



To,  
**The Additional Principal Chief Conservator of Forest,  
Regional Office (Eastern Central Zone)  
Ministry of Environment, Forests and Climate Change, Govt. of India  
Bungalow No. A-2, Shyamali Colony, Ranchi – 834002, Jharkhand.**

Ref No. – JMB/ENV/KOCP/24/344/2022

May 27, 2022

Ref.: Environmental Clearance letter no. - J-11015/252/2005-IA.II (M) dated June 22, 2006

**Sub: Half Yearly Compliance Status Report of Environment Clearance conditions issued by MoEF&CC, New Delhi to Kalimela Open Cast Project, Tata Steel Limited, Dhanbad for the period October'21 to March'22**


Dear Sir,

We are enclosing herewith compliance report for the period **October'21 to March'22** for the EC granted vide letter no.- J-11015/252/2005-IA.II(M), Dated-22<sup>nd</sup> June 2006 issued by Ministry of Environment, Forest and Climate Change, New Delhi.

We trust the information furnished is in line with your requirement.

Thanking you,

Yours faithfully,

  
**Head (Planning)  
Jharia Division, Tata Steel Ltd.**

Encl: As above.

Copy to: Member Secretary, CPCB, Eastern Zonal Office, Southend Conclave, 502, 5<sup>th</sup> Floor  
1582, Rajdanga Main Road, Kolkata -700107.

Copy to: Member Secretary, JSPCB, T.A. Division Building (Ground Floor), H.E.C, Dhurwa,  
Ranchi - 834004.

Copy to: Regional Officer, JSPCB, HIG-1 Sardar Patel Nagar, Housing Colony, Hirapur, Dhanbad

**TATA STEEL LIMITED**

Jharia Collieries Jamadoba 828 112 Dhanbad India

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Regd. Office Bombay House 24 Homi Mody Street Fort Mumbai 400 001

Tel 91 22 66658282 Fax 91 22 66657724

Corporate Identity Number L27100MII1907PLC000260 Website www.tatasteel.com

**HALF YEARLY COMPLIANCE REPORT  
(PERIOD: OCTOBER'21 – MARCH'22)**

**OCP KALIMELA PROJECT  
UNDER JAMADOBA COLLIERY**



**TATA STEEL LIMITED, JHARIA DIVISION**

**P.O.- JAMADOBA, DIST. - DHANBAD,  
STATE- JHARKHAND, PIN CODE – 828112.**

**ENVIRONMENTAL CLEARANCE GRANTED VIDE LETTER NO. - J-11015/252/2005-  
IA.II(M) DATED- 22<sup>ND</sup> JUNE 2006 ISSUED BY GOVT. OF INDIA, MINISTRY OF  
ENVIRONMENT & FOREST, NEW DELHI.**

**Compliance status of Environmental Clearance of Kalimela Open Cast Mining Project (0.34 MTPA) of M/s Tata Steel Ltd., Village Dungri, Tehsil Jharia, dist. Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/252/2005-IA.II (M) dated June 22, 2006**

S. No.	Condition	Compliance Status
<b>Specific Condition:</b>		
(i)	All the conditions stipulated by SPCB in their NOC no N-35 dated 31.01.2005 are to be implemented effectively.	NOC conditions are being complied with. The open cast operations have ceased, and no raw coal production is taking place.  Currently the backfilling of the mine void by the OB has been completed and biological reclamation work is in progress.
(ii)	The bund/embankment shall be designed taking into account highest flood level, based on past data, in the Damodar River/ Dungri Jore so as to guard against mine inundation.	The embankment exists along Dungri Jore. The HFL (Highest flood line) of Damodar river is way below the surface level of open cast mine hence bunds across the river is not necessary.
(iii)	Topsoil should be stacked properly with proper slope at earmarked sites and should not be kept active and shall be used for reclamation and development of green belt.	No further top soil will be generated as coal mining activity has been ceased. The back filling has been completed and the top soil is being used for biological reclamation of backfilled and OB area.
(iv)	OB should be stacked at earmarked external OB dumpsite(s) within ML area and shall be a maximum height of 60m only and consist of benches of 10m each. The ultimate slope of the dump shall not exceed 28°. Backfilling shall begin at the end of 3rd year in the decoaled area. Monitoring and management of existing reclaimed dumpsites should continue until the vegetation becomes self-sustaining. Compliance Status should be submitted to the MOEF and its regional office at Bhubaneswar on yearly basis.	OB was stacked within ML area at an area of 12 ha approx. About 24.08 lakh cum of OB generated has been stacked with an approximate height reached of 50 mts. The other conditions are being followed as well.  This OB has been used for backfilling the mine pit as part of our mine closure plan. Now the backfilling work has been completed and biological reclamation work is in progress.
(v)	Catch drains and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from soil, OB and mineral dumps. The water so collected should be utilized for watering the mine area, roads, green belt development, etc. The drains should be regularly desilted and maintained properly. Garland drains (size, gradient and length) and sump capacity should be designed keeping 50% safety margin over and above the peak sudden rainfall and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper settling of slit material.	Catch drain and siltation ponds have been constructed to arrest the debris, silt and sediment flows from OB dumps. Collected water had been used for watering mine area, roads & plantation. Total length of catch drains was 2200 mts. Garland drains (about 1790 mts) had been completely constructed around the mine site to ensure runoff water during rainy season is properly drained off. Since mine area has not going to expand, no additional garland drains are required as of now.

