.
PPs Submission: Complied Bag filter based DE systems have been provided in all process stacks. CEMS has been installed for the continuous emission monitoring in all process stacks.		Date: 31/05/2025
3	AIR QUALITY MONITORING AND PRESERVATION	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
PPs Submission: Complied The following control measures are implemented to keep a check on secondary fugitive emission :- 1. Concreting of internal roads and additional mobile water sprinkler are engaged within the premises for fugitive dust suppression. 2. Tapping fumes are sucked by a Hood and collection system which is routed through GCP. 3. Water fogging system installed at feeding points. 4. Water fogging system installed at feeding points. At all the conveyor nodes, intermittent water sprinkling is practiced.		Date: 31/05/2025
4	WATER QUALITY MONITORING AND PRESERVATION	Prior permission for the drawl of 9,155 KLD water from competent authority shall be obtained. 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 should be met from other sources.
PPs Submission: Complied 960 KLD of raw water is used in Submerged Arc Furnace. Additionally, NOC has also been obtained from CGWA for withdrawal of ground water for drinking purposes. Rainwater getting collected in the plant premises is being recycled back in plant processes.		Date: 31/05/2025
5	WATER QUALITY MONITORING AND PRESERVATION	Regular monitoring of influent and effluent surface, sub-surface and ground water shall be ensured and treated wastewater shall meet the norms prescribed by the State Pollution Control Board or described

		under the E(P) Act whichever are more stringent. Leachate study for the effluent generated and analysis should also be regularly carried out and report submitted to the Ministry's Regional Office at Bhubaneswar, SPCB and CPCB.
PPs Submission: Complied Monitoring of influent and effluent surface and sub surface and ground water is being done on regular basis. ETP and STP is operational and the report is being submitted to SPCB in monthly basis.		Date: 31/05/2025
6	WASTE MANAGEMENT	'Zero' effluent discharge shall be strictly followed and no wastewater should be discharged outside the premises.
PPs Submission: Complied The Water Circuit of the Plant adheres to Zero Effluent Discharge principle.		Date: 31/05/2025
7	WASTE MANAGEMENT	All the Ferro alloy slag shall be used for land filling inside the plant or used as building material only after passing through Toxic Chemical Leach ability Potential (TCLP) test. Otherwise, hazardous substances shall be recovered from the slag and output waste and be disposed in secured landfill as per CPCB guidelines.
PPs Submission: Complied TCLP Test is done on the slag samples, and on the basis of the results, the slag is used for construction and for land levelling purposes. Unsold slag is being stored inside the plant premises.		Date: 31/05/2025
8	WASTE MANAGEMENT	Slag produced in Ferro Manganese (Fe-Mn) production shall be used in manufacture Silico Manganese (Si-Mn).
PPs Submission: Complied Not Applicable. The unit is not producing Manganese (Mn) Alloys at present. In future, if there is production of Ferro Manganese (Fe-Mn), the slag shall be utilized accordingly.		Date: 31/05/2025
9	Statutory compliance	No Ferro Chrome shall be manufactured without prior approval from the Ministry of Environment & Forests.
PPs Submission: Complied Amended EC for production of Ferro Chrome apart from producing Ferro Alloys (Ferro Manganese, Silico Manganese and Ferro Silicon) within approved production capacity has been obtained from MoEF vide File No. J-11011/372/2009-IA,II(I) on dated 21.09.2012.		Date: 31/05/2025
10	Risk Mitigation and Disaster Management	Risk and Disaster Management Plan along with the mitigation measures should be prepared and a copy submitted to the Ministry's Regional Office at Bhubaneswar, OSPB and CPCB within 3 months of issue of environment clearance letter
PPs Submission: Complied Complied. Onsite Emergency plan was prepared and was approved by Directorate of Factories and Boilers, Bhubaneswar. A copy of the same was also submitted to OSPB and CPCB.		Date: 31/05/2025
11	GREENBELT	As proposed, green belt shall be developed in at least 33 % of the project area. Selection of the plant species shall be as per the CPCB guidelines in consultation with the DFO.
PPs Submission: Complied Plant is located over the area of 60 Acre. The green cover has been developed over an area of 10.8 Acres (18 percent of total area). Development of green cover over additional area is in progress to achieve 33percent green cover and shall be completed by December 26.		Date: 31/05/2025

12	Corporate Environmental Responsibility	At least 5 % of the total cost of the project should be earmarked towards the corporate social responsibility and item- wise details along with time bound action plan (need based) should be prepared and submitted to the Ministry's Regional Office at Bhubaneswar. Implementation of such program shall be ensured accordingly in a time bound manner.
PPs Submission: Complied Tata Steel Mining Ltd. (amalgamated with Tata Steel Limited) has acquired the Plant through NCLT under the IBC code. TSL is engaging with Tata Steel Foundation (TSF) for implementing CSR activities as per corporate guidelines.		Date: 31/05/2025
13	MISCELLANEOUS	The company shall provide housing for construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.
PPs Submission: Complied Complied during construction phase.		Date: 31/05/2025
14	Statutory compliance	The company shall comply with all the conditions stipulated while according environmental clearance vide Ministry's letter of even number dated 30th September, 2010.
PPs Submission: Complied Conditions stipulated in previous EC File No. J-11011/372/2009-IA,II(I) dated 30/09/2010 are being complied.		Date: 31/05/2025
15	WASTE MANAGEMENT	The company shall recover ferro chrome from ferro chrome slag. The remaining slag shall be disposed of in the waste disposal site after carrying TCLP Test.
PPs Submission: Complied The processed slag is utilized directly in filling the low-lying areas. We have earmarked the area for stacking of slag and is being followed. TCLP is being carried out before disposing the slag.		Date: 31/05/2025
16	WATER QUALITY MONITORING AND PRESERVATION	The ground water quality monitoring around the disposal site shall be regularly monitored and the results of the monitored data shall be submitted to the SPCB and to the RO of the Ministry.
PPs Submission: Complied Ground water quality monitoring around the disposal site is being carried out regularly and result is being submitted to SPCB and RO, MoEF, Bhubaneswar and enclosed here with.		Date: 31/05/2025
17	MISCELLANEOUS	The trucks carrying the slag shall be covered with tarpaulin.
PPs Submission: Complied Tarpaulin covered transportation of slag is being carried out.		Date: 31/05/2025
18	AIR QUALITY MONITORING AND PRESERVATION	The National Ambient Air Quality Standards issued by the Ministry vide G.S.R. No. 826(E) dated 16th November, 2009 shall be followed
PPs Submission: Complied Regular Monitoring has been carried out and indicate that the AAQ results are within the NAAQS limit during the operation along with the pollution control equipment and the report is being submitted to SPCB in monthly basis.		Date: 31/05/2025

General Conditions

Sr.No.	Condition Type	Condition Details
1	Statutory compliance	The project authorities must strictly adhere to the stipulations made by the Orissa State Pollution Control Board and the State Government.
PPs Submission: Complied All the stipulations made by the Odisha Pollution Control Board and the State Government are being strictly followed.		Date: 31/05/2025
2	Statutory compliance	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests.
PPs Submission: Complied Acknowledged and status quo is being and will be maintained.		Date: 31/05/2025
3	AIR QUALITY MONITORING AND PRESERVATION	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.
PPs Submission: Complied Stack emissions from all the units are being maintained well within the statutory limits.		Date: 31/05/2025
4	AIR QUALITY MONITORING AND PRESERVATION	At least four ambient air quality monitoring stations should be established in the downward direction as well as where maximum ground level concentration of PM10, SO2, 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.
PPs Submission: Complied Ambient Air Quality is being monitored at 5 stations across the units. Monitoring report of AAQ is being submitted to SPCB on monthly basis.		Date: 31/05/2025
5	WASTE MANAGEMENT	Industrial wastewater 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 wastewater shall be utilized for plantation purpose.
PPs Submission: Complied Process related waste water is being collected and treated in the existing ETP. Treated water is being utilized in plant operations. Surface run-off is also being treated in ETP and reused in plantation and water sprinkling on the roads. The water is being tested every month.		Date: 31/05/2025
6	Noise Monitoring & Prevention	The overall noise levels in and around the plant area shall be kept well within the standards (85 dBA) 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 dBA (daytime) and 70dBA (nighttime).

PPs Submission: Complied Following measures are implemented to restrict noise levels within prescribed limits:- 1. Regular maintenance of noise generating machineries is being carried out. 2. Use of vibration dampeners for all the equipment.		Date: 31/05/2025
7	Statutory compliance	Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories act
PPs Submission: Complied Done as per the statute along with record keeping. It is being done as per the Factories Act in every 3rd Quarter of a Financial Year covering complete employees and contractor workmen.		Date: 31/05/2025
8	MISCELLANEOUS	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.
PPs Submission: Complied Feasibility study is completed. Going forward, Tata Steel has a plan to develop rainwater recharge pits/catchment pond. The same is expected to be completed by June 2026.		Date: 31/05/2025
9	Statutory compliance	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 programs, educational programs, drinking water supply and health care etc.
PPs Submission: Complied All the stipulated conditions of the Environmental Clearance are being complied to safeguard the immediate surrounding environment. TSL is engaging with Tata Steel Foundation (TSF) for implementing CSR activities as per corporate guidelines.		Date: 31/05/2025
10	MISCELLANEOUS	Requisite amount 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.
PPs Submission: Complied Annual recurring cost for maintenance of Pollution control equipments to the tune of 3 Cr/annum is being spent towards environmental protection measures. One time Capital cost for construction of new WTP, Internal Roads and drain, plantation to the tune of around 10-12 crores for the year 2025-2026.		Date: 31/05/2025
11	MISCELLANEOUS	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.
PPs Submission: Complied Environment Clearance copy has been submitted to the concerned Govt. /Private Bodies. Environment Clearance letter has also been uploaded on the Tata Steel website, www.tatasteel.com		Date: 31/05/2025
12	AIR QUALITY MONITORING AND PRESERVATION	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 SPCB. The criteria pollutant levels namely; PM10, SO2, NOx (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.
PPs Submission: Complied Six-monthly EC compliance reports are uploaded to the company's website www.tatasteel.com. Electronic multi-line display board installed to display the criteria pollutant levels namely, PM10, SO2, NOX or critical sectoral parameters, indicated for the projects at main gate of the company for the public domain. The compliance reports are being sent to the Regional Office, MoEFCC and the respective zonal office of CPCB and SPCB.		Date: 31/05/2025
13	Statutory compliance	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, the respective Zonal Office of CPCB and the SPCB. The Regional Office of this Ministry at Bhubaneswar/CPCB/SPCB shall monitor the stipulated conditions.
PPs Submission: Complied In compliance with MoEFCCs notification vide S.O-5845, dt. 28th Nov 2018, the online submitted six-monthly compliance report with required annexures is being submitted to MoEFCC/OSPCB Regional Office through e-mail.		Date: 31/05/2025
14	Statutory compliance	The environmental statement for each financial year ending 31st 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.
PPs Submission: Complied The environmental statement is being submitted every year to OSPCB and RO MoEFCC. Copy of the same is also uploaded on Companys website.		Date: 31/05/2025
15	Statutory compliance	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.
PPs Submission: Complied Tata Steel Ltd. has acquired the Plant through NCLT under the IBC code. The advertisement done by erstwhile owner i.e.. Rohit Ferrotech limited is not traceable by us. Once the EC is transferred in the name of Tata Steel, the advertisement will be published and hosted on the website.		Date: 31/05/2025
16	Statutory compliance	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.

PPs Submission: Complied

Tata Steel Ltd. has acquired the Plant through NCLT under the IBC code. Post-acquisition, before the start of the work concerned authorities were informed. Presently the four furnaces (16.5 MVA) are in operation at a rated capacity 100000 TPA after obtaining valid CTO from SPCB

Date:
31/05/2025

Visit Remarks**Last Site Visit Report Date:**

N/A

Additional Remarks:

Note: This acknowledgement is as per the details submitted by project proponent. In no way is this document to be considered as conclusion on any action on the compliance of the project. This is strictly for the project proponent's reference purpose.

**Six-Monthly Compliance Report of stipulated conditions of
Environmental Clearance
{Period: October 2024 – March 2025}**

Half -Yearly Compliance Report

Name of the Project: Ferro Alloys Plant, Jajpur of M/s Tata Steel Limited

Environmental Clearance Conditions

(MoEF LETTER NO. EC Vide File No.- J-11011/372/2009-IA II (I) dated 30th September 2010

EC Vide File No. J-11011/372 /2009-IA II (I) dated 21st September 2012. ISSUED BY
GOVT. OF INDIA, MINISTRY OF ENVIRONMENT & FOREST, NEW DELHI)

Period: Oct'2024 to Mar'2025

Submitted By:

Ferro Alloys Plant, Jajpur

Of M/s Tata Steel Limited

P.O- Duburi, Dist. Jajpur

Odisha- 755026

Six-Monthly Compliance Report of stipulated conditions of Environmental Clearance {Period: October 2024 – March 2025}

S.No.	EC Conditions	Compliances
Specific Conditions		
1.	No charcoal shall be used as fuel. Pet coke shall be used as fuel instead of charcoal from unknown sources.	Low Ash Metallurgical Coke (LAM Coke) is used for Ferro Chrome manufacturing in place of Pet Coke which is a cleaner alternative to pet coke.
2.	Continuous monitoring facilities for all the stacks and sufficient air pollution control equipment's viz. fume extraction system with bag filters, ID fan and stack of adequate height to submerged arc furnace shall be provided to control emissions below 50 mg/Nm ³ .	Bag filter based DE systems have been provided in all process stacks. CEMS has been installed for the continuous emission monitoring in all process stacks.
3.	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.	Regular Monitoring has been carried out and indicate that the AAQ results are within the NAAQS limit during the operation along with the pollution control equipment and the report is being submitted to SPCB in monthly basis.
4.	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.	<p>The following control measures are implemented to keep a check on secondary fugitive emission :-</p> <ol style="list-style-type: none"> 1. Concreting of internal roads and additional mobile water sprinkler are engaged within the premises for fugitive dust suppression. 2. Tapping fumes are sucked by a Hood and collection system which is routed through GCP. 3. Water fogging system installed at feeding points. 4. Water fogging system installed at feeding points. At all the conveyor nodes, intermittent water sprinkling is practiced.
5.	Prior permission for the drawl of 9,155 KLD water from competent authority shall be obtained. 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 should be met from other sources.	960 KLD of raw water is used in Submerged Arc Furnace. Additionally, NOC has also been obtained from CGWA for withdrawal of ground water for drinking purposes. Rainwater getting collected in the plant premises is being recycled back in plant processes.
6.	Regular monitoring of influent and effluent surface, sub-surface and ground water shall be ensured and treated wastewater shall meet the norms prescribed by the State Pollution Control Board or described under the E(P) Act whichever are more stringent. Leachate study	Monitoring of influent and effluent surface and sub surface and ground water is being done on regular basis. ETP and STP is operational and the report is being submitted to SPCB in monthly basis.

**Six-Monthly Compliance Report of stipulated conditions of
Environmental Clearance
{Period: October 2024 – March 2025}**

S.No.	EC Conditions	Compliances
	for the effluent generated and analysis should also be regularly carried out and report submitted to the Ministry's Regional Office at Bhubaneswar, SPCB and CPCB.	
7.	'Zero' effluent discharge shall be strictly followed and no wastewater should be discharged outside the premises.	The Water Circuit of the Plant adheres to Zero Effluent Discharge principle.
8.	All the Ferro alloy slag shall be used for land filling inside the plant or used as building material only after passing through Toxic Chemical Leach ability Potential (TCLP) test. Otherwise, hazardous substances shall be recovered from the slag and output waste and be disposed in secured landfill as per CPCB guidelines.	TCLP Test is done on the slag samples, and on the basis of the results, the slag is used for construction and for land levelling purposes. Unsold slag is being stored inside the plant premises.
9.	Slag produced in Ferro Manganese (Fe-Mn) production shall be used in manufacture Silico Manganese (Si-Mn).	Not Applicable. The unit is not producing Manganese (Mn) Alloys at present. In future, if there is production of Ferro Manganese (Fe-Mn), the slag shall be utilized accordingly.
10.	No Ferro Chrome shall be manufactured without prior approval from the Ministry of Environment & Forests.	Amended EC for production of Ferro Chrome apart from producing Ferro Alloys (Ferro Manganese, Silico Manganese and Ferro Silicon) within approved production capacity has been obtained from MoEF vide File No. J-11011/372/2009-IA,II(I) on dated 21.09.2012.
11.	Risk and Disaster Management Plan along with the mitigation measures should be prepared and a copy submitted to the Ministry's Regional Office at Bhubaneswar, OSPCB and CPCB within 3 months of issue of environment clearance letter.	Complied. Onsite Emergency plan was prepared and was approved by Directorate of Factories and Boilers, Bhubaneswar. A copy of the same was also submitted to OSPCB and CPCB.
12.	As proposed, green belt shall be developed in at least 33 % of the project area. Selection of the plant species shall be as per the CPCB guidelines in consultation with the DFO.	Plant is located over the area of 60 Acre. The green cover has been developed over an area of 10.8 Acres (18 percent of total area). Development of green cover over additional area is in progress to achieve 33 percent green cover and shall be completed by December 26.
13.	At least 5 % of the total cost of the project should be earmarked towards the corporate social responsibility and item- wise details along with time bound action plan (need based) should be prepared and submitted to the Ministry's Regional Office at Bhubaneswar. Implementation of such program shall be	Tata Steel Mining Ltd. (amalgamated with Tata Steel Limited) has acquired the Plant through NCLT under the IBC code. TSL is engaging with Tata Steel Foundation (TSF) for implementing CSR activities as per corporate guidelines.

