



Letter No. – TSTD/EC/2024/NOV/01

22nd Nov' 2024

To,

Deputy Director General of Forests (C),
Ministry of Environment, Forest and Climate Change,
Integrated Regional Office, 2nd Floor,
Headquarter- Jharkhand State Housing Board,
Harmu Chowk, Ranchi, Jharkhand – 834002

Subject: - Half yearly environmental compliance report of Tata Steel Limited, Tinplate Division,
Gomuri, Jamshedpur for the Period April 2024 to September 2024

Reference: - (i) EC letter No.– EC/SEIAA/2020-21/2480/2021/367 dated 30/01/2023
(ii) EC Corrigendum Letter No. EC/SEIAA/2022-23/265& EC2/453 dated 24.03.2023
(iii) EC Transfer Memo No. 153 dated 16.07.2024 issued on 24.07.2024

Sir,

With reference to the above, please find enclosed our half yearly compliance report of Tata Steel Limited, Tinplate Division for Operation of current plant of capacity 415,000 TPA and proposed phase-wise expansion to 1,015,000 TPA capacity of Electrolytic Tinplate and Tin-Free Steel material including 28,000 TPA Printed and Lacquered sheets at Golmuri, Jamshedpur, East Singhbhum, Jharkhand to the period from April 2024 to September 2024.

Thanking you,

Yours Faithfully,

For Tata Steel Limited, Tinplate Division


Somenath Bose
Head (Expansion Project)

Cc:

1. The Member Secretary, SEIAA, Dhurwa Nursery Complex, Near Dhurwa Bus Stand, Ranchi, Jharkhand – 834004
2. The Zonal Head, CPCB Kolkata, 'South end Conclave' Block-502, 5th and 6th Floor, 1582, Razidanga, Main Road, Kolkata-700107
3. The Member Secretary, JSPCB, H.E.C., Dhurwa, Ranchi-834004 (Jharkhand)
4. The Regional Officer, JSPCB, M 15, New Housing Colony, Adityapur – 839018

TATA STEEL LIMITED

Tinplate Division, Golmuri Works Jamshedpur 831 003 Jharkhand India
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

Operation of current plant of capacity 415,000 TPA and proposed phase-wise expansion to 1,015,000 TPA capacity of Electrolytic Tinplate and Tin-Free Steel material including 28,000 TPA Printed and Lacquered sheets of M/s Tata Steel Limited, Tinplate Division at Golmuri Works, Jamshedpur, East Singhbhum, Jharkhand

Ref. No.: (i) EC Letter No. – EC/SEIAA/2020-21/2480/2021/367 dated: 30/01/2023
(ii) EC Corrigendum Letter No. EC/SEIAA/2022-23/2656/2022/453 Dated: 24.03.2023
(iii) EC Transfer Memo No. 153 dated 16.07.2024 issued on 24.07.2024

(Period: April 2024 to September 2024)

| Sl. No. | Compliance Conditions | Compliance Status |
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| I | Specific Conditions: | |
| i | <p>This Environmental Clearance is valid subject to the following conditions below- That this project has -</p> <p>(a) Obtained all legal rights to operate at concerned place (b) Complied with all existing concerned laws of the land and (c) Complied with the decisions of SEIAA on the issue of Environmental clearance till date</p> | <p>(a) Legal rights available for usage of land to operate the plants at concerned place. (b) It is being complied with all existing concerned laws of the land. (c) We shall comply with the conditions of environmental clearance as specified.</p> |
| ii | Environment Management System including organisation structure to be drawn to ensure compliance of EC conditions stipulated based on principles of continual improvement and periodic management review. | Tata Steel Limited has a well-constituted Environment Management Department / Cell comprising of Senior Management Executives, engineers, and officers to monitor the environmental performance and the relevant statutory compliance. The Performance of Environment, Health & Safety is reviewed on regular basis. The Executive In-charge of the Tinplate Division company review the performance and compliance of environment clearance along with senior level team. |
| iii | All raw materials having possibility of generation of fugitive emission to be stored under a covered shed | <p>Major raw material in our operation is Hot Rolled Coil and Tin ingot and there is no fugitive emission arises from loading and unloading of the same. However, crushed coal which is used in process boiler for steam generation are kept under shed to control fugitive emission.</p> <p>Photograph enclosed in annexure 1 (a).</p> |
| iv | Project Authority (PAs) to offset (3-5 %) consumption of conventional energy sources by promoting use of solar energy, passive energy utilization, and optimum fenestration, Shading effect and heat islands. | <p>The major energy requirements at Tinplate Division are power and fuel for operating the plant and its auxiliary units.</p> <p>Power is fully sourced from Tata Steel Limited, Jamshedpur Works through its power distribution system that already has around 25% of its electrical energy content as renewable/green energy as a mandate. This is purchased in the form of Renewable Energy Certificates.</p> <p>Further to the above, solar panels have been installed on rooftop (1.3 MWp) of all plant buildings for utilization of solar energy. LED lights of lower wattage installed for all bay lighting and plant area lighting. Turbo-ventilators are installed at plant buildings as per requirement to reduce heat loads.</p> <p>Photographs enclosed in annexure 1 (b).</p> |

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| | | <p>Existing buildings are designed with openings, louvers, transparent doors, and sufficient no. of windows for utilizing natural light. Similar arrangements for use of renewable energy and passive energy utilisation will be considered for upcoming facilities.</p> <p>Gaseous fuel (Natural gas/ Propane) has been considered as fuel for boilers of expansion project.</p> |
| v | Developers to promote energy conservation measures such that it offsets not less than 2% of connected load. It is to be achieved by solar panels etc meeting ECBC norms (Energy Conservation Building Code) | <p>Existing buildings are designed with openings, louvers, transparent doors, and sufficient no. of windows for utilizing natural light. Solar panels have been installed on rooftop of all plant buildings for utilization of solar energy. LED lights of lower wattage installed for all bay lighting and plant area lighting. Turbo-ventilators are installed at plant buildings as per requirement to reduce heat loads. (Photograph are shown)</p> <p>Offices in upcoming plants will be built in accordance with ECBC (Energy conservation Building Code) and solar panel will be installed in the rooftop to conserve energy requirement of offices. Arrangements for use of renewable energy and passive energy utilisation will be considered for upcoming facilities. The Office buildings will be built with openings, louvers, transparent doors, and sufficient no. of windows for utilizing natural light in accordance with existing plants.</p> |
| vi | Trees should be planted and maintained not less than 15% of project area | <p>Green belt and green cover constitute around 27% of the project area which will be further increased to 33% post expansion. Plantation is being done in new truck parking area. Additional plantation will be done along the extended boundary and Yard area. Annual drive for plantation is carried out within the plant premises and its surroundings. Plants with different species viz. Karanj, Bakul, Gulmohar, Peltophorum, Arjun, Kadam, Shishum, Neem, Ashok, Alstonia etc are planted in and around plant premises. In addition, we adopted Miyawaki plantation method for developing dense plantation in township.</p> <p>Photograph enclosed in annexure 1 (c).</p> |
| vii | Organic Waste Converter (OWC) to be installed of sufficient capacity such that all organic waste (biodegradable) generated is used as compost manure. | <p>Compost making machine has been installed for using organic waste for preparation of compost in our premises.</p> <p>Photograph enclosed in annexure 1 (d).</p> |
| viii | Developers/Company to install STP of sufficient capacity such that all sewer produced is treated and reused | <p>Sewage from existing plant and different zones of township are pumped from Tinplate Sewage Pumping Station of capacity of 4.25 MLD to Bara STP of capacity 45 MLD. Around 1.0 MLD of sewage is pumped from this pumping station on daily basis. Tinplate Sewage Pumping Station and Bara Sewage Treatment Plant is maintained by M/s JUSCO. Tinplate Division has order agreement with M/s JUSCO for operation and maintenance of Tinplate Sewage Pumping Station. In the line with the above, we will construct pipelines and other associated facilities to pump the extra</p> |

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| | | <p>sewage generated from upcoming plants and offices into the same Sewage Pumping station for treatment of sewage and further reuse.</p> <p>Photograph enclosed in annexure 1 (e)</p> |
| ix | Developers/Company to install Rainwater harvesting including reuse on 100% basis | <p>In our existing plant, the recommendation of Ground Water Directorate, Government of Jharkhand for construction of 4 no. of rainwater harvesting structures has been constructed for recharge of groundwater. The size of each rainwater harvesting structure is 8 m x 5.5 m x 3 m. There is total 14 no. of recharge borewells present inside these structures. In addition, there is a Works Bund inside plant premises for storage cum percolation of rainwater.</p> <p>Photograph enclosed in annexure-1 (f).</p> <p>Area has been demarcated for construction of rainwater harvesting structures to take the rooftop rainwater of upcoming plant building in the expansion project.</p> |
| x | Developers/Company to conduct and submit carbon footprint and carbon sequestration study report including mitigation measures as a part of EC compliance | <p>Accounting of Carbon footprint (GHG accounting) is being done based on GHG emission guidelines of WRI-WBCSD Greenhouse Gas Protocol. M/s SGS, Mumbai was engaged initially for study and audit of Carbon footprint/GHG accounting of the plant. Presently, it is being done on a yearly basis internally and is being validated through third party.</p> <p>Summary report of the study of FY24 is mentioned below:</p> <p>Scope 1 GHG emission: 123026 tCO₂ Scope 2 GHG emission: 133189 tCO₂</p> <p>Carbon sequestration / Mitigation measures for reduction of carbon footprint: -</p> <p>a. Around 1000 tree/ year is planted as a part of carbon sequestration measure to mitigate the impact of GHG emission.</p> <p>b. Solar panels installed of 1.3 MWp capacity for plant buildings.</p> <p>c. Buildings designed with specially designed translucent sheets to allow natural light.</p> <p>d. LED lights of lower wattage installed for all bay lighting and plant area lighting.</p> <p>e. High power consuming Conduction reflow converted to 100% Induction reflow in both Tinning Lines.</p> <p>f. Variable Frequency Drives installed for drives with high KW motors, auxiliary systems, fume exhaust motors.</p> <p>g. Gaseous fuel (Natural gas/ Propane) has been considered as fuel for boilers of expansion project.</p> |
| Xi | Water runoff originating from open non constructed areas of project premises to be harvested/guided in such a way that it does | <p>The Storm water drains of existing plant has been constructed to ensure no water logging condition in and around the plant. Similar considerations made for</p> |

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| | not create water logging condition in vicinity | upcoming plant. |
| Xii | Sufficient number of EV fast charging points to be installed | EV fast charging station has been installed at prominent locations in township for charging of EV vehicles. |
| xiii | No mining/activity shall be undertaken in the forest land or deemed forest without obtaining requisite prior forestry clearance. | Not applicable since no mining activity will be undertaken in expansion project. |
| xiv | This Environmental clearance is granted subject to final outcome of Hon'ble supreme court of the India, Hon'ble High Court, Hon'ble NGT, MOEF & CC and any other court of law, if any, as may be applicable to this project. | Noted. |
| xv | Environmental clearance is subject to obtaining prior clearance from forestry and Wildlife angle including clearance from standing committee of NBWL, as may be applicable to this project (in case any fauna occurs /is found in the project area or if the area involves forest land or Wildlife habitat i.e., core zone of elephant /tiger reserve etc. and or located within 10 km. of protected area) | Site Specific Wildlife Plan has been submitted at PPCF Wildlife & Chief Wildlife Warden since project falls within 10km radius of Dalma Wildlife sanctuary. Financial outlay plan is under discussion with PCCF and Forest Officials. |
| xvi | The project proponent may apply simultaneously for forest and NBWL clearance, in order to complete the formalities without undue delay, which till process on their respective merits, no rights will vest in or accrue to them unless all clearance are obtained. | Not applicable. |
| xvii | As proposed, Gaseous fuel (Natural gas/ Propane) will be used as fuel, as both are environmentally friendly fuel and produce insignificant particulate emissions. | Gaseous fuel (Natural gas/ Propane) will be used as fuel for our process line & boiler in expansion project. |
| xviii | Efforts shall be made to reduce PM levels in the ambient air. Ambient air quality monitoring stations shall be set up in the downwind direction as well as where maximum ground level concentration of PM are anticipated in consultation with the state pollution control board (SPCB). Data on ambient air, stack and fugitive emission shall be submitted to the SEIAA Office, JSPCB and CPCB. | <p>Several measures are being taken on regular basis to reduce PM level inside plant premises. Vacuum sweeping vehicle is deployed for road sweeping. Fixed sprinklers are deployed at required locations for suppression of fugitive dust. Sprinkling of water on road is being done through dedicated Tankers. Dry fog system and water sprinklers are installed in boiler area. Paver block and green patches are placed on loose soil area. CAAQMS is installed inside plant premises for continuous monitoring of ambient air quality and online data is being transferred to State Pollution Control Borad. In addition, manual monitoring of ambient air quality is done on four different locations inside plant.</p> <p>Photographs enclosed in annexure 1 (g).</p> <p>Pollution control equipment along with stack arrangements are provided in Mills and Boilers. Regular monitoring is being done to control stack emission.</p> <p>Data of ambient air quality, stack and fugitive</p> |

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| | | emission is enclosed in annexure 2. |
| xix | Online ambient air quality monitoring and continuous stack monitoring facilities with sufficient air pollution control devices shall be provided for the stacks that using fuel having potential to produce significant particulate emission. The emission of particulate matter from various process units shall conform to the standards prescribed by concerned authorities from time to time. | Continuous Ambient Air Quality Monitoring System has been provided inside Plant premises near Works Gate. Air pollution control systems such as ESPs, Fume Exhaust System and scrubbers are installed in process boiler and Mills as per the process requirement. Online stack monitoring facilities has been provided in boiler stacks. The emission of particulate matter is conformed to the prescribed standards. Photographs enclosed in annexure 1 (h)) |
| xx | The company shall monitor the raw and treated wastewater quality for trace metals and air quality at sources and including routine parameters and the reports shall be submitted regularly with six monthly compliance report. | Monitoring of inlet quality of wastewater treatment plant, treated quality of wastewater treatment plant and air quality at sources i.e., stack emission is being done and reports are enclosed. Monitoring reports of above enclosed in annexure-3. |
| xxi | The company shall connect the pollution control equipment to DG set to ensure operation of these equipment's during power failure. The company shall also provide interlocking system with the process equipment so that the plant automatically stops in case the pollution load exceeds the guaranteed limits. | All the pollution control equipment and production process are connected to same power source. In case of power failure, no production takes place. DG sets are only used during emergency power failures (approximate frequency: Once per quarter for duration of max. 20 min). The emission from fume stacks of Mills is well within norms and it is in the ranges from 5 mg/Nm ³ – 25 Nm ³ /hr. The boiler stacks are provided with ESPs and Continuous Emission Monitoring Systems to control and monitor the emission level on continuous basis and prompt action is being taken for any deviation. |
| xxii | The industry shall ensure that the treated effluent and stack emission in the unit are within the norms stipulated under the EP Rules or JSPCB whichever is more stringent. In case of process distribution/failure of pollution control equipment adopted in the unit, the respective unit shall be shut down and shall not be restarted until the control measures are rectified to achieve the desired efficiency. | Preventive maintenance of pollution control equipment and Effluent Treatment Plants are being done on regular basis to control emissions and effluent quality. Treated effluent and stack emission are maintained as per stipulated norms. The boiler stacks are provided with ESPs and Continuous Emission Monitoring Systems to control and monitor the emission level on continuous basis. Effluent Treatment Plants have online pH meter systems to monitor the effluent quality level on continuous basis. We are regularly monitoring the quality of stack and effluent and prompt corrective actions are being taken for any abnormal observations. |
| xxiii | In-plant control measures for checking fugitive emissions from all the vulnerable sources shall be provided. Dust suppression and dust extraction systems shall be provided to control fugitive emission at material handling points. Fugitive emissions shall be controlled by providing closed storages, water sprinkling systems, etc. to arrest the suspended particles. | Fixed type water sprinklers and Dry fog system are provided in coal handling area of boiler area to control fugitive emission. Sprinkling of water on road is being done through dedicated Tankers. Vacuum sweeping vehicle is deployed for sweeping of road to control fugitive emission. Plantation is done on regular basis. Paver blocks are placed on loose soil area. Photograph enclosed in annexure 1 (g)) |
| xxiv | Secondary fugitive emission from all the sources shall be controlled within the latest permissible limits issues by the Ministry and regularly monitored. Guidelines/ code of Practice issued by the CPCB shall be followed. | Fugitive emission monitoring is being carried out on regular basis in coal handling area of boiler and secondary product area. Work environment monitoring of fumes based on process of different mills are being done and monitored parameters are |

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| | The emission standards issue by the Ministry in May,2008 shall be followed. | well within permissible limits. We follow the latest guidelines/ code of practice issued by CPCB for secondary fugitive emission monitoring. |
| xxv | Vehicular pollution due to transportation of raw material and finished product shall be controlled. Proper arrangements shall also be made to control dust emission during loading and unloading of the raw materials and finished product. | Regular sweeping of metallic road through mechanized vacuum sweeping vehicle and mobile water sprinkling is being done to reduce fugitive emission from roads. Our major raw material in the process is HR coil and Tin Ingots. Wind barrier (sheets), dry fog system and water sprinklers are placed in the coal handling area of boiler to control fugitive emission during unloading of coal. Crushed Coal are kept inside shed. |
| xxvi | Total water requirement (12000 m3/day) for plant purpose will be met through surface water and no ground water shall be extracted for plant use. All the wastewater generated from the process shall be treated in the effluent treated plant (ETP) and recycled and reduce in the process and/ or used for dust suppression, green belt development and for various activities at the project site. No effluent shall be discharge outside the premises. 'Zero' discharge shall be strictly adopted. | <p>Raw water is taken through M/s TSUIL (Formerly JUSCO) for plant operation and Domestic use. No ground water is extracted for plant use.</p> <p>Existing plants are equipped with dedicated Effluent Treatment Plants to treat the effluent generated from the processes and maintain the treated effluent discharge quality as per the prescribed standard. The existing effluent treatment plants are further augmented to take care of the additional effluent treatment and its sludge handling systems. Wastewater Recycling Systems are installed at Acid Regeneration Plant, Electrolytic Cleaning Line of CRM and Electrolytic Tinning Line to treat the effluent generated from these process lines and the treated water is recycled back in the process.</p> <p>Photograph enclosed in annexure 1 (i))</p> <p>There is a plan to recycle the treated discharge water upon installation of Zero Effluent discharge system in a phase-wise manner along with the expansion project.</p> |
| xxvii | Total water requirement for plant purpose will be met through surface water and no ground water shall be extracted for plant use. Prior permission to be taken from concerned department in case of withdrawal of Ground water and a copy of the letter shall be submitted to this office within 6 months of issues of the environment clearance. | Raw water is taken through M/s TSUIL (Formerly JUSCO) for plant and Domestic use. No ground water is extracted for plant use. |
| xxviii | As proposed, all the metal scrap, iron oxide and dust shall be disposed for recycle/reuse in furnaces. The domestic waste including sewage sludge shall be treated biologically and used as manure for green belt. Used/spent oil shall be to authorized recyclers as per the Hazardous waste (Management, Handling & Transboundary Movement) Rules 2016 and subsequent amendments. | As proposed, Steel scraps are sold to other industry for reuse/recycling purpose. Iron oxide from ARP unit is sold to paint industry. Similar practice will be adopted in expansion project. Domestic sewage water is pumped to Bara STP for treatment and reuse. Hazardous waste such as Waste Oil/Emulsion/process residues wastes are disposed through authorized recyclers/CHWTSDF. ETL sludge & CRM sludge is being disposed to Common Hazardous Waste Treatment Storage Disposal Facility (CHWTSDF), Waste Pickling Liquor (WPL) is regenerated at ARP and reused in the process, Alkali residues is treated at Cold Rolling Mill Wastewater Treatment Plant. |
| xxix | A time bound action plan shall be submitted | Solid wastes are handled as per solid waste |

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| | to reduce solid waste, its proper utilization and disposal. | management plan which is primarily based on the concept of reduce/recycle/reuse. For example, Iron oxide is being sold to paint manufacturing industry; generated scrap sold to other industries for reused, fly ash generated from process boiler are sent to fly ash brick manufacturers. CRM sludge is being disposed through Authorised agency (M/s Adityapur Waste Management Pvt. Ltd.) The same practice will be adopted in upcoming expansion plants. |
| xxx | Proper handling, storage, utilization, and disposal of all the solid waste shall be ensure and regular report regarding end use of solid/hazardous waste shall be submitted to the SEIAA, JSPCB and CPCB. | <p>Proper handling, storage, utilization, and disposal of for solid/hazardous waste is implemented for existing plant and the records of the same for FY'24 is given below-</p> <p>(i) Iron oxide (2833 MT) from ARP unit is sold to paint industry.</p> <p>(ii) Fly ash (19970 MT) is sent to fly ash brick manufacturers.</p> <p>(iii) Steel scrap (73236.2 MT) is sold to other industries for its reuse.</p> <p>(iv) CRM sludge (1506 MT) is being disposed through M/s Adityapur Waste Management Pvt. Ltd., CHWTSDF.</p> <p>(v) Tin dross (13.91 MT) is sold to outside industries.</p> <p>(vi) ETL sludge (1558.58 MT) is disposed through M/s Adityapur Waste Management Pvt. Ltd., CHWTSDF.</p> <p>(vii) Waste Emulsion (103.23 MT) is disposed through M/s Adityapur Waste Management Pvt. Ltd., CHWTSDF.</p> <p>(viii) Waste Oil (405.48 MT) is disposed through authorised recyclers.</p> <p>(ix) Process residue (8.09 MT) is disposed through authorised recyclers.</p> <p>(x) Waste Pickling Liquor (18278.3 KL) is recycled internally at ARP and reused back in pickling process line</p> <p>(xi) Alkali residue (4070.64 KL) is treated internally at Waste Water Treatment Plant.</p> |
| xxxii | Plantation should be done over an area equal to 33% of plant area including Green Belt inside and Plantation outside the premises. Local species trees should be planted as per the CPCB guidelines. | <p>Green belt and green cover constitute around 27% of the project area which will be further increased to 33% post expansion. Plantation is being done in new truck parking area. Additional plantation will be done along the extended boundary and Yard area. Annual drive for plantation is carried out within the plant premises and its surroundings. Plants with different species viz. Karanj, Bakul, Palash, Tabebuia, Arjun, Kadam, Shishum, Putrangiva etc are planted in and around plant premises. In addition, we adopted Miyawaki plantation method for developing dense plantation in Tinplate Golf Course.</p> <p>Photograph enclosed in annexure 1 (c).</p> |
| xxxiii | Proper care shall be taken in structural design to protect against earthquake if the site falls under earthquake zone and implemented during construction phase. | Building design of plants are considered to take care of the effect of earthquake. |
| xxxiii | The company shall provide housing for construction labour within the site all | Necessary infrastructures have been planned with use of Porta cabins along with amenities to the labour |