**Compliance status of Environmental Clearance of Kalimela Open Cast Mining Project (0.34 MTPA) of M/s Tata Steel Ltd., Village Dungri, Tehsil Jharia, dist. Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/252/2005-IA.II (M) dated June 22, 2006**

(vi)	Dimension of the retaining wall at the toe of the dumps and OB benches within the mine to check run-off and siltation should be based on the rainfall data	Retention wall (or Toe wall) of about 2200 mts. exists around the dump area to check run-off and siltation.
(vii)	The effluents from the coal washery shall be treated to prescribed norms before discharge from the lease.	There is no separate coal washery for OCP Kalimela. We have a central coal washery for Jamadoba group of mines, about 1.5 kms away, which has a closed water circuit system to maintain zero discharge.
(viii)	Crushers at the CHP should be operated with high efficiency bag filters, water sprinkling system should be provided to check fugitive emissions from crushing operations, conveyor system, haulage roads, transfer points, etc.	There is no separate CHP for OCP Kalimela. The existing CHP for Jamadoba group of mines already has adequate measures in place such as water sprinkling system (fixed and movable) and dry fog system.
(ix)	Drills should be wet operated.	It is not applicable now as mining has ceased.
(x)	Controlled blasting should be practiced only during daytime with use of delay detonators. The mitigative measures for control of ground vibration and to arrest the fly rocks and boulders should be implemented.	It is not applicable now as mining has ceased.
(xi)	Area brought under afforestation includes reclaimed external OB dump (12.89 ha), backfilled area (25.15 ha), along ML boundary, along roads (0.45 ha) and in undisturbed area (1.14 ha) within the lease area by planting native species in consultation with the local DFO/Agriculture Department. The density of the trees should be around 2500 plants per ha.	The backfilling work has been completed and the biological reclamation work is in progress .
(xii)	A progressive closure plan shall be implemented by reclamation of quarry area of 25.15 ha which shall be backfilled and afforested by planting native plant species in consultation with the local DFO/Agriculture Department. The density of the trees should be around 2500 plants per ha. The balance 1.10 ha of decoaled area shall be converted into a water reservoir, the upper benches of which shall be gently sloped and stabilized and reclaimed with plantation.	The reclamation work is in progress as per the progressive mine closure Plan.  The mine closure plan of KOCP is under mining plan of Jamadoba Colliery (including MCP of Kalimela) has been approved by MOC, Delhi.
(xiii)	Conservation Plan for endangered species, if any, found in and around the project area shall be formulated, if required, in consultation with the State Forest and Wildlife Departments.	Not Applicable.

**Compliance status of Environmental Clearance of Kalimela Open Cast Mining Project (0.34 MTPA) of M/s Tata Steel Ltd., Village Dungri, Tehsil Jharia, dist. Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/252/2005-IA.II (M) dated June 22, 2006**

(xiv)	The company shall obtain prior approval of CGWA/ CGWB Regional Office for use of groundwater if any, for mining operations.	Not Applicable.
(xv)	Regular monitoring of groundwater level and quality should be carried out by establishing a network of existing wells and construction of new peizometers. The monitoring for quantity should be done four times a year in pre-monsoon (May), monsoon (August), post-monsoon (November) and winter (January) seasons and for quality in May. Data thus collected should be submitted to the Ministry of Environment & Forest and to the Central Pollution Control Board quarterly within one month of monitoring.	Now there will be no impact on ground water as mining has ceased. However, quality of groundwater is regularly analysed as required and attached in <b>Annexure-I</b>
(xvi)	The Company shall put up artificial groundwater recharge measures for augmentation of groundwater resource. The project authorities should meet water requirement of nearby village(s) in case the village wells go dry due to dewatering of mine.	Now there will be no impact on ground water as mining has ceased. However, quality of groundwater is regularly analysed as required and attached in <b>Annexure-I</b>
(xvii)	ETP should also be provided for workshop, coal washery and CHP wastewater.	It is not applicable. Though ETP for Central Workshop has been commissioned having facility of Oil & Grease Trap.
(xviii)	R&R shall not be less than the norms laid down by the State Government and shall be completed within a specified time-frame.	It is not applicable.
(xix)	A Final Mine Closure Plan along with details of Corpus Fund should be submitted to the Ministry of Environment & Forests for approval 5 years in advance of final mine closure for approval.	It has been approved by MOC, Delhi and submitted to MoEF&CC.
(xx)	Consent to operate shall be obtained before starting mining operations.	Consent to operate has been obtained from JSPCB vide letter ref. No. JSPCB/HO/RNC/CTO-2512557/2018/1469 dated-18.09.2018 valid up to 30.09.2022.
<b>General Conditions:</b>		
(i)	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment and forest.	All mining excavation activities are terminated. Reclamation work is in progress
(i)	No change in the calendar plan including excavation, quantum of mineral coal and waste should be made.	All mining excavation activities are terminated. Reclamation work is in progress.
(ii)	Four Ambient Air quality monitoring station should be established in the core zones as well as in the buffer zone SPM, RSPM, SO2	The operations have now ceased. The ambient air monitoring is done at 4 locations and the reports are attached as <b>Annexure-I</b>