Six-Monthly Compliance Report of stipulated conditions of Environmental Clearance {Period: October 2024 – March 2025}

S.No.	EC Conditions	Compliances
	ensured accordingly in a time bound manner.	
14.	The company shall provide housing for construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	Complied during construction phase.
General Conditions		
1.	The project authorities must strictly adhere to the stipulations made by the Orissa State Pollution Control Board and the State Government.	All the stipulations made by the Odisha Pollution Control Board and the State Government are being strictly followed.
2.	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests.	Acknowledged and status quo is being and will be maintained.
3	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.	Stack emissions from all the units are being maintained well within the statutory limits.
4	At least four ambient air quality monitoring stations should be established in the downward direction as well as where maximum ground level concentration of PM ₁₀ , SO ₂ , 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.	Ambient Air Quality is being monitored at 5 stations across the units. Monitoring report of AAQ is being submitted to SPCB on monthly basis.
5	Industrial wastewater 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 wastewater shall be utilized for plantation purpose.	Process related waste water is being collected and treated in the existing ETP. Treated water is being utilized in plant operations. Surface run-off is also being treated in ETP and reused in plantation and water sprinkling on the roads. The water is being tested every month.
6	The overall noise levels in and around the plant area shall be kept well within the standards (85 dBA) 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	Following measures are implemented to restrict noise levels within prescribed limits:- 1. Regular maintenance of noise generating machineries is being carried out.

Six-Monthly Compliance Report of stipulated conditions of Environmental Clearance {Period: October 2024 – March 2025}

S.No.	EC Conditions	Compliances
	standards prescribed under EPA Rules, 1989 viz. 75 dBA (daytime) and 70dBA (nighttime).	2. Use of vibration dampeners for all the equipment.
7	Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories act	Done as per the statute along with record keeping. It is being done as per the Factories Act in every 3rd Quarter of a Financial Year covering complete employees and contractor workmen.
8	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.	Feasibility study is completed. Going forward, Tata Steel has a plan to develop rainwater recharge pits/catchment pond. The same is expected to be completed by June 2026
9	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 programs, educational programs, drinking water supply and health care etc.	All the stipulated conditions of the Environmental Clearance are being complied to safeguard the immediate surrounding environment. TSL is engaging with Tata Steel Foundation (TSF) for implementing CSR activities as per corporate guidelines.
10	Requisite amount 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.	Annual recurring cost for maintenance of Pollution control equipments to the tune of 3 Cr/annum is being spent towards environmental protection measures. One time Capital cost for construction of new WTP, Internal Roads and drain, plantation to the tune of around 10-12 crores for the year 2025-2026.
11	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.	Environment Clearance copy has been submitted to the concerned Govt. /Private Bodies. Environment Clearance letter has also been uploaded on the Tata Steel website, www.tatasteel.com
12	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 SPCB. The criteria pollutant levels namely; PM ₁₀ , SO ₂ , NO _x	Six-monthly EC compliance reports are uploaded to the company's website www.tatasteel.com . Electronic multi-line display board installed to display the criteria pollutant levels namely, PM ₁₀ , SO ₂ , NO _x or critical sectoral parameters, indicated for the projects at main gate of the company for

Six-Monthly Compliance Report of stipulated conditions of Environmental Clearance {Period: October 2024 – March 2025}

S.No.	EC Conditions	Compliances
	(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.	the public domain. The compliance reports are being sent to the Regional Office, MoEFCC and the respective zonal office of CPCB and SPCB.
13	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, the respective Zonal Office of CPCB and the SPCB. The Regional Office of this Ministry at Bhubaneswar/CPCB/SPCB shall monitor the stipulated conditions.	In compliance with MoEFCCs notification vide S.O-5845, dt. 28th Nov 2018, the online submitted six-monthly compliance report with required annexures is being submitted to MoEFCC/OSPCB Regional Office through e-mail.
14	The environmental statement for each financial year ending 31st 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.	The environmental statement is being submitted every year to OSPCB and RO MoEFCC. Copy of the same is also uploaded on Companys website.
15	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.	Tata Steel Ltd. has acquired the Plant through NCLT under the IBC code. The advertisement done by erstwhile owner i.e.. Rohit Ferrotech limited is not traceable by us. Once the EC is transferred in the name of Tata Steel, the advertisement will be published and hosted on the website.
16	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.	Tata Steel Ltd. has acquired the Plant through NCLT under the IBC code. Post-acquisition, before the start of the work concerned authorities were informed. Presently the four furnaces (16.5 MVA) are in operation at a rated capacity 100000 TPA after obtaining valid CTO from SPCB,

**Six-Monthly Compliance Report of stipulated conditions of
Environmental Clearance
{Period: October 2024 – March 2025}**

<u>EC File No. J-11011/372/2009-IA,II(I) dated 21.09.2012</u>		
S.No.	Specific Conditions	Compliances
1.	The company shall comply with all the conditions stipulated while according environmental clearance vide Ministry's letter of even number dated 30 th September, 2010.	Conditions stipulated in previous EC File No. J-11011/372/2009-IA,II(I) dated 30/09/2010 are being complied.
2.	The company shall recover ferro chrome from ferro chrome slag. The remaining slag shall be disposed of in the waste disposal site after carrying TCLP Test.	The processed slag is utilized directly in filling the low-lying areas. We have earmarked the area for stacking of slag and is being followed. TCLP is being carried out before disposing the slag.
3.	The ground water quality monitoring around the disposal site shall be regularly monitored and the results of the monitored data shall be submitted to the SPCB and to the RO of the Ministry.	Ground water quality monitoring around the disposal site is being carried out regularly and result is being submitted to SPCB and RO, MoEF, Bhubaneswar and enclosed here with.
4.	The trucks carrying the slag shall be covered with tarpaulin.	Tarpaulin covered transportation of slag is being carried out.



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Report No. - CEMC/TSL/041124/SW1

Issued Date-04.11.2024

SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client : M/s. TATA Steel Ltd., (Ferro Alloys Plant),
Kalinga Nagar, Jajpur
Date of Sampling : 19.10.2024
Sampling by : Mr. Rabindranath Das
Date of Sample Received : 20.10.2024
Sample Description : Surface Water
Sample Quantity : 2.0 Ltrs
Location : Finishing Yard Sump Pit
Date of Analysis : 20.10.2024 to 30.10.2024
Reference No. : CEMC-04112024SW1

ANALYSIS RESULT

Sl. No	Parameter	Unit of measurement	IS 2490: Discharge into Inland Surface Water	Testing Method	Result
1	Colour	Hazen	--	APHA 2120 B,C &	120
2	Odour	--	--	APHA 2150 B	U/O
3	Total Suspended Solids	mg/l	100	APHA 2540 D	48
4	Particular size of SS	--	Shall pass 850	APHA 2540 D	<850
5	pH Value @ 25°C	--	5.5 to 9.0	APHA 4500H ⁺ B	7.61
6	Temperature	°C	Shall not Exceed 40 within 15 m d/s from effluent Outlet	APHA 2550 B	25.6
7	Oil & Grease	mg/l	10	APHA 5520 B	<1
8	Residual Free Chlorine	mg/l	1.0	APHA 4500Cl ₂ B	ND
9	Ammonical Nitrogen	mg/l	50	APHA 4500NH ₃ B,C	ND
10	Total Kjeldahl Nitrogen as N	mg/l	100	APHA 4500 N, B	5.81
11	Free Ammonia	mg/l	5.0	Calculation Method	0.88
12	Biochemical Oxygen Demand	mg/l	30	APHA 5210 B	12
13	Chemical Oxygen Demand	mg/l	250	APHA 5220 C	80
14	Arsenic (as As)	mg/l	0.2	APHA 3114 B	<0.001
15	Mercury (as Hg)	mg/l	0.01	APHA 3500Hg	<0.001
16	Lead (as Pb)	mg/l	0.1	APHA 3111 B,C	<0.005
17	Cadmium (as Cd)	mg/l	2.0	APHA 3111 B,C	<0.005
18	Hexavalent Chromium (as Cr ⁺⁶)	mg/l	0.1	APHA 3500Cr B	0.08
19	Total Chromium (as Cr)	mg/l	2.0	APHA 3111 B,C	0.19
20	Copper (as Cu)	mg/l	3.0	APHA 3111 B,C	0.02
21	Zinc (as Zn)	mg/l	5.0	APHA 3111 B,C	0.13
22	Selenium (as Se)	mg/l	0.05	APHA 3114 B	<0.001
23	Nickel (as Ni)	mg/l	3.0	APHA 3111 B,C	0.026
24	Cyanide (as CN)	mg/l	0.2	APHA 4500CN ⁻ C,D	ND
25	Fluoride (as F)	mg/l	2.0	APHA 4500F ⁻ C	0.61
26	Dissolved Phosphate (as PO ₄)	mg/l	5.0	APHA 4500P D	0.17
27	Sulphide (as S)	mg/l	2.0	APHA 4500 S ²⁻ D	0.8

N.B: U/O-Unobjectionable, ND-Not Detectable

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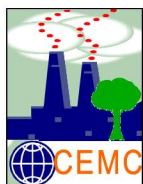
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Report No. - CEMC/TSL/041124/SW1

Issued Date-04.11.2024

28	Phenolic Compounds (as C_6H_5OH)	mg/l	1.0	APHA 5530 B,D	<0.001
29	Bioassay Test	--	90% survival of fish after 96 hours in 100% effluent	APHA 8910 C	94%
30	Manganese (as Mn)	mg/l	2.0	APHA 3500Mn B	0.14
31	Iron (as Fe)	mg/l	3.0	APHA 3500Fe, B	2.38
32	Vanadium (as V)	mg/l	0.2	APHA 3111 B,C	<0.005
33	Nitrate (as NO_3)	mg/l	10	APHA 4500 NO_3^- E	1.32
34	Dissolved Oxygen	mg/l	--	APHA 4500O C	5.7

End of the Report


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Report No. - CEMC/TSL/041124/SW2

Issued Date-04.11.2024

SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client : M/s. TATA Steel Ltd., (Ferro Alloys Plant),
Kalinga Nagar, Jajpur
Date of Sampling : 19.10.2024
Sampling by : Mr. Rabindranath Das
Date of Sample Received : 20.10.2024
Sample Description : Surface Water
Sample Quantity : 2.0 Ltrs
Location : Furnace Backside Sump Drain
Date of Analysis : 20.10.2024 to 30.10.2024
Reference No. : CEMC-04112024SW2

ANALYSIS RESULT

Sl. No	Parameter	Unit of measurement	IS 2490: Discharge into Inland Surface Water	Testing Method	Result
1	Colour	Hazen	--	APHA 2120 B,C &	100
2	Odour	--	--	APHA 2150 B	U/O
3	Total Suspended Solids	mg/l	100	APHA 2540 D	28.8
4	Particular size of SS	--	Shall pass 850	APHA 2540 D	<850
5	pH Value @ 25°C	--	5.5 to 9.0	APHA 4500H ⁺ B	7.46
6	Temperature	°C	Shall not Exceed 40 within 15 m d/s from effluent Outlet	APHA 2550 B	25.4
7	Oil & Grease	mg/l	10	APHA 5520 B	<1
8	Residual Free Chlorine	mg/l	1.0	APHA 4500Cl ₂ B	ND
9	Ammonical Nitrogen	mg/l	50	APHA 4500NH ₃ B,C	ND
10	Total Kjeldahl Nitrogen as N	mg/l	100	APHA 4500 N, B	6.81
11	Free Ammonia	mg/l	5.0	Calculation Method	0.92
12	Biochemical Oxygen Demand	mg/l	30	APHA 5210 B	18
13	Chemical Oxygen Demand	mg/l	250	APHA 5220 C	150
14	Arsenic (as As)	mg/l	0.2	APHA 3114 B	<0.001
15	Mercury (as Hg)	mg/l	0.01	APHA 3500Hg	<0.001
16	Lead (as Pb)	mg/l	0.1	APHA 3111 B,C	<0.005
17	Cadmium (as Cd)	mg/l	2.0	APHA 3111 B,C	<0.005
18	Hexavalent Chromium (as Cr ⁺⁶)	mg/l	0.1	APHA 3500Cr B	<0.05
19	Total Chromium (as Cr)	mg/l	2.0	APHA 3111 B,C	0.21
20	Copper (as Cu)	mg/l	3.0	APHA 3111 B,C	<0.005
21	Zinc (as Zn)	mg/l	5.0	APHA 3111 B,C	0.11
22	Selenium (as Se)	mg/l	0.05	APHA 3114 B	<0.001
23	Nickel (as Ni)	mg/l	3.0	APHA 3111 B,C	0.088
24	Cyanide (as CN)	mg/l	0.2	APHA 4500CN ⁻ C,D	ND
25	Fluoride (as F)	mg/l	2.0	APHA 4500F ⁻ C	0.57
26	Dissolved Phosphate (as PO ₄)	mg/l	5.0	APHA 4500P D	3.21
27	Sulphide (as S)	mg/l	2.0	APHA 4500 S ²⁻ D	2.4

N.B: U/O-Unobjectionable, ND-Not Detectable

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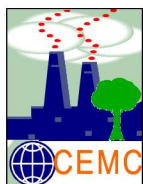
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Report No. - CEMC/TSL/041124/SW2

Issued Date-04.11.2024

28	Phenolic Compounds (as C_6H_5OH)	mg/l	1.0	APHA 5530 B,D	<0.001
29	Bioassay Test	--	90% survival of fish after 96 hours in 100% effluent	APHA 8910 C	93%
30	Manganese (as Mn)	mg/l	2.0	APHA 3500Mn B	0.14
31	Iron (as Fe)	mg/l	3.0	APHA 3500Fe, B	1.1
32	Vanadium (as V)	mg/l	0.2	APHA 3111 B,C	<0.01
33	Nitrate (as NO_3)	mg/l	10	APHA 4500 NO_3^- E	8.61
34	Dissolved Oxygen	mg/l	--	APHA 4500O C	5.4

End of the Report

B.pdas

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Report No. - CEMC/TSL/041124/SW3

Issued Date-04.11.2024

SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client : M/s. TATA Steel Ltd., (Ferro Alloys Plant),
Kalinga Nagar, Jajpur
Date of Sampling : 19.10.2024
Sampling by : Mr. Rabindranath Das
Date of Sample Received : 20.10.2024
Sample Description : Surface Water
Sample Quantity : 2.0 Ltrs
Location : Surface Drain Near Furnance-1
Date of Analysis : 20.10.2024 to 30.10.2024
Reference No. : CEMC-04112024SW3