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| | necessary infrastructure and facility such as fuel for cooking, mobile toilets, mobile STP/Soak pit, 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. | involved in construction work as per requirement of the site. Laborers shall be from adjacent areas and nearby villages for construction activities during expansion project. There is no provision to stay at the site. Safe drinking water, medical health care, mobile toilets, creche etc. will be provided at site. |
| II | Statutory compliance | |
| i | The project proponent shall obtain forest clearance under the provisions Forest (Conservation) Act , 1986, in case of the division of Forest land for non-forest purpose involved in the project | Not Applicable |
| ii | The project proponent shall obtain clearance from the National Board for Wildlife, if applicable | Not Applicable |
| iii | The project proponent shall prepare a site-specific conservation Plan & Wildlife Management Plan and approved by the Chief Wildlife Warden. The recommendation of the approved site-Specific Conservation Plan/ Wildlife Management Plan shall be implemented with the state Forest Department. The implementation report shall be furnished along with the six-monthly compliance report.(in case of the presence of schedule-1 species in the study area | Site Specific Wildlife Plan has been submitted at PCCF, Wildlife-cum-Chief Wildlife Warden, Jharkhand since project falls within 10km radius of Dalma Wildlife sanctuary. Financial outlay plan is under discussion with PCCF and Forest Officials. |
| iv | In the writ petition (Civil) no. 202/1995, T.N. Gadaverman Thirumulpad vs union of India and others the Hon'ble Supreme court passed an order 03.06.2022". National Park or Wildlife Sanctuary must have an ESZ of minimum 01 km in which the activities prescribed in the guidelines of 09th February 2011 shall be strictly adhered to" | Not applicable |
| v | The project proponent shall obtain consent to Establish / Operate under the provisions of Air (Prevention & Control of pollution) Act ,1981 and the water (Prevention & control of Pollution) Act, 1974 from the concerned State Pollution Control Board/Committee. | Noted. |
| vi | The project proponent shall obtain the necessary permission from the Central Ground Water Authority, in case of drawl of groundwater and a copy of the same shall be submitted to SEIAA. | Not applicable since no ground water is extracted. |
| vii | The project proponent shall obtain authorization under the Hazardous and other Waste Management Rules 2016 as amended from time to time. | Existing plant have authorization under the Hazardous and other Waste Management Rules 2016 and is valid till 2026. |
| viii | It shall be mandatory for the project management to submit six (06) monthly compliance report in report in respect of the stipulated prior environmental clearance terms and conditions in hard copies and soft copies to the regulatory authority concerned | Half yearly compliance report is being submitted in the mentioned offices. |

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| | regional office of MoEF & CC at Ranchi and Jharkhand State Pollution Control Board (J.S.P.C.B), Ranchi/SEIAA/CPCB | |
| ix | Concealing factual data or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environmental (Protection) Act, 1986 | Noted. |
| x | The SEIAA, Jharkhand or any other competent Authority may alter modify the above conditions or stipulate any further condition in the interest of Environment Protection | Noted. |
| III | Air quality monitoring and preservation | |
| i | The project proponent shall install 24x7 continuous emission monitoring system at process stacks to monitor stack emission with respect to standards prescribed in Environmental (Protection) Rules 1986 vide G.S.R 277 (E) dated 31st March 2012 (applicable to IF/EAF) as amended from time to time; S.O. 3305 (E) dated 7th December 2015 (Thermal Power Plants) as amended from time to time and connected to SPCB and CPCB online servers and calibrate these system from time to time according to equipment supplier specification through labs recognized under Environment (Protection) Act, 1986 or NABL accredited laboratories. | It is not applicable since Tinplate Division does not have IF/EAF or Thermal Power Plant and there is no proposal to install IF/EAF and Thermal Power Plant in upcoming expansion project. |
| ii | The Project proponent shall monitor fugitive emissions in the plant premises at least once in every quarter through laboratories recognized under Environmental (Protection) Act, 1986 or NABL accredited laboratories. | Fugitive emission of coal handling area and secondary product area is being done on quarterly basis through NABL accredited laboratories. Fugitive emission report enclosed in annexure-3. |
| iii | The Project proponent shall install system carryout Continuous Ambient Air Quality Monitoring for common/criterion parameters relevant to the main pollutants released (e.g. PM10 and PM2.5 in reference to the PM emission, and SO2 and NOx in reference to SO2 and NOx emissions) within and outside the plant area (at least four locations one within and three outside the plant area at an angle of 120° each), covering upwind and downwind directions (case to case basis, small plants: Manual, Large Plants: Continuous) | Continuous Ambient Air Quality Monitoring Station (CAAQMS) is installed inside plant premises at Works Gate for monitoring of air quality parameters such as PM10, PM2.5, SO2 and NOx and online data is being transferred to State Pollution Control Board. Other three CAAQMS location outside plant will be finalised as per requirement at an angle of 120° covering upwind and downwind directions. |
| iv | The Project proponent shall submit monthly summary report of continuous stack emission and air quality monitoring and results of manual stack monitoring and manual monitoring of air quality/fugitive emissions to the Regional office of MoEF&CC, Zonal Office of CPCB and Regional Office of SPCB along with six-monthly monitoring report. | Monthly summary report of continuous and manual monitoring of stack and ambient air is enclosed in annexure-2 along with six-monthly compliance report. |
| v | Appropriate Air Pollution Control (APC) system | Air pollution control systems such as ESPs, Fume |

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| | shall be provided for all the dust generating points including fugitive dust from all vulnerable sources. | Exhaust System and scrubbers are installed in process boiler and Mills as per the process. Periodic maintenance of pollution control equipment is being done during preventive maintenance & annual shutdowns to maintain the performance of the devices. Dry fog system and Sprinklers are provided in coal handling area. |
| vi | The Project proponent shall provide leakage detection and mechanised bag cleaning facilities for better maintenance of bags | Not applicable |
| vii | Sufficient number of mobile or stationery vacuum cleaners shall be provided to clean plant roads, shop floors, roofs, regularly | Regular sweeping of metallic road through mechanized vacuum sweeping vehicle is being done on daily basis. Cleanliness of shopfloor is maintained on daily basis. |
| viii | Recycle and reuse iron fines, coal and coke fines, lime fines and such other fines collected in the pollutant control devices and vacuum cleaning devices in the process after briquetting/agglomeration | Iron oxide from ARP unit is sold to paint industry for its reuse. Coal fines generated inside coal handling area is reused in boiler. Similar practice will be adopted in expansion project. However, Gaseous fuel (Natural gas/ Propane) based boiler will be installed in expansion project. |
| ix | The Project Proponent shall use leak proof trucks/dumpers carrying coal and other raw materials and covered them with tarpaulin | Trucks/dumpers carrying coal which is used in process boiler for steam generation are covered with tarpaulin. |
| x | The Project proponent shall provide covered sheds for raw materials like scrap and sponge iron, lump ore, coke, coal, etc. | Sponge iron, lump ore and Scrap are not used in our process. Raw material for process boiler i.e., crushed coal are kept under shed. |
| xi | The Project proponent shall provide primary and secondary fume extraction system at all melting furnaces. | Not applicable since no melting furnace is proposed in expansion project. |
| xii | Design the ventilation system for adequate air changes as per ACGIH document for all tunnels, motor houses, Oil cellars. | Ventilation system for adequate air changes will be consider in project execution stage for the design of motor houses, Cellars etc, as per ACGIH. |
| IV | Water quality monitoring and preservation | |
| i | The project proponent shall install 24*7 continuous effluent monitoring system with respect to standards prescribed in Environment (Protection) Rules 1986 vide G.S.R 277 (E) dated 31st March 2012 (applicable to IF/ EAF) as amended from time to time; S.O 3305 (E) dated 7th December 2015 (Thermal Power Plants) as amended from time to time) and connected to SPCB and CPCB online servers and calibrate these system from time to time according to equipment supplier specification through labs recognised under Environment (Protection) Act, 1986 or NABL accredited laboratories.(case to case basis small plants: Manual :Large plants :continuous). | It is not applicable since Tinplate Division does not have IF/EAF or Thermal Power Plant and there is no proposal to install IF/EAF and Thermal Power Plant in upcoming expansion project. |
| ii | The project proponent shall monitor regularly ground water quality at least twice a year (pre and post monsoon) at sufficient numbers of piezometers/sampling wells in the plant and adjacent areas through labs recognised under | Ground water quality is being monitored twice in a year by NABL accredited laboratories. Ground water reports enclosed in annexure-3. |

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| | Environment (Protection) act, 1986 and NABL accredited laboratories. | |
| iii | The project proponent shall submit monthly summary report of continuous effluent monitoring and results of manual effluent testing and manual monitoring of ground water quality to regional office of MoEF & CC, Zonal office of CPCB and Regional Office of SPCB along with six-monthly monitoring report. | Monthly summary report of continuous effluent monitoring and manual effluent is enclosed in annexure-2 along with six-monthly compliance report. |
| iv | Adhere to "Zero Liquid Discharge". | Zero Effluent Discharge plan will be implemented in a phase-wise manner to take care of the treated effluent discharge. |
| v | Sewage Treatment Plant shall be provided for treatment of domestic wastewater to meet prescribe standard. | Sewage from existing plant and different zones of township are pumped from Tinplate Sewage Pumping Station of capacity of 4.25 MLD to Bara STP of capacity 45 MLD. Around 1.0 MLD of sewage is pumped from this pumping station on daily basis. Tinplate Sewage Pumping Station and Bara Sewage Treatment Plant is maintained by M/s JUSCO. Tinplate Division has order agreement with M/s JUSCO for operation and maintenance of Tinplate Sewage Pumping Station. In the line with the above, we will construct pipelines and other associated facilities to pump the extra sewage generated from upcoming plants and offices into the same Sewage Pumping station for treatment of sewage and further reuse. |
| vi | The project Proponent shall provide the ETP for effluents of rolling mills to meet the standards prescribe in G.S.R 277 (E) 31st March 2012 (applicable to IF/EM) as amended from time to time. | Cold Rolling Mill & Electrolytic Tinning Line of existing plant are equipped with dedicated Effluent Treatment Plants to ensure the proper treatment of effluent and discharge within stipulated norms which would be recycled back after installation of Zero Effluent Discharge System along with the expansion project. |
| vii | Garland drains and collection pits shall be provided for each stockpile to arrest the run-off in the event of heavy rains and to check the water pollution due to surface run off. | Garland drains and collection pits will be provided for each stockpile during construction phase to arrest the run-off in the event of heavy rains to check the water pollution due to surface run off. |
| viii | The project proponent shall practice rainwater harvesting to maximum possible extent. | We will construct the rainwater harvesting structures in the expansion project to harvest the rainwater from rooftop of upcoming plants. |
| ix | The project proponent shall make efforts to minimise water consumption in the steel plant complex by segregation of used water, practicing cascade use and by recycling treated water. | We have wastewater recycling systems in our existing units. Waste Pickle liquor which is generated during pickling process, and it is recovered as regenerated acid in Acid Regeneration Plant. The rinse water of Electrolytic Cleaning Line and Electrolytic Tinning Line are recovered as DM water at its dedicated Wastewater Recycling Plants and reuse back in the process. Boiler blowdown water is channelised in a collection tank and reuse back in ash conditioning purpose. |
| V | Noise Monitoring and Prevention | |
| i | Noise level survey shall be carried as per the prescribed guidelines and report in this regard shall be submitted to Regional Office of the Ministry as a part of six-monthly compliance | Noise level is monitored as per prescribed standard on regular basis. Noise monitoring report enclosed in annexure-3. |

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| | report. | |
| ii | The ambient noise levels should confirm to the standards prescribed under E(P)A Rules,1986 viz. 75dB (A) during day time and 70 dB (A) during night time. | Ambient noise level is monitored, and it conforms the prescribed standard. Noise monitoring report enclosed in annexure 3. |
| VI | Energy Conservation measures: | |
| i | The project proponent shall provide waste heat recovery system (pre-heating of combustion air) at the flue gases of reheating furnaces. | Not applicable |
| ii | Practice hot charging of slabs and billets/booms as far as possible. | Not applicable |
| iii | Ensure installation of regenerative type burns on all reheating furnaces. | Not applicable |
| iv | Provide solar power generation on rooftops of building, for solar light system for all common areas, streetlights/parking around project area and maintain the same regularly. | We have installed 1.3 MWp of Solar Rooftop on Mills ECR which is equivalent to the requirement of General Office & other offices inside plant. |
| v | Provide the project proponent for LED lights in their offices and residential areas. | LED light has been provided in offices, Plant & streetlight. |
| VII | Waste management: | |
| i | Used refractories shall be recycled as far as possible. | Used refractories are in reused as road grading material, pedestal etc. inside plant. |
| ii | Oily scum and metallic sludge recovered from rolling ETP shall be mixed, dried, and briquetted and reused melting Furnaces. | Oily scums are disposed through Recyclers and CHWTSDF (M/s Ramky). Same practice will be done by in the facilities installed in expansion project. |
| iii | 100% utilization of fly ash shall be ensured. All the fly ash shall be provided to cement and bricks manufactures for further utilization and Memorandum of Understanding in this regard shall be submitted to the Ministry's Regional Office. | fly ash generated from process boiler are sent to fly ash brick manufacturers. Fly ash is stored intermittently in silo of boiler. An additional silo is also installed to cater the emergency storage of ash. Fly ash is loaded from ash silo on dumper and covered with tarpaulin before transportation to fly ash brick manufacturers on free of cost. 100% fly ash is being used in fly ash brick manufacturing by the manufactures. |
| iv | The waste oils, grease and other hazardous waste shall be disposed of as per Hazardous & others waste (Management & Transboundary Movement) Rules.2016. | Different types of hazardous waste which are generated within the plant are disposed as per their nature as follows: (i) Waste Oil/Emulsion/process residues wastes are disposed through authorized recyclers/CHWTSDF. (ii) ETL sludge/Chromium sludge being disposed to Common Hazardous Waste Treatment Storage Disposal Facility. (iii) Waste Pickling Liquor (WPL) is regenerated at ARP and reused in the process. (iv) Alkali residues is treated at Cold Rolling Mill Wastewater Treatment Plant (v) CRM sludge is being disposed through Common Hazardous Waste Treatment Storage Disposal Facility. The waste oils, grease and other hazardous waste will be disposed of as per Hazardous & others waste (Management & Transboundary Movement) Rules 2016 in the upcoming expansion project facilities. |
| v | Kitchen waste shall be composted or | Compost making machine is installed to convert |

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| | converted to biogas for further use. (to be decided on case basis depending on type and size plant) | kitchen waste into compost which is used further in plantation and gardening purpose. |
| VIII | Green Belt | |
| i | Green belt shall be developed in an area equal to 33% of the plant area with a native tree species in accordance with CPCB guidelines. The green belt shall inter alia cover the entire periphery of the plant. | Green belt and green cover constitute around 27% of the project area which will be further increased to 33% post expansion. Additional plantation will be done along the extended boundary, Yard area and new truck parking area. Annual drive for plantation is carried out within the plant premises and its surroundings. Plants with different species viz. Karanj, Bakul, Palash, Tabebuia, Arjun, Kadam, Shishum, Putrangiva etc are planted in and around plant premises. In addition, we adopted Miyawaki plantation method for developing dense plantation in Tinsplate Golf Course. Photograph enclosed in annexure 1 (c). |
| ii | The project proponent shall carry prepare GHG emission inventory for the plant and shall submit the programme for the same including carbon sequestration including plantation. | Accounting of Carbon footprint (GHG accounting) is being done based on GHG emission guidelines of WRI-WBCSD Greenhouse Gas Protocol. M/s SGS, Mumbai was engaged initially for study and audit of Carbon footprint/GHG accounting of the plant. Presently, it is being done on a yearly basis internally. Summary report of the study of FY24 is mentioned below: Scope 1 GHG emission: 123026 tCO2 Scope 2 GHG emission: 133189 tCO2 Carbon sequestration / Mitigation measures for reduction of carbon footprint: - a. Around 1000 tree/ year is being planted as a part of carbon sequestration measure to mitigate the impact of GHG emission. b. Solar panels installed of 1.3 MWp capacity for plant buildings. c. Buildings designed with specially designed translucent sheets to allow natural light. d. LED lights of lower wattage installed for all bay lighting and plant area lighting. e. High power consuming Conduction reflow converted to 100% Induction reflow in both Tinning Lines. f. Variable Frequency Drives installed for drives with high KW motors, auxiliary systems, fume exhaust motors. g. Gaseous fuel (Natural gas/ Propane) has been considered as fuel for boilers of expansion project. |
| IX | Public hearing and Human health issues: | |
| i | Emergency preparedness plan based on the Hazard Identification and Risk Assessment (HIRA) and Disaster Management Plan shall be implemented. | Hazard identification and Risk Assessment (HIRA) is being done and based on that Emergency Preparedness plan has been prepared and approved by Chief Factory Inspector. |
| ii | The project proponent shall carry out heat stress analysis for the workmen who work in high temperature work zone and provide | We are providing PPEs as per the nature and requirement of the job inside our plant premises., CRM and ETL units are provided with exhaust fans, the |

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| | Personal Protection Equipment (PPE) as per the norms of Factory Act. | bay is cross ventilated and the PPES such as Safety shoe, Safety Helmet, Florescent jacket, Safety goggles, ear plug, hand gloves, Shin guard etc. are provided to the employees working on shop floor. |
| iii | Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as 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. | Laborers shall be from adjacent areas and nearby villages for construction activities during expansion project. There is no provision to stay at the site. Safe drinking water, medical health care, mobile toilets, creche etc. will be provided at site. All other facilities are being provided as and when required. |
| X | Corporate Environment Responsibility: | |
| i | The project proponent shall comply with the provisions contained in this Ministry's OM vide F.NO 22-65/2017-1A.III dated 1st May 2018, as applicable regarding corporate Environment Responsibility. | Corporate Environment Responsibility will be implemented through our dedicated CSR team which will cover issues raised during public hearing, social need assessment and environment management plan etc. |
| ii | The company shall have a well laid down environmental policy duly approve by the Board of Directors. The environmental policy should prescribe for standard operating procedures to have proper checks and balances and to bring into focus any infringements/violation of the environmental/forest/wildlife norms/condition. The company shall have define system of reporting infringements/ deviation/violation of the environmental/forest/wildlife norms/ conditions and/ or/shareholders/stock holders. The copy of the board resolution in this regard shall be submitted to the MOEF & CC as a part of Six- monthly report. | Tata Steel Limited, Tinplate Division have well defined environmental Policy duly approved by the Board. Environmental Policy of Tata Steel Limited is applicable to Tinplate Division after merger with Tata Steel and it covers all the important direction to safeguard the environment. Environmental policy is attached as annexure 4. Minutes of meeting of board of The Tinplate company of India limited (presently Tata Steel Limited, Tinplate Division) regarding approval of policy is also enclosed in annexure 4. |
| iii | A separate Environmental cell both at the project and company head quarter level, with qualified personnel shall be up under the control of senior Executive, who will directly to the head of the organization. | Tata Steel Limited has a well-constituted Environment Management Department / Cell comprising of Senior Management Executives, engineers, and officers to monitor the environmental performance and the relevant statutory compliance. The Performance of Environment, Health & Safety is reviewed on regular basis. The Executive In-charge of the Tinplate Division company review the performance and compliance of environment clearance along with senior level team. |
| iv | Action plan for implementation EMP and Environmental condition along with responsibility matrix of the company authority. The year wise funds earmarked for environmental protection measures shall be kept in separate account and not to be diverted for any other purpose. Year wise progress of implementation of action plan shall be reported to the Ministry/ Regional office along wise the six-Monthly compliance Report. | It has been stated that the action plan for environment protection measures will be made in accordance with the EIA/EMP report and accordingly implemented along with other environmental conditions. |
| v | Self-environmental audit shall be conduct annually. Every three years third party | The company has a well-defined Integrated Management System (IMS) which covers all aspect of |

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| | environmental audit shall be carried out. | Environment Management System, Occupational Health & Safety Management System and Quality Management System. Internal audit (Self-environment audit) and third-party environmental audit of the Environment Management System is being done as a part of integrated management system on half yearly and annual basis respectively. |
| vi | All the recommendations made into the charter on corporate Responsibility for Environment Protection (CREP) for the plants shall be implemented. | For the process of Cold rolling mill and Tinplating, there is no specific recommendation has been made under CREP. However, solid wastes such as iron oxide sold to authorized vendors, metallic scraps generated inside plant have been sent to other industries for reused, fly ash are sent to fly ash brick manufacturers. Besides these, generated waste Oil/Emulsion/process residues wastes are disposed through authorized recyclers/CHWTSDF. ETL Sludge and CRM sludge are being disposed to Common Hazardous Waste Treatment Storage Disposal Facility (M/s Ramky). Waste Pickling Liquor (WPL) is regenerated at ARP and reused in the process; Alkali residues is treated at Cold Rolling Mill Wastewater Treatment Plant. |
| vii | Occupational health surveillance of the workers shall be done on a regular basis and record maintained as per the Factories Act. | Occupational health surveillance of the workers is being done on a regular basis and record maintained as per the Factories Act. |
| XII | Miscellaneous: | |
| i | The project proponent shall make public the environmental clearance granted for their project along with the environmental condition and safeguards at their cost by providentially advertising it at least in two local newspapers of the District or State, of which one shall be in the vernacular language within seven days and in addition this shall also displayed in the project proponent; website permanently. | Advertisement was published in two local newspapers i.e., Prabhat Khabar and Times of India on dated 23.08.2023 in view of grant of Environmental Clearance. Prabhat Khabar and The Times of India is being published in Hindi and English language respectively. Environmental Clearance letter is also displayed on company's website. |
| ii | The copies of the environmental clearance shall be submitted by the project proponents to the Heads of local bodies, Panchayats and Municipal Bodies in addition to the relevant officers of the Governmental who in turn has to display the same for 30 days from the date of receipt. | Copies of Environmental Clearance were submitted via letter dated 27.04.2022 to local bodies and government offices for display. |
| iii | The project proponent shall upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and upload the same on half-yearly basis. | Half yearly compliance of environment clearance along with monitoring report will be uploaded on website on half yearly basis. |
| iv | The project proponent shall monitoring the criteria pollutants level namely:PM10, SO2, NOx (ambient level as well as stack emissions) or critical sectoral parameters, indicated for the projects and display the same at a convent location for the projects and display the same at a convenient location for disclosures to the public and put on the website of the company. | Ambient air quality and stack emission information is displayed at company gate for disclosure to public and the same is also put up on company's website. |