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	and NOX monitoring location of the stations should be decided based on the metrological data & topographical features & environmentally & ecologically sensitive targets in consultation with SPCB.	
(iii)	Fugitive dust emissions (SPM & RSPM) from all the sources should be controlled regularly monitored & data recorded properly. Water spraying arrangement on haul roads, wagon loading, and dump trucks (loading & unloading) points should be provided & properly maintained.	Presently no coal excavation and coal transportation jobs are going on. However, water sprinkling on roads is being done regularly.
(iv)	Data on ambient air quality (SPM, RSPM, SOx & NOx) should be regularly submitted to the Ministry including its regional office at Bhubaneswar and to the SPCB & CPCB once in six months.	The ambient air monitoring is done at 4 locations and the reports are submitted to SPCB, CPCB & MoEFCC on half yearly basis( <b>Annexure-I</b> )
(v)	Adequate measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in blasting and drilling operations of HEMM etc. All should be provided with Ear Plug/Muff.	It is not applicable now.
(vi)	Industrial waste water (Workshop and Waste water from the mine) should be properly collected, treated so as to conform to the standards prescribed under GSR 422(E) dated 19th May 1993 and 31st December 1993 or as amended from time to time before discharged. Oil and Grease trap should be installed before discharge of Work shop effluent.	There is no generation of waste water.
(vii)	Vehicular emissions should be kept under control and regularly monitored. Vehicle used for transporting the mineral should be covered with tarpaulins and optimally loaded.	No mineral is being transported now. The vehicles carrying OB are only allowed to ply after securing full compliance on vehicle check list. Check list ensures the optimum load, good condition, emissions under limit.
(viii)	Environmental laboratory should be established with adequate number and type of pollution monitoring and analysis equipment in consultation with the SPCB.	We have a fully equipped Environment Cell Laboratory with qualified personnel. The monitoring and analysis are also done at regular intervals by a NABL and JSPCB recognised laboratory
(ix)	Personnel working in dusty area should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspect. Occupational Health Surveillance programme of the worker should be under	It is not applicable now.

**Compliance status of Environmental Clearance of Kalimela Open Cast Mining Project (0.34 MTPA) of M/s Tata Steel Ltd., Village Dungri, Tehsil Jharia, dist. Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/252/2005-IA.II (M) dated June 22, 2006**

	taken periodically to observe any contraction due to exposure to dust and to take corrective measures if needed.	
(x)	A separate Environmental Management cell with suitable qualified personnel should be set up under the control of a senior executive, who will report directly to the Head of the Company.	We have a separate Environmental Management Cell with four qualified personnel. The reporting of Environmental Cell is directly to General Manager of the Division.
(xi)	Funds earmarked for environmental protection measures should be kept in separate A/C and should not be diverted for other purposes. Year wise expenditure should be reported to this ministry and its regional office at Bhubaneswar.	The Environment Cell has a separate fund for Environmental protection measures and for complying with legal requirements. The annual environmental expenditure for the financial year 2020-21 is Rs. 292.71 lakhs.
(xii)	The regional office of this ministry located at Bhubaneswar shall monitor compliance of the stipulated conditions. The project authorities shall extend full co-operation to the officer of regional office by furnishing the requisite Data/ information/ monitoring report.	Being complied. All data is being furnished in the compliance report and during inspection.