ANALYSIS RESULT

Sl. No	Parameter	Unit of measurement	IS 2490: Discharge into Inland Surface Water	Testing Method	Result
1	Colour	Hazen	--	APHA 2120 B,C &	40
2	Odour	--	--	APHA 2150 B	U/O
3	Total Suspended Solids	mg/l	100	APHA 2540 D	23.8
4	Particular size of SS	--	Shall pass 850	APHA 2540 D	<850
5	pH Value @ 25°C	--	5.5 to 9.0	APHA 4500H ⁺ B	6.82
6	Temperature	°C	Shall not Exceed 40 within 15 m d/s from effluent Outlet	APHA 2550 B	25.4
7	Oil & Grease	mg/l	10	APHA 5520 B	<1
8	Residual Free Chlorine	mg/l	1.0	APHA 4500Cl ₂ B	ND
9	Ammonical Nitrogen	mg/l	50	APHA 4500NH ₃ B,C	ND
10	Total Kjeldahl Nitrogen as N	mg/l	100	APHA 4500 N, B	4.14
11	Free Ammonia	mg/l	5.0	Calculation Method	0.22
12	Biochemical Oxygen Demand	mg/l	30	APHA 5210 B	16
13	Chemical Oxygen Demand	mg/l	250	APHA 5220 C	140
14	Arsenic (as As)	mg/l	0.2	APHA 3114 B	<0.001
15	Mercury (as Hg)	mg/l	0.01	APHA 3500Hg	<0.001
16	Lead (as Pb)	mg/l	0.1	APHA 3111 B,C	<0.005
17	Cadmium (as Cd)	mg/l	2.0	APHA 3111 B,C	<0.005
18	Hexavalent Chromium (as Cr ⁺⁶)	mg/l	0.1	APHA 3500Cr B	<0.05
19	Total Chromium (as Cr)	mg/l	2.0	APHA 3111 B,C	0.26
20	Copper (as Cu)	mg/l	3.0	APHA 3111 B,C	<0.005
21	Zinc (as Zn)	mg/l	5.0	APHA 3111 B,C	0.09
22	Selenium (as Se)	mg/l	0.05	APHA 3114 B	<0.001
23	Nickel (as Ni)	mg/l	3.0	APHA 3111 B,C	0.03
24	Cyanide (as CN)	mg/l	0.2	APHA 4500CN ⁻ C,D	ND
25	Fluoride (as F)	mg/l	2.0	APHA 4500F ⁻ C	0.62
26	Dissolved Phosphate (as PO ₄)	mg/l	5.0	APHA 4500P D	0.64
27	Sulphide (as S)	mg/l	2.0	APHA 4500 S ²⁻ D	<0.1

N.B: U/O-Unobjectionable, ND-Not Detectable

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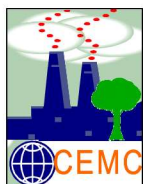
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28	Phenolic Compounds (as C_6H_5OH)	mg/l	1.0	APHA 5530 B,D	<0.001
29	Bioassay Test	--	90% survival of fish after 96 hours in 100% effluent	APHA 8910 C	95%
30	Manganese (as Mn)	mg/l	2.0	APHA 3500Mn B	0.07
31	Iron (as Fe)	mg/l	3.0	APHA 3500Fe, B	1.2
32	Vanadium (as V)	mg/l	0.2	APHA 3111 B,C	<0.01
33	Nitrate (as NO_3)	mg/l	10	APHA 4500 NO_3^- E	3.41
34	Dissolved Oxygen	mg/l	--	APHA 4500O C	5.5

End of the Report

BPOAL
Authorized Signatory



Notes:

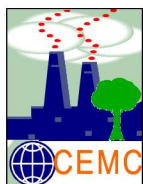
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Report No. - CEMC/TSL/041124/SW4

Issued Date-04.11.2024

SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client : M/s. TATA Steel Ltd., (Ferro Alloys Plant),
Kalinga Nagar, Jajpur
Date of Sampling : 19.10.2024
Sampling by : Mr. Rabindranath Das
Date of Sample Received : 20.10.2024
Sample Description : Surface Water
Sample Quantity : 2.0 Ltrs
Location : Sump Pit Near ETP
Date of Analysis : 20.10.2024 to 30.10.2024
Reference No. : CEMC-04112024SW4

ANALYSIS RESULT

Sl. No	Parameter	Unit of measurement	IS 2490: Discharge into Inland Surface Water	Testing Method	Result
1	Colour	Hazen	--	APHA 2120 B,C &	30
2	Odour	--	--	APHA 2150 B	U/O
3	Total Suspended Solids	mg/l	100	APHA 2540 D	21.2
4	Particular size of SS	--	Shall pass 850	APHA 2540 D	<850
5	pH Value @ 25°C	--	5.5 to 9.0	APHA 4500H ⁺ B	7.14
6	Temperature	°C	Shall not Exceed 40 within 15 m d/s from effluent Outlet	APHA 2550 B	25.5
7	Oil & Grease	mg/l	10	APHA 5520 B	<1
8	Residual Free Chlorine	mg/l	1.0	APHA 4500Cl ₂ B	ND
9	Ammonical Nitrogen	mg/l	50	APHA 4500NH ₃ B,C	ND
10	Total Kjeldahl Nitrogen as N	mg/l	100	APHA 4500 N, B	2.4
11	Free Ammonia	mg/l	5.0	Calculation Method	ND
12	Biochemical Oxygen Demand	mg/l	30	APHA 5210 B	8
13	Chemical Oxygen Demand	mg/l	250	APHA 5220 C	20
14	Arsenic (as As)	mg/l	0.2	APHA 3114 B	<0.001
15	Mercury (as Hg)	mg/l	0.01	APHA 3500Hg	<0.001
16	Lead (as Pb)	mg/l	0.1	APHA 3111 B,C	<0.005
17	Cadmium (as Cd)	mg/l	2.0	APHA 3111 B,C	<0.005
18	Hexavalent Chromium (as Cr ⁺⁶)	mg/l	0.1	APHA 3500Cr B	0.21
19	Total Chromium (as Cr)	mg/l	2.0	APHA 3111 B,C	0.38
20	Copper (as Cu)	mg/l	3.0	APHA 3111 B,C	<0.005
21	Zinc (as Zn)	mg/l	5.0	APHA 3111 B,C	0.084
22	Selenium (as Se)	mg/l	0.05	APHA 3114 B	<0.001
23	Nickel (as Ni)	mg/l	3.0	APHA 3111 B,C	0.006
24	Cyanide (as CN)	mg/l	0.2	APHA 4500CN ⁻ C,D	ND
25	Fluoride (as F)	mg/l	2.0	APHA 4500F ⁻ C	1.21
26	Dissolved Phosphate (as PO ₄)	mg/l	5.0	APHA 4500P D	0.38
27	Sulphide (as S)	mg/l	2.0	APHA 4500 S ²⁻ D	0.4

N.B: U/O-Unobjectionable, ND-Not Detectable

Pg-3 of 4

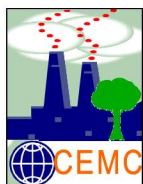
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Report No. - CEMC/TSL/041124/SW4

Issued Date-04.11.2024

28	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	1.0	APHA 5530 B,D	<0.001
29	Bioassay Test	--	90% survival of fish after 96 hours in 100% effluent	APHA 8910 C	94%
30	Manganese (as Mn)	mg/l	2.0	APHA 3500Mn B	0.016
31	Iron (as Fe)	mg/l	3.0	APHA 3500Fe, B	1.02
32	Vanadium (as V)	mg/l	0.2	APHA 3111 B,C	<0.01
33	Nitrate (as NO ₃)	mg/l	10	APHA 4500 NO ₃ ⁻ E	3.42
34	Dissolved Oxygen	mg/l	--	APHA 4500O C	5.7

End of the Report

B. P. Das
Authorized Signatory



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Report No. - CEMC/TSL/041124/SW5

Issued Date-04.11.2024

SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client : M/s. TATA Steel Ltd., (Ferro Alloys Plant),
Kalinga Nagar, Jajpur
Date of Sampling : 19.10.2024
Sampling by : Mr. Rabindranath Das
Date of Sample Received : 20.10.2024
Sample Description : Surface Water
Sample Quantity : 2.0 Ltrs
Location : Surface Drain Raw Material Yard, Coal Yard
Date of Analysis : 20.10.2024 to 30.10.2024
Reference No. : CEMC-04112024SW5

ANALYSIS RESULT

Sl. No	Parameter	Unit of measurement	IS 2490: Discharge into Inland Surface Water	Testing Method	Result
1	Colour	Hazen	--	APHA 2120 B,C &	110
2	Odour	--	--	APHA 2150 B	U/O
3	Total Suspended Solids	mg/l	100	APHA 2540 D	164
4	Particular size of SS	--	Shall pass 850	APHA 2540 D	<850
5	pH Value @ 25°C	--	5.5 to 9.0	APHA 4500H ⁺ B	7.04
6	Temperature	°C	Shall not Exceed 40 within 15 m d/s from effluent Outlet	APHA 2550 B	25.5
7	Oil & Grease	mg/l	10	APHA 5520 B	<1
8	Residual Free Chlorine	mg/l	1.0	APHA 4500Cl ₂ B	ND
9	Ammonical Nitrogen	mg/l	50	APHA 4500NH ₃ B,C	ND
10	Total Kjeldahl Nitrogen as N	mg/l	100	APHA 4500 N, B	5.72
11	Free Ammonia	mg/l	5.0	Calculation Method	0.84
12	Biochemical Oxygen Demand	mg/l	30	APHA 5210 B	10
13	Chemical Oxygen Demand	mg/l	250	APHA 5220 C	60
14	Arsenic (as As)	mg/l	0.2	APHA 3114 B	<0.001
15	Mercury (as Hg)	mg/l	0.01	APHA 3500Hg	<0.001
16	Lead (as Pb)	mg/l	0.1	APHA 3111 B,C	<0.005
17	Cadmium (as Cd)	mg/l	2.0	APHA 3111 B,C	<0.005
18	Hexavalent Chromium (as Cr ⁺⁶)	mg/l	0.1	APHA 3500Cr B	0.14
19	Total Chromium (as Cr)	mg/l	2.0	APHA 3111 B,C	0.22
20	Copper (as Cu)	mg/l	3.0	APHA 3111 B,C	<0.005
21	Zinc (as Zn)	mg/l	5.0	APHA 3111 B,C	0.074
22	Selenium (as Se)	mg/l	0.05	APHA 3114 B	<0.001
23	Nickel (as Ni)	mg/l	3.0	APHA 3111 B,C	0.078
24	Cyanide (as CN)	mg/l	0.2	APHA 4500CN ⁻ C,D	ND
25	Fluoride (as F)	mg/l	2.0	APHA 4500F ⁻ C	1.13
26	Dissolved Phosphate (as PO ₄)	mg/l	5.0	APHA 4500P D	0.51
27	Sulphide (as S)	mg/l	2.0	APHA 4500 S ²⁻ D	0.4

N.B: U/O-Unobjectionable, ND-Not Detectable

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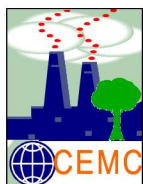
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Report No. - CEMC/TSL/041124/SW5

Issued Date-04.11.2024

28	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	1.0	APHA 5530 B,D	<0.001
29	Bioassay Test	--	90% survival of fish after 96 hours in 100% effluent	APHA 8910 C	95%
30	Manganese (as Mn)	mg/l	2.0	APHA 3500Mn B	0.093
31	Iron (as Fe)	mg/l	3.0	APHA 3500Fe, B	1.22
32	Vanadium (as V)	mg/l	0.2	APHA 3111 B,C	<0.01
33	Nitrate (as NO ₃)	mg/l	10	APHA 4500 NO ₃ ⁻ E	6.34
34	Dissolved Oxygen	mg/l	--	APHA 4500O C	5.9

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Report No. - CEMC/TSL/041224/SW1

Issued Date-04.12.2024

SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client : M/s. TATA Steel Ltd., (Ferro Alloys Plant),
Kalinga Nagar, Jajpur
Date of Sampling : 14.11.2024
Sampling by : Mr. Rabindranath Das
Date of Sample Received : 14.11.2024
Sample Description : Surface Water
Sample Quantity : 2.0 Ltrs
Location : Finishing Yard Sump Pit
Date of Analysis : 15.11.2024 to 23.11.2024
Reference No. : CEMC-04122024SW1

ANALYSIS RESULT

Sl. No	Parameter	Unit of measurement	IS 2490: Discharge into Inland Surface Water	Testing Method	Result
1	Colour	Hazen	--	APHA 2120 B,C &	100
2	Odour	--	--	APHA 2150 B	U/O
3	Total Suspended Solids	mg/l	100	APHA 2540 D	34
4	Particular size of SS	--	Shall pass 850	APHA 2540 D	<850
5	pH Value @ 25°C	--	5.5 to 9.0	APHA 4500H ⁺ B	7.48
6	Temperature	°C	Shall not Exceed 40 within 15 m d/s from effluent Outlet	APHA 2550 B	25.1
7	Oil & Grease	mg/l	10	APHA 5520 B	<1
8	Residual Free Chlorine	mg/l	1.0	APHA 4500Cl ₂ B	ND
9	Ammonical Nitrogen	mg/l	50	APHA 4500NH ₃ B,C	ND
10	Total Kjeldahl Nitrogen as N	mg/l	100	APHA 4500 N, B	6.28
11	Free Ammonia	mg/l	5.0	Calculation Method	0.93
12	Biochemical Oxygen Demand	mg/l	30	APHA 5210 B	20
13	Chemical Oxygen Demand	mg/l	250	APHA 5220 C	100
14	Arsenic (as As)	mg/l	0.2	APHA 3114 B	<0.001
15	Mercury (as Hg)	mg/l	0.01	APHA 3500Hg	<0.001
16	Lead (as Pb)	mg/l	0.1	APHA 3111 B,C	<0.005
17	Cadmium (as Cd)	mg/l	2.0	APHA 3111 B,C	<0.005
18	Hexavalent Chromium (as Cr ⁺⁶)	mg/l	0.1	APHA 3500Cr B	0.11
19	Total Chromium (as Cr)	mg/l	2.0	APHA 3111 B,C	0.21
20	Copper (as Cu)	mg/l	3.0	APHA 3111 B,C	0.028
21	Zinc (as Zn)	mg/l	5.0	APHA 3111 B,C	0.24
22	Selenium (as Se)	mg/l	0.05	APHA 3114 B	<0.001
23	Nickel (as Ni)	mg/l	3.0	APHA 3111 B,C	0.031
24	Cyanide (as CN)	mg/l	0.2	APHA 4500CN ⁻ C,D	ND
25	Fluoride (as F)	mg/l	2.0	APHA 4500F ⁻ C	0.66
26	Dissolved Phosphate (as PO ₄)	mg/l	5.0	APHA 4500P D	0.22
27	Sulphide (as S)	mg/l	2.0	APHA 4500 S ²⁻ D	1.0

N.B: U/O-Unobjectionable, ND-Not Detectable

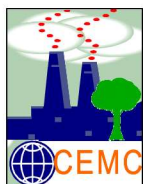
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Report No. - CEMC/TSL/041224/SW1

Issued Date-04.12.2024

28	Phenolic Compounds (as C_6H_5OH)	mg/l	1.0	APHA 5530 B,D	<0.001
29	Bioassay Test	--	90% survival of fish after 96 hours in 100% effluent	APHA 8910 C	93%
30	Manganese (as Mn)	mg/l	2.0	APHA 3500Mn B	0.18
31	Iron (as Fe)	mg/l	3.0	APHA 3500Fe, B	2.46
32	Vanadium (as V)	mg/l	0.2	APHA 3111 B,C	<0.005
33	Nitrate (as NO_3)	mg/l	10	APHA 4500 NO_3^- E	3.42
34	Dissolved Oxygen	mg/l	--	APHA 4500O C	5.6

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B.P.Das
Authorized Signatory



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Report No. - CEMC/TSL/041224/SW2

Issued Date-04.12.2024

SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client : M/s. TATA Steel Ltd., (Ferro Alloys Plant),
Kalinga Nagar, Jajpur
Date of Sampling : 14.11.2024
Sampling by : Mr. Rabindranath Das
Date of Sample Received : 14.11.2024
Sample Description : Surface Water
Sample Quantity : 2.0 Ltrs
Location : Furnace Backside Sump Drain
Date of Analysis : 15.11.2024 to 23.11.2024
Reference No. : CEMC-04122024SW2