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| v | The project proponent shall submit six monthly report on the data of the compliance of the stipulated environmental condition on the website of the ministry of environment, forest, climate change and environmental clearance porta. | Being Complied. |
| vi | The project proponent shall submit the environmental statement for each financial layer in Form -V to the concerned state pollution Control Board as prescribed under the Environment Protection rules, 1986, as amended subsequently and put on the website of the company | Environmental Statement (Form-V) is submitted to Jharkhand State Pollution Control Board before 30 th of September every year and it will be uploaded on company's website. |
| vii | The project proponent shall inform the regional office as well as the ministry, the date of financial closure and financial final approval of the project by the concerned authorities, commencing the land development work and start of production operation by the project. | Financial approval of expansion project from TCIL Board and Tata Steel Limited Board was Aug' 2021 and 23 rd Feb'2022 respectively. TCIL has merged with Tata Steel Limited on 15 th Jan'2023 and the EC transfer has been obtained via. Memo No. 153 dated 16.07.2024 and issued on 24.07.2024. Enabling job is under progress. |
| viii | The project authorities must strictly adhere to the stipulations made by the state pollution Control Board and the state government | Noted. |
| ix | The project proponent shall abide by all the commitments and recommendations made in the EIA/EMP report, commitment made during public hearing and also that during their presentation to the expert appraisal committee | Environmental protection measures proposed in the EIA/EMP of the project and commitment made during public hearing will be systematically implemented as per EC timeline. |
| x | No further expansion or modifications in the plant shall be carried out without prior approval of the ministry of environment forest and climate change (MoEF&CC) | Noted. |
| xi | Concealing factual data or submission of false/fabricated data may result in revocation of this environmental clearance and attract action under the provisions of Environment (Protection) Act, 1986 | Noted. |
| xii | The ministry may revoke or suspend the clearance, if implementation of any of the above condition is not satisfactory | Noted. |
| xiii | The ministry reserves the right to stipulate additional conditions if found necessary. The company in a time bound manner shall implement these conditions | Noted. |
| xiv | The regional office of this ministry shall monitor compliance of the stipulated conditions the project authorities should extend full cooperation to the officer (s) of the regional office by furnishing the requisite data/information/monitoring reports. | Full cooperation will be felicitated to the officer(s) of the regional office. |
| xv | The above conditions shall be in forced inter alia under the provisions of the Water (Prevention and control of pollution) Act 1974, the Air (Prevention and control of pollution) | All applicable acts are being complied. |

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| | Act 1981, the Environment(Protection) Act 1986, Hazardous and other waste (Management and Transboundary Movement)Rules 2016 and the public Liability Insurance Act along with their amendments and Rules and any other orders passed by the honourable Supreme Court of India / High Courts and any other court of law relating to the subject matter. | |
| xvi | Any appeal against the environmental clearance shall lie with the National Green Tribunal, if preferred within a period of 30 days as prescribed under section 16 of the National Green Tribunal Act ,2010 | Noted. |
| XII | Other Conditions | |
| i | The Authority reserves the right to add and any new conditions or modify the above conditions or to revoke the clearance if conditions stipulated above are not implemented to the satisfaction of Authority or for that matter for any other administrative reason. | Noted. |
| ii | In view of the latest MOEF notification dated- 12.04.2022, validity of EC shall be for a period of 10 Years. | Noted. |
| iii | In case of any deviation or alteration in the project post from those submitted to SEIAA ,Jharkhand for clearance, a fresh reference should be made to SEIAA to access the adequacy of the conditions in post and to incorporate any new conditions if required | Noted. |

EC Compliance Annexures

- 1. Annexure 1 - Photographs**
- 2. Annexure 2 – Monitoring Report Summary Data**
- 3. Annexure 3 – Monitoring Reports**

Annexure1 (a) Covered Shed for Storage of Crushed Coal



Annexure1 (b) Solar panels at mills rooftop & energy conservation measures



Solar panel at Printing & Lacquering Line



Solar panel at Cold Rolling Mill



Solar panel at Temper



Solar panel at Coil Preparation Line



LED light at all Mill & Process Bays



Vergola Air Ventilation



Variable Frequency Drive for all Mill and process line motors



Capacitor Bank

Annexure 1 (c) Plantation inside Works and its Surroundings



Behind Propane Yard



General Office Area



Near Main Gate



Works Bund Area



Township (GT Hostel)



Township (Tinplate Sport Complex Road)



Tinplate Golf Course



Tinplate Golf Course (Myawaki Plantation)

Annexure 1 (d) Compost Making Machine



Annexure 1 (e) Tinplate Sewage Pumping Station (4.25 MLD)



Annexure 1 (f) Rainwater Harvesting Structures



(4 No. Recharging pit of size 8 m x 5.5 m x 3 m with 4 No. of desilting chamber of size 4 m x 1 m x 1.2 m along with 14 no. of recharging borewells)

Annexure 1 (g) Measures to control fugitive emissions



Mechanized Vacuum Cleaning Vehicle



Mobile Water Sprinkling



Water Sprinkler



Dry fog system



Plantation Drives



Paver blocks on loose soil



Continuous Ambient Air Quality Monitoring System
(CAAQMS)

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Jharkhand State Pollution Control Board

Home Dashboard Data View Data Monitor View Data Industry Data Industry Categories Site Registration Add Category/Parameter Login Logout

Export to Excel Close

81 Record Found

| Sr. No | Industry Name | stationid | analysid | Parameter | Process Value | Unit | Submitted Date | Timestamp of Analyser |
|--------|--|----------------------|-------------|-----------|---------------|------|---------------------|-----------------------|
| 1 | The Tata Tegalite Company of India Limited | TATA_TIN_PLATE_AAQMS | AAQMS_SO2 | SO2 | 17.55 | ugm3 | 25-05-2024 15:15:23 | 2024-05-25 15:30 |
| 2 | The Tata Tegalite Company of India Limited | TATA_TIN_PLATE_AAQMS | AAQMS_PM2.5 | PM2.5 | 23.82 | ugm3 | 25-05-2024 15:21:16 | 2024-05-25 17:45 |
| 3 | The Tata Tegalite Company of India Limited | TATA_TIN_PLATE_AAQMS | AAQMS_SO2 | SO2 | 17.44 | ugm3 | 25-05-2024 16:01:16 | 2024-05-25 17:45 |
| 4 | The Tata Tegalite Company of India Limited | TATA_TIN_PLATE_AAQMS | AAQMS_PM10 | PM10 | 44.52 | ugm3 | 25-05-2024 16:01:17 | 2024-05-25 17:45 |
| 5 | The Tata Tegalite Company of India Limited | TATA_TIN_PLATE_AAQMS | AAQMS_NOX | NOX | 30.20 | ugm3 | 25-05-2024 16:01:16 | 2024-05-25 17:45 |
| 6 | The Tata Tegalite Company of India Limited | TATA_TIN_PLATE_AAQMS | AAQMS_SO2 | SO2 | 17.81 | ugm3 | 25-05-2024 17:21:06 | 2024-05-25 17:55 |
| 7 | The Tata Tegalite Company of India Limited | TATA_TIN_PLATE_AAQMS | AAQMS_NOX | NOX | 26.86 | ugm3 | 25-05-2024 17:30:14 | 2024-05-25 17:55 |
| 8 | The Tata Tegalite Company of India Limited | TATA_TIN_PLATE_AAQMS | AAQMS_PM2.5 | PM2.5 | 25.11 | ugm3 | 25-05-2024 17:30:14 | 2024-05-25 17:55 |
| 9 | The Tata Tegalite Company of India Limited | TATA_TIN_PLATE_AAQMS | AAQMS_PM10 | PM10 | 45.88 | ugm3 | 25-05-2024 17:30:13 | 2024-05-25 17:55 |
| 10 | The Tata Tegalite Company of India Limited | TATA_TIN_PLATE_AAQMS | AAQMS_PM2.5 | PM2.5 | 21.21 | ugm3 | 25-05-2024 16:40:05 | 2024-05-25 16:30 |
| 11 | The Tata Tegalite Company of India Limited | TATA_TIN_PLATE_AAQMS | AAQMS_SO2 | SO2 | 40.43 | ugm3 | 25-05-2024 16:44:54 | 2024-05-25 16:30 |

Online data transfer from CAAQMS

**Annexure 1 (h) Pollution Control Equipment & Continuous Emission
Monitoring System (CEMS)**



Scrubber at Pickling



Scrubber at ARP



FES at CRM



Scrubber at ECL



Electrostatic Precipitator (ESPs)
at Boiler Stack



Continuous Emission Monitoring
System at Boiler Stack (CEMS)

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Jharkhand State Pollution Control Board

Home | Dashboard | Day Wise Data | Week Wise Data | Monthly Data | Monthly Category | Site Registration | Add CEMS/Parameter | Logout

Vendor: Pooja Mahal | Industry: The Tropic Company | Station ID: JH0101 | Analyser ID: 0001 | Select Date: 2023-11-12

42 Records Found

| Sl. No | Industry Name | StationID | AnalyserID | Parameter | Previous Value | Unit | Submitted Date | Timestamp of Analyser |
|--------|---------------------------------|-----------|------------|------------------|----------------|-------------------|---------------------|-----------------------|
| 1 | The Tropic Company of India Ltd | JH0101 | 0001 | SO ₂ | 97.00 | ppm | 15-11-2023 04:14:58 | 2023-11-12 05:45:00 |
| 2 | The Tropic Company of India Ltd | JH0101 | 0001 | NO ₂ | 223.40 | ppm | 15-11-2023 04:02:26 | 2023-11-12 05:45:00 |
| 3 | The Tropic Company of India Ltd | JH0101 | 0001 | CO | 97.00 | ppm | 15-11-2023 05:21:59 | 2023-11-12 05:30:00 |
| 4 | The Tropic Company of India Ltd | JH0101 | 0001 | NO | 228.18 | ppm | 15-11-2023 05:14:25 | 2023-11-12 05:30:00 |
| 5 | The Tropic Company of India Ltd | JH0101 | 0001 | PM ₁₀ | 45.42 | mg/m ³ | 12-11-2023 21:48:37 | 2023-11-12 20:50:00 |
| 6 | The Tropic Company of India Ltd | JH0101 | 0001 | NO ₂ | 710.88 | ppm | 15-11-2023 23:04:18 | 2023-11-12 22:45:00 |
| 7 | The Tropic Company of India Ltd | JH0101 | 0001 | NO | 108.10 | ppm | 15-11-2023 22:48:58 | 2023-11-12 22:30:00 |
| 8 | The Tropic Company of India Ltd | JH0101 | 0001 | PM ₁₀ | 49.40 | mg/m ³ | 12-11-2023 22:02:50 | 2023-11-12 21:19:00 |
| 9 | The Tropic Company of India Ltd | JH0101 | 0001 | PM ₁₀ | 50.58 | mg/m ³ | 15-11-2023 21:04:37 | 2023-11-12 20:45:00 |
| 10 | The Tropic Company of India Ltd | JH0101 | 0001 | PM ₁₀ | 48.21 | mg/m ³ | 12-11-2023 20:48:31 | 2023-11-12 20:30:00 |

Online data transfer from CEMS of Boiler stack

Annexure1 (i) Effluent Treatment Plants & Wastewater Recycling System

Effluent Treatment Plants



WWTPs at CRM



ETP at ETL

Wastewater Recycling Systems



ARP



ECL Rinse based DM Plant



ETL Rinse based DM Plant



ENVIRONMENTAL LABORATORIES &

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ENGINEERING SERVICES PVT. LTD.

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Phone no.: 0651-2290103
Website : www.elespl.co.in



TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/5723 | Report Release Date : 04.10.2024 |
| Work Order No. : 3000175731/T01 | Work Order Date : 16.09.2024 |
| ULR No. : TC135872400003621F | |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|---|----------------------|-----------------------------------|
| Customer Name | : Tata Steel Limited, Tinsplate Division (Golmuri Works) | Sample Ref. No. | : ELES/RNC/2024/EF/6722 |
| Address | : Golmuri, Jamshedpur, Dist- East Singhbhum, Jharkhand, Pin- 831003 | Sampling Date | : 27.09.2024 |
| | | Sample Received Date | : 28.09.2024 |
| Plant Status | : Operational | Type of Sample | : Effluent Water |
| | | Source of Sample | : CRM WWTP Inlet (Pickling Rinse) |
| Period of Analysis | : 28.09.2024 to 04.10.2024 | Sampling Procedure | : ELES/DOC/SMPL/01 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| Discipline : Chemical | | Group : Pollution & Environment | |
|--|------|---|------------------|
| Parameter | Unit | Test Protocol | Result |
| pH (at 25.4 °C) | - | APHA 24 th Ed.2023,4500-H ⁺ | BDL (DL: 4.0) |
| Temperature | °C | APHA 24 th Ed.2023, 2550 B | 47.0 |
| Total Dissolved Solids (TDS) | mg/L | IS 3025 (Part-16): 2023 | 2840 |
| Total Suspended Solids (TSS) | mg/L | IS 3025 (Part-17): 2022 | 12 |
| Chemical Oxygen Demand (COD) | mg/L | IS 3025 (Part-58) : 2023 | 185 |
| Biochemical Oxygen Demand (BOD) (at 27 °C for 3 days) | mg/L | IS 3025 (Part-44): 2023 | 18.9 |
| Oil & Grease | mg/L | IS 3025 (Part-39): 2021 | 8.8 |
| Ammoniacal Nitrogen (as NH ₃ -N) | mg/L | APHA24 th Ed.2023, 4500 NH ₃ -F | 7.0 |



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CIN: U74999JH2018PTC011125

TEST REPORT

| | | | |
|-----------------|----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2024/5723 | Report Release Date | : 04.10.2024 |
| Work Order No. | : 3000175731/T01 | Work Order Date | : 16.09.2024 |
| ULR No. | : TC135872400003621F | | |

| Discipline : Chemical | | Group : Residues in Water | |
|--|------|--|--------------------|
| Parameter | Unit | Test Protocol | Result |
| Cadmium (as Cd) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.003) |
| Copper (as Cu) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.03) |
| Cyanide (as CN) | mg/L | APHA 24 th Ed.2023, 4500 CN E | BDL (DL: 0.012) |
| Total Chromium (as Cr) | mg/L | APHA 24 th Ed.2023, 3111B | 0.254 |
| Hexavalent Chromium (as Cr ⁶⁺) | mg/L | APHA 24 th Ed.2023, 3500-Cr | BDL (DL: 0.05) |
| Iron (as Fe) | mg/L | APHA 24 th Ed.2023, 3111B | 98.0 |
| Lead (as Pb) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.01) |
| Nickel (as Ni) | mg/L | APHA 24 th Ed.2023, 3111B | BDL (DL: 0.01) |
| Zinc (as Zn) | mg/L | APHA 24 th Ed.2023, 3111B | 0.129 |

Remarks: pH & RFC done at Lab.



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Akash Kumar
Quality Manager

Page 2 of 2

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TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/5723 | Report Release Date : 04.10.2024 |
| Work Order No. : 3000175731/T01 | Work Order Date : 16.09.2024 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|---|----------------------|-----------------------------------|
| Customer Name | : Tata Steel Limited, Tinplate Division (Golmuri Works) | Sample Ref. No. | : ELES/RNC/2024/EF/6722 |
| Address | : Golmuri, Jamshedpur, Dist- East Singhbhum, Jharkhand, Pin- 831003 | Sampling Date | : 27.09.2024 |
| | | Sample Received Date | : 28.09.2024 |
| | | Type of Sample | : Effluent Water |
| Plant Status | : Operational | Source of Sample | : CRM WWTP Inlet (Pickling Rinse) |
| | | Sampling Procedure | : ELES/DOC/SMPL/01 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| Period of Analysis | : 28.09.2024 to 04.10.2024 | Sample Condition | : Sealed & Preserved |

| Discipline : Chemical | | Group : Pollution & Environment | | Discharge Limits – CPCB EPR, 1986 Schedule VI | |
|------------------------------|------|---------------------------------|--------|---|---------------------|
| Parameter | Unit | Test Protocol | Result | Inland Surface Water | Land for Irrigation |
| Free Residual Chlorine (RFC) | mg/L | IS 3025 (Part-26) : 2021 | 2.15 | 1.0 | -- |



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Quality Manager

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TEST REPORT

| | | | |
|-----------------|----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2024/5721 | Report Release Date | : 04.10.2024 |
| Work Order No. | : 3000175731/T01 | Work Order Date | : 16.09.2024 |
| ULR No. | : TC135872400003619F | | |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|---|----------------------|----------------------------------|
| Customer Name | : Tata Steel Limited, Tinplate Division (Golmuri Works) | Sample Ref. No. | : ELES/RNC/2024/EF/6720 |
| Address | : Golmuri, Jamshedpur, Dist- East Singhbhum, Jharkhand, Pin- 831003 | Sampling Date | : 27.09.2024 |
| | | Sample Received Date | : 28.09.2024 |
| Plant Status | : Operational | Type of Sample | : Effluent Water |
| | | Source of Sample | : CRM Inlet (Alkali Waste Water) |
| Period of Analysis | : 28.09.2024 to 04.10.2024 | Sampling Procedure | : ELES/DOC/SMPL/01 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| Discipline : Chemical | | Group : Pollution & Environment | |
|--|------|---|----------------------|
| Parameter | Unit | Test Protocol | Result |
| pH (at 25.4 °C) | - | APHA 24 th Ed.2023,4500-H ⁺ | >10.0 (HDL: 10.0) |
| Temperature | °C | APHA 24 th Ed.2023, 2550 B | 32.0 |
| Total Dissolved Solids (TDS) | mg/L | IS 3025 (Part-16): 2023 | 2558 |
| Total Suspended Solids (TSS) | mg/L | IS 3025 (Part-17): 2022 | 104 |
| Chemical Oxygen Demand (COD) | mg/L | IS 3025 (Part-58) : 2023 | 1483 |
| Biochemical Oxygen Demand (BOD) (at 27 °C for 3 days) | mg/L | IS 3025 (Part-44): 2023 | 150 |
| Oil & Grease | mg/L | IS 3025 (Part-39): 2021 | 88 |
| Ammoniacal Nitrogen (as NH ₃ -N) | mg/L | APHA24 th Ed.2023, 4500 NH3-F | 11.8 |



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TEST REPORT

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|-----------------|----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2024/5721 | Report Release Date | : 04.10.2024 |
| Work Order No. | : 3000175731/T01 | Work Order Date | : 16.09.2024 |
| ULR No. | : TC135872400003619F | | |

| Discipline : Chemical | | Group : Residues in Water | |
|--|------|--|--------------------|
| Parameter | Unit | Test Protocol | Result |
| Cadmium (as Cd) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.003) |
| Copper (as Cu) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.03) |
| Cyanide (as CN) | mg/L | APHA 24 th Ed.2023, 4500 CN E | BDL (DL: 0.012) |
| Total Chromium (as Cr) | mg/L | APHA 24 th Ed.2023, 3111B | BDL (DL: 0.03) |
| Hexavalent Chromium (as Cr ⁶⁺) | mg/L | APHA 24 th Ed.2023, 3500-Cr | BDL (DL: 0.05) |
| Iron (as Fe) | mg/L | APHA 24 th Ed.2023, 3111B | 4.8 |
| Lead (as Pb) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.01) |
| Nickel (as Ni) | mg/L | APHA 24 th Ed.2023, 3111B | BDL (DL: 0.01) |
| Zinc (as Zn) | mg/L | APHA 24 th Ed.2023, 3111B | BDL (DL: 0.1) |

Remarks: pH & RFC done at Lab.



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Quality Manager

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TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/5721 | Report Release Date : 04.10.2024 |
| Work Order No. : 3000175731/T01 | Work Order Date : 16.09.2024 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|---|----------------------|----------------------------------|
| Customer Name | : Tata Steel Limited, Tinplate Division (Golmuri Works) | Sample Ref. No. | : ELES/RNC/2024/EF/6720 |
| Address | : Golmuri, Jamshedpur, Dist- East Singhbhum, Jharkhand, Pin- 831003 | Sampling Date | : 27.09.2024 |
| | | Sample Received Date | : 28.09.2024 |
| | | Type of Sample | : Effluent Water |
| Plant Status | : Operational | Source of Sample | : CRM Inlet (Alkali Waste Water) |
| | | Sampling Procedure | : ELES/DOC/SMPL/01 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| Period of Analysis | : 28.09.2024 to 04.10.2024 | Sample Condition | : Sealed & Preserved |

| Discipline : Chemical | | Group : Pollution & Environment | | Discharge Limits – CPCB EPR, 1986 Schedule VI | |
|------------------------------|------|---------------------------------|--------|--|---------------------|
| Parameter | Unit | Test Protocol | Result | Inland Surface Water | Land for Irrigation |
| Free Residual Chlorine (RFC) | mg/L | IS 3025 (Part-26) : 2021 | 2.43 | 1.0 | -- |



****End of Report****


Authorised Signatory
Akash Kumar
Quality Manager

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/5722 | Report Release Date : 04.10.2024 |
| Work Order No. : 3000175731/T01 | Work Order Date : 16.09.2024 |
| ULR No. : TC135872400003620F | |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|---|----------------------|-----------------------------|
| Customer Name | : Tata Steel Limited, Tinplate Division (Golmuri Works) | Sample Ref. No. | : ELES/RNC/2024/EF/6721 |
| Address | : Golmuri, Jamshedpur, Dist- East Singhbhum, Jharkhand, Pin- 831003 | Sampling Date | : 27.09.2024 |
| Plant Status | : Operational | Sample Received Date | : 28.09.2024 |
| Period of Analysis | : 28.09.2024 to 04.10.2024 | Type of Sample | : Effluent Water |
| | | Source of Sample | : CRM Inlet (Emulsion Tank) |
| | | Sampling Procedure | : ELES/DOC/SMPL/01 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| Discipline : Chemical | | Group : Pollution & Environment | |
|---|------|---|--------|
| Parameter | Unit | Test Protocol | Result |
| pH (at 25.4 °C) | - | APHA 24 th Ed.2023,4500-H ⁺ | 5.86 |
| Temperature | °C | APHA 24 th Ed.2023, 2550 B | 32.8 |
| Total Dissolved Solids (TDS) | mg/L | IS 3025 (Part-16): 2023 | 1420 |
| Total Suspended Solids (TSS) | mg/L | IS 3025 (Part-17): 2022 | 321 |
| Chemical Oxygen Demand (COD) | mg/L | IS 3025 (Part-58) : 2023 | 1435 |
| Biochemical Oxygen Demand (BOD) (at 27 °C for 3 days) | mg/L | IS 3025 (Part-44): 2023 | 175 |
| Oil & Grease | mg/L | IS 3025 (Part-39): 2021 | 128 |
| Ammoniacal Nitrogen (as NH ₃ -N) | mg/L | APHA24 th Ed.2023, 4500 NH3-F | 14.2 |



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| Test Report No. | : ELES/RNC/2024/5722 | Report Release Date | : 04.10.2024 |
| Work Order No. | : 3000175731/T01 | Work Order Date | : 16.09.2024 |
| ULR No. | : TC135872400003620F | | |

| Discipline : Chemical | | Group : Residues in Water | |
|--|------|--|--------------------|
| Parameter | Unit | Test Protocol | Result |
| Cadmium (as Cd) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.003) |
| Copper (as Cu) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.03) |
| Cyanide (as CN) | mg/L | APHA 24 th Ed.2023; 4500 CN E | BDL (DL: 0.012) |
| Total Chromium (as Cr) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.03) |
| Hexavalent Chromium (as Cr ⁶⁺) | mg/L | APHA 24 th Ed.2023; 3500-Cr | BDL (DL: 0.05) |
| Iron (as Fe) | mg/L | APHA 24 th Ed.2023; 3111B | 42.8 |
| Lead (as Pb) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.01) |
| Nickel (as Ni) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.01) |
| Zinc (as Zn) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.1) |

Remarks: pH & RFC done at Lab.