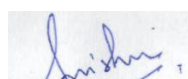
**AIR QUALITY REPORT**

Core zone &amp; Buffer zone

Period- October'21 to December'21

No. of sampling points: 4

Core zone (as per Air quality standards for coal mines in EPA Notification, 1988)							
Location	Latitude/ Longitude	Date	Weather Condition	SPM 24 Hourly Limit- 700 $\mu\text{g}/\text{m}^3$	RSPM 24 Hourly Limit- 300 $\mu\text{g}/\text{m}^3$	SO <sub>2</sub> 24 Hourly Limit- 120 $\mu\text{g}/\text{m}^3$	NOx 24 Hourly Limit-120 $\mu\text{g}/\text{m}^3$
Jamadoba Group Office	23°42'15.3" N/ 86°24'11" E	07.10.21	Clear	176.8	73.9	11.6	10.8
		17.11.21	Clear	194.7	85.2	10.4	11.6
		09.12.21	Clear	198.7	86.9	11.4	10.4
Buffer zone (as per NAAQS 2009 for ambient air quality standards)							
Location	Latitude/ Longitude	Date	Weather Condition	PM10 24 Hourly Limit- 100 $\mu\text{g}/\text{m}^3$	PM2.5 24 Hourly Limit- 60 $\mu\text{g}/\text{m}^3$	SO <sub>2</sub> 24 Hourly Limit- 80 $\mu\text{g}/\text{m}^3$	NO <sub>2</sub> 24 Hourly Limit- 80 $\mu\text{g}/\text{m}^3$
Digwadih 12 No. Colony	23°41'42" N/ 86°24'45.3" E	04.10.21	Clear	68.4	32.6	11.8	10.7
		23.11.21	Clear	82.7	40.1	11.3	12.6
		06.12.21	Clear	84.5	41.6	10.1	11.7
New Village Colony, Jamadoba	23°41'51" N/ 86°23'19" E	06.10.21	Clear	79.8	40.3	12.4	11.6
		22.11.21	Clear	77.2	38.7	10.5	11.8
		08.12.21	Clear	79.8	40.2	11.9	12.3
6&7 Pits Kalimandir colony	23°43'15" N/ 86°24'12" E	05.10.21	Clear	72.4	35.2	11.8	12.3
		16.11.21	Clear	84.3	42.5	11.6	12.8
		10.12.21	Clear	87.3	45.6	10.7	11.2


**Sr. Manager (Environment)**

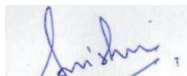


**AIR QUALITY REPORT**  
Core zone & Buffer zone

Period- January'22 to March'22

No. of sampling points: 4

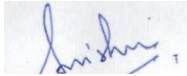
Core zone (as per Air quality standards for coal mines in EPA Notification, 1988)							
Location	Latitude/ Longitude	Date	Weather Condition	SPM 24 Hourly Limit- 700 µg/m <sup>3</sup>	RSPM 24 Hourly Limit- 300 µg/m <sup>3</sup>	SO <sub>2</sub> 24 Hourly Limit- 120 µg/m <sup>3</sup>	NO <sub>x</sub> 24 Hourly Limit-120 µg/m <sup>3</sup>
Jamadoba Group Office	23°42'15.3" N/ 86°24'11" E	13.01.22	Clear	174.6	80.2	10.9	12.4
		10.02.22	Clear	216.4	82.6	12.3	13.8
		21.03.22	Clear	220.6	83.9	10.3	12.7
Buffer zone (as per NAAQS 2009 for ambient air quality standards)							
Location	Latitude/ Longitude	Date	Weather Condition	PM10 24 Hourly Limit- 100µg/m <sup>3</sup>	PM2.5 24 Hourly Limit- 60µg/m <sup>3</sup>	SO <sub>2</sub> 24 Hourly Limit- 80µg/m <sup>3</sup>	NO <sub>2</sub> 24 Hourly Limit-80µg/m <sup>3</sup>
Digwadih 12 No. Colony	23°41'42" N/ 86°24'45.3" E	10.01.22	Clear	86.7	44.2	11.7	12.5
		07.02.22	Clear	79.3	40.5	10.2	11.9
		16.03.22	Clear	89.6	47.2	12.5	13.9
New Village Colony, Jamadoba	23°41'51" N/ 86°23'19" E	12.01.22	Clear	77.8	38.4	10.2	11.7
		11.02.22	Clear	86.9	45.1	11.3	12.4
		22.03.22	Clear	92.7	49.5	13.5	14.8
6&7 Pits Kalimandir colony	23°43'15" N/ 86°24'12" E	11.01.22	Clear	82.7	42.6	11.4	12.9
		09.02.22	Clear	88.2	48.3	12.2	13.5
		14.03.22	Clear	78.2	36.4	11.3	13.9



**Sr. Manager (Environment)**

**Ground Water Quality Analysis (Hand Pump & Dung Well)  
(Post- Monsoon Season- November'2021)**

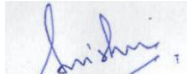
S.No	Date	Location	Time	Depth in meter	pH	Electrical Conductivity, $\mu\text{S/m}$
1	25.11.21	Purnadih (Jorapokhar)	09:20 AM	3.10	7.2	764
2	25.11.21	Bhowra 13 No	10:00 AM	2.24	7.1	710
3	25.11.21	Mohalbani Basti	10:30 AM	4.86	7.0	784
4	25.11.21	Digwadih 12 No	10:50 AM	2.74	7.2	720
5	25.11.21	Digwadih 10 No F & J	11:10 AM	2.10	7.1	993
6	25.11.21	Kalimela Shivmandir	01:30 PM	1.98	7.2	832
7	25.11.21	Kalimela Kalimandir	01:20 PM	2.98	7.3	786
8	25.11.21	Lower Dungari	01:10 PM	2.82	7.2	684
9	25.11.21	Upper Dungari	12:50 PM	2.12	7.3	795
10	25.11.21	Pattia Basti	12:35 PM	2.24	7.1	812
11	25.11.21	Kenduadih Basti	12:10 PM	1.36	7.2	754
12	25.11.21	Jorapokhar Kushtand	09:10 AM	3.48	7.0	772
13	25.11.21	Jamadoba 3 No	01:45 PM	2.84	7.1	758
14	25.11.21	6&7 Pits (Ayodhya Nagri)	11:40 AM	2.63	7.2	726