ANALYSIS RESULT

Sl. No	Parameter	Unit of measurement	IS 2490: Discharge into Inland Surface Water	Testing Method	Result
1	Colour	Hazen	--	APHA 2120 B,C &	90
2	Odour	--	--	APHA 2150 B	U/O
3	Total Suspended Solids	mg/l	100	APHA 2540 D	22.4
4	Particular size of SS	--	Shall pass 850	APHA 2540 D	<850
5	pH Value @ 25°C	--	5.5 to 9.0	APHA 4500H ⁺ B	7.31
6	Temperature	°C	Shall not Exceed 40 within 15 m d/s from effluent Outlet	APHA 2550 B	25.2
7	Oil & Grease	mg/l	10	APHA 5520 B	<1
8	Residual Free Chlorine	mg/l	1.0	APHA 4500Cl ₂ B	ND
9	Ammonical Nitrogen	mg/l	50	APHA 4500NH ₃ B,C	ND
10	Total Kjeldahl Nitrogen as N	mg/l	100	APHA 4500 N, B	7.28
11	Free Ammonia	mg/l	5.0	Calculation Method	1.04
12	Biochemical Oxygen Demand	mg/l	30	APHA 5210 B	22
13	Chemical Oxygen Demand	mg/l	250	APHA 5220 C	180
14	Arsenic (as As)	mg/l	0.2	APHA 3114 B	<0.001
15	Mercury (as Hg)	mg/l	0.01	APHA 3500Hg	<0.001
16	Lead (as Pb)	mg/l	0.1	APHA 3111 B,C	<0.005
17	Cadmium (as Cd)	mg/l	2.0	APHA 3111 B,C	<0.005
18	Hexavalent Chromium (as Cr ⁺⁶)	mg/l	0.1	APHA 3500Cr B	<0.05
19	Total Chromium (as Cr)	mg/l	2.0	APHA 3111 B,C	0.28
20	Copper (as Cu)	mg/l	3.0	APHA 3111 B,C	<0.005
21	Zinc (as Zn)	mg/l	5.0	APHA 3111 B,C	0.18
22	Selenium (as Se)	mg/l	0.05	APHA 3114 B	<0.001
23	Nickel (as Ni)	mg/l	3.0	APHA 3111 B,C	0.091
24	Cyanide (as CN)	mg/l	0.2	APHA 4500CN ⁻ C,D	ND
25	Fluoride (as F)	mg/l	2.0	APHA 4500F ⁻ C	0.61
26	Dissolved Phosphate (as PO ₄)	mg/l	5.0	APHA 4500P D	3.5
27	Sulphide (as S)	mg/l	2.0	APHA 4500 S ²⁻ D	2.0

N.B: U/O-Unobjectionable, ND-Not Detectable

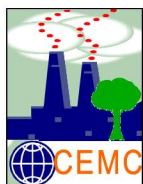
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Report No. - CEMC/TSL/041224/SW2

Issued Date-04.12.2024

28	Phenolic Compounds (as C_6H_5OH)	mg/l	1.0	APHA 5530 B,D	<0.001
29	Bioassay Test	--	90% survival of fish after 96 hours in 100% effluent	APHA 8910 C	94%
30	Manganese (as Mn)	mg/l	2.0	APHA 3500Mn B	0.16
31	Iron (as Fe)	mg/l	3.0	APHA 3500Fe, B	1.8
32	Vanadium (as V)	mg/l	0.2	APHA 3111 B,C	<0.01
33	Nitrate (as NO_3)	mg/l	10	APHA 4500 NO_3^- E	7.21
34	Dissolved Oxygen	mg/l	--	APHA 4500O C	5.5

End of the Report

B.P.Das

Authorized Signatory



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Report No. - CEMC/TSL/041224/SW3

Issued Date-04.12.2024

SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client : M/s. TATA Steel Ltd., (Ferro Alloys Plant),
Kalinga Nagar, Jajpur
Date of Sampling : 14.11.2024
Sampling by : Mr. Rabindranath Das
Date of Sample Received : 14.11.2024
Sample Description : Surface Water
Sample Quantity : 2.0 Ltrs
Location : Surface Drain Near Furnance-1
Date of Analysis : 15.11.2024 to 23.11.2024
Reference No. : CEMC-04122024SW3

ANALYSIS RESULT

Sl. No	Parameter	Unit of measurement	IS 2490: Discharge into Inland Surface Water	Testing Method	Result
1	Colour	Hazen	--	APHA 2120 B,C &	30
2	Odour	--	--	APHA 2150 B	U/O
3	Total Suspended Solids	mg/l	100	APHA 2540 D	18.6
4	Particular size of SS	--	Shall pass 850	APHA 2540 D	<850
5	pH Value @ 25°C	--	5.5 to 9.0	APHA 4500H ⁺ B	6.91
6	Temperature	°C	Shall not Exceed 40 within 15 m d/s from effluent Outlet	APHA 2550 B	25.1
7	Oil & Grease	mg/l	10	APHA 5520 B	<1
8	Residual Free Chlorine	mg/l	1.0	APHA 4500Cl ₂ B	ND
9	Ammonical Nitrogen	mg/l	50	APHA 4500NH ₃ B,C	ND
10	Total Kjeldahl Nitrogen as N	mg/l	100	APHA 4500 N, B	4.56
11	Free Ammonia	mg/l	5.0	Calculation Method	0.34
12	Biochemical Oxygen Demand	mg/l	30	APHA 5210 B	18
13	Chemical Oxygen Demand	mg/l	250	APHA 5220 C	160
14	Arsenic (as As)	mg/l	0.2	APHA 3114 B	<0.001
15	Mercury (as Hg)	mg/l	0.01	APHA 3500Hg	<0.001
16	Lead (as Pb)	mg/l	0.1	APHA 3111 B,C	<0.005
17	Cadmium (as Cd)	mg/l	2.0	APHA 3111 B,C	<0.005
18	Hexavalent Chromium (as Cr ⁺⁶)	mg/l	0.1	APHA 3500Cr B	<0.05
19	Total Chromium (as Cr)	mg/l	2.0	APHA 3111 B,C	0.31
20	Copper (as Cu)	mg/l	3.0	APHA 3111 B,C	<0.005
21	Zinc (as Zn)	mg/l	5.0	APHA 3111 B,C	0.12
22	Selenium (as Se)	mg/l	0.05	APHA 3114 B	<0.001
23	Nickel (as Ni)	mg/l	3.0	APHA 3111 B,C	0.036
24	Cyanide (as CN)	mg/l	0.2	APHA 4500CN ⁻ C,D	ND
25	Fluoride (as F)	mg/l	2.0	APHA 4500F ⁻ C	0.68
26	Dissolved Phosphate (as PO ₄)	mg/l	5.0	APHA 4500P D	0.72
27	Sulphide (as S)	mg/l	2.0	APHA 4500 S ²⁻ D	0.2

N.B: U/O-Unobjectionable, ND-Not Detectable

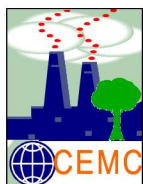
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Report No. - CEMC/TSL/041224/SW3

Issued Date-04.12.2024

28	Phenolic Compounds (as C_6H_5OH)	mg/l	1.0	APHA 5530 B,D	<0.001
29	Bioassay Test	--	90% survival of fish after 96 hours in 100% effluent	APHA 8910 C	94%
30	Manganese (as Mn)	mg/l	2.0	APHA 3500Mn B	0.082
31	Iron (as Fe)	mg/l	3.0	APHA 3500Fe, B	1.7
32	Vanadium (as V)	mg/l	0.2	APHA 3111 B,C	<0.01
33	Nitrate (as NO_3)	mg/l	10	APHA 4500 NO_3^- E	4.21
34	Dissolved Oxygen	mg/l	--	APHA 4500O C	5.4

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Report No. - CEMC/TSL/041224/SW4

Issued Date-04.12.2024

SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client : M/s. TATA Steel Ltd., (Ferro Alloys Plant),
Kalinga Nagar, Jajpur
Date of Sampling : 14.11.2024
Sampling by : Mr. Rabindranath Das
Date of Sample Received : 14.11.2024
Sample Description : Surface Water
Sample Quantity : 2.0 Ltrs
Location : Sump Pit Near ETP
Date of Analysis : 15.11.2024 to 23.11.2024
Reference No. : CEMC-04122024SW4

ANALYSIS RESULT

Sl. No	Parameter	Unit of measurement	IS 2490: Discharge into Inland Surface Water	Testing Method	Result
1	Colour	Hazen	--	APHA 2120 B,C &	20
2	Odour	--	--	APHA 2150 B	U/O
3	Total Suspended Solids	mg/l	100	APHA 2540 D	16.4
4	Particular size of SS	--	Shall pass 850	APHA 2540 D	<850
5	pH Value @ 25°C	--	5.5 to 9.0	APHA 4500H ⁺ B	7.23
6	Temperature	°C	Shall not Exceed 40 within 15 m d/s from effluent Outlet	APHA 2550 B	25.1
7	Oil & Grease	mg/l	10	APHA 5520 B	<1
8	Residual Free Chlorine	mg/l	1.0	APHA 4500Cl ₂ B	ND
9	Ammonical Nitrogen	mg/l	50	APHA 4500NH ₃ B,C	ND
10	Total Kjeldahl Nitrogen as N	mg/l	100	APHA 4500 N, B	3.1
11	Free Ammonia	mg/l	5.0	Calculation Method	ND
12	Biochemical Oxygen Demand	mg/l	30	APHA 5210 B	10
13	Chemical Oxygen Demand	mg/l	250	APHA 5220 C	40
14	Arsenic (as As)	mg/l	0.2	APHA 3114 B	<0.001
15	Mercury (as Hg)	mg/l	0.01	APHA 3500Hg	<0.001
16	Lead (as Pb)	mg/l	0.1	APHA 3111 B,C	<0.005
17	Cadmium (as Cd)	mg/l	2.0	APHA 3111 B,C	<0.005
18	Hexavalent Chromium (as Cr ⁺⁶)	mg/l	0.1	APHA 3500Cr B	0.26
19	Total Chromium (as Cr)	mg/l	2.0	APHA 3111 B,C	0.42
20	Copper (as Cu)	mg/l	3.0	APHA 3111 B,C	<0.005
21	Zinc (as Zn)	mg/l	5.0	APHA 3111 B,C	0.092
22	Selenium (as Se)	mg/l	0.05	APHA 3114 B	<0.001
23	Nickel (as Ni)	mg/l	3.0	APHA 3111 B,C	0.008
24	Cyanide (as CN)	mg/l	0.2	APHA 4500CN ⁻ C,D	ND
25	Fluoride (as F)	mg/l	2.0	APHA 4500F ⁻ C	1.14
26	Dissolved Phosphate (as PO ₄)	mg/l	5.0	APHA 4500P D	0.46
27	Sulphide (as S)	mg/l	2.0	APHA 4500 S ²⁻ D	0.6

N.B: U/O-Unobjectionable, ND-Not Detectable

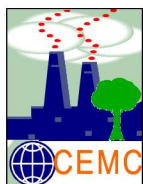
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Report No. - CEMC/TSL/041224/SW4

Issued Date-04.12.2024

28	Phenolic Compounds (as C_6H_5OH)	mg/l	1.0	APHA 5530 B,D	<0.001
29	Bioassay Test	--	90% survival of fish after 96 hours in 100% effluent	APHA 8910 C	95%
30	Manganese (as Mn)	mg/l	2.0	APHA 3500Mn B	0.018
31	Iron (as Fe)	mg/l	3.0	APHA 3500Fe, B	1.34
32	Vanadium (as V)	mg/l	0.2	APHA 3111 B,C	<0.01
33	Nitrate (as NO_3)	mg/l	10	APHA 4500 NO_3^- E	3.88
34	Dissolved Oxygen	mg/l	--	APHA 4500O C	5.6

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B.P. Das
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Report No. - CEMC/TSL/041224/SW5

Issued Date-04.12.2024

SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client : M/s. TATA Steel Ltd., (Ferro Alloys Plant),
Kalinga Nagar, Jajpur
Date of Sampling : 14.11.2024
Sampling by : Mr. Rabindranath Das
Date of Sample Received : 14.11.2024
Sample Description : Surface Water
Sample Quantity : 2.0 Ltrs
Location : Surface Drain Raw Material Yard, Coal Yard
Date of Analysis : 15.11.2024 to 23.11.2024
Reference No. : CEMC-04122024SW5

ANALYSIS RESULT

Sl. No	Parameter	Unit of measurement	IS 2490: Discharge into Inland Surface Water	Testing Method	Result
1	Colour	Hazen	--	APHA 2120 B,C &	80
2	Odour	--	--	APHA 2150 B	U/O
3	Total Suspended Solids	mg/l	100	APHA 2540 D	152
4	Particular size of SS	--	Shall pass 850	APHA 2540 D	<850
5	pH Value @ 25°C	--	5.5 to 9.0	APHA 4500H ⁺ B	7.14
6	Temperature	°C	Shall not Exceed 40 within 15 m d/s from effluent Outlet	APHA 2550 B	24.9
7	Oil & Grease	mg/l	10	APHA 5520 B	<1
8	Residual Free Chlorine	mg/l	1.0	APHA 4500Cl ₂ B	ND
9	Ammonical Nitrogen	mg/l	50	APHA 4500NH ₃ B,C	ND
10	Total Kjeldahl Nitrogen as N	mg/l	100	APHA 4500 N, B	5.98
11	Free Ammonia	mg/l	5.0	Calculation Method	0.94
12	Biochemical Oxygen Demand	mg/l	30	APHA 5210 B	20
13	Chemical Oxygen Demand	mg/l	250	APHA 5220 C	80
14	Arsenic (as As)	mg/l	0.2	APHA 3114 B	<0.001
15	Mercury (as Hg)	mg/l	0.01	APHA 3500Hg	<0.001
16	Lead (as Pb)	mg/l	0.1	APHA 3111 B,C	<0.005
17	Cadmium (as Cd)	mg/l	2.0	APHA 3111 B,C	<0.005
18	Hexavalent Chromium (as Cr ⁺⁶)	mg/l	0.1	APHA 3500Cr B	0.18
19	Total Chromium (as Cr)	mg/l	2.0	APHA 3111 B,C	0.29
20	Copper (as Cu)	mg/l	3.0	APHA 3111 B,C	<0.005
21	Zinc (as Zn)	mg/l	5.0	APHA 3111 B,C	0.081
22	Selenium (as Se)	mg/l	0.05	APHA 3114 B	<0.001
23	Nickel (as Ni)	mg/l	3.0	APHA 3111 B,C	0.082
24	Cyanide (as CN)	mg/l	0.2	APHA 4500CN ⁻ C,D	ND
25	Fluoride (as F)	mg/l	2.0	APHA 4500F ⁻ C	1.24
26	Dissolved Phosphate (as PO ₄)	mg/l	5.0	APHA 4500P D	0.62
27	Sulphide (as S)	mg/l	2.0	APHA 4500 S ²⁻ D	0.7

N.B: U/O-Unobjectionable, ND-Not Detectable

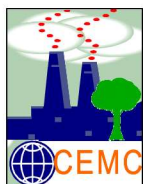
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Report No. - CEMC/TSL/041224/SW5

Issued Date-04.12.2024

28	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	1.0	APHA 5530 B,D	<0.001
29	Bioassay Test	--	90% survival of fish after 96 hours in 100% effluent	APHA 8910 C	94%
30	Manganese (as Mn)	mg/l	2.0	APHA 3500Mn B	0.103
31	Iron (as Fe)	mg/l	3.0	APHA 3500Fe, B	1.64
32	Vanadium (as V)	mg/l	0.2	APHA 3111 B,C	<0.01
33	Nitrate (as NO ₃)	mg/l	10	APHA 4500 NO ₃ ⁻ E	6.56
34	Dissolved Oxygen	mg/l	--	APHA 4500O C	5.7

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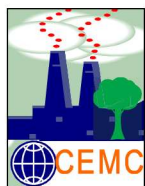
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Report No. - CEMC/TSL/040125/SW1

Issued Date-04.01.2025

SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client : M/s. TATA Steel Ltd., (Ferro Alloys Plant),
Kalinga Nagar, Jajpur
Date of Sampling : 14.12.2024
Sampling by : Mr. Rabindranath Das
Date of Sample Received : 14.12.2024
Sample Description : Surface Water
Sample Quantity : 2.0 Ltrs
Location : Finishing Yard Sump Pit
Date of Analysis : 15.12.2024 to 23.12.2024
Reference No. : CEMC-04012025SW1