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TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/5722 | Report Release Date : 04.10.2024 |
| Work Order No. : 3000175731/T01 | Work Order Date : 16.09.2024 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|---|----------------------|-----------------------------|
| Customer Name | : Tata Steel Limited, Tinplate Division (Golmuri Works) | Sample Ref. No. | : ELES/RNC/2024/EF/6721 |
| Address | : Golmuri, Jamshedpur, Dist- East Singhbhum, Jharkhand, Pin- 831003 | Sampling Date | : 27.09.2024 |
| | | Sample Received Date | : 28.09.2024 |
| | | Type of Sample | : Effluent Water |
| Plant Status | : Operational | Source of Sample | : CRM Inlet (Emulsion Tank) |
| | | Sampling Procedure | : ELES/DOC/SMPL/01 |
| Period of Analysis | : 28.09.2024 to 04.10.2024 | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| Discipline : Chemical | | Group : Pollution & Environment | | Discharge Limits – CPCB EPR, 1986 Schedule VI | |
|------------------------------|------|---------------------------------|--------|---|---------------------|
| Parameter | Unit | Test Protocol | Result | Inland Surface Water | Land for Irrigation |
| Free Residual Chlorine (RFC) | mg/L | IS 3025 (Part-26) : 2021 | 2.64 | 1.0 | -- |



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TEST REPORT

| | | | |
|-----------------|----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2024/5724 | Report Release Date | : 04.10.2024 |
| Work Order No. | : 3000175731/T01 | Work Order Date | : 16.09.2024 |
| ULR No. | : TC135872400003622F | | |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|---|----------------------|-------------------------|
| Customer Name | : Tata Steel Limited, Tinplate Division (Golmuri Works) | Sample Ref. No. | : ELES/RNC/2024/EF/6723 |
| Address | : Golmuri, Jamshedpur, Dist- East Singhbhum, Jharkhand, Pin- 831003 | Sampling Date | : 27.09.2024 |
| | | Sample Received Date | : 28.09.2024 |
| Plant Status | : Operational | Type of Sample | : Effluent Water |
| Period of Analysis | : 28.09.2024 to 04.10.2024 | Source of Sample | : CRM WWTP Outlet |
| | | Sampling Procedure | : ELES/DOC/SMPL/01 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| Discipline : Chemical | | Group : Pollution & Environment | | Discharge Limits – CPCB EPR, 1986 Schedule VI | |
|---|------|---|--------|--|---------------------|
| Parameter | Unit | Test Protocol | Result | Inland Surface Water | Land for Irrigation |
| pH (at 25.4 °C) | - | APHA 24 th Ed.2023,4500-H ⁺ | 7.35 | 5.5-9.0 | 5.5-9.0 |
| Temperature | °C | APHA 24 th Ed.2023, 2550 B | 33.2 | Shall Not Exceed 5°C Above the Receiving Water Temperature | -- |
| Total Dissolved Solids (TDS) | mg/L | IS 3025 (Part-16): 2023 | 2440 | -- | -- |
| Total Suspended Solids (TSS) | mg/L | IS 3025 (Part-17): 2022 | 37.8 | 100 | 200 |
| Chemical Oxygen Demand (COD) | mg/L | IS 3025 (Part-58) : 2023 | 173 | 250 | -- |
| Biochemical Oxygen Demand (BOD) (at 27 °C for 3 days) | mg/L | IS 3025 (Part-44): 2023 | 17.5 | 30 | 100 |
| Oil & Grease | mg/L | IS 3025 (Part-39): 2021 | 6.2 | 10 | 10 |
| Ammoniacal Nitrogen (as NH ₃ -N) | mg/L | APHA24 th Ed.2023, 4500 NH ₃ -F | 3.6 | 50 | -- |

TEST REPORT

| | | | |
|-----------------|----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2024/5724 | Report Release Date | : 04.10.2024 |
| Work Order No. | : 3000175731/T01 | Work Order Date | : 16.09.2024 |
| ULR No. | : TC135872400003622F | | |

| Discipline : Chemical | | Group : Residues in Water | | Discharge Limits – CPCB EPR, 1986 Schedule VI | |
|---|------|--|--------------------|--|------------------------|
| Parameter | Unit | Test Protocol | Result | Inland Surface Water | Land for Irrigation |
| Cadmium (as Cd) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.003) | 2.0 | -- |
| Copper (as Cu) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.03) | 3.0 | -- |
| Cyanide (as CN) | mg/L | APHA 24 th Ed.2023, 4500 CN E | BDL (DL: 0.012) | 0.2 | 0.2 |
| Total Chromium (as Cr) | mg/L | APHA 24 th Ed.2023, 3111B | 0.164 | 2.0 | -- |
| Hexavalent Chromium (as Cr ⁶⁺) | mg/L | APHA 24 th Ed.2023, 3500-Cr | BDL (DL: 0.05) | 0.1 | -- |
| Iron (as Fe) | mg/L | APHA 24 th Ed.2023, 3111B | 0.836 | 3.0 | -- |
| Lead (as Pb) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.01) | 0.1 | -- |
| Nickel (as Ni) | mg/L | APHA 24 th Ed.2023, 3111B | BDL (DL: 0.01) | 3.0 | -- |
| Zinc (as Zn) | mg/L | APHA 24 th Ed.2023, 3111B | BDL (DL: 0.1) | 5.0 | -- |

Remarks: pH & RFC done at Lab.



****End of Report****


Authorised Signatory
Akash Kumar
Quality Manager

Page 2 of 2

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ENVIRONMENTAL LABORATORIES &

PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA
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TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/5724 | Report Release Date : 04.10.2024 |
| Work Order No. : 3000175731/T01 | Work Order Date : 16.09.2024 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|---|----------------------|-------------------------|
| Customer Name | : Tata Steel Limited, Tinplate Division (Golmuri Works) | Sample Ref. No. | : ELES/RNC/2024/EF/6723 |
| Address | : Golmuri, Jamshedpur, Dist- East Singhbhum, Jharkhand, Pin- 831003 | Sampling Date | : 27.09.2024 |
| Plant Status | : Operational | Sample Received Date | : 28.09.2024 |
| Period of Analysis | : 28.09.2024 to 04.10.2024 | Type of Sample | : Effluent Water |
| | | Source of Sample | : CRM WWTP Outlet |
| | | Sampling Procedure | : ELES/DOC/SMPL/01 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| Discipline : Chemical | | Group : Pollution & Environment | | Discharge Limits – CPCB EPR, 1986 Schedule VI | |
|------------------------------|------|---------------------------------|--------|--|---------------------|
| Parameter | Unit | Test Protocol | Result | Inland Surface Water | Land for Irrigation |
| Free Residual Chlorine (RFC) | mg/L | IS 3025 (Part-26) : 2021 | 0.97 | 1.0 | -- |



****End of Report****


Authorised Signatory
Akash Kumar
Quality Manager

TEST REPORT

| | | | |
|-----------------|----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2024/5725 | Report Release Date | : 04.10.2024 |
| Work Order No. | : 3000175731/T01 | Work Order Date | : 16.09.2024 |
| ULR No. | : TC135872400003623F | | |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|---|----------------------|-----------------------------|
| Customer Name | : Tata Steel Limited, Tinplate Division (Golmuri Works) | Sample Ref. No. | : ELES/RNC/2024/EF/6724 |
| Address | : Golmuri, Jamshedpur, Dist- East Singhbhum, Jharkhand, Pin- 831003 | Sampling Date | : 27.09.2024 |
| | | Sample Received Date | : 28.09.2024 |
| Plant Status | : Operational | Type of Sample | : Effluent Water |
| | | Source of Sample | : ETL ETP Inlet (CS 5) Tank |
| Period of Analysis | : 28.09.2024 to 04.10.2024 | Sampling Procedure | : ELES/DOC/SMPL/01 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| Discipline : Chemical | | Group : Pollution & Environment | |
|--|------|--|----------------------|
| Parameter | Unit | Test Protocol | Result |
| pH (at 25.4 °C) | - | APHA 24 th Ed.2023, 4500-H | >10.0 (HDL: 10.0) |
| Temperature | °C | APHA 24 th Ed.2023, 2550 B | 40.0 |
| Total Dissolved Solids (TDS) | mg/L | IS 3025 (Part-16): 2023 | 3180 |
| Total Suspended Solids (TSS) | mg/L | IS 3025 (Part-17): 2022 | 223 |
| Chemical Oxygen Demand (COD) | mg/L | IS 3025 (Part-58) : 2023 | 532 |
| Biochemical Oxygen Demand (BOD) (at 27 °C for 3 days) | mg/L | IS 3025 (Part-44): 2023 | 46.1 |
| Oil & Grease | mg/L | IS 3025 (Part-39): 2021 | 14.6 |
| Ammoniacal Nitrogen (as NH ₃ -N) | mg/L | APHA24 th Ed.2023, 4500 NH3-F | 7.6 |



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TEST REPORT

| | | | |
|-----------------|----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2024/5725 | Report Release Date | : 04.10.2024 |
| Work Order No. | : 3000175731/T01 | Work Order Date | : 16.09.2024 |
| ULR No. | : TC135872400003623F | | |

| Discipline : Chemical | | Group : Residues in Water | |
|--|------|--|--------------------|
| Parameter | Unit | Test Protocol | Result |
| Cadmium (as Cd) | mg/L | APHA 24 th Ed.2023; 3111B | 0.113 |
| Copper (as Cu) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.03) |
| Cyanide (as CN) | mg/L | APHA 24 th Ed.2023, 4500 CN E | BDL (DL: 0.012) |
| Total Chromium (as Cr) | mg/L | APHA 24 th Ed.2023, 3111B | BDL (DL: 0.03) |
| Hexavalent Chromium (as Cr ⁶⁺) | mg/L | APHA 24 th Ed.2023, 3500-Cr | BDL (DL: 0.05) |
| Iron (as Fe) | mg/L | APHA 24 th Ed.2023, 3111B | 10.4 |
| Lead (as Pb) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.01) |
| Nickel (as Ni) | mg/L | APHA 24 th Ed.2023, 3111B | BDL (DL: 0.01) |
| Zinc (as Zn) | mg/L | APHA 24 th Ed.2023, 3111B | BDL (DL: 0.1) |

Remarks: pH & RFC done at Lab.



****End of Report****


Authorised Signatory
Akash Kumar
Quality Manager

Page 2 of 2

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TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/5725 | Report Release Date : 04.10.2024 |
| Work Order No. : 3000175731/T01 | Work Order Date : 16.09.2024 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|---|----------------------|-----------------------------|
| Customer Name | : Tata Steel Limited, Tinplate Division (Golmuri Works) | Sample Ref. No. | : ELES/RNC/2024/EF/6724 |
| Address | : Golmuri, Jamshedpur, Dist- East Singhbhum, Jharkhand, Pin- 831003 | Sampling Date | : 27.09.2024 |
| | | Sample Received Date | : 28.09.2024 |
| Plant Status | : Operational | Type of Sample | : Effluent Water |
| | | Source of Sample | : ETL ETP Inlet (CS 5) Tank |
| Period of Analysis | : 28.09.2024 to 04.10.2024 | Sampling Procedure | : ELES/DOC/SMPL/01 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| Discipline : Chemical | | Group : Pollution & Environment | | Discharge Limits – CPCB EPR, 1986 Schedule VI | |
|------------------------------|------|---------------------------------|--------|--|---------------------|
| Parameter | Unit | Test Protocol | Result | Inland Surface Water | Land for Irrigation |
| Free Residual Chlorine (RFC) | mg/L | IS 3025 (Part-26) : 2021 | 4.1 | 1.0 | -- |



****End of Report****

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Akash Kumar
Quality Manager

Page 1 of 1

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Website: www.elespl.co.in



TEST REPORT

| | | | |
|-----------------|----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2024/5726 | Report Release Date | : 04.10.2024 |
| Work Order No. | : 3000175731/T01 | Work Order Date | : 16.09.2024 |
| ULR No. | : TC135872400003624F | | |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|---|----------------------|------------------------------|
| Customer Name | : Tata Steel Limited, Tinplate Division (Golmuri Works) | Sample Ref. No. | : ELES/RNC/2024/EF/6725 |
| Address | : Golmuri, Jamshedpur, Dist- East Singhbhum, Jharkhand, Pin- 831003 | Sampling Date | : 27.09.2024 |
| | | Sample Received Date | : 28.09.2024 |
| Plant Status | : Operational | Type of Sample | : Effluent Water |
| | | Source of Sample | : Eff. ETP Inlet (CS 6) Tank |
| Period of Analysis | : 28.09.2024 to 04.10.2024 | Sampling Procedure | : ELES/DOC/SMPL/01 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| Discipline : Chemical | | Group : Pollution & Environment | |
|--|------|--|------------------|
| Parameter | Unit | Test Protocol | Result |
| pH (at 25.4 °C) | - | APHA 24 th Ed 2023, 4500-H ⁺ | BDL (DL: 4.0) |
| Temperature | °C | APHA 24 th Ed.2023, 2550 B | 35.8 |
| Total Dissolved Solids (TDS) | mg/L | IS 3025 (Part-16): 2023 | 1230 |
| Total Suspended Solids (TSS) | mg/L | IS 3025 (Part-17): 2022 | 15.3 |
| Chemical Oxygen Demand (COD) | mg/L | IS 3025 (Part-58): 2023 | 241 |
| Biochemical Oxygen Demand (BOD) (at 27 °C for 3 days) | mg/L | IS 3025 (Part-44): 2023 | 27.5 |
| Oil & Grease | mg/L | IS 3025 (Part-39): 2021 | 9.8 |
| Ammoniacal Nitrogen (as NH ₃ -N) | mg/L | APHA 24 th Ed.2023, 4500 NH ₃ -F | 5.8 |



CIN: U74999JH2018PTC011125

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TC-13587

TEST REPORT

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|-----------------|----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2024/5726 | Report Release Date | : 04.10.2024 |
| Work Order No. | : 3000175731/T01 | Work Order Date | : 16.09.2024 |
| ULR No. | : TC135872400003624F | | |

| Discipline : Chemical | | Group : Residues in Water | |
|--|------|--|--------------------|
| Parameter | Unit | Test Protocol | Result |
| Cadmium (as Cd) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.003) |
| Copper (as Cu) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.03) |
| Cyanide (as CN) | mg/L | APHA 24 th Ed.2023, 4500 CN E | BDL (DL: 0.012) |
| Total Chromium (as Cr) | mg/L | APHA 24 th Ed.2023, 3111B | 11.28 |
| Hexavalent Chromium (as Cr ⁶⁺) | mg/L | APHA 24 th Ed.2023, 3500-Cr | BDL (DL: 0.05) |
| Iron (as Fe) | mg/L | APHA 24 th Ed.2023, 3111B | 6.80 |
| Lead (as Pb) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.01) |
| Nickel (as Ni) | mg/L | APHA 24 th Ed.2023, 3111B | BDL (DL: 0.01) |
| Zinc (as Zn) | mg/L | APHA 24 th Ed.2023, 3111B | BDL (DL: 0.1) |

Remarks: pH & RFC done at Lab.



****End of Report****

Authorised Signatory
Akash Kumar
Quality Manager

Page 2 of 2

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TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/5726 | Report Release Date : 04.10.2024 |
| Work Order No. : 3000175731/T01 | Work Order Date : 16.09.2024 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|---|----------------------|-----------------------------|
| Customer Name | : Tata Steel Limited, Tinplate Division (Golmuri Works) | Sample Ref. No. | : ELES/RNC/2024/EF/6725 |
| Address | : Golmuri, Jamshedpur, Dist- East Singhbhum, Jharkhand, Pin- 831003 | Sampling Date | : 27.09.2024 |
| | | Sample Received Date | : 28.09.2024 |
| Plant Status | : Operational | Type of Sample | : Effluent Water |
| | | Source of Sample | : ETL ETP Inlet (CS 6) Tank |
| Period of Analysis | : 28.09.2024 to 04.10.2024 | Sampling Procedure | : ELES/DOC/SMPL/01 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| Discipline : Chemical | | Group : Pollution & Environment | | Discharge Limits – CPCB EPR, 1986 Schedule VI | |
|------------------------------|------|---------------------------------|--------|---|---------------------|
| Parameter | Unit | Test Protocol | Result | Inland Surface Water | Land for Irrigation |
| Free Residual Chlorine (RFC) | mg/L | IS 3025 (Part-26) : 2021 | 2.57 | 1.0 | -- |



****End of Report****


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Quality Manager

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TEST REPORT

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|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/5727 | Report Release Date : 04.10.2024 |
| Work Order No. : 3000175731/T01 | Work Order Date : 16.09.2024 |
| ULR No. : TC135872400003625F | |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|---|----------------------|-------------------------|
| Customer Name | : Tata Steel Limited, Tinplate Division (Golmuri Works) | Sample Ref. No. | : ELES/RNC/2024/EF/6726 |
| Address | : Golmuri, Jamshedpur, Dist- East Singhbhum, Jharkhand, Pin- 831003 | Sampling Date | : 27.09.2024 |
| | | Sample Received Date | : 28.09.2024 |
| Plant Status | : Operational | Type of Sample | : Effluent Water |
| | | Source of Sample | : ETL ETP Outlet |
| Period of Analysis | : 28.09.2024 to 04.10.2024 | Sampling Procedure | : ELES/DOC/SMPL/01 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| Discipline : Chemical | | Group : Pollution & Environment | | Discharge Limits – CPCB EPR, 1986 Schedule VI | |
|---|------|---|--------|--|---------------------|
| Parameter | Unit | Test Protocol | Result | Inland Surface Water | Land for Irrigation |
| pH (at 24.4 °C) | - | APHA 24 th Ed.2023,4500-H ⁺ | 5.97 | 5.5-9.0 | 5.5-9.0 |
| Temperature | °C | APHA 24 th Ed.2023, 2550 B | 33.7 | Shall Not Exceed 5°C Above the Receiving Water Temperature | -- |
| Total Dissolved Solids (TDS) | mg/L | IS 3025 (Part-16): 2023 | 1310 | -- | -- |
| Total Suspended Solids (TSS) | mg/L | IS 3025 (Part-17): 2022 | 3.3 | 100 | 200 |
| Chemical Oxygen Demand (COD) | mg/L | IS 3025 (Part-58) : 2023 | 149 | 250 | -- |
| Biochemical Oxygen Demand (BOD) (at 27 °C for 3 days) | mg/L | IS 3025 (Part-44): 2023 | 17.3 | 30 | 100 |
| Oil & Grease | mg/L | IS 3025 (Part-39): 2021 | 2.8 | 10 | 10 |
| Ammoniacal Nitrogen (as NH ₃ -N) | mg/L | APHA24 th Ed.2023, 4500 NH ₃ -F | 3.8 | 50 | -- |

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CIN: U74999JH2018PTC011125

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TEST REPORT

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|-----------------|----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2024/5727 | Report Release Date | : 04.10.2024 |
| Work Order No. | : 3000175731/T01 | Work Order Date | : 16.09.2024 |
| ULR No. | : TC135872400003625F | | |

| Discipline : Chemical | | Group : Residues in Water | | Discharge Limits – CPCB EPR, 1986 Schedule VI | |
|---|------|--|--------------------|--|------------------------|
| Parameter | Unit | Test Protocol | Result | Inland Surface Water | Land for Irrigation |
| Cadmium (as Cd) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.003) | 2.0 | -- |
| Copper (as Cu) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.03) | 3.0 | -- |
| Cyanide (as CN) | mg/L | APHA 24 th Ed.2023; 4500 CN E | BDL (DL: 0.012) | 0.2 | 0.2 |
| Total Chromium (as Cr) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.03) | 2.0 | -- |
| Hexavalent Chromium (as Cr ⁶⁺) | mg/L | APHA 24 th Ed.2023; 3500-Cr | BDL (DL: 0.05) | 0.1 | -- |
| Iron (as Fe) | mg/L | APHA 24 th Ed.2023; 3111B | 0.784 | 3.0 | -- |
| Lead (as Pb) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.01) | 0.1 | -- |
| Nickel (as Ni) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.01) | 3.0 | -- |
| Zinc (as Zn) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.1) | 5.0 | -- |

Remarks: pH & RFC done at Lab.



****End of Report****


Authorised Signatory
Akash Kumar
Quality Manager

Page 2 of 2

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ENVIRONMENTAL LABORATORIES &

PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA
HATIA, RANCHI-834003 (JHARKHAND)
GST NO:- 20AAECE97130124

ENGINEERING SERVICES PVT. LTD.

Email: info@elespl.co.in , eles.ranchi@gmail.com

Phone no.: 0651-2290103

Website : www.elespl.co.in

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/5727 | Report Release Date : 04.10.2024 |
| Work Order No. : 3000175731/T01 | Work Order Date : 16.09.2024 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|---|----------------------|-------------------------|
| Customer Name | : Tata Steel Limited, Tinplate Division (Golmuri Works) | Sample Ref. No. | : ELES/RNC/2024/EF/6726 |
| Address | : Golmuri, Jamshedpur, Dist- East Singhbhum, Jharkhand, Pin- 831003 | Sampling Date | : 27.09.2024 |
| | | Sample Received Date | : 28.09.2024 |
| Plant Status | : Operational | Type of Sample | : Effluent Water |
| | | Source of Sample | : ETL ETP Outlet |
| Period of Analysis | : 28.09.2024 to 04.10.2024 | Sampling Procedure | : ELES/DOC/SMPL/01 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| Discipline : Chemical | | Group : Pollution & Environment | | Discharge Limits – CPCB EPR, 1986 Schedule VI | |
|------------------------------|------|---------------------------------|--------|---|---------------------|
| Parameter | Unit | Test Protocol | Result | Inland Surface Water | Land for Irrigation |
| Free Residual Chlorine (RFC) | mg/L | IS 3025 (Part-26) : 2021 | 0.76 | 1.0 | -- |



****End of Report****

Authorized Signatory
Akash Kumar
Quality Manager

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ENGINEERING SERVICES PVT. LTD.