**Sr. Manager (Environment)**

**Ground Water Quality Analysis (Hand Pump & Dung Well)  
(Winter Season- January'2022)**

S.No	Date	Location	Time	Depth in meter	pH	Electrical Conductivity $\mu\text{S/m}$
1	17.01.22	Purnadih (Jorapokhar)	09:50 AM	3.18	7.3	764
2	17.01.22	Bhowra 13 No	10:25 AM	2.86	7.4	728
3	17.01.22	Mohalbani Basti	10:55 AM	5.12	7.6	896
4	17.01.22	Digwadih 12 No	11:15 AM	2.98	7.3	793
5	17.01.22	Digwadih 10 No F & J	11:40 AM	2.36	7.4	998
6	17.01.22	Kalimela Shivmandir	02:15 PM	2.24	7.2	826
7	17.01.22	Kalimela Kalimandir	02:30 PM	3.12	7.3	815
8	17.01.22	Lower Dungari	01:55 PM	3.24	7.3	726
9	17.01.22	Upper Dungari	01:30 PM	2.48	7.2	758
10	17.01.22	Pattia Basti	01:20 PM	2.76	7.4	836
11	17.01.22	Kenduadih Basti	12:55 PM	1.84	7.3	782
12	17.01.22	Jorapokhar Kushtand	09:30 AM	3.92	7.4	824
13	17.01.22	Jamadoba 3 No	02:45 PM	2.98	7.3	782
14	17.01.22	6&7 Pits (Ayodhya Nagri)	12:20 PM	2.86	7.2	728



**Sr. Manager (Environment)**



# ADITI R&D SERVICES

Testing Laboratory

NABL ACCREDITED

(A Constituent Board of Quality Council of India)

ISO/IEC 17025:2017, ISO 9001:2015, ISO (OHSAS) 45001:2018 Certified

Plot No - I-B-17 (P)  
Sindri, Industrial Area,  
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Email ID: sindriaditi@gmail.com  
Website: aditirndservices.com  
Phone: 0326-2952377 (O)  
Mobile: 09471358492, 09431512608

Ref. No.: - ARDS/21-22/4584

Date: 20.11.2021

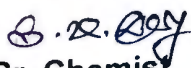
## TEST REPORT OF AMBIENT AIR QUALITY

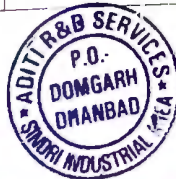
- Name of the industry : M/S TATA STEEL, JAMADOBA,  
TATA STEEL LIMITED  
JAMADOBA GROUP PLANT,  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Date of Sample Collection : 17.11.2021 TO 18.11.2021
- Date of Testing : 19.11.2021
- Test Procedure : As per IS-5182

### TEST RESULTS

LOCATION - OFFICERS COLONY, 12 NO. DIGWADIH			
	Avg. Ambient Temperature	24°C	Avg. Humidity
SI No.	Particulars	Value	62%
1.	Particulate Matter (PM <sub>10</sub> ), µg/m <sup>3</sup>	71.42	100 µg/m <sup>3</sup>
2.	Particulate Matter (PM <sub>2.5</sub> ), µg/m <sup>3</sup>	38.41	60 µg/m <sup>3</sup>
3.	SO <sub>2</sub> , µg/m <sup>3</sup>	13.65	80 µg/m <sup>3</sup>
4.	NO <sub>2</sub> , µg/m <sup>3</sup>	24.10	80 µg/m <sup>3</sup>
5.	Ozone, µg/m <sup>3</sup>	17.12	180 µg/m <sup>3</sup>
6.	NH <sub>3</sub> , µg/m <sup>3</sup>	14.35	400 µg/m <sup>3</sup>
7.	CO, mg/m <sup>3</sup>	0.72	4 mg/m <sup>3</sup>
8.	Pb, µg/m <sup>3</sup>	BDL	1 µg/m <sup>3</sup>
9.	As, ng/m <sup>3</sup>	BDL	6 ng/m <sup>3</sup>
10.	Ni, ng/m <sup>3</sup>	BDL	20 ng/m <sup>3</sup>
11.	Benzene, µg/m <sup>3</sup>	BDL	5 µg/m <sup>3</sup>
12.	Benzoapyrene ng/m <sup>3</sup>	BDL	1 ng/m <sup>3</sup>

NOTE: BDL - Below Detection Limit

  
Sr. Chemist  
Aditi R&D Services



  
Technical Manager  
Aditi R&D Services, Sindri

#### Statements :

- The test report refers only to the particular item(s) submitted for testing.
- The test results reported in this report are valid at the time of and under the stated condition of measurement.
- This particular test report cannot be reproduced except in full without prior permission of Quality Manager of the laboratory.