ANALYSIS RESULT

Sl. No	Parameter	Unit of measurement	IS 2490: Discharge into Inland Surface Water	Testing Method	Result
1	Colour	Hazen	--	APHA 2120 B,C &	130
2	Odour	--	--	APHA 2150 B	U/O
3	Total Suspended Solids	mg/l	100	APHA 2540 D	52
4	Particular size of SS	--	Shall pass 850	APHA 2540 D	<850
5	pH Value @ 25°C	--	5.5 to 9.0	APHA 4500H ⁺ B	7.31
6	Temperature	°C	Shall not Exceed 40 within 15 m d/s from effluent Outlet	APHA 2550 B	24.8
7	Oil & Grease	mg/l	10	APHA 5520 B	<1
8	Residual Free Chlorine	mg/l	1.0	APHA 4500Cl ₂ B	ND
9	Ammonical Nitrogen	mg/l	50	APHA 4500NH ₃ B,C	ND
10	Total Kjeldahl Nitrogen as N	mg/l	100	APHA 4500 N, B	7.56
11	Free Ammonia	mg/l	5.0	Calculation Method	1.1
12	Biochemical Oxygen Demand	mg/l	30	APHA 5210 B	26
13	Chemical Oxygen Demand	mg/l	250	APHA 5220 C	160
14	Arsenic (as As)	mg/l	0.2	APHA 3114 B	<0.001
15	Mercury (as Hg)	mg/l	0.01	APHA 3500Hg	<0.001
16	Lead (as Pb)	mg/l	0.1	APHA 3111 B,C	<0.005
17	Cadmium (as Cd)	mg/l	2.0	APHA 3111 B,C	<0.005
18	Hexavalent Chromium (as Cr ⁺⁶)	mg/l	0.1	APHA 3500Cr B	<0.05
19	Total Chromium (as Cr)	mg/l	2.0	APHA 3111 B,C	0.12
20	Copper (as Cu)	mg/l	3.0	APHA 3111 B,C	0.021
21	Zinc (as Zn)	mg/l	5.0	APHA 3111 B,C	0.28
22	Selenium (as Se)	mg/l	0.05	APHA 3114 B	<0.001
23	Nickel (as Ni)	mg/l	3.0	APHA 3111 B,C	0.041
24	Cyanide (as CN)	mg/l	0.2	APHA 4500CN ⁻ C,D	ND
25	Fluoride (as F)	mg/l	2.0	APHA 4500F ⁻ C	0.54
26	Dissolved Phosphate (as PO ₄)	mg/l	5.0	APHA 4500P D	<0.05
27	Sulphide (as S)	mg/l	2.0	APHA 4500 S ²⁻ D	1.6

N.B: U/O-Unobjectionable, ND-Not Detectable

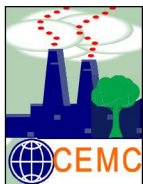
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Report No. - CEMC/TSL/040125/SW1

Issued Date-04.01.2025

28	Phenolic Compounds (as C_6H_5OH)	mg/l	1.0	APHA 5530 B,D	<0.001
29	Bioassay Test	--	90% survival of fish after 96 hours in 100% effluent	APHA 8910 C	92%
30	Manganese (as Mn)	mg/l	2.0	APHA 3500Mn B	0.11
31	Iron (as Fe)	mg/l	3.0	APHA 3500Fe, B	0.41
32	Vanadium (as V)	mg/l	0.2	APHA 3111 B,C	<0.005
33	Nitrate (as NO_3)	mg/l	10	APHA 4500 NO_3^- E	6.2
34	Dissolved Oxygen	mg/l	--	APHA 4500O C	5.5

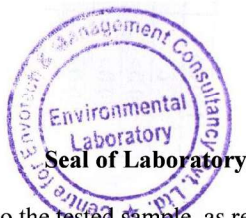
End of the Report

BPDAS

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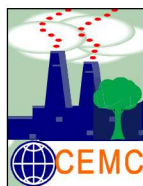
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Report No. - CEMC/TSL/040125/SW2

Issued Date-04.01.2025

SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client : M/s. TATA Steel Ltd., (Ferro Alloys Plant),
Kalinga Nagar, Jajpur
Date of Sampling : 14.12.2024
Sampling by : Mr. Rabindranath Das
Date of Sample Received : 14.12.2024
Sample Description : Surface Water
Sample Quantity : 2.0 Ltrs
Location : Furnace Backside Sump Drain
Date of Analysis : 15.12.2024 to 23.12.2024
Reference No. : CEMC-04012025SW2

ANALYSIS RESULT

Sl. No	Parameter	Unit of measurement	IS 2490: Discharge into Inland Surface Water	Testing Method	Result
1	Colour	Hazen	--	APHA 2120 B,C &	70
2	Odour	--	--	APHA 2150 B	U/O
3	Total Suspended Solids	mg/l	100	APHA 2540 D	34.8
4	Particular size of SS	--	Shall pass 850	APHA 2540 D	<850
5	pH Value @ 25°C	--	5.5 to 9.0	APHA 4500H ⁺ B	7.42
6	Temperature	°C	Shall not Exceed 40 within 15 m d/s from effluent Outlet	APHA 2550 B	25.1
7	Oil & Grease	mg/l	10	APHA 5520 B	<1
8	Residual Free Chlorine	mg/l	1.0	APHA 4500Cl ₂ B	ND
9	Ammonical Nitrogen	mg/l	50	APHA 4500NH ₃ B,C	ND
10	Total Kjeldahl Nitrogen as N	mg/l	100	APHA 4500 N, B	6.28
11	Free Ammonia	mg/l	5.0	Calculation Method	0.91
12	Biochemical Oxygen Demand	mg/l	30	APHA 5210 B	18
13	Chemical Oxygen Demand	mg/l	250	APHA 5220 C	140
14	Arsenic (as As)	mg/l	0.2	APHA 3114 B	<0.001
15	Mercury (as Hg)	mg/l	0.01	APHA 3500Hg	<0.001
16	Lead (as Pb)	mg/l	0.1	APHA 3111 B,C	<0.005
17	Cadmium (as Cd)	mg/l	2.0	APHA 3111 B,C	<0.005
18	Hexavalent Chromium (as Cr ⁺⁶)	mg/l	0.1	APHA 3500Cr B	<0.05
19	Total Chromium (as Cr)	mg/l	2.0	APHA 3111 B,C	0.21
20	Copper (as Cu)	mg/l	3.0	APHA 3111 B,C	<0.005
21	Zinc (as Zn)	mg/l	5.0	APHA 3111 B,C	0.12
22	Selenium (as Se)	mg/l	0.05	APHA 3114 B	<0.001
23	Nickel (as Ni)	mg/l	3.0	APHA 3111 B,C	0.084
24	Cyanide (as CN)	mg/l	0.2	APHA 4500CN ⁻ C,D	ND
25	Fluoride (as F)	mg/l	2.0	APHA 4500F ⁻ C	0.76
26	Dissolved Phosphate (as PO ₄)	mg/l	5.0	APHA 4500P D	2.2
27	Sulphide (as S)	mg/l	2.0	APHA 4500 S ²⁻ D	1.2

N.B: U/O-Unobjectionable, ND-Not Detectable

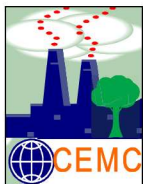
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Report No. - CEMC/TSL/040125/SW2

Issued Date-04.01.2025

28	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	1.0	APHA 5530 B,D	<0.001
29	Bioassay Test	--	90% survival of fish after 96 hours in 100% effluent	APHA 8910 C	93%
30	Manganese (as Mn)	mg/l	2.0	APHA 3500Mn B	0.24
31	Iron (as Fe)	mg/l	3.0	APHA 3500Fe, B	4.89
32	Vanadium (as V)	mg/l	0.2	APHA 3111 B,C	<0.01
33	Nitrate (as NO ₃)	mg/l	10	APHA 4500 NO ₃ ⁻ E	6.24
34	Dissolved Oxygen	mg/l	--	APHA 4500O C	5.6

End of the Report

B.P.Das

Authorized Signatory

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Report No. - CEMC/TSL/040125/SW3

Issued Date-04.01.2025

SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client : M/s. TATA Steel Ltd., (Ferro Alloys Plant),
Kalinga Nagar, Jajpur
Date of Sampling : 14.12.2024
Sampling by : Mr. Rabindranath Das
Date of Sample Received : 14.12.2024
Sample Description : Surface Water
Sample Quantity : 2.0 Ltrs
Location : Surface Drain Near Furnance-1
Date of Analysis : 15.12.2024 to 23.12.2024
Reference No. : CEMC-04012025SW3

ANALYSIS RESULT

Sl. No	Parameter	Unit of measurement	IS 2490: Discharge into Inland Surface Water	Testing Method	Result
1	Colour	Hazen	--	APHA 2120 B,C &	20
2	Odour	--	--	APHA 2150 B	U/O
3	Total Suspended Solids	mg/l	100	APHA 2540 D	12.6
4	Particular size of SS	--	Shall pass 850	APHA 2540 D	<850
5	pH Value @ 25°C	--	5.5 to 9.0	APHA 4500H ⁺ B	7.12
6	Temperature	°C	Shall not Exceed 40 within 15 m d/s from effluent Outlet	APHA 2550 B	24.9
7	Oil & Grease	mg/l	10	APHA 5520 B	<1
8	Residual Free Chlorine	mg/l	1.0	APHA 4500Cl ₂ B	ND
9	Ammonical Nitrogen	mg/l	50	APHA 4500NH ₃ B,C	ND
10	Total Kjeldahl Nitrogen as N	mg/l	100	APHA 4500 N, B	3.86
11	Free Ammonia	mg/l	5.0	Calculation Method	ND
12	Biochemical Oxygen Demand	mg/l	30	APHA 5210 B	10
13	Chemical Oxygen Demand	mg/l	250	APHA 5220 C	120
14	Arsenic (as As)	mg/l	0.2	APHA 3114 B	<0.001
15	Mercury (as Hg)	mg/l	0.01	APHA 3500Hg	<0.001
16	Lead (as Pb)	mg/l	0.1	APHA 3111 B,C	<0.005
17	Cadmium (as Cd)	mg/l	2.0	APHA 3111 B,C	<0.005
18	Hexavalent Chromium (as Cr ⁺⁶)	mg/l	0.1	APHA 3500Cr B	<0.05
19	Total Chromium (as Cr)	mg/l	2.0	APHA 3111 B,C	0.23
20	Copper (as Cu)	mg/l	3.0	APHA 3111 B,C	<0.005
21	Zinc (as Zn)	mg/l	5.0	APHA 3111 B,C	0.082
22	Selenium (as Se)	mg/l	0.05	APHA 3114 B	<0.001
23	Nickel (as Ni)	mg/l	3.0	APHA 3111 B,C	0.042
24	Cyanide (as CN)	mg/l	0.2	APHA 4500CN ⁻ C,D	ND
25	Fluoride (as F)	mg/l	2.0	APHA 4500F ⁻ C	0.72
26	Dissolved Phosphate (as PO ₄)	mg/l	5.0	APHA 4500P D	0.24
27	Sulphide (as S)	mg/l	2.0	APHA 4500 S ²⁻ D	ND

N.B: U/O-Unobjectionable, ND-Not Detectable

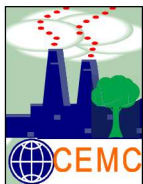
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Report No. - CEMC/TSL/040125/SW3

Issued Date-04.01.2025

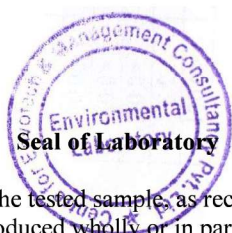
28	Phenolic Compounds (as C_6H_5OH)	mg/l	1.0	APHA 5530 B,D	<0.001
29	Bioassay Test	--	90% survival of fish after 96 hours in 100% effluent	APHA 8910 C	93%
30	Manganese (as Mn)	mg/l	2.0	APHA 3500Mn B	0.075
31	Iron (as Fe)	mg/l	3.0	APHA 3500Fe, B	2.6
32	Vanadium (as V)	mg/l	0.2	APHA 3111 B,C	<0.01
33	Nitrate (as NO_3)	mg/l	10	APHA 4500 NO_3^- E	7.3
34	Dissolved Oxygen	mg/l	--	APHA 4500O C	5.5

End of the Report

Authorized Signatory

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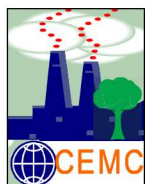


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Report No. - CEMC/TSL/040125/SW4

Issued Date-04.01.2025

SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client : M/s. TATA Steel Ltd., (Ferro Alloys Plant),
Kalinga Nagar, Jajpur
Date of Sampling : 14.12.2024
Sampling by : Mr. Rabindranath Das
Date of Sample Received : 14.12.2024
Sample Description : Surface Water
Sample Quantity : 2.0 Ltrs
Location : Surface Drain Raw Material Yard, Coal Yard
Date of Analysis : 15.12.2024 to 23.12.2024
Reference No. : CEMC-04012025SW4

ANALYSIS RESULT

Sl. No	Parameter	Unit of measurement	IS 2490: Discharge into Inland Surface Water	Testing Method	Result
1	Colour	Hazen	--	APHA 2120 B,C &	60
2	Odour	--	--	APHA 2150 B	U/O
3	Total Suspended Solids	mg/l	100	APHA 2540 D	120
4	Particular size of SS	--	Shall pass 850	APHA 2540 D	<850
5	pH Value @ 25°C	--	5.5 to 9.0	APHA 4500H ⁺ B	7.36
6	Temperature	°C	Shall not Exceed 40 within 15 m d/s from effluent Outlet	APHA 2550 B	25.1
7	Oil & Grease	mg/l	10	APHA 5520 B	<1
8	Residual Free Chlorine	mg/l	1.0	APHA 4500Cl ₂ B	ND
9	Ammonical Nitrogen	mg/l	50	APHA 4500NH ₃ B,C	ND
10	Total Kjeldahl Nitrogen as N	mg/l	100	APHA 4500 N, B	5.98
11	Free Ammonia	mg/l	5.0	Calculation Method	0.61
12	Biochemical Oxygen Demand	mg/l	30	APHA 5210 B	14
13	Chemical Oxygen Demand	mg/l	250	APHA 5220 C	60
14	Arsenic (as As)	mg/l	0.2	APHA 3114 B	<0.001
15	Mercury (as Hg)	mg/l	0.01	APHA 3500Hg	<0.001
16	Lead (as Pb)	mg/l	0.1	APHA 3111 B,C	<0.005
17	Cadmium (as Cd)	mg/l	2.0	APHA 3111 B,C	<0.005
18	Hexavalent Chromium (as Cr ⁺⁶)	mg/l	0.1	APHA 3500Cr B	0.11
19	Total Chromium (as Cr)	mg/l	2.0	APHA 3111 B,C	0.21
20	Copper (as Cu)	mg/l	3.0	APHA 3111 B,C	<0.005
21	Zinc (as Zn)	mg/l	5.0	APHA 3111 B,C	0.072
22	Selenium (as Se)	mg/l	0.05	APHA 3114 B	<0.001
23	Nickel (as Ni)	mg/l	3.0	APHA 3111 B,C	0.074
24	Cyanide (as CN)	mg/l	0.2	APHA 4500CN ⁻ C,D	ND
25	Fluoride (as F)	mg/l	2.0	APHA 4500F ⁻ C	0.89
26	Dissolved Phosphate (as PO ₄)	mg/l	5.0	APHA 4500P D	0.54
27	Sulphide (as S)	mg/l	2.0	APHA 4500 S ²⁻ D	0.4

N.B: U/O-Unobjectionable, ND-Not Detectable

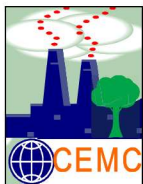
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Report No. - CEMC/TSL/040125/SW4

Issued Date-04.01.2025

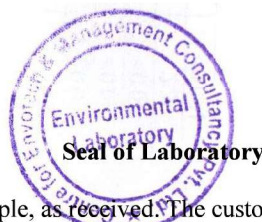
28	Phenolic Compounds (as C_6H_5OH)	mg/l	1.0	APHA 5530 B,D	<0.001
29	Bioassay Test	--	90% survival of fish after 96 hours in 100% effluent	APHA 8910 C	95%
30	Manganese (as Mn)	mg/l	2.0	APHA 3500Mn B	0.081
31	Iron (as Fe)	mg/l	3.0	APHA 3500Fe, B	1.42
32	Vanadium (as V)	mg/l	0.2	APHA 3111 B,C	<0.01
33	Nitrate (as NO_3)	mg/l	10	APHA 4500 NO_3^- E	7.82
34	Dissolved Oxygen	mg/l	--	APHA 4500O C	5.6