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Website : www.elespl.co.in



TEST REPORT

| | | | |
|-----------------|----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2024/5728 | Report Release Date | : 04.10.2024 |
| Work Order No. | : 3000175731/T01 | Work Order Date | : 16.09.2024 |
| ULR No. | : TC135872400003626F | | |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|---|----------------------|--|
| Customer Name | : Tata Steel Limited, Tinplate Division (Golmuri Works) | Sample Ref. No. | : ELES/RNC/2024/EF/6727 |
| Address | : Golmuri, Jamshedpur, Dist- East Singhbhum, Jharkhand, Pin- 831003 | Sampling Date | : 27.09.2024 |
| | | Sample Received Date | : 28.09.2024 |
| Plant Status | : Operational | Type of Sample | : Effluent Water |
| | | Source of Sample | : Treated Final discharge (Kadani Drain) |
| Period of Analysis | : 28.09.2024 to 04.10.2024 | Sampling Procedure | : ELES/DOC/SMPL/01 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| Discipline : Chemical | | Group : Pollution & Environment | | Discharge Limits – CPCB EPR, 1986 Schedule VI | |
|---|------|--|--------|--|---------------------|
| Parameter | Unit | Test Protocol | Result | Inland Surface Water | Land for Irrigation |
| pH (at 25.4 °C) | - | APHA 24 th Ed.2023, 4500-H ⁺ | 6.90 | 5.5-9.0 | 5.5-9.0 |
| Temperature | °C | APHA 24 th Ed.2023, 2550 B | 31.5 | Shall Not Exceed 5°C Above the Receiving Water Temperature | -- |
| Total Dissolved Solids (TDS) | mg/L | IS 3025 (Part-16): 2023 | 1482 | -- | -- |
| Total Suspended Solids (TSS) | mg/L | IS 3025 (Part-17): 2022 | 5.4 | 100 | 200 |
| Chemical Oxygen Demand (COD) | mg/L | IS 3025 (Part-58) : 2023 | 92.7 | 250 | -- |
| Biochemical Oxygen Demand (BOD) (at 27 °C for 3 days) | mg/L | IS 3025 (Part-44): 2023 | 12.0 | 30 | 100 |
| Oil & Grease | mg/L | IS 3025 (Part-39): 2021 | 3.0 | 10 | 10 |
| Ammoniacal Nitrogen (as NH ₃ -N) | mg/L | APHA 24 th Ed.2023, 4500 NH ₃ -F | 3.4 | 50 | -- |



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TEST REPORT

| | | | |
|-----------------|----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2024/5728 | Report Release Date | : 04.10.2024 |
| Work Order No. | : 3000175731/T01 | Work Order Date | : 16.09.2024 |
| ULR No. | : TC135872400003626F | | |

| Discipline : Chemical | | Group : Residues in Water | | Discharge Limits – CPCB EPR, 1986 Schedule VI | |
|---|------|--|--------------------|--|------------------------|
| Parameter | Unit | Test Protocol | Result | Inland Surface Water | Land for Irrigation |
| Cadmium (as Cd) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.003) | 2.0 | -- |
| Copper (as Cu) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.03) | 3.0 | -- |
| Cyanide (as CN) | mg/L | APHA 24 th Ed.2023, 4500 CN E | BDL (DL: 0.012) | 0.2 | 0.2 |
| Total Chromium (as Cr) | mg/L | APHA 24 th Ed.2023, 3111B | BDL (DL: 0.03) | 2.0 | -- |
| Hexavalent Chromium (as Cr ⁶⁺) | mg/L | APHA 24 th Ed.2023, 3500-Cr | BDL (DL: 0.05) | 0.1 | -- |
| Iron (as Fe) | mg/L | APHA 24 th Ed.2023, 3111B | 0.882 | 3.0 | -- |
| Lead (as Pb) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.01) | 0.1 | -- |
| Nickel (as Ni) | mg/L | APHA 24 th Ed.2023, 3111B | BDL (DL: 0.01) | 3.0 | -- |
| Zinc (as Zn) | mg/L | APHA 24 th Ed.2023, 3111B | 0.103 | 5.0 | -- |

Remarks: pH & RFC done at Lab.



****End of Report****


Authorised Signatory
Akash Kumar
Quality Manager

Page 2 of 2

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Website : www.elespl.co.in

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/5728 | Report Release Date : 04.10.2024 |
| Work Order No. : 3000175731/T01 | Work Order Date : 16.09.2024 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|---|----------------------|--|
| Customer Name | : Tata Steel Limited, Tinplate Division (Golmuri Works) | Sample Ref. No. | : ELES/RNC/2024/EF/6727 |
| Address | : Golmuri, Jamshedpur, Dist- East Singhbhum, Jharkhand, Pin- 831003 | Sampling Date | : 27.09.2024 |
| | | Sample Received Date | : 28.09.2024 |
| | | Type of Sample | : Effluent Water |
| Plant Status | : Operational | Source of Sample | : Treated Final discharge (Kadani Drain) |
| | | Sampling Procedure | : ELES/DOC/SMPL/01 |
| Period of Analysis | : 28.09.2024 to 04.10.2024 | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| Discipline : Chemical | | Group : Pollution & Environment | | Discharge Limits – CPCB EPR, 1986 Schedule VI | |
|------------------------------|------|---------------------------------|--------|---|---------------------|
| Parameter | Unit | Test Protocol | Result | Inland Surface Water | Land for Irrigation |
| Free Residual Chlorine (RFC) | mg/L | IS 3025 (Part-26) : 2021 | 0.62 | 1.0 | -- |



****End of Report****


Authorised Signatory
Akash Kumar
Quality Manager



Test Report No. INCHE24106661108121753

ULR No. : TC805724000048448F

Report Issue Date: 10 Oct 2024

TEST REPORT

| | | | |
|--|----------------|---------------------------------|--|
| Report Issued To: Tata Steel Ltd., Tinplate Division | | | |
| GOLMURI WORKS, TINPLATE, GOLMURI, , EAST SINGHBHUM,, JHARKHAND - Pin 831003, India | | | |
| Discipline : | Chemical | Group : | Atmospheric Pollution |
| BV Sample ID : | 1725012 | Sample receipt date : | 03 Oct 2024 |
| Sample Name** : | Stack Emission | Date of registration : | 03 Oct 2024 |
| | | Date of commencing of testing : | 05 Oct 2024 |
| | | Date of completion of testing : | 08 Oct 2024 |
| | | Other information** : | Sampling Time : 01.30 - 02.09 Stack Identification No : Pickling Stack - 1 Shape of Stack : Circular Stack connected to : Scrubber Emission due to : Pickling of HR Coils Stack height from ground Level (m) : 30 Height of Sampling Port from Ground Level (m) : 09 Stack diameter at sampling point (m) : 0.5 Material of Construction of Stack : FRP Installed Capacity : NA Running Capacity : NA Fuel Used : NA Fuel Consumption : NA Platform Ladder Type & Condition : Permanent & Well Pollution Control Device : Scrubber |

| | | | |
|----------------------|-----------------------------|---------------------------------|------------------|
| Sample Information: | Sampling Done by Laboratory | | |
| Sampling procedure : | BVILCH/ENA/SOP-021 | Date of sampling / collection : | 30 Sep 2024 |
| Sampling location : | Pickling Stack - 1 | Sampling / Collection done by : | Mr. Vishal Rajak |

| No. | Test Parameters | Unit | Test Results | Test Method | LOQ |
|-----|--|---------------------|--------------|--------------------------|-----|
| 1 | Oxides of Sulphur (SO ₂) | mg/Nm ³ | BLQ | IS 11255 : Part 2 : 1985 | 5 |
| 2 | Hydrochloric Acid Mist | mg/Nm ³ | 1.32 | USPEA 0050/9057:1996 | 0.1 |
| 3 | Velocity of Flue Gas Discharge | m/s | 7.9 | IS 11255 : Part 3 : 2008 | 1.3 |
| 4 | Temperature of (flue) gas Emission | °K | 318 | IS 11255 : Part 3 : 2008 | 300 |
| 5 | Volume of Flue Gas Discharge | Nm ³ /Hr | 4698 | IS 11255 : Part 3 : 2008 | 65 |
| 6 | Particulate Matter (PM) | mg/Nm ³ | 11.8 | IS 11255 : Part 1 : 1985 | 5 |
| 7 | Oxides of Nitrogen | mg/Nm ³ | BLQ | BVILCH/ENA/SOP 019 | 2 |

Abbreviations: LOQ: Limit of Quantification, BLQ: Below limit of quantification

** Indicates information supplied by the customer for which the laboratory has no control

Note: SAMPLE TESTED AS RECEIVED

Authorized Signatory

M.Ramesh

Manager

Test Report No. INCHE24106661108121753

Report Issue Date: 10 Oct 2024

| No. | Test Parameters | Unit | Test Results | Test Method | LOQ |
|-----|---------------------|-------|--------------|--------------------------|-----|
| 8 | Barometric Pressure | mm Hg | 739 | IS 11255 : Part 3 : 2008 | 10 |

Abbreviations: LOQ: Limit of Quantification, BLQ: Below limit of quantification

** Indicates information supplied by the customer for which the laboratory has no control

Note: SAMPLE TESTED AS RECEIVED

Authorized Signatory



M. Ramesh

Manager

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--- End of Report ---



Test Report No. INCHE24106661108121811

ULR No. : TC805724000048449F

Report Issue Date: 10 Oct 2024

TEST REPORT

| | | | |
|--|----------------|---------------------------------|--|
| Report Issued To: Tata Steel Ltd., Tinplate Division | | | |
| GOLMURI WORKS, TINPLATE, GOLMURI, , EAST SINGHBHUM,, JHARKHAND - Pin 831003, India | | | |
| Discipline : | Chemical | Group : | Atmospheric Pollution |
| BV Sample ID : | 1725013 | Sample receipt date : | 03 Oct 2024 |
| Sample Name** : | Stack Emission | Date of registration : | 03 Oct 2024 |
| | | Date of commencing of testing : | 05 Oct 2024 |
| | | Date of completion of testing : | 08 Oct 2024 |
| | | Other information** : | Sampling Time : 02.45 - 03.24 Stack Identification No : Pickling Stack - 2 Shape of Stack : Circular Stack connected to : Scrubber Emission due to : Pickling of HR Coils Stack height from ground Level (m) : 30 Height of Sampling Port from Ground Level (m) : 09 Stack diameter at sampling point (m) : 0.5 Material of Construction of Stack : FRP Installed Capacity : NA Running Capacity : NA Fuel Used : NA Fuel Consumption : NA Platform Ladder Type & Condition : Permanent & Well Pollution Control Device : Scrubber |

| | | | |
|----------------------|-----------------------------|---------------------------------|------------------|
| Sample Information: | Sampling Done by Laboratory | | |
| Sampling procedure : | BVILCH/ENA/SOP-021 | Date of sampling / collection : | 30 Sep 2024 |
| Sampling location : | Pickling Stack - 2 | Sampling / Collection done by : | Mr. Vishal Rajak |

| No. | Test Parameters | Unit | Test Results | Test Method | LOQ |
|-----|--|---------------------|--------------|--------------------------|-----|
| 1 | Oxides of Sulphur (SO ₂) | mg/Nm ³ | BLQ | IS 11255 : Part 2 : 1985 | 5 |
| 2 | Hydrochloric Acid Mist | mg/Nm ³ | 1.22 | USPEA 0050/9057:1996 | 0.1 |
| 3 | Velocity of Flue Gas Discharge | m/s | 8.12 | IS 11255 : Part 3 : 2008 | 1.3 |
| 4 | Temperature of (flue) gas Emission | °K | 332 | IS 11255 : Part 3 : 2008 | 300 |
| 5 | Volume of Flue Gas Discharge | Nm ³ /Hr | 4312 | IS 11255 : Part 3 : 2008 | 65 |
| 6 | Particulate Matter (PM) | mg/Nm ³ | 13.8 | IS 11255 : Part 1 : 1985 | 5 |
| 7 | Oxides of Nitrogen | mg/Nm ³ | BLQ | BVILCH/ENA/SOP 019 | 2 |

Abbreviations: LOQ: Limit of Quantification, BLQ: Below limit of quantification
** Indicates information supplied by the customer for which the laboratory has no control
Note: SAMPLE TESTED AS RECEIVED

Authorized Signatory

M. Ramesh

Manager

Test Report No. INCHE24106661108121811

Report Issue Date: 10 Oct 2024

| No. | Test Parameters | Unit | Test Results | Test Method | LOQ |
|-----|---------------------|-------|--------------|--------------------------|-----|
| 8 | Barometric Pressure | mm Hg | 739 | IS 11255 : Part 3 : 2008 | 10 |

Abbreviations: LOQ: Limit of Quantification, BLQ: Below limit of quantification

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Note: SAMPLE TESTED AS RECEIVED

Authorized Signatory



M. Ramesh

Manager

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--- End of Report ---



Test Report No. INCHE24106651108121211

ULR No. : TC805724000048439F

Report Issue Date: 10 Oct 2024

TEST REPORT

Report Issued To: Tata Steel Ltd., Tinplate Division

GOLMURI WORKS, TINPLATE, GOLMURI, , EAST SINGHBHUM,, JHARKHAND - Pin 831003, India

Discipline :

BV Sample ID :

Sample Name** :

Chemical

1724998

Slack Emission

Group :

Sample receipt date :

Date of registration :

Date of commencing of testing :

Date of completion of testing :

Other information** :

Atmospheric Pollution

03 Oct 2024

03 Oct 2024

04 Oct 2024

08 Oct 2024

Sampling Time : 10.30 - 10.55
Stack Identification No : 6 Hi-1 Mill Stack
Shape of Stack : Circular
Stack connected to : FES/Dust Collector
Emission due to : Cold Rolling of Steel Coils
Stack height from ground Level (m) : 30
Height of Sampling Port from Ground Level (m) : 25
Stack diameter at sampling point (m) : 1.9
Material of Construction of Stack : MS
Installed Capacity : NA
Running Capacity : NA
Fuel Used : NA
Fuel Consumption : NA
Platform Ladder Type & Condition : Permanent & Well
Pollution Control Device : Mist Eliminator / FES

| | | | |
|----------------------|--|-----------------------------|--|
| Sample Information: | | Sampling Done by Laboratory | |
| Sampling procedure : | | BVILCH/ENA/SOP-021 | Date of sampling / collection : 28 Sep 2024 |
| Sampling location : | | 6Hi - 1 Mill Stack | Sampling / Collection done by : Mr. Vishal Rajak |

| No. | Test Parameters | Unit | Test Results | Test Method | LOQ |
|-----|--------------------------------------|---------------------|--------------|--------------------------|-----|
| 1 | Oxides of Sulphur (SO ₂) | mg/Nm ³ | BLQ | IS 11255 : Part 2 : 1985 | 5 |
| 2 | Velocity of Flue Gas Discharge | m/s | 7.32 | IS 11255 : Part 3 : 2008 | 1.3 |
| 3 | Temperature of (flue) gas Emission | °K | 310 | IS 11255 : Part 3 : 2008 | 300 |
| 4 | Volume of Flue Gas Discharge | Nm ³ /Hr | 69756 | IS 11255 : Part 3 : 2008 | 65 |
| 5 | Particulate Matter (PM) | mg/Nm ³ | 8.2 | IS 11255 : Part 1 : 1985 | 5 |
| 6 | Oxides of Nitrogen | mg/Nm ³ | BLQ | BVILCH/ENA/SOP 019 | 2 |

Abbreviations: LOQ: Limit of Quantification, BLQ: Below limit of quantification
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Note: SAMPLE TESTED AS RECEIVED

Authorized Signatory

M.Ramesh
Manager

Test Report No. INCHE24106651108121211

Report Issue Date: 10 Oct 2024

| No. | Test Parameters | Unit | Test Results | Test Method | LOQ |
|-----|---------------------|-------|--------------|--------------------------|-----|
| 7 | Barometric Pressure | mm Hg | 742 | IS 11255 : Part 3 : 2008 | 10 |

Abbreviations: LOQ: Limit of Quantification; BLQ: Below limit of quantification

** Indicates information supplied by the customer for which the laboratory has no control

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Authorized Signatory



M. Ramesh

Manager

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--- End of Report ---



Test Report No. INCHE24106651108121329

ULR No. : TC805724000048440F

Report Issue Date: 10 Oct 2024

TEST REPORT

| | | | |
|---|------------------------------------|--|---|
| Report Issued To: Tata Steel Ltd., Tinplate Division GOLMURI WORKS, TINPLATE, GOLMURI, , EAST SINGHBHUM,, JHARKHAND - Pin 831003, India | | | |
| Discipline : | Chemical | Group : | Atmospheric Pollution |
| BV Sample ID : | 1724999 | Sample receipt date : | 03 Oct 2024 |
| Sample Name** : | Stack Emission | Date of registration : | 03 Oct 2024 |
| | | Date of commencing of testing : | 04 Oct 2024 |
| | | Date of completion of testing : | 08 Oct 2024 |
| | | Other information** : | Sampling Time : 12.08 - 12.33 Stack Identification No : 6 HI-2 Mill Stack Shape of Stack : Circular Stack connected to : FES/Dust Collector Emission due to : Cold Rolling of Steel Coils Stack height from ground Level (m) : 30 Height of Sampling Port from Ground Level (m) : 25 Stack diameter at sampling point (m) : 2.15 Material of Construction of Stack : MS Installed Capacity : NA Running Capacity : NA Fuel Used : NA Fuel Consumption : NA Platform Ladder Type & Condition : Permanent & Well Pollution Control Device : Mist Eliminator / FES |
| Sample Information: | Sampling Done by Laboratory | | |
| Sampling procedure : | BVILCH/ENA/SOP-021 | Date of sampling / collection : | 28 Sep 2024 |
| Sampling location : | 6Hi - 2 Mill Stack | Collection done by : | Mr. Vishal Rajak |

| No. | Test Parameters | Unit | Test Results | Test Method | LOQ |
|-----|--------------------------------------|---------------------|--------------|--------------------------|-----|
| 1 | Oxides of Sulphur (SO ₂) | mg/Nm ³ | BLQ | IS 11255 : Part 2 : 1985 | 5 |
| 2 | Velocity of Flue Gas Discharge | m/s | 12.4 | IS 11255 : Part 3 : 2008 | 1.3 |
| 3 | Temperature of (flue) gas Emission | °K | 315 | IS 11255 : Part 3 : 2008 | 300 |
| 4 | Volume of Flue Gas Discharge | Nm ³ /Hr | 129985 | IS 11255 : Part 3 : 2008 | 65 |
| 5 | Particulate Matter (PM) | mg/Nm ³ | 10.4 | IS 11255 : Part 1 : 1985 | 5 |
| 6 | Oxides of Nitrogen | mg/Nm ³ | BLQ | BVILCH/ENA/SOP 019 | 2 |

Abbreviations: LOQ: Limit of Quantification, BLQ: Below limit of quantification

** Indicates information supplied by the customer for which the laboratory has no control

Note: SAMPLE TESTED AS RECEIVED

Authorized Signatory

M. Ramesh

Manager

Test Report No. INCHE24106651108121329

Report Issue Date: 10 Oct 2024

| No. | Test Parameters | Unit | Test Results | Test Method | LOQ |
|-----|---------------------|-------|--------------|--------------------------|-----|
| 7 | Barometric Pressure | mm Hg | 742 | IS 11255 : Part 3 : 2008 | 10 |

Abbreviations: LOQ: Limit of Quantification, BLQ: Below limit of quantification

** Indicates information supplied by the customer for which the laboratory has no control

Note: SAMPLE TESTED AS RECEIVED

Authorized Signatory



M. Ramesh

Manager

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--- End of Report ---

Test Report No. INCHE24106651108121339

ULR No. : TC805724000048441F

Report Issue Date: 10 Oct 2024

TEST REPORT

| | | | |
|--|----------------|---------------------------------|---|
| Report Issued To: Tata Steel Ltd., Tinplate Division | | | |
| GOLMURI WORKS, TINPLATE, GOLMURI, , EAST SINGHBHUM,, JHARKHAND - Pin 831003, India | | | |
| Discipline : | Chemical | Group : | Atmospheric Pollution |
| BV Sample ID : | 1725000 | Sample receipt date : | 03 Oct 2024 |
| Sample Name** : | Stack Emission | Date of registration : | 03 Oct 2024 |
| | | Date of commencing of testing : | 04 Oct 2024 |
| | | Date of completion of testing : | 08 Oct 2024 |
| | | Other information** : | Sampling Time : 1.30 - 2.02 Stack Identification No : ECL Stack -02 Shape of Stack : Circular Stack connected to : ECL Emission due to : Cleaning of Steel Coils Stack height from ground Level (m) : 30 Height of Sampling Port from Ground Level (m) : 14 Stack diameter at sampling point (m) : 0.9 Material of Construction of Stack : MS Installed Capacity : NA Running Capacity : NA Fuel Used : NA Fuel Consumption : NA Platform Ladder Type & Condition : Permanent & Well Pollution Control Device : Scrubber |

| | | | |
|----------------------|-----------------------------|---------------------------------|------------------|
| Sample Information: | Sampling Done by Laboratory | | |
| Sampling procedure : | BVILCH/ENA/SOP-021 | Date of sampling / collection : | 28 Sep 2024 |
| Sampling location : | ECL Stack - 02 | Sampling / Collection done by : | Mr. Vishal Rajak |

| No. | Test Parameters | Unit | Test Results | Test Method | LOQ |
|-----|--|---------------------|--------------|--------------------------|-----|
| 1 | Oxides of Sulphur (SO ₂) | mg/Nm ³ | BLQ | IS 11255 : Part 2 : 1985 | 5 |
| 2 | Velocity of Flue Gas Discharge | m/s | 7.78 | IS 11255 : Part 3 : 2008 | 1.3 |
| 3 | Temperature of (flue) gas Emission | °K | 327 | IS 11255 : Part 3 : 2008 | 300 |
| 4 | Volume of Flue Gas Discharge | Nm ³ /Hr | 13645 | IS 11255 : Part 3 : 2008 | 65 |
| 5 | Particulate Matter (PM) | mg/Nm ³ | 8.5 | IS 11255 : Part 1 : 1985 | 5 |
| 6 | Oxides of Nitrogen | mg/Nm ³ | BLQ | BVILCH/ENA/SOP 019 | 2 |

Abbreviations: LOQ: Limit of Quantification, BLQ: Below limit of quantification

** Indicates information supplied by the customer for which the laboratory has no control

Note: SAMPLE TESTED AS RECEIVED

Authorized Signatory

M.Ramesh

Manager

Test Report No. INCHE24106651108121339

Report Issue Date: 10 Oct 2024

| No. | Test Parameters | Unit | Test Results | Test Method | LOQ |
|-----|---------------------|-------|--------------|--------------------------|-----|
| 7 | Barometric Pressure | mm Hg | 742 | IS 11255 : Part 3 : 2008 | 10 |