# ADITI R&D SERVICES

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Mobile: 09471358492, 09431512608

Ref. No.: - ARDS/21-22/4585

Date: 20.11.2021

## TEST REPORT OF AMBIENT AIR QUALITY

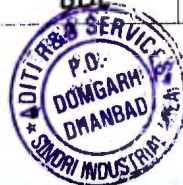
- Name of the industry : M/S TATA STEEL, JAMADOBA,  
TATA STEEL LIMITED  
JAMADOBA GROUP PLANT,  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Date of Sample Collection : 17.11.2021 TO 18.11.2021
- Date of Testing : 19.11.2021
- Test Procedure : As per IS-5182

### TEST RESULTS

LOCATION – CENTRAL WORKSHOP AREA , JAMADOBA			
	Avg. Ambient Temperature	24°C	Avg. Humidity
SI No.	Particulars	Value	NAAQ - CPCB STANDARD
1.	Particulate Matter (PM <sub>10</sub> ), µg/m <sup>3</sup>	84.8	100 µg/m <sup>3</sup>
2.	Particulate Matter (PM <sub>2.5</sub> ), µg/m <sup>3</sup>	38.10	60 µg/m <sup>3</sup>
3.	SO <sub>2</sub> , µg/m <sup>3</sup>	15.33	80 µg/m <sup>3</sup>
4.	NO <sub>2</sub> , µg/m <sup>3</sup>	21.15	80 µg/m <sup>3</sup>
5.	Ozone, µg/m <sup>3</sup>	16.80	180 µg/m <sup>3</sup>
6.	NH <sub>3</sub> , µg/m <sup>3</sup>	17.35	400 µg/m <sup>3</sup>
7.	CO, mg/m <sup>3</sup>	1.08	4 mg/m <sup>3</sup>
8.	Pb, µg/m <sup>3</sup>	BDL	1 µg/m <sup>3</sup>
9.	As, ng/m <sup>3</sup>	BDL	6 ng/m <sup>3</sup>
10.	Ni, ng/m <sup>3</sup>	BDL	20 ng/m <sup>3</sup>
11.	Benzene, µg/m <sup>3</sup>	BDL	5 µg/m <sup>3</sup>
12.	Benzoapyrene ng/m <sup>3</sup>	BDL	1 ng/m <sup>3</sup>

NOTE: BDL - Below Detection Limit

  
Sr. Chemist  
Aditi R&D Services



  
Technical Manager  
Aditi R&D Services, Sindri

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### TEST REPORT OF NOISE (AMBIENT) LEVEL MONITORING

Ref. No. & Date		NAME AND ADDRESS OF THE CLIENT		
ARDS/21-22/4586 Date: 20.11.2021		M/S TATA STEEL, JAMADOBA,		
Date of Monitoring		TATA STEEL LIMITED, JAMADOBA GROUP PLANT,		
17.11.2021 – 18.11.2021		DIST. - DHANBAD (JHARKHAND)		
17.11.2021 – 18.11.2021		Avg. Ambient Temperature(°C)	Average Humidity (%)	Weather Condition
Work Order 4700092573/932 Dt. 20.07.2021		24	65	Clear
				Status of the plant
				Running

#### MONITORING RESULTS

Sl. No	Place of Monitoring	Day Time (6 AM to 10 PM) Avg. dB(A)			Night Time (10 PM to 6 AM) Avg. dB(A)			Noise level (Ambient standard) for Industrial Area as per CPCB Noise Pollution (Regulation and Control) (Amendment) Rules, 2000 notified vide S.O. 1046(E) Dt. 22.11.2020 Limit in dB(A) Leq	
		MAX	MIN	AVG. dB(A) Leq	MAX	MIN	AVERAGE dB(A) Leq	Day Time	Night Time
LOCATION								Industrial Area	Industrial Area
JAMADOBA GROUP									
1.	Central Workshop	66.8	54.2	64.02	52.2	46.8	50.29	75	70
2.	Jamadoba Colliery	69.6	60.5	67.09	57.8	50.33	55.51		
3.	GM Office Area	49.2	47.4	48.39	47.3	42.9	45.63		
								Residential Area	Residential Area
4.	Officer Colony 12 No. Digwadih	47.2	42.6	45.48	43.2	39.8	41.82	55	45

Sr. Chemist

Aditi R&D Services



Technical Manager

Aditi R&D Services, Sindri

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Mobile: 09471358492, 09431512608