End of the Report

B.P.Dal
Authorized Signatory

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Report No. - CEMC/TSL/040225/SW1

Issued Date-04.02.2025

SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client : M/s. TATA Steel Ltd., (Ferro Alloys Plant),
Kalinga Nagar, Jajpur
Date of Sampling : 28.01.2025
Sampling by : Mr. Rabindranath Das
Date of Sample Received : 28.01.2025
Sample Description : Surface Water
Sample Quantity : 2.0 Ltrs
Location : Finishing Yard Sump Pit
Date of Analysis : 29.01.2025 to 03.02.2025
Reference No. : CEMC-04022025SW1

ANALYSIS RESULT

Sl. No	Parameter	Unit of measurement	IS 2490: Discharge into Inland Surface Water	Testing Method	Result
1	Colour	Hazen	--	APHA 2120 B,C &	90
2	Odour	--	--	APHA 2150 B	U/O
3	Total Suspended Solids	mg/l	100	APHA 2540 D	32.8
4	Particular size of SS	--	Shall pass 850	APHA 2540 D	<850
5	pH Value @ 25°C	--	5.5 to 9.0	APHA 4500H ⁺ B	7.92
6	Temperature	°C	Shall not Exceed 40 within 15 m d/s from effluent Outlet	APHA 2550 B	25.8
7	Oil & Grease	mg/l	10	APHA 5520 B	<1
8	Residual Free Chlorine	mg/l	1.0	APHA 4500Cl ₂ B	ND
9	Ammonical Nitrogen	mg/l	50	APHA 4500NH ₃ B,C	ND
10	Total Kjeldahl Nitrogen as N	mg/l	100	APHA 4500 N, B	6.14
11	Free Ammonia	mg/l	5.0	Calculation Method	0.6
12	Biochemical Oxygen Demand	mg/l	30	APHA 5210 B	12
13	Chemical Oxygen Demand	mg/l	250	APHA 5220 C	40
14	Arsenic (as As)	mg/l	0.2	APHA 3120B	<0.001
15	Mercury (as Hg)	mg/l	0.01	APHA 3120B	<0.001
16	Lead (as Pb)	mg/l	0.1	APHA 3120B	<0.005
17	Cadmium (as Cd)	mg/l	2.0	APHA 3120B	<0.005
18	Hexavalent Chromium (as Cr ⁺⁶)	mg/l	0.1	APHA 3500Cr B	0.09
19	Total Chromium (as Cr)	mg/l	2.0	APHA 3120B	0.16
20	Copper (as Cu)	mg/l	3.0	APHA 3120B	0.015
21	Zinc (as Zn)	mg/l	5.0	APHA 3120B	0.19
22	Selenium (as Se)	mg/l	0.05	APHA 3120B	<0.001
23	Nickel (as Ni)	mg/l	3.0	APHA 3120B	0.026
24	Cyanide (as CN)	mg/l	0.2	APHA 4500CN ⁻ C,D	ND
25	Fluoride (as F)	mg/l	2.0	APHA 4500F ⁻ C	0.38
26	Dissolved Phosphate (as PO ₄)	mg/l	5.0	APHA 4500P D	<0.05
27	Sulphide (as S)	mg/l	2.0	APHA 4500 S ²⁻ D	0.8

N.B: U/O-Unobjectionable, ND-Not Detectable

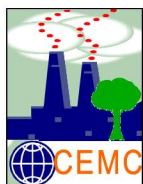
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Report No. - CEMC/TSL/040225/SW1

Issued Date-04.02.2025

28	Phenolic Compounds (as C_6H_5OH)	mg/l	1.0	APHA 5530 B,D	<0.001
29	Bioassay Test	--	90% survival of fish after 96 hours in 100% effluent	APHA 8910 C	94%
30	Manganese (as Mn)	mg/l	2.0	APHA 3120B	<0.005
31	Iron (as Fe)	mg/l	3.0	APHA 3500Fe, B	0.19
32	Vanadium (as V)	mg/l	0.2	APHA 3120B	<0.005
33	Nitrate (as NO_3)	mg/l	10	APHA 4500 NO_3^- E	4.2
34	Dissolved Oxygen	mg/l	--	APHA 4500O C	6.1

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B.P. Das

Authorized Signatory



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Report No. - CEMC/TSL/040225/SW2

Issued Date-04.02.2025

SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client : M/s. TATA Steel Ltd., (Ferro Alloys Plant),
Kalinga Nagar, Jajpur
Date of Sampling : 28.01.2025
Sampling by : Mr. Rabindranath Das
Date of Sample Received : 28.01.2025
Sample Description : Surface Water
Sample Quantity : 2.0 Ltrs
Location : Furnace Backside Sump Drain
Date of Analysis : 29.01.2025 to 03.02.2025
Reference No. : CEMC-04022025SW2

ANALYSIS RESULT

Sl. No	Parameter	Unit of measurement	IS 2490: Discharge into Inland Surface Water	Testing Method	Result
1	Colour	Hazen	--	APHA 2120 B,C &	40
2	Odour	--	--	APHA 2150 B	U/O
3	Total Suspended Solids	mg/l	100	APHA 2540 D	28.2
4	Particular size of SS	--	Shall pass 850	APHA 2540 D	<850
5	pH Value @ 25°C	--	5.5 to 9.0	APHA 4500H ⁺ B	7.97
6	Temperature	°C	Shall not Exceed 40 within 15 m d/s from effluent Outlet	APHA 2550 B	25.9
7	Oil & Grease	mg/l	10	APHA 5520 B	<1
8	Residual Free Chlorine	mg/l	1.0	APHA 4500Cl ₂ B	ND
9	Ammonical Nitrogen	mg/l	50	APHA 4500NH ₃ B,C	ND
10	Total Kjeldahl Nitrogen as N	mg/l	100	APHA 4500 N, B	4.56
11	Free Ammonia	mg/l	5.0	Calculation Method	0.42
12	Biochemical Oxygen Demand	mg/l	30	APHA 5210 B	14
13	Chemical Oxygen Demand	mg/l	250	APHA 5220 C	60
14	Arsenic (as As)	mg/l	0.2	APHA 3120B	<0.001
15	Mercury (as Hg)	mg/l	0.01	APHA 3120B	<0.001
16	Lead (as Pb)	mg/l	0.1	APHA 3120B	<0.005
17	Cadmium (as Cd)	mg/l	2.0	APHA 3120B	<0.005
18	Hexavalent Chromium (as Cr ⁺⁶)	mg/l	0.1	APHA 3500Cr B	<0.05
19	Total Chromium (as Cr)	mg/l	2.0	APHA 3120B	0.15
20	Copper (as Cu)	mg/l	3.0	APHA 3120B	<0.005
21	Zinc (as Zn)	mg/l	5.0	APHA 3120B	0.008
22	Selenium (as Se)	mg/l	0.05	APHA 3120B	<0.001
23	Nickel (as Ni)	mg/l	3.0	APHA 3120B	0.052
24	Cyanide (as CN)	mg/l	0.2	APHA 4500CN ⁻ C,D	ND
25	Fluoride (as F)	mg/l	2.0	APHA 4500F ⁻ C	0.52
26	Dissolved Phosphate (as PO ₄)	mg/l	5.0	APHA 4500P D	1.6
27	Sulphide (as S)	mg/l	2.0	APHA 4500 S ²⁻ D	1.0

N.B: U/O-Unobjectionable, ND-Not Detectable

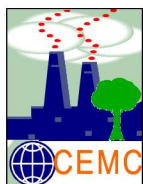
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Report No. - CEMC/TSL/040225/SW2

Issued Date-04.02.2025

28	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	1.0	APHA 5530 B,D	<0.001
29	Bioassay Test	--	90% survival of fish after 96 hours in 100% effluent	APHA 8910 C	94%
30	Manganese (as Mn)	mg/l	2.0	APHA 3120B	0.13
31	Iron (as Fe)	mg/l	3.0	APHA 3500Fe, B	0.28
32	Vanadium (as V)	mg/l	0.2	APHA 3120B	<0.005
33	Nitrate (as NO ₃)	mg/l	10	APHA 4500 NO ₃ ⁻ E	4.62
34	Dissolved Oxygen	mg/l	--	APHA 4500O C	5.9

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B.P.Das

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Report No. - CEMC/TSL/040225/SW3

Issued Date-04.02.2025

SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client : M/s. TATA Steel Ltd., (Ferro Alloys Plant),
Kalinga Nagar, Jajpur
Date of Sampling : 28.01.2025
Sampling by : Mr. Rabindranath Das
Date of Sample Received : 28.01.2025
Sample Description : Surface Water
Sample Quantity : 2.0 Ltrs
Location : Surface Drain Near Furnance-1
Date of Analysis : 29.01.2025 to 03.02.2025
Reference No. : CEMC-04022025SW3

ANALYSIS RESULT

Sl. No	Parameter	Unit of measurement	IS 2490: Discharge into Inland Surface Water	Testing Method	Result
1	Colour	Hazen	--	APHA 2120 B,C &	10
2	Odour	--	--	APHA 2150 B	U/O
3	Total Suspended Solids	mg/l	100	APHA 2540 D	8.4
4	Particular size of SS	--	Shall pass 850	APHA 2540 D	<850
5	pH Value @ 25°C	--	5.5 to 9.0	APHA 4500H ⁺ B	7.48
6	Temperature	°C	Shall not Exceed 40 within 15 m d/s from effluent Outlet	APHA 2550 B	25.7
7	Oil & Grease	mg/l	10	APHA 5520 B	<1
8	Residual Free Chlorine	mg/l	1.0	APHA 4500Cl ₂ B	ND
9	Ammonical Nitrogen	mg/l	50	APHA 4500NH ₃ B,C	ND
10	Total Kjeldahl Nitrogen as N	mg/l	100	APHA 4500 N, B	2.14
11	Free Ammonia	mg/l	5.0	Calculation Method	ND
12	Biochemical Oxygen Demand	mg/l	30	APHA 5210 B	8
13	Chemical Oxygen Demand	mg/l	250	APHA 5220 C	50
14	Arsenic (as As)	mg/l	0.2	APHA 3120B	<0.001
15	Mercury (as Hg)	mg/l	0.01	APHA 3120B	<0.001
16	Lead (as Pb)	mg/l	0.1	APHA 3120B	<0.005
17	Cadmium (as Cd)	mg/l	2.0	APHA 3120B	<0.005
18	Hexavalent Chromium (as Cr ⁺⁶)	mg/l	0.1	APHA 3500Cr B	<0.05
19	Total Chromium (as Cr)	mg/l	2.0	APHA 3120B	0.11
20	Copper (as Cu)	mg/l	3.0	APHA 3120B	<0.005
21	Zinc (as Zn)	mg/l	5.0	APHA 3120B	0.043
22	Selenium (as Se)	mg/l	0.05	APHA 3120B	<0.001
23	Nickel (as Ni)	mg/l	3.0	APHA 3120B	0.021
24	Cyanide (as CN)	mg/l	0.2	APHA 4500CN ⁻ C,D	ND
25	Fluoride (as F)	mg/l	2.0	APHA 4500F ⁻ C	0.38
26	Dissolved Phosphate (as PO ₄)	mg/l	5.0	APHA 4500P D	0.16
27	Sulphide (as S)	mg/l	2.0	APHA 4500 S ²⁻ D	ND

N.B: U/O-Unobjectionable, ND-Not Detectable

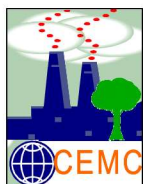
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Report No. - CEMC/TSL/040225/SW3

Issued Date-04.02.2025

28	Phenolic Compounds (as C_6H_5OH)	mg/l	1.0	APHA 5530 B,D	<0.001
29	Bioassay Test	--	90% survival of fish after 96 hours in 100% effluent	APHA 8910 C	94%
30	Manganese (as Mn)	mg/l	2.0	APHA 3120B	0.025
31	Iron (as Fe)	mg/l	3.0	APHA 3500Fe, B	0.14
32	Vanadium (as V)	mg/l	0.2	APHA 3120B	<0.005
33	Nitrate (as NO_3)	mg/l	10	APHA 4500 NO_3^- E	5.4
34	Dissolved Oxygen	mg/l	--	APHA 4500O C	5.5

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Report No. - CEMC/TSL/040225/SW4

Issued Date-04.02.2025

SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client : M/s. TATA Steel Ltd., (Ferro Alloys Plant),
Kalinga Nagar, Jajpur
Date of Sampling : 28.01.2025
Sampling by : Mr. Rabindranath Das
Date of Sample Received : 28.01.2025
Sample Description : Surface Water
Sample Quantity : 2.0 Ltrs
Location : Surface Drain Raw Material Yard, Coal Yard
Date of Analysis : 29.01.2025 to 03.02.2025
Reference No. : CEMC-04022025SW4

ANALYSIS RESULT

Sl. No	Parameter	Unit of measurement	IS 2490: Discharge into Inland Surface Water	Testing Method	Result
1	Colour	Hazen	--	APHA 2120 B,C &	20
2	Odour	--	--	APHA 2150 B	U/O
3	Total Suspended Solids	mg/l	100	APHA 2540 D	46.8
4	Particular size of SS	--	Shall pass 850	APHA 2540 D	<850
5	pH Value @ 25°C	--	5.5 to 9.0	APHA 4500H ⁺ B	7.64
6	Temperature	°C	Shall not Exceed 40 within 15 m d/s from effluent Outlet	APHA 2550 B	25.8
7	Oil & Grease	mg/l	10	APHA 5520 B	<1
8	Residual Free Chlorine	mg/l	1.0	APHA 4500Cl ₂ B	ND
9	Ammonical Nitrogen	mg/l	50	APHA 4500NH ₃ B,C	ND
10	Total Kjeldahl Nitrogen as N	mg/l	100	APHA 4500 N, B	2.56
11	Free Ammonia	mg/l	5.0	Calculation Method	0.21
12	Biochemical Oxygen Demand	mg/l	30	APHA 5210 B	6
13	Chemical Oxygen Demand	mg/l	250	APHA 5220 C	40
14	Arsenic (as As)	mg/l	0.2	APHA 3120B	<0.001
15	Mercury (as Hg)	mg/l	0.01	APHA 3120B	<0.001
16	Lead (as Pb)	mg/l	0.1	APHA 3120B	<0.005
17	Cadmium (as Cd)	mg/l	2.0	APHA 3120B	<0.005
18	Hexavalent Chromium (as Cr ⁺⁶)	mg/l	0.1	APHA 3500Cr B	0.08
19	Total Chromium (as Cr)	mg/l	2.0	APHA 3120B	0.14
20	Copper (as Cu)	mg/l	3.0	APHA 3120B	<0.005
21	Zinc (as Zn)	mg/l	5.0	APHA 3120B	0.056
22	Selenium (as Se)	mg/l	0.05	APHA 3120B	<0.001
23	Nickel (as Ni)	mg/l	3.0	APHA 3120B	0.021
24	Cyanide (as CN)	mg/l	0.2	APHA 4500CN ⁻ C,D	ND
25	Fluoride (as F)	mg/l	2.0	APHA 4500F ⁻ C	0.28
26	Dissolved Phosphate (as PO ₄)	mg/l	5.0	APHA 4500P D	0.31
27	Sulphide (as S)	mg/l	2.0	APHA 4500 S ²⁻ D	0.4

N.B: U/O-Unobjectionable, ND-Not Detectable

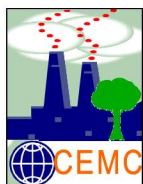
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Report No. - CEMC/TSL/040225/SW4

Issued Date-04.02.2025

28	Phenolic Compounds (as C_6H_5OH)	mg/l	1.0	APHA 5530 B,D	<0.001
29	Bioassay Test	--	90% survival of fish after 96 hours in 100% effluent	APHA 8910 C	95%
30	Manganese (as Mn)	mg/l	2.0	APHA 3120B	0.042
31	Iron (as Fe)	mg/l	3.0	APHA 3500Fe, B	0.24
32	Vanadium (as V)	mg/l	0.2	APHA 3120B	<0.005
33	Nitrate (as NO_3)	mg/l	10	APHA 4500 NO_3^- E	5.23
34	Dissolved Oxygen	mg/l	--	APHA 4500O C	6.2

End of the Report

B.P.Das

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Report No. - CEMC/TSL/040325/SW1

Issued Date-04.03.2025

SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client : M/s. TATA Steel Ltd., (Ferro Alloys Plant),
Kalinga Nagar, Jajpur
Date of Sampling : 11.02.2025
Sampling by : Mr. Rabindranath Das
Date of Sample Received : 12.02.2025
Sample Description : Surface Water
Sample Quantity : 2.0 Ltrs
Location : Finishing Yard Sump Pit
Date of Analysis : 12.02.2025 to 23.02.2025
Reference No. : CEMC-04032025SW1.