Abbreviations: LOQ: Limit of Quantification, BLQ: Below limit of quantification

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Authorized Signatory



M. Ramesh

Manager

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--- End of Report ---

Test Report No. INCHE24106651108121412

ULR No. : TC805724000048442F

Report Issue Date: 10 Oct 2024

TEST REPORT

| | | | |
|--|----------------|---------------------------------|---|
| Report Issued To: Tata Steel Ltd., Tinplate Division | | | |
| GOLMURI WORKS, TINPLATE, GOLMURI, , EAST SINGHBHUM,, JHARKHAND - Pin 831003, India | | | |
| Discipline : | Chemical | Group : | Atmospheric Pollution |
| BV Sample ID : | 1725001 | Sample receipt date : | 03 Oct 2024 |
| Sample Name** : | Stack Emission | Date of registration : | 03 Oct 2024 |
| | | Date of commencing of testing : | 04 Oct 2024 |
| | | Date of completion of testing : | 08 Oct 2024 |
| | | Other information** : | Sampling Time : 2.45 - 3.17 Stack Identification No : ECL Stack -01 Shape of Stack : Circular Stack connected to : ECL Emission due to : Cleaning of Steel Coils Stack height from ground Level (m) : 30 Height of Sampling Port from Ground Level (m) : 14 Stack diameter at sampling point (m) : 0.9 Material of Construction of Stack : MS Installed Capacity : NA Running Capacity : NA Fuel Used : NA Fuel Consumption : NA Platform Ladder Type & Condition : Permanent & Well Pollution Control Device : Scrubber |

| | | | |
|----------------------|-----------------------------|---------------------------------|------------------|
| Sample Information: | Sampling Done by Laboratory | | |
| Sampling procedure : | BVILCH/ENA/SOP-021 | Date of sampling / collection : | 28 Sep 2024 |
| Sampling location : | ECL Stack - 01 | Sampling / Collection done by : | Mr. Vishal Rajak |

| No. | Test Parameters | Unit | Test Results | Test Method | LOQ |
|-----|--|---------------------|--------------|--------------------------|-----|
| 1 | Oxides of Sulphur (SO ₂) | mg/Nm ³ | BLQ | IS 11255 : Part 2 : 1985 | 5 |
| 2 | Velocity of Flue Gas Discharge | m/s | 8.12 | IS 11255 : Part 3 : 2008 | 1.3 |
| 3 | Temperature of (flue) gas Emission | °K | 325 | IS 11255 : Part 3 : 2008 | 300 |
| 4 | Volume of Flue Gas Discharge | Nm ³ /Hr | 11212 | IS 11255 : Part 3 : 2008 | 65 |
| 5 | Particulate Matter (PM) | mg/Nm ³ | BLQ | IS 11255 : Part 1 : 1985 | 5 |
| 6 | Oxides of Nitrogen | mg/Nm ³ | BLQ | BVILCH/ENA/SOP 019 | 2 |

Abbreviations: LOQ: Limit of Quantification, BLQ: Below limit of quantification

** Indicates information supplied by the customer for which the laboratory has no control

Note: SAMPLE TESTED AS RECEIVED

Authorized Signatory

M. Ramesh
Manager

Test Report No. INCHE24106651108121412

Report Issue Date: 10 Oct 2024

| No. | Test Parameters | Unit | Test Results | Test Method | LOQ |
|-----|---------------------|-------|--------------|--------------------------|-----|
| 7 | Barometric Pressure | mm Hg | 742 | IS 11255 : Part 3 : 2008 | 10 |

Abbreviations: LOQ: Limit of Quantification, BLQ: Below limit of quantification

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Note: SAMPLE TESTED AS RECEIVED

Authorized Signatory



M. Ramesh

Manager

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— End of Report —

Test Report No. INCHE24106651108121421

ULR No. : TC805724000048443F

Report Issue Date: 10 Oct 2024

TEST REPORT

| | | | |
|--|------------------------|---------------------------------|--|
| Report Issued To: Tata Steel Ltd., Tinplate Division | | | |
| GOLMURI WORKS, TINPLATE, GOLMURI, , EAST SINGHBHUM,, JHARKHAND - Pin 831003, India | | | |
| Discipline : | Chemical | Group : | Atmospheric Pollution |
| BV Sample ID : | 1725002 | Sample receipt date : | 03 Oct 2024 |
| Sample Name** : | Stack Emission | Date of registration : | 03 Oct 2024 |
| | | Date of commencing of testing : | 04 Oct 2024 |
| | | Date of completion of testing : | 08 Oct 2024 |
| | | Other information** : | Sampling Time : 10.15 - 10.54 Stack Identification No : Temper Mill Stack -01 Shape of Stack : Circular Stack connected to : Temper Mill Emission due to : Temper Rolling of Steel Coils Stack height from ground Level (m) : 30 Height of Sampling Port from Ground Level (m): 24 Stack diameter at sampling point (m) : 1.4 Material of Construction of Stack : MS Installed Capacity : NA Running Capacity : NA Fuel Used : NA Fuel Consumption : NA Platform Ladder Type & Condition : Permanent & Well Pollution Control Device : FES / Dust Collector |
| Sample Information: | | Sampling Done by Laboratory | |
| Sampling procedure : | BVILCH/ENA/SOP-021 | Date of sampling / collection : | 29 Sep 2024 |
| Sampling location : | Temper Mill Stack - 01 | Sampling / Collection done by : | Mr. Vishal Rajak |

| No. | Test Parameters | Unit | Test Results | Test Method | LOQ |
|-----|--|---------------------|--------------|--------------------------|-----|
| 1 | Oxides of Sulphur (SO ₂) | mg/Nm ³ | BLQ | IS 11255 : Part 2 : 1985 | 5 |
| 2 | Velocity of Flue Gas Discharge | m/s | 5.97 | IS 11255 : Part 3 : 2008 | 1.3 |
| 3 | Temperature of (flue) gas Emission | °K | 320 | IS 11255 : Part 3 : 2008 | 300 |
| 4 | Volume of Flue Gas Discharge | Nm ³ /Hr | 29271 | IS 11255 : Part 3 : 2008 | 65 |
| 5 | Particulate Matter (PM) | mg/Nm ³ | 7.27 | IS 11255 : Part 1 : 1985 | 5 |
| 6 | Oxides of Nitrogen | mg/Nm ³ | BLQ | BVILCH/ENA/SOP 019 | 2 |

Abbreviations: LOQ: Limit of Quantification, BLQ: Below limit of quantification

** Indicates information supplied by the customer for which the laboratory has no control

Note: SAMPLE TESTED AS RECEIVED

Authorized Signatory



M.Ramesh

Manager

Test Report No. INCHE24106651108121421

Report Issue Date: 10 Oct 2024

| No. | Test Parameters | Unit | Test Results | Test Method | LOQ |
|-----|---------------------|-------|--------------|--------------------------|-----|
| 7 | Barometric Pressure | mm Hg | 743 | IS 11255 : Part 3 : 2008 | 10 |

Abbreviations: LOQ: Limit of Quantification, BLQ: Below limit of quantification

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Note: SAMPLE TESTED AS RECEIVED

Authorized Signatory



M. Ramesh

Manager

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--- End of Report ---

Test Report No. INCHE24106651108121431

ULR No. : TC805724000048444F

Report Issue Date: 10 Oct 2024

TEST REPORT

| | | | |
|--|----------------|---------------------------------|---|
| Report Issued To: Tata Steel Ltd., Tinplate Division | | | |
| GOLMURI WORKS, TINPLATE, GOLMURI, , EAST SINGHBHUM,, JHARKHAND - Pin 831003, India | | | |
| Discipline : | Chemical | Group : | Atmospheric Pollution |
| BV Sample ID : | 1725003 | Sample receipt date : | 03 Oct 2024 |
| Sample Name** : | Stack Emission | Date of registration : | 03 Oct 2024 |
| | | Date of commencing of testing : | 04 Oct 2024 |
| | | Date of completion of testing : | 08 Oct 2024 |
| | | Other information** : | Sampling Time : 11.36 - 12.18 |
| | | | Stack Identification No : Annealing Stack - 02 |
| | | | Shape of Stack : Circular |
| | | | Stack connected to : Annealing Furnace |
| | | | Emission due to : Burning of Propane |
| | | | Stack height from ground Level (m) : 30 |
| | | | Height of Sampling Port from Ground Level (m) : 22 |
| | | | Stack diameter at sampling point (m) : 1.7 |
| | | | Material of Construction of Stack : MS |
| | | | Installed Capacity : NA |
| | | | Running Capacity : NA |
| | | | Fuel Used : Propane Gas |
| | | | Fuel Consumption : 0.22mt/hr |
| | | | Platform Ladder Type & Condition : Permanent & Well |
| | | | Pollution Control Device : NA |

| | | | |
|----------------------|-----------------------------|---------------------------------|------------------|
| Sample Information: | Sampling Done by Laboratory | | |
| Sampling procedure : | BVILCH/ENA/SOP-021 | Date of sampling / collection : | 29 Sep 2024 |
| Sampling location : | Annealing Stack - 02 | Sampling / Collection done by : | Mr. Vishal Rajak |

| No. | Test Parameters | Unit | Test Results | Test Method | LOQ |
|-----|--------------------------------------|---------------------|--------------|--------------------------|-----|
| 1 | Oxides of Sulphur (SO ₂) | mg/Nm ³ | BLQ | IS 11255 : Part 2 : 1985 | 5 |
| 2 | Velocity of Flue Gas Discharge | m/s | 6.55 | IS 11255 : Part 3 : 2008 | 1.3 |
| 3 | Temperature of (flue) gas Emission | °K | 356 | IS 11255 : Part 3 : 2008 | 300 |
| 4 | Volume of Flue Gas Discharge | Nm ³ /Hr | 36235 | IS 11255 : Part 3 : 2008 | 65 |
| 5 | Particulate Matter (PM) | mg/Nm ³ | 7.4 | IS 11255 : Part 1 : 1985 | 5 |
| 6 | Oxides of Nitrogen | mg/Nm ³ | BLQ | BVILCH/ENA/SOP 019 | 2 |

Abbreviations: LOQ: Limit of Quantification, BLQ: Below limit of quantification

** Indicates information supplied by the customer for which the laboratory has no control

Note: SAMPLE TESTED AS RECEIVED

Authorized Signatory



M. Ramesh

Manager

Test Report No. INCHE24106651108121431

Report Issue Date: 10 Oct 2024

| No. | Test Parameters | Unit | Test Results | Test Method | LOQ |
|-----|---------------------|-------|--------------|--------------------------|-----|
| 7 | Barometric Pressure | mm Hg | 743 | IS 11255 : Part 3 : 2008 | 10 |

Abbreviations: LOQ: Limit of Quantification, BLQ: Below limit of quantification

** Indicates information supplied by the customer for which the laboratory has no control

Note: SAMPLE TESTED AS RECEIVED

Authorized Signatory



M. Ramesh

Manager

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--- End of Report ---



Test Report No. INCHE24106651108121448

ULR No. : TC805724000048446F

Report Issue Date: 10 Oct 2024

TEST REPORT

| | | | |
|--|----------------|---------------------------------|--|
| Report Issued To: Tata Steel Ltd., Tinplate Division | | | |
| GOLMURI WORKS, TINPLATE, GOLMURI, , EAST SINGHBHUM,, JHARKHAND - Pin 831003, India | | | |
| Discipline : | Chemical | Group : | Atmospheric Pollution |
| BV Sample ID : | 1725005 | Sample receipt date : | 07 Oct 2024 |
| Sample Name** : | Stack Emission | Date of registration : | 07 Oct 2024 |
| | | Date of commencing of testing : | 07 Oct 2024 |
| | | Date of completion of testing : | 08 Oct 2024 |
| | | Other information** : | Sampling Time : 10.20 - 10.54 Stack Identification No : Boiler Stack -02 Shape of Stack : Circular Stack connected to : Boiler Emission due to : Process Activity Stack height from ground Level (m) : 45 Stack diameter at sampling point (m) : 1.2 Material of Construction of Stack : MS Installed Capacity : NA Running Capacity : NA Fuel Used : Coal Fuel Consumption : 2.4 MT/Hr Platform Ladder Type & Condition : Permanent & Well Pollution Control Device : ESP |

| | | | |
|----------------------|-----------------------------|---------------------------------|------------------|
| Sample Information: | Sampling Done by Laboratory | | |
| Sampling procedure : | BVILCH/ENA/SOP-021 | Date of sampling / collection : | 30 Sep 2024 |
| Sampling location : | Boiler Stack - 02 | Sampling / Collection done by : | Mr. Vishal Rajak |

| No. | Test Parameters | Unit | Test Results | Test Method | LOQ |
|-----|--------------------------------------|---------------------|--------------|--------------------------|-----|
| 1 | Oxides of Sulphur (SO ₂) | mg/Nm ³ | 314.0 | IS 11255 : Part 2 : 1985 | 5 |
| 2 | Velocity of Flue Gas Discharge | m/s | 9.65 | IS 11255 : Part 3 : 2008 | 1.3 |
| 3 | Temperature of (flue) gas Emission | °K | 355 | IS 11255 : Part 3 : 2008 | 300 |
| 4 | Volume of Flue Gas Discharge | Nm ³ /Hr | 27654 | IS 11255 : Part 3 : 2008 | 65 |
| 5 | Particulate Matter (PM) | mg/Nm ³ | 22.8 | IS 11255 : Part 1 : 1985 | 5 |
| 6 | Oxides of Nitrogen | mg/Nm ³ | 179.0 | BVILCH/ENA/SOP 019 | 2 |

Abbreviations: LOQ: Limit of Quantification, BLQ: Below limit of quantification

** Indicates information supplied by the customer for which the laboratory has no control

Note: SAMPLE TESTED AS RECEIVED

Authorized Signatory

M. Ramesh

Manager

Test Report No. INCHE24106651108121448

Report Issue Date: 10 Oct 2024

| No. | Test Parameters | Unit | Test Results | Test Method | LOQ |
|-----|---------------------|-------|--------------|--------------------------|-----|
| 7 | Barometric Pressure | mm Hg | 738 | IS 11255 : Part 3 : 2008 | 10 |

Abbreviations: LOQ: Limit of Quantification, BLQ: Below limit of quantification

** Indicates information supplied by the customer for which the laboratory has no control

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M. Ramesh

Manager

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--- End of Report ---



Test Report No. INCHE24106651108121440

ULR No. : TC805724000048445F

Report Issue Date: 10 Oct 2024

TEST REPORT

| | | | |
|--|----------------|---------------------------------|---|
| Report Issued To: Tata Steel Ltd., Tinplate Division | | | |
| GOLMURI WORKS, TINPLATE, GOLMURI, , EAST SINGHBHUM,, JHARKHAND - Pin 831003, India | | | |
| Discipline : | Chemical | Group : | Atmospheric Pollution |
| BV Sample ID : | 1725004 | Sample receipt date : | 07 Oct 2024 |
| Sample Name** : | Stack Emission | Date of registration : | 07 Oct 2024 |
| | | Date of commencing of testing : | 07 Oct 2024 |
| | | Date of completion of testing : | 08 Oct 2024 |
| | | Other information** : | Sampling Time : 02.10 - 02.42 Stack Identification No : Annealing Stack -01 Shape of Stack : Circular Stack connected to : Annealing Furnace Emission due to : Process Activity Stack height from ground Level (m) : 30 Stack diameter at sampling point (m) : 0.85 Material of Construction of Stack : MS Installed Capacity : NA Running Capacity : NA Fuel Used : Propane Gas Fuel Consumption : 0.22 MT/Hr Platform Ladder Type & Condition : Permanent & Well Pollution Control Device : NA |

| | | | |
|----------------------|-----------------------------|---------------------------------|------------------|
| Sample Information: | Sampling Done by Laboratory | | |
| Sampling procedure : | BVILCH/ENA/SOP-021 | Date of sampling / collection : | 29 Sep 2024 |
| Sampling location : | Annealing Stack - 01 | Sampling / Collection done by : | Mr. Vishal Rajak |

| No. | Test Parameters | Unit | Test Results | Test Method | LOQ |
|-----|--------------------------------------|---------------------|--------------|--------------------------|-----|
| 1 | Oxides of Sulphur (SO ₂) | mg/Nm ³ | 7 | IS 11255 : Part 2 : 1985 | 5 |
| 2 | Velocity of Flue Gas Discharge | m/s | 7.8 | IS 11255 : Part 3 : 2008 | 1.3 |
| 3 | Temperature of (flue) gas Emission | °K | 338 | IS 11255 : Part 3 : 2008 | 300 |
| 4 | Volume of Flue Gas Discharge | Nm ³ /Hr | 12543 | IS 11255 : Part 3 : 2008 | 65 |
| 5 | Particulate Matter (PM) | mg/Nm ³ | 6 | IS 11255 : Part 1 : 1985 | 5 |
| 6 | Oxides of Nitrogen | mg/Nm ³ | 22 | BVILCH/ENA/SOP 019 | 2 |

Abbreviations: LOQ: Limit of Quantification, BLQ: Below limit of quantification
** Indicates information supplied by the customer for which the laboratory has no control
Note: SAMPLE TESTED AS RECEIVED

Authorized Signatory

M. Ramesh
Manager

Test Report No. INCHE24106651108121544

ULR No. : TC805724000048447F

Report Issue Date: 10 Oct 2024

TEST REPORT

| | | | |
|--|----------------|---------------------------------|--|
| Report Issued To: Tata Steel Ltd., Tinplate Division | | | |
| GOLMURI WORKS, TINPLATE, GOLMURI, , EAST SINGHBHUM,, JHARKHAND - Pin 831003, India | | | |
| Discipline : | Chemical | Group : | Atmospheric Pollution |
| BV Sample ID : | 1725006 | Sample receipt date : | 03 Oct 2024 |
| Sample Name** : | Stack Emission | Date of registration : | 03 Oct 2024 |
| | | Date of commencing of testing : | 04 Oct 2024 |
| | | Date of completion of testing : | 08 Oct 2024 |
| | | Other information** : | Sampling Time : 11.30 - 12.04 |
| | | | Stack Identification No : Boiler Stack -01 |
| | | | Shape of Stack : Circular |
| | | | Stack connected to : Boiler |
| | | | Emission due to : Combustion of Coal |
| | | | Stack |
| | | | height from ground Level (m) : 45 |
| | | | Height of Sampling Port from Ground |
| | | | Level (m) : 25 |
| | | | Stack diameter at sampling point (m) : 1.4 |
| | | | Material of Construction of Stack : MS |
| | | | Installed Capacity : NA |
| | | | Running Capacity : NA |
| | | | Fuel Used : Coal |
| | | | Fuel Consumption : 2.9 MT/Hr |
| | | | Platform Ladder Type & Condition : |
| | | | Permanent & Well |
| | | | Pollution Control Device : ESP |

| | | | |
|----------------------|-----------------------------|---------------------------------|------------------|
| Sample Information: | Sampling Done by Laboratory | | |
| Sampling procedure : | BVILCH/ENA/SOP-021 | Date of sampling / collection : | 30 Sep 2024 |
| Sampling location : | Boiler Stack - 01 | Sampling / Collection done by : | Mr. Vishal Rajak |

| No. | Test Parameters | Unit | Test Results | Test Method | LOQ |
|-----|--------------------------------------|---------------------|--------------|--------------------------|-----|
| 1 | Oxides of Sulphur (SO ₂) | mg/Nm ³ | 322.0 | IS 11255 : Part 2 : 1985 | 5 |
| 2 | Velocity of Flue Gas Discharge | m/s | 7.9 | IS 11255 : Part 3 : 2008 | 1.3 |
| 3 | Temperature of (flue) gas Emission | °K | 369 | IS 11255 : Part 3 : 2008 | 300 |
| 4 | Volume of Flue Gas Discharge | Nm ³ /Hr | 30346 | IS 11255 : Part 3 : 2008 | 65 |
| 5 | Particulate Matter (PM) | mg/Nm ³ | 32.6 | IS 11255 : Part 1 : 1985 | 5 |
| 6 | Oxides of Nitrogen | mg/Nm ³ | 123 | BVILCH/ENA/SOP 019 | 2 |

Abbreviations: LOQ: Limit of Quantification, BLQ: Below limit of quantification

** Indicates information supplied by the customer for which the laboratory has no control

Note: SAMPLE TESTED AS RECEIVED

Authorized Signatory



M. Ramesh

Manager



Test Report No. INCHE24106631010102137

ULR No. : TC805724000046178F

Report Issue Date: 10 Oct 2024

TEST REPORT

| Report Issued To: Tata Steel Ltd., Tinplate Division | | | | | |
|--|--|-----------------------------|---------------------------------|--------------------------|-----------------------|
| GOLMURI WORKS, TINPLATE, GOLMURI, , EAST SINGHBHUM,, JHARKHAND - Pin 831003, India | | | | | |
| Discipline : | | Chemical | Group : | | Atmospheric Pollution |
| BV Sample ID : | | 1724977 | Sample receipt date : | | 04 Oct 2024 |
| Sample Name** : | | Fugitive Air | Date of registration : | | 03 Oct 2024 |
| | | | Date of commencing of testing : | | 05 Oct 2024 |
| | | | Date of completion of testing : | | 05 Oct 2024 |
| Sample Information: | | Sampling Done by Laboratory | | | |
| Sampling procedure : | | BVILCH/ENA/SOP-021 | Date of sampling / collection : | | 30 Sep 2024 |
| Sampling location : | | Boiler Coal Storage Yard | Sampling / Collection done by : | | Mr. Vishal Rajak |
| No. | Test Parameters | Unit | Test Results | Test Method | LOQ |
| 1 | Nitrogen Dioxide (NO ₂) | µg/m ³ | 36.1 | IS 5182 : Part 6 : 2006 | 4 |
| 2 | Respirable Suspended Particulate matter less than 10µm or PM ₁₀ | µg/m ³ | 298.3 | IS 5182 : Part 23 : 2006 | 5 |
| 3 | Sulphur Dioxide (SO ₂) | µg/m ³ | 28.8 | IS 5182 : Part 2 : 2001 | 4 |