ANALYSIS RESULT

Sl. No	Parameter	Unit of measurement	IS 2490: Discharge into Inland Surface Water	Testing Method	Result
1	Colour	Hazen	--	APHA 2120 B,C &	70
2	Odour	--	--	APHA 2150 B	U/O
3	Total Suspended Solids	mg/l	100	APHA 2540 D	26.4
4	Particular size of SS	--	Shall pass 850	APHA 2540 D	<850
5	pH Value @ 25°C	--	5.5 to 9.0	APHA 4500H ⁺ B	7.75
6	Temperature	°C	Shall not Exceed 40 within 15 m d/s from effluent Outlet	APHA 2550 B	28.2
7	Oil & Grease	mg/l	10	APIIA 5520 B	<1
8	Residual Free Chlorine	mg/l	1.0	APHA 4500Cl ₂ B	ND
9	Ammonical Nitrogen	mg/l	50	APHA 4500NH ₃ B,C	ND
10	Total Kjeldahl Nitrogen as N	mg/l	100	APHA 4500 N, B	5.24
11	Free Ammonia	mg/l	5.0	Calculation Method	0.4
12	Biochemical Oxygen Demand	mg/l	30	APHA 5210 B	14
13	Chemical Oxygen Demand	mg/l	250	APHA 5220 C	50
14	Arsenic (as As)	mg/l	0.2	APHA 3120B	<0.001
15	Mercury (as Hg)	mg/l	0.01	APHA 3120B	<0.001
16	Lead (as Pb)	mg/l	0.1	APHA 3120B	<0.005
17	Cadmium (as Cd)	mg/l	2.0	APHA 3120B	<0.005
18	Hexavalent Chromium (as Cr ⁺⁶)	mg/l	0.1	APHA 3500Cr B	0.11
19	Total Chromium (as Cr)	mg/l	2.0	APHA 3120B	0.19
20	Copper (as Cu)	mg/l	3.0	APHA 3120B	0.018
21	Zinc (as Zn)	mg/l	5.0	APHA 3120B	0.23
22	Selenium (as Se)	mg/l	0.05	APHA 3120B	<0.001
23	Nickel (as Ni)	mg/l	3.0	APHA 3120B	0.029
24	Cyanide (as CN)	mg/l	0.2	APHA 4500CN ⁻ C,D	ND
25	Fluoride (as F)	mg/l	2.0	APHA 4500F ⁻ C	0.42
26	Dissolved Phosphate (as PO ₄)	mg/l	5.0	APHA 4500P D	<0.05
27	Sulphide (as S)	mg/l	2.0	APHA 4500 S ²⁻ D	1.2

N.B: U/O-Unobjectionable, ND-Not Detectable

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Report No. - CEMC/TSL/040325/SW1

Issued Date-04.03.2025

28	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	1.0	APHA 5530 B,D	<0.001
29	Bioassay Test	--	90% survival of fish after 96 hours in 100% effluent	APHA 8910 C	93%
30	Manganese (as Mn)	mg/l	2.0	APHA 3120B	<0.005
31	Iron (as Fe)	mg/l	3.0	APHA 3500Fe, B	0.23
32	Vanadium (as V)	mg/l	0.2	APHA 3120B	<0.005
33	Nitrate (as NO ₃)	mg/l	10	APHA 4500 NO ₃ ⁻ E	4.8
34	Dissolved Oxygen	mg/l	--	APHA 4500O C	5.9

End of the Report


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Report No. - CEMC/TSL/040325/SW2

Issued Date-04.03.2025

SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client : M/s. TATA Steel Ltd., (Ferro Alloys Plant),
Kalinga Nagar, Jajpur
Date of Sampling : 11.02.2025
Sampling by : Mr. Rabindranath Das
Date of Sample Received : 12.02.2025
Sample Description : Surface Water
Sample Quantity : 2.0 Ltrs
Location : Furnace Backside Sump Drain
Date of Analysis : 12.02.2025 to 23.02.2025
Reference No. : CEMC-04032025SW2

ANALYSIS RESULT

Sl. No	Parameter	Unit of measurement	IS 2490: Discharge into Inland Surface Water	Testing Method	Result
1	Colour	Hazen	--	APHA 2120 B,C &	50
2	Odour	--	--	APHA 2150 B	U/O
3	Total Suspended Solids	mg/l	100	APHA 2540 D	34.6
4	Particular size of SS	--	Shall pass 850	APHA 2540 D	<850
5	pH Value @ 25°C	--	5.5 to 9.0	APHA 4500H ⁺ B	7.09
6	Temperature	°C	Shall not Exceed 40 within 15 m d/s from effluent Outlet	APHA 2550 B	28.8
7	Oil & Grease	mg/l	10	APHA 5520 B	<1
8	Residual Free Chlorine	mg/l	1.0	APHA 4500Cl ₂ B	ND
9	Ammonical Nitrogen	mg/l	50	APHA 4500NH ₃ B,C	ND
10	Total Kjeldahl Nitrogen as N	mg/l	100	APHA 4500 N, B	5.28
11	Free Ammonia	mg/l	5.0	Calculation Method	0.61
12	Biochemical Oxygen Demand	mg/l	30	APHA 5210 B	20
13	Chemical Oxygen Demand	mg/l	250	APHA 5220 C	80
14	Arsenic (as As)	mg/l	0.2	APHA 3120B	<0.001
15	Mercury (as Hg)	mg/l	0.01	APHA 3120B	<0.001
16	Lead (as Pb)	mg/l	0.1	APHA 3120B	<0.005
17	Cadmium (as Cd)	mg/l	2.0	APHA 3120B	<0.005
18	Hexavalent Chromium (as Cr ⁺⁶)	mg/l	0.1	APHA 3500Cr B	0.08
19	Total Chromium (as Cr)	mg/l	2.0	APHA 3120B	0.19
20	Copper (as Cu)	mg/l	3.0	APHA 3120B	<0.005
21	Zinc (as Zn)	mg/l	5.0	APHA 3120B	0.014
22	Selenium (as Se)	mg/l	0.05	APHA 3120B	<0.001
23	Nickel (as Ni)	mg/l	3.0	APHA 3120B	0.061
24	Cyanide (as CN)	mg/l	0.2	APHA 4500CN ⁻ C,D	ND
25	Fluoride (as F)	mg/l	2.0	APHA 4500F ⁻ C	0.59
26	Dissolved Phosphate (as PO ₄)	mg/l	5.0	APHA 4500P D	1.8
27	Sulphide (as S)	mg/l	2.0	APHA 4500 S ²⁻ D	1.4

N.B: U/O-Unobjectionable, ND-Not Detectable

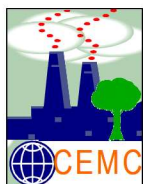
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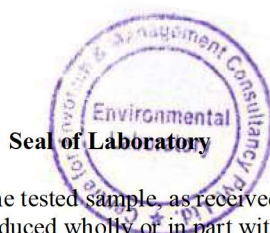
Report No. - CEMC/TSL/040325/SW2

Issued Date-04.03.2025

28	Phenolic Compounds (as C_6H_5OH)	mg/l	1.0	APHA 5530 B,D	<0.001
29	Bioassay Test	--	90% survival of fish after 96 hours in 100% effluent	APHA 8910 C	94%
30	Manganese (as Mn)	mg/l	2.0	APHA 3120B	0.16
31	Iron (as Fe)	mg/l	3.0	APHA 3500Fe, B	0.31
32	Vanadium (as V)	mg/l	0.2	APHA 3120B	<0.005
33	Nitrate (as NO_3)	mg/l	10	APHA 4500 NO_3^- E	5.13
34	Dissolved Oxygen	mg/l	--	APHA 4500O C	5.8

End of the Report


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Report No. - CEMC/TSL/040325/SW3

Issued Date-04.03.2025

SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client

: M/s. TATA Steel Ltd., (Ferro Alloys Plant),
Kalinga Nagar, Jajpur

Date of Sampling

: 11.02.2025

Sampling by

: Mr. Rabindranath Das

Date of Sample Received

: 12.02.2025

Sample Description

: Surface Water

Location

: Surface Drain Near Furnance-1

Date of Analysis

: 12.02.2025 to 23.02.2025

Reference No.

: CEMC-04032025SW3

ANALYSIS RESULT

Sl. No	Parameter	Unit of measurement	IS 2490: Discharge into Inland Surface Water	Testing Method	Result
1	Colour	Hazen	--	APHA 2120 B,C &	20
2	Odour	--	--	APHA 2150 B	U/O
3	Total Suspended Solids	mg/l	100	APHA 2540 D	14.6
4	Particular size of SS	--	Shall pass 850	APHA 2540 D	<850
5	pH Value @ 25°C	--	5.5 to 9.0	APHA 4500H ⁺ B	7.21
6	Temperature	°C	Shall not Exceed 40 within 15 m d/s from effluent Outlet	APHA 2550 B	28.9
7	Oil & Grease	mg/l	10	APHA 5520 B	<1
8	Residual Free Chlorine	mg/l	1.0	APHA 4500Cl ₂ B	ND
9	Ammonical Nitrogen	mg/l	50	APHA 4500NH ₃ B,C	ND
10	Total Kjeldahl Nitrogen as N	mg/l	100	APHA 4500 N, B	2.82
11	Free Ammonia	mg/l	5.0	Calculation Method	ND
12	Biochemical Oxygen Demand	mg/l	30	APHA 5210 B	12
13	Chemical Oxygen Demand	mg/l	250	APHA 5220 C	60
14	Arsenic (as As)	mg/l	0.2	APHA 3120B	<0.001
15	Mercury (as Hg)	mg/l	0.01	APHA 3120B	<0.001
16	Lead (as Pb)	mg/l	0.1	APHA 3120B	<0.005
17	Cadmium (as Cd)	mg/l	2.0	APHA 3120B	<0.005
18	Hexavalent Chromium (as Cr ⁺⁶)	mg/l	0.1	APHA 3500Cr B	<0.05
19	Total Chromium (as Cr)	mg/l	2.0	APHA 3120B	0.14
20	Copper (as Cu)	mg/l	3.0	APHA 3120B	<0.005
21	Zinc (as Zn)	mg/l	5.0	APHA 3120B	0.049
22	Selenium (as Se)	mg/l	0.05	APHA 3120B	<0.001
23	Nickel (as Ni)	mg/l	3.0	APHA 3120B	0.026
24	Cyanide (as CN)	mg/l	0.2	APHA 4500CN ⁻ C,D	ND
25	Fluoride (as F)	mg/l	2.0	APHA 4500F ⁻ C	0.42
26	Dissolved Phosphate (as PO ₄)	mg/l	5.0	APHA 4500P D	0.19
27	Sulphide (as S)	mg/l	2.0	APHA 4500 S ²⁻ D	ND

N.B: U/O-Unobjectionable, ND-Not Detectable

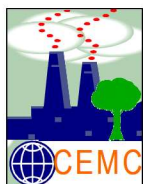
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Report No. - CEMC/TSL/040325/SW3

Issued Date-04.03.2025

28	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	1.0	APHA 5530 B,D	<0.001
29	Bioassay Test	--	90% survival of fish after 96 hours in 100% effluent	APHA 8910 C	95%
30	Manganese (as Mn)	mg/l	2.0	APHA 3120B	0.029
31	Iron (as Fe)	mg/l	3.0	APHA 3500Fe, B	0.18
32	Vanadium (as V)	mg/l	0.2	APHA 3120B	<0.005
33	Nitrate (as NO ₃)	mg/l	10	APHA 4500 NO ₃ ⁻ E	6.2
34	Dissolved Oxygen	mg/l	--	APHA 4500O C	5.4

End of the Report

BPDAS

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Seal of Laboratory

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Report No. - CEMC/TSL/040325/SW4

Issued Date-04.03.2025

SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client : M/s. TATA Steel Ltd., (Ferro Alloys Plant),
Kalinga Nagar, Jajpur
Date of Sampling : 11.02.2025
Sampling by : Mr. Rabindranath Das
Date of Sample Received : 12.02.2025
Sample Description : Surface Water
Location : Surface Drain Raw Material Yard, Coal Yard
Date of Analysis : 12.02.2025 to 23.02.2025
Reference No. : CEMC-04032025SW4

ANALYSIS RESULT

Sl. No	Parameter	Unit of measurement	IS 2490: Discharge into Inland Surface Water	Testing Method	Result
1	Colour	Hazen	--	APHA 2120 B,C &	30
2	Odour	--	--	APHA 2150 B	U/O
3	Total Suspended Solids	mg/l	100	APHA 2540 D	56.2
4	Particular size of SS	--	Shall pass 850	APHA 2540 D	<850
5	pH Value @ 25°C	--	5.5 to 9.0	APHA 4500H ⁺ B	7.46
6	Temperature	°C	Shall not Exceed 40 within 15 m d/s from effluent Outlet	APHA 2550 B	28.2
7	Oil & Grease	mg/l	10	APHA 5520 B	<1
8	Residual Free Chlorine	mg/l	1.0	APHA 4500Cl ₂ B	ND
9	Ammonical Nitrogen	mg/l	50	APHA 4500NH ₃ B,C	ND
10	Total Kjeldahl Nitrogen as N	mg/l	100	APHA 4500 N, B	2.86
11	Free Ammonia	mg/l	5.0	Calculation Method	0.26
12	Biochemical Oxygen Demand	mg/l	30	APHA 5210 B	10
13	Chemical Oxygen Demand	mg/l	250	APHA 5220 C	50
14	Arsenic (as As)	mg/l	0.2	APHA 3120B	<0.001
15	Mercury (as Hg)	mg/l	0.01	APHA 3120B	<0.001
16	Lead (as Pb)	mg/l	0.1	APHA 3120B	<0.005
17	Cadmium (as Cd)	mg/l	2.0	APHA 3120B	<0.005
18	Hexavalent Chromium (as Cr ⁺⁶)	mg/l	0.1	APHA 3500Cr B	0.09
19	Total Chromium (as Cr)	mg/l	2.0	APHA 3120B	0.18
20	Copper (as Cu)	mg/l	3.0	APHA 3120B	<0.005
21	Zinc (as Zn)	mg/l	5.0	APHA 3120B	0.064
22	Selenium (as Se)	mg/l	0.05	APHA 3120B	<0.001
23	Nickel (as Ni)	mg/l	3.0	APHA 3120B	0.024
24	Cyanide (as CN)	mg/l	0.2	APHA 4500CN ⁻ C,D	ND
25	Fluoride (as F)	mg/l	2.0	APHA 4500F ⁻ C	0.32
26	Dissolved Phosphate (as PO ₄)	mg/l	5.0	APHA 4500P D	0.38
27	Sulphide (as S)	mg/l	2.0	APHA 4500 S ²⁻ D	0.6

N.B: U/O-Unobjectionable, ND-Not Detectable

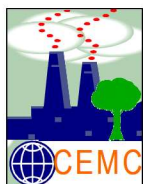
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Report No. - CEMC/TSL/040325/SW4

Issued Date-04.03.2025

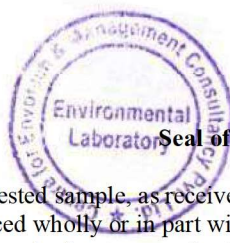
28	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	1.0	APHA 5530 B,D	<0.001
29	Bioassay Test	--	90% survival of fish after 96 hours in 100% effluent	APHA 8910 C	95%
30	Manganese (as Mn)	mg/l	2.0	APHA 3120B	0.058
31	Iron (as Fe)	mg/l	3.0	APHA 3500Fe, B	0.26
32	Vanadium (as V)	mg/l	0.2	APHA 3120B	<0.005
33	Nitrate (as NO ₃)	mg/l	10	APHA 4500 NO ₃ ⁻ E	5.43
34	Dissolved Oxygen	mg/l	--	APHA 4500O C	6.1

End of the Report


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Report No. - CEMC/TSL/040425/SW1

Issued Date-04.04.2025

SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client : M/s. TATA Steel Ltd., (Ferro Alloys Plant),
Kalinga Nagar, Jajpur
Date of Sampling : 18.03.2025
Sampling by : Mr. Rabindranath Das
Date of Sample Received : 18.03.2025
Sample Description : Surface Water
Sample Quantity : 2.0 Ltrs
Location : Finishing Yard Sump Pit
Date of Analysis : 18.03.2025 to 25.03.2025
Reference No. : CEMC-04042025SW1.