Abbreviations: LOQ: Limit of Quantification, BLQ: Below limit of quantification

** Indicates information supplied by the customer for which the laboratory has no control

Note: SAMPLE TESTED AS RECEIVED

Authorized Signatory

M. Ramesh

Manager

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--- End of Report ---





Test Report No. INCHE24106631010102143

ULR No. : TC805724000046179F

Report Issue Date: 10 Oct 2024

TEST REPORT

| | | | |
|--|--------------|---------------------------------|-----------------------|
| Report Issued To: Tata Steel Ltd., Tinplate Division | | | |
| GOLMURI WORKS, TINPLATE, GOLMURI, , EAST SINGHBHUM,, JHARKHAND - Pin 831003, India | | | |
| Discipline : | Chemical | Group : | Atmospheric Pollution |
| BV Sample ID : | 1724978 | Sample receipt date : | 04 Oct 2024 |
| Sample Name** : | Fugitive Air | Date of registration : | 03 Oct 2024 |
| | | Date of commencing of testing : | 05 Oct 2024 |
| | | Date of completion of testing : | 05 Oct 2024 |

| | | | |
|----------------------|-----------------------------|---------------------------------|------------------|
| Sample Information: | Sampling Done by Laboratory | | |
| Sampling procedure : | BVILCH/ENA/SOP-021 | Date of sampling / collection : | 30 Sep 2024 |
| Sampling location : | Secondary Product Area | Sampling / Collection done by : | Mr. Vishal Rajak |

| No. | Test Parameters | Unit | Test Results | Test Method | LOQ |
|-----|--|-------------------|--------------|--------------------------|-----|
| 1 | Nitrogen Dioxide (NO ₂) | µg/m ³ | 27.8 | IS 5182 : Part 6 : 2006 | 4 |
| 2 | Respirable Suspended Particulate matter less than 10µm or PM ₁₀ | µg/m ³ | 183.0 | IS 5182 : Part 23 : 2006 | 5 |
| 3 | Sulphur Dioxide (SO ₂) | µg/m ³ | 30.8 | IS 5182 : Part 2 : 2001 | 4 |

Abbreviations: LOQ: Limit of Quantification, BLQ: Below limit of quantification

** Indicates information supplied by the customer for which the laboratory has no control

Note: SAMPLE TESTED AS RECEIVED

Authorized Signatory

M. Ramesh

Manager

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--- End of Report ---



TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/2017 | Report Release Date : 03.05.2024 |
| Work Order No. : 3000169663/T01 | Work Order Date : 29.02.2024 |
| ULR No. : TC135872400000002F | |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|---|----------------------|-------------------------|
| Customer Name | : Tata Steel Limited, Tinplate Division (Golmuri Works) | Sample Ref. No. | : ELES/RNC/2024/GW/1745 |
| Address | : Golmuri, Jamshedpur, Dist- East Singhbhum, Jharkhand, Pin- 831003 | Sampling Date | : 22.03.2024 |
| Plant Status | : Operational | Sample Received Date | : 23.03.2024 |
| Period of Analysis | : 23.03.2024 to 05.04.2024 | Type of Sample | : Ground Water |
| | | Source of Sample | : Well |
| | | Location of Sample | : Kadani Road |
| | | Sampling Procedure | : ELES/DOC/SMPL/01 |
| | | Sampling Done By | : ELES Pvt.Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| Discipline : Chemical | | Group : Water | | Regulatory Limit as per IS 10500:2012 | |
|--|-------|--|-----------------|---------------------------------------|-------------------|
| Parameter | Unit | Test Protocol | Result | Acceptable Limit | Permissible Limit |
| pH (at 25.2°C) | - | APHA 24 th Ed.2023, 4500-H ⁺ | 6.75 | 6.5-8.5 | No Relaxation |
| Conductivity (at 25.2°C) | µS/cm | APHA 24 th Ed.2023, 2510-B | 742 | -- | -- |
| Colour | Hazen | APHA 24 th Ed.2023, 2120B&D | 14.0 | 5 | 15 |
| Turbidity | NTU | APHA 24 th Ed.2023, 2130B | 11.3 | 1.0 | 5.0 |
| Total Suspended Solids (TSS) | mg/L | APHA 24 th Ed.2023, 2540B,C&D | 46.2 | -- | -- |
| Total Dissolved Solids (TDS) | mg/L | APHA 24 th Ed.2023, 2540B,C&D | 526 | 500 | 2000 |
| Chloride (as Cl) | mg/L | APHA 24 th Ed.2023, 4500 Cl-B | 33.5 | 250 | 1000 |
| Total Alkalinity (as CaCO ₃) | mg/L | IS 3025 (Part-23): 2023 | 183 | 200 | 600 |
| Sulphate (as SO ₄) | mg/L | APHA 24 th Ed.2023, 4500 SO ₄ ²⁻ -E | 61.5 | 200 | 400 |
| Nitrate(as NO ₃) | mg/L | APHA 24 th Ed.2023, 4500 NO ₃ -B | 17.7 | 45 | No Relaxation |
| Cyanide (as CN) | mg/L | APHA 24 th Ed.2023, 4500 CN-E | BDL (DL: 0.012) | 0.05 | No Relaxation |
| Fluoride (as F) | mg/L | APHA 24 th Ed.2023, 4500 F-D | 0.163 | 1.0 | 1.5 |

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/2017 | Report Release Date : 03.05.2024 |
| Work Order No. : 3000169663/T01 | Work Order Date : 29.02.2024 |
| ULR No. : TC135872400000002F | |

| Discipline : Chemical | | Group : Water | | Regulatory Limit as per IS 10500:2012 | |
|-----------------------|------|---|--------------------|--|-------------------|
| Parameter | Unit | Test Protocol | Result | Acceptable Limit | Permissible Limit |
| Oil & Grease | mg/L | APHA 24 th Ed.2023, 5520B | BDL (DL: 0.1) | -- | -- |
| Sodium (as Na) | mg/L | APHA 24 th Ed.2023, 3500Na-B | 13.0 | -- | -- |
| Potassium (as K) | mg/L | APHA 24 th Ed.2023, 3500K-B | 3.6 | -- | -- |
| Phosphate (as P) | mg/L | APHA 24 th Ed.2023, 4500-P D | BDL (DL: 0.5) | -- | -- |
| Calcium (as Ca) | mg/L | IS 3025 (Part-40): 2019 | 55.4 | 75 | 200 |
| Discipline : Chemical | | Group : Residues in Water | | | |
| Arsenic (as As) | mg/L | IS 3025 (Part-37): 2022 | BDL (DL: 0.005) | 0.01 | 0.01 |
| Cadmium (as Cd) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.003) | 0.003 | No Relaxation |
| Total Chromium(as Cr) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.03) | 0.05 | No Relaxation |
| Copper (as Cu) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.03) | 0.05 | 1.5 |
| Iron (as Fe) | mg/L | APHA 24 th Ed.2023; 3111B | 0.317 | 1.0 | 1.0 |
| Lead (as Pb) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.01) | 0.01 | No Relaxation |
| Manganese (as Mn) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.05) | 0.1 | 0.3 |
| Mercury (as Hg) | mg/L | IS 3025 (Part-48): 2019 | BDL (DL: 0.001) | 0.001 | No Relaxation |
| Nickel (as Ni) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.01) | 0.02 | No Relaxation |
| Zinc (as Zn) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.1) | 5 | 15 |
| Magnesium (as Mg) | mg/L | IS 3025(Part-46): 2023 | 21.1 | 30 | 100 |



ENVIRONMENTAL LABORATORIES &

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Email: info@elespl.co.in, eles.ranchi@gmail.com
Phone no.: 0651-2290103
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TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/2017 | Report Release Date : 03.05.2024 |
| Work Order No. : 3000169663/T01 | Work Order Date : 29.02.2024 |
| ULR No. : TC135872400000002F | |

| Pesticides | | | | |
|---------------------|------|----------------------|--------------------|-------|
| Parameter | Unit | Test Protocol | Result | Limit |
| Alachlor | µg/L | ELES/GC/SOP/01: 2023 | BDL (DL: 0.5) | 20 |
| Atrazine | µg/L | ELES/GC/SOP/01: 2023 | BDL (DL: 0.5) | 2.0 |
| Butachlor | µg/L | ELES/GC/SOP/01: 2023 | BDL (DL: 0.5) | 125 |
| Chlorpyrifos | µg/L | ELES/GC/SOP/01: 2023 | BDL (DL: 0.5) | 30 |
| Ethion | µg/L | ELES/GC/SOP/01: 2023 | BDL (DL: 0.5) | 3.0 |
| Malathion | µg/L | ELES/GC/SOP/01: 2023 | BDL (DL: 0.5) | 190 |
| Methyl parathion | µg/L | ELES/GC/SOP/01: 2023 | BDL (DL: 0.1) | 0.30 |
| Monocrotophos | µg/L | ELES/GC/SOP/01: 2023 | BDL (DL: 0.5) | 1.0 |
| Phorate | µg/L | ELES/GC/SOP/01: 2023 | BDL (DL: 0.5) | 2.0 |
| Phorate Sulphone | µg/L | ELES/GC/SOP/01: 2023 | BDL (DL: 0.5) | -- |
| Dieldrin | µg/L | ELES/GC/SOP/02: 2023 | BDL (DL: 0.01) | 0.03 |
| Alpha HCH | µg/L | ELES/GC/SOP/02: 2023 | BDL (DL: 0.006) | 0.01 |
| Beta HCH | µg/L | ELES/GC/SOP/02: 2023 | BDL (DL: 0.02) | 0.04 |
| Delta HCH | µg/L | ELES/GC/SOP/02: 2023 | BDL (DL: 0.02) | 0.04 |
| Gamma HCH (Lindane) | µg/L | ELES/GC/SOP/02: 2023 | BDL (DL: 0.02) | 2.0 |

Page 3 of 4

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"Save Environment, Save Future"

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/2017 | Report Release Date : 03.05.2024 |
| Work Order No. : 3000169663/T01 | Work Order Date : 29.02.2024 |
| ULR No. : TC135872400000002F | |

| Pesticides | | | | |
|--|------|----------------------|----------------|-------|
| Parameter | Unit | Test Protocol | Result | Limit |
| Endosulfan (alpha, beta and sulphate) | µg/L | ELES/GC/SOP/02: 2023 | BDL (DL: 0.05) | 0.40 |
| DDT(o,p and p,p-isomers of DDT,DDEand DDD) | µg/L | ELES/GC/SOP/02: 2023 | BDL (DL: 0.05) | 1.0 |

Remarks: I. pH and RFC done at Lab.



Reviewed by
AKASH KUMAR
Quality Manager
ELES PVT. LTD.

****End of Report****



Authorised Signatory
Rekha Saxena
B. Sc, M. Sc. (Botany)
Director
ELES Pvt. Ltd.

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/2018 | Report Release Date : 03.05.2024 |
| Work Order No. : 3000169663/T01 | Work Order Date : 29.02.2024 |
| ULR No. : TC135872400000003F | |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|---|----------------------|-------------------------|
| Customer Name | : Tata Steel Limited, Tinplate Division (Golmuri Works) | Sample Ref. No. | : ELES/RNC/2024/GW/1746 |
| Address | : Golmuri, Jamshedpur, Dist- East Singhbhum, Jharkhand, Pin- 831003 | Sampling Date | : 22.03.2024 |
| Plant Status | : Operational | Sample Received Date | : 23.03.2024 |
| Period of Analysis | : 23.03.2024 to 05.04.2024 | Type of Sample | : Ground Water |
| | | Source of Sample | : Borewell |
| | | Location of Sample | : Propane Yard |
| | | Sampling Procedure | : ELES/DOC/SMPL/01 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| Discipline : Chemical | | Group : Water | | Regulatory Limit as per IS 10500:2012 | |
|--|-------|--|-----------------|---------------------------------------|-------------------|
| Parameter | Unit | Test Protocol | Result | Acceptable Limit | Permissible Limit |
| pH (at 25.2°C) | - | APHA 24 th Ed.2023, 4500-H ⁺ | 6.88 | 6.5-8.5 | No Relaxation |
| Conductivity (at 25.2°C) | µS/cm | APHA 24 th Ed.2023, 2510-B | 594 | -- | -- |
| Colour | Hazen | APHA 24 th Ed.2023, 2120B&D | 8.0 | 5 | 15 |
| Turbidity | NTU | APHA 24 th Ed.2023, 2130B | 9.3 | 1.0 | 5.0 |
| Total Suspended Solids (TSS) | mg/L | APHA 24 th Ed.2023, 2540B,C&D | 22.4 | -- | -- |
| Total Dissolved Solids (TDS) | mg/L | APHA 24 th Ed.2023, 2540B,C&D | 430 | 500 | 2000 |
| Chloride (as Cl) | mg/L | APHA 24 th Ed.2023, 4500 Cl-B | 19.7 | 250 | 1000 |
| Total Alkalinity (as CaCO ₃) | mg/L | IS 3025 (Part-23): 2023 | 94 | 200 | 600 |
| Sulphate (as SO ₄) | mg/L | APHA 24 th Ed.2023, 4500 SO ₄ ²⁻ -E | 114 | 200 | 400 |
| Nitrate(as NO ₃) | mg/L | APHA 24 th Ed.2023, 4500 NO ₃ -B | 14.4 | 45 | No Relaxation |
| Cyanide (as CN) | mg/L | APHA 24 th Ed.2023, 4500 CN-E | BDL (DL: 0.012) | 0.05 | No Relaxation |
| Fluoride (as F) | mg/L | APHA 24 th Ed.2023, 4500 F-D | 0.145 | 1.0 | 1.5 |

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/2018 | Report Release Date : 03.05.2024 |
| Work Order No. : 3000169663/T01 | Work Order Date : 29.02.2024 |
| ULR No. : TC135872400000003F | |

| Discipline : Chemical | | Group : Water | | Regulatory Limit as per IS 10500:2012 | |
|-----------------------|------|---|--------------------|--|-------------------|
| Parameter | Unit | Test Protocol | Result | Acceptable Limit | Permissible Limit |
| Oil & Grease | mg/L | APHA 24 th Ed.2023, 5520B | BDL (DL: 0.1) | -- | -- |
| Sodium (as Na) | mg/L | APHA 24 th Ed.2023, 3500Na-B | 7.6 | -- | -- |
| Potassium (as K) | mg/L | APHA 24 th Ed.2023, 3500K-B | 2.1 | -- | -- |
| Phosphate (as P) | mg/L | APHA 24 th Ed.2023, 4500-P D | BDL (DL: 0.5) | -- | -- |
| Calcium (as Ca) | mg/L | IS 3025 (Part-40): 2019 | 38 | 75 | 200 |
| Discipline : Chemical | | Group : Residues in Water | | | |
| Arsenic (as As) | mg/L | IS 3025 (Part-37): 2022 | BDL (DL: 0.005) | 0.01 | 0.01 |
| Cadmium (as Cd) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.003) | 0.003 | No Relaxation |
| Total Chromium(as Cr) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.03) | 0.05 | No Relaxation |
| Copper (as Cu) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.03) | 0.05 | 1.5 |
| Iron (as Fe) | mg/L | APHA 24 th Ed.2023; 3111B | 0.280 | 1.0 | 1.0 |
| Lead (as Pb) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.01) | 0.01 | No Relaxation |
| Manganese (as Mn) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.05) | 0.1 | 0.3 |
| Mercury (as Hg) | mg/L | IS 3025 (Part-48): 2019 | BDL (DL: 0.001) | 0.001 | No Relaxation |
| Nickel (as Ni) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.01) | 0.02 | No Relaxation |
| Zinc (as Zn) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.1) | 5 | 15 |
| Magnesium (as Mg) | mg/L | IS 3025(Part-46): 2023 | 21.1 | 30 | 100 |

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/2018 | Report Release Date : 03.05.2024 |
| Work Order No. : 3000169663/T01 | Work Order Date : 29.02.2024 |
| ULR No. : TC135872400000003F | |

| Pesticides | | | | |
|---------------------|------|----------------------|--------------------|-------|
| Parameter | Unit | Test Protocol | Result | Limit |
| Alachlor | µg/L | ELES/GC/SOP/01: 2023 | BDL (DL: 0.5) | 20 |
| Atrazine | µg/L | ELES/GC/SOP/01: 2023 | BDL (DL: 0.5) | 2.0 |
| Butachlor | µg/L | ELES/GC/SOP/01: 2023 | BDL (DL: 0.5) | 125 |
| Chlorpyrifos | µg/L | ELES/GC/SOP/01: 2023 | BDL (DL: 0.5) | 30 |
| Ethion | µg/L | ELES/GC/SOP/01: 2023 | BDL (DL: 0.5) | 3.0 |
| Malathion | µg/L | ELES/GC/SOP/01: 2023 | BDL (DL: 0.5) | 190 |
| Methyl parathion | µg/L | ELES/GC/SOP/01: 2023 | BDL (DL: 0.1) | 0.30 |
| Monocrotophos | µg/L | ELES/GC/SOP/01: 2023 | BDL (DL: 0.5) | 1.0 |
| Phorate | µg/L | ELES/GC/SOP/01: 2023 | BDL (DL: 0.5) | 2.0 |
| Phorate Sulphone | µg/L | ELES/GC/SOP/01: 2023 | BDL (DL: 0.5) | -- |
| Dieldrin | µg/L | ELES/GC/SOP/02: 2023 | BDL (DL: 0.01) | 0.03 |
| Alpha HCH | µg/L | ELES/GC/SOP/02: 2023 | BDL (DL: 0.006) | 0.01 |
| Beta HCH | µg/L | ELES/GC/SOP/02: 2023 | BDL (DL: 0.02) | 0.04 |
| Delta HCH | µg/L | ELES/GC/SOP/02: 2023 | BDL (DL: 0.02) | 0.04 |
| Gamma HCH (Lindane) | µg/L | ELES/GC/SOP/02: 2023 | BDL (DL: 0.02) | 2.0 |

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/2018 | Report Release Date : 03.05.2024 |
| Work Order No. : 3000169663/T01 | Work Order Date : 29.02.2024 |
| ULR No. : TC135872400000003F | |

| Pesticides | | | | |
|--|------|----------------------|----------------|-------|
| Parameter | Unit | Test Protocol | Result | Limit |
| Endosulfan (alpha, beta and sulphate) | µg/L | ELES/GC/SOP/02: 2023 | BDL (DL: 0.05) | 0.40 |
| DDT(o,p and p,p-isomers of DDT,DDEand DDD) | µg/L | ELES/GC/SOP/02: 2023 | BDL (DL: 0.05) | 1.0 |

Remarks: I. pH and RFC done at Lab.



Reviewed by
AKASH KUMAR
Quality Manager
ELES PVT. LTD.

****End of Report****



Authorised Signatory
Rekha Saxena
B. Sc, M. Sc. (Botany)
Director
ELES Pvt. Ltd.

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/6181 | Report Release Date : 25.10.2024 |
| Work Order No. : 3000175731/T01 | Work Order Date : 16.09.2024 |
| ULR No. : TC135872400004072F | |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|---|----------------------|--|
| Customer Name | : Tata Steel Limited, Tinplate Division (Golmuri Works) | Sample Ref. No. | : ELES/RNC/2024/GW/7176 |
| Address | : Golmuri, Jamshedpur, Dist- East Singhbhum, Jharkhand, Pin- 831003 | Sampling Date | : 16.10.2024 |
| | | Sample Received Date | : 17.10.2024 |
| Plant Status | : Operational | Type of Sample | : Ground Water |
| | | Source of Sample | : Well |
| Period of Analysis | : 17.10.2024 to 25.10.2024 | Location of Sample | : Beside TCIL Boundary, Near Mandir, Kadani Road |
| | | Sampling Procedure | : ELES/DOC/SMPL/01 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| Discipline : Chemical | | Group : Water | | Regulatory Limit as per IS 10500:2012 | |
|--|-------|--|---------------|---------------------------------------|-------------------|
| Parameter | Unit | Test Protocol | Result | Acceptable Limit | Permissible Limit |
| pH (at 24.9 °C) | - | APHA 24 th Ed.2023, 4500-H ⁺ | 6.75 | 6.5-8.5 | No Relaxation |
| Conductivity (at 24.9 °C) | µS/cm | APHA 24 th Ed.2023, 2510-B | 742 | -- | -- |
| Colour | Hazen | APHA 24 th Ed.2023, 2120B&D | 2.9 | 5.0 | 15 |
| Turbidity | NTU | APHA 24 th Ed.2023, 2130B | 0.48 | 1.0 | 5.0 |
| Total Dissolved Solids (TDS) | mg/L | APHA 24 th Ed.2023, 2540B,C&D | 477 | 500 | 2000 |
| Total Suspended Solids (TSS) | mg/L | APHA 24 th Ed.2023, 2540B,C&D | BDL (DL: 0.1) | -- | -- |
| Chloride (as Cl) | mg/L | APHA 24 th Ed.2023, 4500 Cl-B | 45.6 | 250 | 1000 |
| Fluoride (as F) | mg/L | APHA 24 th Ed.2023, 4500 F-D | BDL (DL: 0.1) | 1.0 | 1.5 |
| Total Alkalinity (as CaCO ₃) | mg/L | IS 3025 (Part-23): 2023 | 208 | 200 | 600 |
| Sulphate (as SO ₄) | mg/L | APHA 24 th Ed.2023, 4500 SO ₄ ²⁻ -E | 63.5 | 200 | 400 |
| Nitrate (as NO ₃) | mg/L | APHA 24 th Ed.2023, 4500 NO ₃ -B | 29.4 | 45 | No Relaxation |
| Phosphate (as P) | mg/L | APHA 24 th Ed.2023, 4500-P D | 0.85 | -- | -- |

Page 1 of 4

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TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/6181 | Report Release Date : 25.10.2024 |
| Work Order No. : 3000175731/T01 | Work Order Date : 16.09.2024 |
| ULR No. : TC135872400004072F | |

| Discipline : Chemical | | Group : Water | | Regulatory Limit as per IS 10500:2012 | |
|------------------------|------|--|--------------------|--|-------------------|
| Parameter | Unit | Test Protocol | Result | Acceptable Limit | Permissible Limit |
| Oil & Grease | mg/L | APHA 24 th Ed.2023, 5520B | BDL (DL: 0.1) | -- | -- |
| Sodium (as Na) | mg/L | APHA 24 th Ed.2023, 3500Na-B | 17.7 | -- | -- |
| Potassium (as K) | mg/L | APHA 24 th Ed.2023, 3500K-B | 5.0 | -- | -- |
| Calcium (as Ca) | mg/L | IS 3025 (Part-40): 2019 | 57.6 | 75 | 200 |
| Discipline : Chemical | | Group : Residues in Water | | | |
| Arsenic (as As) | mg/L | IS 3025 (Part-37): 2022 | BDL (DL: 0.005) | 0.01 | No Relaxation |
| Cadmium (as Cd) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.003) | 0.003 | No Relaxation |
| Total Chromium (as Cr) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.03) | 0.05 | No Relaxation |
| Copper (as Cu) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.03) | 0.05 | 1.5 |
| Cyanide (as CN) | mg/L | APHA 24 th Ed.2023, 4500 CN-E | BDL (DL: 0.012) | 0.05 | No Relaxation |
| Iron (as Fe) | mg/L | APHA 24 th Ed.2023; 3111B | 0.080 | 1.0 | No Relaxation |
| Lead (as Pb) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.01) | 0.01 | No Relaxation |
| Manganese (as Mn) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.05) | 0.1 | 0.3 |
| Mercury (as Hg) | mg/L | IS 3025 (Part-48): 2019 | BDL (DL: 0.001) | 0.001 | No Relaxation |
| Magnesium (as Mg) | mg/L | IS 3025(Part-46): 2023 | 20.6 | 30 | 100 |
| Nickel (as Ni) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.01) | 0.02 | No Relaxation |
| Zinc (as Zn) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.1) | 5.0 | 15 |

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/6181 | Report Release Date : 25.10.2024 |
| Work Order No. : 3000175731/T01 | Work Order Date : 16.09.2024 |
| ULR No. : TC135872400004072F | |

| Discipline : Chemical | | | Group : Residues in Water | |
|-----------------------|------|----------------------|---------------------------|-------|
| Parameter | Unit | Test Protocol | Result | Limit |
| Pesticides | | | | |
| Alachlor | µg/L | ELES/GC/SOP/01: 2023 | BDL (DL: 0.5) | 20 |
| Atrazine | µg/L | ELES/GC/SOP/01: 2023 | BDL (DL: 0.5) | 2.0 |
| Butachlor | µg/L | ELES/GC/SOP/01: 2023 | BDL (DL: 0.5) | 125 |
| Chlorpyrifos | µg/L | ELES/GC/SOP/01: 2023 | BDL (DL: 0.5) | 30 |
| Ethion | µg/L | ELES/GC/SOP/01: 2023 | BDL (DL: 0.5) | 3.0 |
| Malathion | µg/L | ELES/GC/SOP/01: 2023 | BDL (DL: 0.5) | 190 |
| Methyl parathion | µg/L | ELES/GC/SOP/01: 2023 | BDL (DL: 0.1) | 0.30 |
| Monocrotophos | µg/L | ELES/GC/SOP/01: 2023 | BDL (DL: 0.5) | 1.0 |
| Phorate | µg/L | ELES/GC/SOP/01: 2023 | BDL (DL: 0.5) | 2.0 |
| Phorate Sulphone | µg/L | ELES/GC/SOP/01: 2023 | BDL (DL: 0.5) | -- |
| Dieldrin | µg/L | ELES/GC/SOP/02: 2023 | BDL (DL: 0.01) | 0.03 |
| Alpha HCH | µg/L | ELES/GC/SOP/02: 2023 | BDL (DL: 0.006) | 0.01 |
| Beta HCH | µg/L | ELES/GC/SOP/02: 2023 | BDL (DL: 0.02) | 0.04 |
| Delta HCH | µg/L | ELES/GC/SOP/02: 2023 | BDL (DL: 0.02) | 0.04 |
| Gamma HCH (Lindane) | µg/L | ELES/GC/SOP/02: 2023 | BDL (DL: 0.02) | 2.0 |

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/6181 | Report Release Date : 25.10.2024 |
| Work Order No. : 3000175731/T01 | Work Order Date : 16.09.2024 |
| ULR No. : TC135872400004072F | |


| Discipline : Chemical | | Group : Residues in Water | | |
|--|------|---------------------------|----------------|-------|
| Parameter | Unit | Test Protocol | Result | Limit |
| Pesticides | | | | |
| Endosulfan (alpha, beta and sulphate) | µg/L | ELES/GC/SOP/02: 2023 | BDL (DL: 0.05) | 0.40 |
| DDT(o,p and p,p-isomers of DDT) (DDE and DDD) | µg/L | ELES/GC/SOP/02: 2023 | BDL (DL: 0.05) | 1.0 |

Remarks: 1. pH done at Lab.



Reviewed by
Akash Kumar
Quality Manager

****End of Report****



Authorised Signatory
Dr. Deependra Kumar Sinha
Ph. D. Environmental Engg.
Technical Manager

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/6180 | Report Release Date : 25.10.2024 |
| Work Order No. : 3000175731/T01 | Work Order Date : 16.09.2024 |
| ULR No. : TC135872400004071F | |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|---|----------------------|-------------------------|
| Customer Name | : Tata Steel Limited, Tinplate Division (Golmuri Works) | Sample Ref. No. | : ELES/RNC/2024/GW/7175 |
| Address | : Golmuri, Jamshedpur, Dist- East Singhbhum, Jharkhand, Pin- 831003 | Sampling Date | : 16.10.2024 |
| Plant Status | : Operational | Sample Received Date | : 17.10.2024 |
| Period of Analysis | : 17.10.2024 to 25.10.2024 | Type of Sample | : Ground Water |
| | | Source of Sample | : Borewell |
| | | Location of Sample | : Propane Yard |
| | | Sampling Procedure | : ELES/DOC/SMPL/01 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| Discipline : Chemical | | Group : Water | | Regulatory Limit as per IS 10500:2012 | |
|--|-------|--|---------------|---------------------------------------|-------------------|
| Parameter | Unit | Test Protocol | Result | Acceptable Limit | Permissible Limit |
| pH (at 24.9 °C) | - | APHA 24 th Ed.2023, 4500-H ⁺ | 6.53 | 6.5-8.5 | No Relaxation |
| Conductivity (at 24.9 °C) | µS/cm | APHA 24 th Ed.2023, 2510-B | 455 | -- | -- |
| Colour | Hazen | APHA 24 th Ed.2023, 2120B&D | 2.3 | 5.0 | 15 |
| Turbidity | NTU | APHA 24 th Ed.2023, 2130B | 0.60 | 1.0 | 5.0 |
| Total Dissolved Solids (TDS) | mg/L | APHA 24 th Ed.2023, 2540B,C&D | 346 | 500 | 2000 |
| Total Suspended Solids (TSS) | mg/L | APHA 24 th Ed.2023, 2540B,C&D | 3.1 | -- | -- |
| Chloride (as Cl) | mg/L | APHA 24 th Ed.2023, 4500 Cl-B | 20.9 | 250 | 1000 |
| Fluoride (as F) | mg/L | APHA 24 th Ed.2023, 4500 F-D | BDL (DL: 0.1) | 1.0 | 1.5 |
| Total Alkalinity (as CaCO ₃) | mg/L | IS 3025 (Part-23): 2023 | 102 | 200 | 600 |
| Sulphate (as SO ₄) | mg/L | APHA 24 th Ed.2023, 4500 SO ₄ ⁻² -E | 53.3 | 200 | 400 |
| Nitrate (as NO ₃) | mg/L | APHA 24 th Ed.2023, 4500 NO ₃ -B | 18.3 | 45 | No Relaxation |
| Phosphate (as P) | mg/L | APHA 24 th Ed.2023, 4500-P D | 1.82 | -- | -- |

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/6180 | Report Release Date : 25.10.2024 |
| Work Order No. : 3000175731/T01 | Work Order Date : 16.09.2024 |
| ULR No. : TC135872400004071F | |

| Discipline : Chemical | | Group : Water | | Regulatory Limit as per IS 10500:2012 | |
|------------------------|------|--|--------------------|--|-------------------|
| Parameter | Unit | Test Protocol | Result | Acceptable Limit | Permissible Limit |
| Oil & Grease | mg/L | APHA 24 th Ed.2023, 5520B | BDL (DL: 0.1) | -- | -- |
| Sodium (as Na) | mg/L | APHA 24 th Ed.2023, 3500Na-B | 8.1 | -- | -- |
| Potassium (as K) | mg/L | APHA 24 th Ed.2023, 3500K-B | 2.2 | -- | -- |
| Calcium (as Ca) | mg/L | IS 3025 (Part-40): 2019 | 38.9 | 75 | 200 |
| Discipline : Chemical | | Group : Residues in Water | | | |
| Arsenic (as As) | mg/L | IS 3025 (Part-37): 2022 | BDL (DL: 0.005) | 0.01 | No Relaxation |
| Cadmium (as Cd) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.003) | 0.003 | No Relaxation |
| Total Chromium (as Cr) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.03) | 0.05 | No Relaxation |
| Copper (as Cu) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.03) | 0.05 | 1.5 |
| Cyanide (as CN) | mg/L | APHA 24 th Ed.2023, 4500 CN-E | BDL (DL: 0.012) | 0.05 | No Relaxation |
| Iron (as Fe) | mg/L | APHA 24 th Ed.2023; 3111B | 0.153 | 1.0 | No Relaxation |
| Lead (as Pb) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.01) | 0.01 | No Relaxation |
| Manganese (as Mn) | mg/L | APHA 24 th Ed.2023; 3111B | 0.142 | 0.1 | 0.3 |
| Mercury (as Hg) | mg/L | IS 3025 (Part-48): 2019 | BDL (DL: 0.001) | 0.001 | No Relaxation |
| Magnesium (as Mg) | mg/L | IS 3025(Part-46): 2023 | 17.9 | 30 | 100 |
| Nickel (as Ni) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.01) | 0.02 | No Relaxation |
| Zinc (as Zn) | mg/L | APHA 24 th Ed.2023; 3111B | BDL (DL: 0.1) | 5.0 | 15 |

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/6180 | Report Release Date : 25.10.2024 |
| Work Order No. : 3000175731/T01 | Work Order Date : 16.09.2024 |
| ULR No. : TC135872400004071F | |

| Discipline : Chemical | | | Group : Residues in Water | |
|-----------------------|------|----------------------|---------------------------|-------|
| Parameter | Unit | Test Protocol | Result | Limit |
| Pesticides | | | | |
| Alachlor | µg/L | ELES/GC/SOP/01: 2023 | BDL (DL: 0.5) | 20 |
| Atrazine | µg/L | ELES/GC/SOP/01: 2023 | BDL (DL: 0.5) | 2.0 |
| Butachlor | µg/L | ELES/GC/SOP/01: 2023 | BDL (DL: 0.5) | 125 |
| Chlorpyrifos | µg/L | ELES/GC/SOP/01: 2023 | BDL (DL: 0.5) | 30 |
| Ethion | µg/L | ELES/GC/SOP/01: 2023 | BDL (DL: 0.5) | 3.0 |
| Malathion | µg/L | ELES/GC/SOP/01: 2023 | BDL (DL: 0.5) | 190 |
| Methyl parathion | µg/L | ELES/GC/SOP/01: 2023 | BDL (DL: 0.1) | 0.30 |
| Monocrotophos | µg/L | ELES/GC/SOP/01: 2023 | BDL (DL: 0.5) | 1.0 |
| Phorate | µg/L | ELES/GC/SOP/01: 2023 | BDL (DL: 0.5) | 2.0 |
| Phorate Sulphone | µg/L | ELES/GC/SOP/01: 2023 | BDL (DL: 0.5) | -- |
| Dieldrin | µg/L | ELES/GC/SOP/02: 2023 | BDL (DL: 0.01) | 0.03 |
| Alpha HCH | µg/L | ELES/GC/SOP/02: 2023 | BDL (DL: 0.006) | 0.01 |
| Beta HCH | µg/L | ELES/GC/SOP/02: 2023 | BDL (DL: 0.02) | 0.04 |
| Delta HCH | µg/L | ELES/GC/SOP/02: 2023 | BDL (DL: 0.02) | 0.04 |
| Gamma HCH (Lindane) | µg/L | ELES/GC/SOP/02: 2023 | BDL (DL: 0.02) | 2.0 |

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/6180 | Report Release Date : 25.10.2024 |
| Work Order No. : 3000175731/T01 | Work Order Date : 16.09.2024 |
| ULR No. : TC135872400004071F | |

| Discipline : Chemical | | Group : Residues in Water | | |
|--|------|---------------------------|----------------|-------|
| Parameter | Unit | Test Protocol | Result | Limit |
| Pesticides | | | | |
| Endosulfan (alpha, beta and sulphate) | µg/L | ELES/GC/SOP/02: 2023 | BDL (DL: 0.05) | 0.40 |
| DDT(o,p and p,p-isomers of DDT) (DDE and DDD) | µg/L | ELES/GC/SOP/02: 2023 | BDL (DL: 0.05) | 1.0 |

Remarks: 1. pH done at Lab.



Reviewed by
Akash Kumar
Quality Manager

****End of Report****



Authorised Signatory
Dr. Deependra Kumar Sinha
Ph. D. Environmental Engg.
Technical Manager



Test Report No. INCHE24106621106095013

Report Issue Date: 10 Oct 2024

TEST REPORT

| | | | |
|--|---------------------------------|---------------------------------|-----------------------|
| Report Issued To: Tata Steel Ltd., Tinplate Division | | | |
| GOLMURI WORKS, TINPLATE, GOLMURI, , EAST SINGHBHUM,, JHARKHAND - Pin 831003, India | | | |
| Discipline : | Chemical | Group : | Atmospheric Pollution |
| BV Sample ID : | 1724957 | Sample receipt date : | 04 Oct 2024 |
| Sample Name** : | Ambient Noise | Date of registration : | 03 Oct 2024 |
| | | Date of commencing of testing : | 05 Oct 2024 |
| | | Date of completion of testing : | 05 Oct 2024 |
| Sample Information: | Sampling Done by Laboratory | | |
| Sampling procedure : | BVILCH/ENA/SOP-021 | Date of sampling / collection : | 28 Sep 2024 |
| Sampling location : | Analysar Room Near Gate No - 06 | Sampling / Collection done by : | Mr. Vishal Rajak |

| No. | Test Parameters | Unit | Test Results | * Specification | Test Method | LOQ |
|-----|---|-------|--------------|---|---------------|-----|
| 1 | Analysar Room Near Gate No - 06 (Day) | dB(A) | 61.8 | 75 dBA (Max) 06.00 AM to 10.00 PM | IS 9989: 1981 | 30 |
| 2 | Analysar Room Near Gate No - 06 (Night) | dB(A) | 50.8 | 70 dBA (Max) 10.00 PM to 06.00 AM | IS 9989: 1981 | 30 |

Abbreviations: LOQ: Limit of Quantification, BLQ: Below limit of quantification

** Indicates information supplied by the customer for which the laboratory has no control

Note: SAMPLE TESTED AS RECEIVED

Remarks :

Instrument used : Noise Meter.

* The Gazette of India : Extraordinary [Part II – Sec.3 (ii)] under Ministry of Environment & Forests Notification with respect to Noise as per The Noise Pollution (Regulation and Control) (Amendment) Rules, 2010.

Authorized Signatory

M. Ramesh
Manager

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— End of Report —



Test Report No. INCHE24106621106095007

Report Issue Date: 10 Oct 2024

TEST REPORT

| Report Issued To: Tata Steel Ltd., Tinplate Division | | | | | | |
|--|-----------------------------|-----------------------------|---------------------------------|---|-----------------------|-----|
| GOLMURI WORKS, TINPLATE, GOLMURI, , EAST SINGHBHUM,, JHARKHAND - Pin 831003, India | | | | | | |
| Discipline : | | Chemical | Group : | | Atmospheric Pollution | |
| BV Sample ID : | | 1724958 | Sample receipt date : | | 04 Oct 2024 | |
| Sample Name** : | | Ambient Noise | Date of registration : | | 03 Oct 2024 | |
| | | | Date of commencing of testing : | | 05 Oct 2024 | |
| | | | Date of completion of testing : | | 05 Oct 2024 | |
| Sample Information: | | Sampling Done by Laboratory | | | | |
| Sampling procedure : | | BVILCH/ENA/SOP-021 | Date of sampling / collection : | | 28 Sep 2024 | |
| Sampling location : | | General Office Lawn | Sampling / Collection done by : | | Mr. Vishal Rajak | |
| No. | Test Parameters | Unit | Test Results | * Specification | Test Method | LOQ |
| 1 | General Office Lawn (Day) | dB(A) | 56.8 | 75 dBA (Max) 06.00 AM to 10.00 PM | IS 9989: 1981 | 30 |
| 2 | General Office Lawn (Night) | dB(A) | 48.2 | 70 dBA (Max) 10.00 PM to 06.00 AM | IS 9989: 1981 | 30 |

Abbreviations: LOQ: Limit of Quantification, BLQ: Below limit of quantification

** Indicates information supplied by the customer for which the laboratory has no control

Note: SAMPLE TESTED AS RECEIVED

Remarks :

Instrument used : Noise Meter.

* The Gazette of India : Extraordinary [Part II – Sec.3 (ii)] under Ministry of Environment & Forests Notification with respect to Noise as per The Noise Pollution (Regulation and Control) (Amendment) Rules, 2010.

Authorized Signatory

M. Ramesh

Manager

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— End of Report —



Test Report No. INCHE24106621106094847

Report Issue Date: 10 Oct 2024

TEST REPORT

| | | | |
|--|---------------|---------------------------------|-----------------------|
| Report Issued To: Tata Steel Ltd., Tinplate Division | | | |
| GOLMURI WORKS, TINPLATE, GOLMURI, , EAST SINGHBHUM,, JHARKHAND - Pin 831003, India | | | |
| Discipline : | Chemical | Group : | Atmospheric Pollution |
| BV Sample ID : | 1724959 | Sample receipt date : | 04 Oct 2024 |
| Sample Name** : | Ambient Noise | Date of registration : | 03 Oct 2024 |
| | | Date of commencing of testing : | 05 Oct 2024 |
| | | Date of completion of testing : | 05 Oct 2024 |

| | | | |
|----------------------|-----------------------------|---------------------------------|------------------|
| Sample Information: | Sampling Done by Laboratory | | |
| Sampling procedure : | BVILCH/ENA/SOP-021 | Date of sampling / collection : | 29 Sep 2024 |
| Sampling location : | Expansion Area | Sampling / Collection done by : | Mr. Vishal Rajak |

| No. | Test Parameters | Unit | Test Results | * Specification | Test Method | LOQ |
|-----|------------------------|-------|--------------|---|---------------|-----|
| 1 | Expansion Area (Day) | dB(A) | 66.9 | 75 dBA (Max) 06.00 AM to 10.00 PM | IS 9989: 1981 | 30 |
| 2 | Expansion Area (Night) | dB(A) | 51.8 | 70 dBA (Max) 10.00 PM to 06.00 AM | IS 9989: 1981 | 30 |

Abbreviations: LOQ: Limit of Quantification, BLQ: Below limit of quantification

** Indicates information supplied by the customer for which the laboratory has no control

Note: SAMPLE TESTED AS RECEIVED

Remarks :

Instrument used : Noise Meter.

* The Gazette of India : Extraordinary [Part II – Sec.3 (ii)] under Ministry of Environment & Forests Notification with respect to Noise as per The Noise Pollution (Regulation and Control) (Amendment) Rules, 2010.

Authorized Signatory

M.Ramesh

Manager

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— End of Report —



Test Report No. INCHE24106621106094756

Report Issue Date: 10 Oct 2024

TEST REPORT

| Report Issued To: Tata Steel Ltd., Tinplate Division | | | | | | |
|--|------------------------|-----------------------------|---------------------------------|---|-----------------------|-----|
| GOLMURI WORKS, TINPLATE, GOLMURI, , EAST SINGHBHUM,, JHARKHAND - Pin 831003, India | | | | | | |
| Discipline : | | Chemical | Group : | | Atmospheric Pollution | |
| BV Sample ID : | | 1724960 | Sample receipt date : | | 04 Oct 2024 | |
| Sample Name** : | | Ambient Noise | Date of registration : | | 03 Oct 2024 | |
| | | | Date of commencing of testing : | | 05 Oct 2024 | |
| | | | Date of completion of testing : | | 05 Oct 2024 | |
| Sample Information: | | Sampling Done by Laboratory | | | | |
| Sampling procedure : | | BVILCH/ENA/SOP-021 | Date of sampling / collection : | | 29 Sep 2024 | |
| Sampling location : | | CRM Solar Pond | Sampling / Collection done by : | | Mr. Vishal Rajak | |
| No. | Test Parameters | Unit | Test Results | * Specification | Test Method | LOQ |
| 1 | CRM Solar Pond (Day) | dB(A) | 59.5 | 75 dBA (Max) 06.00 AM to 10.00 PM | IS 9989: 1981 | 30 |
| 2 | CRM Solar Pond (Night) | dB(A) | 49.9 | 70 dBA (Max) 10.00 PM to 06.00 AM | IS 9989: 1981 | 30 |

Abbreviations: LOQ: Limit of Quantification, BLQ: Below limit of quantification

** Indicates information supplied by the customer for which the laboratory has no control

Note: SAMPLE TESTED AS RECEIVED

Remarks :

Instrument used : Noise Meter.

* The Gazette of India : Extraordinary [Part II – Sec.3 (ii)] under Ministry of Environment & Forests Notification with respect to Noise as per The Noise Pollution (Regulation and Control) (Amendment) Rules, 2010.

Authorized Signatory

M. Ramesh

Manager

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— End of Report —



THE TINPLATE COMPANY OF INDIA LIMITED


EXTRACT OF THE CERTIFIED TRUE COPY OF THE MINUTES OF THE MEETING
OF THE BOARD OF DIRECTORS OF THE TINPLATE COMPANY OF INDIA
LIMITED HELD ON JUNE 13, 2020 THROUGH AUDIO VISUAL MEANS

Business Responsibility Policies

The Board considered the following business responsibility policies as circulated and after discussion unanimously approved the same:

- i. Human Resource Policy,
- ii. Affirmative Action Policy,
- iii. Environmental Policy,
- iv. Quality Policy,
- v. Food Safety Policy

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THE TINPLATE COMPANY OF INDIA LTD.

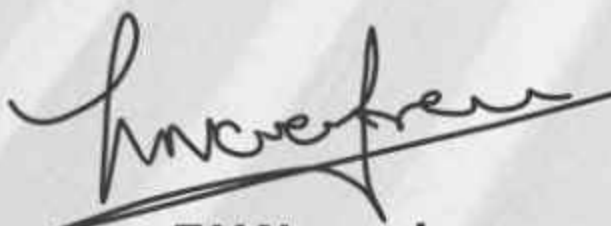

KAUSHIK SEAL
Company Secretary

ENVIRONMENTAL POLICY

Tata Steel's environmental responsibilities are driven by our commitment to preserve the environment and are integral to the way we do business.

1. We are committed to deal proactively with Climate Change issue by efficient use of natural resources & energy; reducing and preventing pollution; promoting waste avoidance and recycling measures; and product stewardship.
 - We shall identify, assess and manage our environment impact.
 - We shall regularly monitor, review and report publicly our environmental performance.
 - We shall develop & rehabilitate abandoned sites through afforestation and landscaping and shall protect and preserve the biodiversity in the areas of our operations.
 - We shall enhance awareness, skill and competence of our employees and contractors so as to enable them to demonstrate their involvement, responsibility and accountability for sound environmental performance.
2. We are committed to continual improvement in our environmental performance.
 - We shall set objective-targets, develop, implement and maintain management standards and systems, and go beyond compliance of the relevant industry standards, legal and other requirements.
3. We will truly succeed when we sustain our environmental achievement and are valued by the communities in which we work.

Date : November 1, 2017



T V Narendran
CEO & Managing Director