ANALYSIS RESULT

Sl. No	Parameter	Unit of measurement	IS 2490: Discharge into Inland Surface Water	Testing Method	Result
1	Colour	Hazen	--	APHA 2120 B,C &	80
2	Odour	--	--	APHA 2150 B	U/O
3	Total Suspended Solids	mg/l	100	APHA 2540 D	38.4
4	Particular size of SS	--	Shall pass 850	APHA 2540 D	<850
5	pH Value @ 25°C	--	5.5 to 9.0	APHA 4500H ⁺ B	6.88
6	Temperature	°C	Shall not Exceed 40 within 15 m d/s from effluent Outlet	APHA 2550 B	31.6
7	Oil & Grease	mg/l	10	APIIA 5520 B	<1
8	Residual Free Chlorine	mg/l	1.0	APHA 4500Cl ₂ B	ND
9	Ammonical Nitrogen	mg/l	50	APHA 4500NH ₃ B,C	ND
10	Total Kjeldahl Nitrogen as N	mg/l	100	APHA 4500 N, B	5.91
11	Free Ammonia	mg/l	5.0	Calculation Method	0.46
12	Biochemical Oxygen Demand	mg/l	30	APHA 5210 B	22
13	Chemical Oxygen Demand	mg/l	250	APHA 5220 C	80
14	Arsenic (as As)	mg/l	0.2	APHA 3120B	<0.001
15	Mercury (as Hg)	mg/l	0.01	APHA 3120B	<0.001
16	Lead (as Pb)	mg/l	0.1	APHA 3120B	<0.005
17	Cadmium (as Cd)	mg/l	2.0	APHA 3120B	<0.005
18	Hexavalent Chromium (as Cr ⁺⁶)	mg/l	0.1	APHA 3500Cr B	0.15
19	Total Chromium (as Cr)	mg/l	2.0	APHA 3120B	0.23
20	Copper (as Cu)	mg/l	3.0	APHA 3120B	0.025
21	Zinc (as Zn)	mg/l	5.0	APHA 3120B	0.31
22	Selenium (as Se)	mg/l	0.05	APHA 3120B	<0.001
23	Nickel (as Ni)	mg/l	3.0	APHA 3120B	0.036
24	Cyanide (as CN)	mg/l	0.2	APHA 4500CN ⁻ C,D	ND
25	Fluoride (as F)	mg/l	2.0	APHA 4500F ⁻ C	0.48
26	Dissolved Phosphate (as PO ₄)	mg/l	5.0	APHA 4500P D	<0.05
27	Sulphide (as S)	mg/l	2.0	APHA 4500 S ²⁻ D	1.4

N.B: U/O-Unobjectionable, ND-Not Detectable

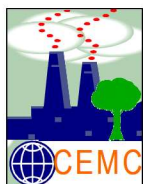
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Report No. - CEMC/TSL/040425/SW1

Issued Date-04.04.2025

28	Phenolic Compounds (as C_6H_5OH)	mg/l	1.0	APHA 5530 B,D	<0.001
29	Bioassay Test	--	90% survival of fish after 96 hours in 100% effluent	APHA 8910 C	92%
30	Manganese (as Mn)	mg/l	2.0	APHA 3120B	<0.005
31	Iron (as Fe)	mg/l	3.0	APHA 3500Fe, B	0.33
32	Vanadium (as V)	mg/l	0.2	APHA 3120B	<0.005
33	Nitrate (as NO_3)	mg/l	10	APHA 4500 NO_3^- E	5.2
34	Dissolved Oxygen	mg/l	--	APHA 4500O C	5.7

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Report No. - CEMC/TSL/040425/SW2

Issued Date-04.04.2025

SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client : M/s. TATA Steel Ltd., (Ferro Alloys Plant),
Kalinga Nagar, Jajpur
Date of Sampling : 18.03.2025
Sampling by : Mr. Rabindranath Das
Date of Sample Received : 18.03.2025
Sample Description : Surface Water
Sample Quantity : 2.0 Ltrs
Location : Furnace Backside Sump Drain
Date of Analysis : 18.03.2025 to 25.03.2025
Reference No. : CEMC-04042025SW2

ANALYSIS RESULT

Sl. No	Parameter	Unit of measurement	IS 2490: Discharge into Inland Surface Water	Testing Method	Result
1	Colour	Hazen	--	APHA 2120 B,C &	60
2	Odour	--	--	APHA 2150 B	U/O
3	Total Suspended Solids	mg/l	100	APHA 2540 D	42.4
4	Particular size of SS	--	Shall pass 850	APHA 2540 D	<850
5	pH Value @ 25°C	--	5.5 to 9.0	APHA 4500H ⁺ B	6.89
6	Temperature	°C	Shall not Exceed 40 within 15 m d/s from effluent Outlet	APHA 2550 B	31.8
7	Oil & Grease	mg/l	10	APHA 5520 B	<1
8	Residual Free Chlorine	mg/l	1.0	APHA 4500Cl ₂ B	ND
9	Ammonical Nitrogen	mg/l	50	APHA 4500NH ₃ B,C	ND
10	Total Kjeldahl Nitrogen as N	mg/l	100	APHA 4500 N, B	5.86
11	Free Ammonia	mg/l	5.0	Calculation Method	0.71
12	Biochemical Oxygen Demand	mg/l	30	APHA 5210 B	30
13	Chemical Oxygen Demand	mg/l	250	APHA 5220 C	110
14	Arsenic (as As)	mg/l	0.2	APHA 3120B	<0.001
15	Mercury (as Hg)	mg/l	0.01	APHA 3120B	<0.001
16	Lead (as Pb)	mg/l	0.1	APHA 3120B	<0.005
17	Cadmium (as Cd)	mg/l	2.0	APHA 3120B	<0.005
18	Hexavalent Chromium (as Cr ⁺⁶)	mg/l	0.1	APHA 3500Cr B	0.15
19	Total Chromium (as Cr)	mg/l	2.0	APHA 3120B	0.21
20	Copper (as Cu)	mg/l	3.0	APHA 3120B	<0.005
21	Zinc (as Zn)	mg/l	5.0	APHA 3120B	0.016
22	Selenium (as Se)	mg/l	0.05	APHA 3120B	<0.001
23	Nickel (as Ni)	mg/l	3.0	APHA 3120B	0.066
24	Cyanide (as CN)	mg/l	0.2	APHA 4500CN ⁻ C,D	ND
25	Fluoride (as F)	mg/l	2.0	APHA 4500F ⁻ C	0.62
26	Dissolved Phosphate (as PO ₄)	mg/l	5.0	APHA 4500P D	2.1
27	Sulphide (as S)	mg/l	2.0	APHA 4500 S ²⁻ D	1.6

N.B: U/O-Unobjectionable, ND-Not Detectable

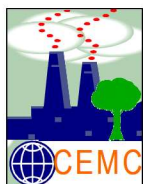
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Report No. - CEMC/TSL/040425/SW2

Issued Date-04.04.2025

28	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	1.0	APHA 5530 B,D	<0.001
29	Bioassay Test	--	90% survival of fish after 96 hours in 100% effluent	APHA 8910 C	93%
30	Manganese (as Mn)	mg/l	2.0	APHA 3120B	0.17
31	Iron (as Fe)	mg/l	3.0	APHA 3500Fe, B	0.38
32	Vanadium (as V)	mg/l	0.2	APHA 3120B	<0.005
33	Nitrate (as NO ₃)	mg/l	10	APHA 4500 NO ₃ ⁻ E	5.64
34	Dissolved Oxygen	mg/l	--	APHA 4500O C	5.6

End of the Report


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Report No. - CEMC/TSL/040425/SW3

Issued Date-04.04.2025

SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client

: M/s. TATA Steel Ltd., (Ferro Alloys Plant),
Kalinga Nagar, Jajpur

Date of Sampling

: 18.03.2025

Sampling by

: Mr. Rabindranath Das

Date of Sample Received

: 18.03.2025

Sample Description

: Surface Water

Location

: Surface Drain Near Furnance-1

Date of Analysis

: 18.03.2025 to 25.03.2025

Reference No.

: CEMC-04042025SW3

ANALYSIS RESULT

Sl. No	Parameter	Unit of measurement	IS 2490: Discharge into Inland Surface Water	Testing Method	Result
1	Colour	Hazen	--	APHA 2120 B,C &	25
2	Odour	--	--	APHA 2150 B	U/O
3	Total Suspended Solids	mg/l	100	APHA 2540 D	22.6
4	Particular size of SS	--	Shall pass 850	APHA 2540 D	<850
5	pH Value @ 25°C	--	5.5 to 9.0	APHA 4500H ⁺ B	7.13
6	Temperature	°C	Shall not Exceed 40 within 15 m d/s from effluent Outlet	APHA 2550 B	31.4
7	Oil & Grease	mg/l	10	APHA 5520 B	<1
8	Residual Free Chlorine	mg/l	1.0	APHA 4500Cl ₂ B	ND
9	Ammonical Nitrogen	mg/l	50	APHA 4500NH ₃ B,C	ND
10	Total Kjeldahl Nitrogen as N	mg/l	100	APHA 4500 N, B	3.28
11	Free Ammonia	mg/l	5.0	Calculation Method	ND
12	Biochemical Oxygen Demand	mg/l	30	APHA 5210 B	28
13	Chemical Oxygen Demand	mg/l	250	APHA 5220 C	90
14	Arsenic (as As)	mg/l	0.2	APHA 3120B	<0.001
15	Mercury (as Hg)	mg/l	0.01	APHA 3120B	<0.001
16	Lead (as Pb)	mg/l	0.1	APHA 3120B	<0.005
17	Cadmium (as Cd)	mg/l	2.0	APHA 3120B	<0.005
18	Hexavalent Chromium (as Cr ⁺⁶)	mg/l	0.1	APHA 3500Cr B	0.06
19	Total Chromium (as Cr)	mg/l	2.0	APHA 3120B	0.16
20	Copper (as Cu)	mg/l	3.0	APHA 3120B	<0.005
21	Zinc (as Zn)	mg/l	5.0	APHA 3120B	0.054
22	Selenium (as Se)	mg/l	0.05	APHA 3120B	<0.001
23	Nickel (as Ni)	mg/l	3.0	APHA 3120B	0.031
24	Cyanide (as CN)	mg/l	0.2	APHA 4500CN ⁻ C,D	ND
25	Fluoride (as F)	mg/l	2.0	APHA 4500F ⁻ C	0.51
26	Dissolved Phosphate (as PO ₄)	mg/l	5.0	APHA 4500P D	0.23
27	Sulphide (as S)	mg/l	2.0	APHA 4500 S ²⁻ D	0.2

N.B: U/O-Unobjectionable, ND-Not Detectable

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Report No. - CEMC/TSL/040425/SW3

Issued Date-04.04.2025

28	Phenolic Compounds (as C_6H_5OH)	mg/l	1.0	APHA 5530 B,D	<0.001
29	Bioassay Test	--	90% survival of fish after 96 hours in 100% effluent	APHA 8910 C	93%
30	Manganese (as Mn)	mg/l	2.0	APHA 3120B	0.031
31	Iron (as Fe)	mg/l	3.0	APHA 3500Fe, B	0.22
32	Vanadium (as V)	mg/l	0.2	APHA 3120B	<0.005
33	Nitrate (as NO_3)	mg/l	10	APHA 4500 NO_3^- E	7.1
34	Dissolved Oxygen	mg/l	--	APHA 4500O C	5.3

End of the Report


Authorized Signatory



Notes:

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Report No. - CEMC/TSL/040425/SW4

Issued Date-04.04.2025

SURFACE WATER QUALITY TEST REPORT

Name & Address of the Client : M/s. TATA Steel Ltd., (Ferro Alloys Plant),
Kalinga Nagar, Jajpur
Date of Sampling : 18.03.2025
Sampling by : Mr. Rabindranath Das
Date of Sample Received : 18.03.2025
Sample Description : Surface Water
Location : Surface Drain Raw Material Yard, Coal Yard
Date of Analysis : 18.03.2025 to 25.03.2025
Reference No. : CEMC-04042025SW4

ANALYSIS RESULT

Sl. No	Parameter	Unit of measurement	IS 2490: Discharge into Inland Surface Water	Testing Method	Result
1	Colour	Hazen	--	APHA 2120 B,C &	40
2	Odour	--	--	APHA 2150 B	U/O
3	Total Suspended Solids	mg/l	100	APHA 2540 D	62.4
4	Particular size of SS	--	Shall pass 850	APHA 2540 D	<850
5	pH Value @ 25°C	--	5.5 to 9.0	APHA 4500H ⁺ B	7.24
6	Temperature	°C	Shall not Exceed 40 within 15 m d/s from effluent Outlet	APHA 2550 B	31.3
7	Oil & Grease	mg/l	10	APHA 5520 B	<1
8	Residual Free Chlorine	mg/l	1.0	APHA 4500Cl ₂ B	ND
9	Ammonical Nitrogen	mg/l	50	APHA 4500NH ₃ B,C	ND
10	Total Kjeldahl Nitrogen as N	mg/l	100	APHA 4500 N, B	3.14
11	Free Ammonia	mg/l	5.0	Calculation Method	0.29
12	Biochemical Oxygen Demand	mg/l	30	APHA 5210 B	20
13	Chemical Oxygen Demand	mg/l	250	APHA 5220 C	70
14	Arsenic (as As)	mg/l	0.2	APHA 3120B	<0.001
15	Mercury (as Hg)	mg/l	0.01	APHA 3120B	<0.001
16	Lead (as Pb)	mg/l	0.1	APHA 3120B	<0.005
17	Cadmium (as Cd)	mg/l	2.0	APHA 3120B	<0.005
18	Hexavalent Chromium (as Cr ⁺⁶)	mg/l	0.1	APHA 3500Cr B	0.13
19	Total Chromium (as Cr)	mg/l	2.0	APHA 3120B	0.21
20	Copper (as Cu)	mg/l	3.0	APHA 3120B	<0.005
21	Zinc (as Zn)	mg/l	5.0	APHA 3120B	0.071
22	Selenium (as Se)	mg/l	0.05	APHA 3120B	<0.001
23	Nickel (as Ni)	mg/l	3.0	APHA 3120B	0.029
24	Cyanide (as CN)	mg/l	0.2	APHA 4500CN ⁻ C,D	ND
25	Fluoride (as F)	mg/l	2.0	APHA 4500F ⁻ C	0.38
26	Dissolved Phosphate (as PO ₄)	mg/l	5.0	APHA 4500P D	0.42
27	Sulphide (as S)	mg/l	2.0	APHA 4500 S ²⁻ D	0.8

N.B: U/O-Unobjectionable, ND-Not Detectable

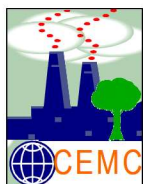
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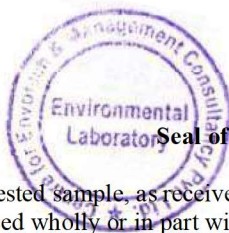
28	Phenolic Compounds (as C_6H_5OH)	mg/l	1.0	APHA 5530 B,D	<0.001
29	Bioassay Test	--	90% survival of fish after 96 hours in 100% effluent	APHA 8910 C	94%
30	Manganese (as Mn)	mg/l	2.0	APHA 3120B	0.061
31	Iron (as Fe)	mg/l	3.0	APHA 3500Fe, B	0.29
32	Vanadium (as V)	mg/l	0.2	APHA 3120B	<0.005
33	Nitrate (as NO_3)	mg/l	10	APHA 4500 NO_3^- E	6.21
34	Dissolved Oxygen	mg/l	--	APHA 4500O C	5.9

End of the Report


Authorized Signatory

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