Ref. No.: - ARDS/21-22/4625


Date: 23.11.2021

## TEST REPORT OF MINERALOGICAL COMPOSITION OF PARTICULATE MATTER

- Name of the industry : M/S TATA STEEL, JAMADOBA,  
TATA STEEL LIMITED  
JAMADOBA GROUP PLANT,  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Date of Sample Collection : 18.11.2021
- Date of Testing : 19.11.2021 – 21.11.2021

### TEST RESULTS

Sl No.	Particulars	Mineralogical Composition (%)			
		SiO <sub>2</sub>	FeO	Al <sub>2</sub> O <sub>3</sub>	CaO
1.	Central Workshop Area, Jamadoba	1.68	0.04	1.13	2.2
2.	Officer's Colony, 12 No. Digwadih	2.02	0.10	1.21	2.88

  
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Ref. No.: - ARDS/21-22/4626


Date: 23.11.2021

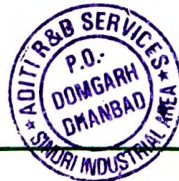
### TEST REPORT OF SURFACE WATER

- Name of the industry : M/S TATA STEEL, JAMADOBA,  
TATA STEEL LIMITED  
JAMADOBA GROUP PLANT,  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Sample Code : 1. Damodar River Up Stream  
2. Damodar River Dn Stream
- Date of Sample Collection: 17.11.2021
- Date of Testing : 19.11.2021 - 22.11.2021
- Test : pH, TDS, Turbidity, DO, BOD, Cl, F, SO<sub>4</sub>

### TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE		Limit as per IS 2296 Class - C	Test Method
		Damodar River Up Stream	Damodar River Dn Stream		
1.	pH	7.6	7.8	6.5 -8.5	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	590	610	1500	IS-3025 (P-16): 1984
3.	Turbidity, NTU	10.5	12.8	-	IS-3025 (P-10):1984
4.	Dissolved Oxygen, mg/l	6.7	5.8	4.0	IS-3025 (P-38):1989
5.	Bio chemical Oxygen Demand, mg/l	1.2	1.8	3.0	IS-3025 (P-44):1994
6.	Chloride as Cl, mg/l	54	64	-	IS-3025 (P-32):1988
7.	Fluoride as F, mg/l	0.58	0.63	1.5	IS-3025 (P-60):2008
8.	Sulphate as SO <sub>4</sub> , mg/l	45.15	57.18	400	IS-3025 (P-24):1986

  
Sr. Chemist  
Aditi R&D Services



  
Technical Manager  
Aditi R&D Services, Sindri

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Ref. No.: - ARDS/21-22/4627


Date: 23.11.2021

## TEST REPORT OF MINE WATER DISCHARGE

- Name of the industry : M/S TATA STEEL, JAMADOBA, TATA STEEL LIMITED JAMADOBA GROUP PLANT, DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Sample Code : 1. 2 Pit Jamadoba Colliery  
2. Digwadih Colliery  
3. 2 Incline Jamadoba Colliery  
4. 6 & 7 Pits Colliery
- Date of Sample Collection: 18.11.2021
- Date of Testing : 19.11.2021 – 22.11.2021
- Test : pH, TDS, TSS, BOD, COD, OIL & GREASE.

### TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE				Limit as per IS-2296 Class B (For Bathing)	Test Method
		2 Pit Jamadoba Colliery	Digwadih Colliery	2 Incline Jamadoba Colliery	6 & 7 Pits Colliery		
1.	pH,	7.7	7.8	7.6	7.9	6.5-8.5	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	648	658	590	680	-	IS-3025 (P-16): 1984
3.	Total Suspended Solids, mg/l	15	12	20	10	-	IS-3025(P-17): 1984
4.	Bio chemical Oxygen Demand, mg/l	2.1	1.6	1.8	1.9	3	IS-3025 (P-44):1994
5.	Chemical Oxygen Demand, mg/l	36	34	28	30	-	IS-3025 (P-58):2006
6.	Oil & Grease, mg/l	BDL	BDL	BDL	BDL	-	IS-3025 (P-39):2021

  
Sr. Chemist  
Aditi R&D Services



  
Technical Manager  
Aditi R&D Services, Sindri

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Ref. No.: - ARDS/21-22/4628


Date: 23.11.2021

## TEST REPORT OF EFFLUENT

- Name of the industry : M/S TATA STEEL, JAMADOBA, TATA STEEL LIMITED, JAMADOBA GROUP PLANT, DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Sample Code : 1. JCPP (Final Settling Pond)  
2. T.C.H, Point (Near Casualty)
- Date of Sample Collection: 18.11.2021
- Date of Testing : 19.11.2021 – 22.11.2021
- Test : pH, TDS, TSS, BOD, COD, OIL & GREASE.

### TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE		MoEF&C Notification 1 <sup>st</sup> Jan.2016 Permissible Max. Desirable Limit	Test Method
		JCPP (Final Settling Pond)	TCH Point (Near Casualty)		
1.	pH,	8.10	7.3	6.0-9.0	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	960	845	2100	IS-3025 (P-16): 1984
3.	Total Suspended Solids, mg/l	14	52	100	IS-3025(P-17): 1984
4.	Bio chemical Oxygen Demand, mg/l	1.6	2.1	30	IS-3025 (P-44):1994
5.	Chemical Oxygen Demand, mg/l	28	98	250	IS-3025 (P-58):2006
6.	Oil & Grease, mg/l	B.D.L	B.D.L	10	IS-3025 (P-39):2021

  
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Aditi R&D Services



  
Technical Manager  
Aditi R&D Services, Sindri

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Mobile: 09471358492, 09431512608

Ref. No.: - ARDS/21-22/4629

Date: 23.11.2021

## TEST REPORT OF DRINKING WATER

- Name of the industry : M/S TATA STEEL, JAMADOBA,  
TATA STEEL LIMITED  
JAMADOBA GROUP PLANT,  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Sample Code : 1. W. T. P. (Jamadoba)  
2. W. T. P. (Digwadih)
- Date of Sample Collection: 17.11.2021
- Date of Testing : 19.11.2021 – 22.11.2021
- Test :

Colour, Odour, Taste, Turbidity, pH, Total Hardness, Iron, Chloride, Res. Free chlorine, Total Dissolved Solids, Calcium, Copper, Manganese, Sulphate, Nitrate, Fluoride, Phenolic Compound, Mercury, Cadmium, Arsenic, Cyanide, Lead, Zinc, Total Coliform, Hexavalent Chromium, Mineral Oil, Alkalinity, Aluminium & Boron.

### TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE		IS as per IS 10500:2012		Test Method
		W.T.P. Jamadoba Canteen	W.T.P. Digwadih Club	Desirable	Permissible	
1.	Colour, (Hazen Unit)	1	1	5.00	15.0	IS 3025 (P-4):2021
2.	Odour	Agreeable	Agreeable	Agreeable	Agreeable	IS 3025 (P-5):2018
3.	Taste	Agreeable	Agreeable	Agreeable	Agreeable	IS 3025 (P-7):2017
4.	Turbidity, NTU	1	1	1.0	5.0	IS 3025 (P-10):1984
5.	pH	7.80	7.90	6.5-8.5	No. Relax.	IS-3025 (P-11):1983
6.	Total Hardness as CaCO <sub>3</sub> , mg/l	290.45	305.45	200	600	IS 3025 (P-21):2009
7.	Chloride as Cl, mg/l	48	52	250	1000	IS 3025 (P-32):1988
8.	Res. Free chlorine as Cl <sub>2</sub> mg/l	NIL	NIL	0.20	1.0	IS 3025 (P-26):2021
9.	Total Dissolved Solids, mg/l	670	680	500	2000	IS 3025 (P-16):1984
10.	Calcium as CaCO <sub>3</sub> , mg/l	87	95	75	200	IS 3025 (P-40):1991
11.	Copper as Cu, mg/l	BDL	BDL	0.05	1.5	IS 3025 (P-42):1992

Continued on Page 2

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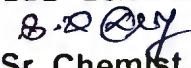
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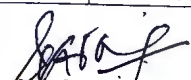
- 2 -

SI. No.	PARAMETERS OF TEST	VALUE		IS as per IS 10500:1991		Test Method
		W. T. P. Jamadoba	W.T.P. Digwadih	Desirable	Permissible	
12.	Manganese as Mn, mg/l	BDL	BDL	0.10	0.30	IS 3025 (P-59):2006
13.	Sulphate as SO <sub>4</sub> , mg/l	46	59	200	400	IS 3025 (P-24):1986
14.	Nitrate as NO <sub>3</sub> , mg/l	3.1	3.3	45	No. Relax	IS 3025 (P-34):1988
15.	Fluoride as F, mg/l	0.2	0.3	1.0	1.5	IS 3025 (P-60):2008
16.	Phenolic Compound as (C <sub>6</sub> H <sub>5</sub> OH) mg/l	BDL	BDL	0.001	0.002	IS 3025 (P-43):1992
17.	Mercury as Hg, mg/l	BDL	BDL	0.001	No. Relax	IS 3025 (P-48):1994
18.	Cadmium as Cd, mg/l	BDL	BDL	0.003	No. Relax	IS 3025 (P-41):1992
19.	Arsenic as As, mg/l	BDL	BDL	0.01	No. Relax	IS 3025 (P-37):1988
20.	Cyanide as CN, mg/l	BDL	BDL	0.05	No. Relax	IS 3025 (P-27):1986
21.	Lead as Pb, mg/l	BDL	BDL	0.01	No. Relax	IS 3025 (P-47):1994
22.	Zinc as Zn, mg/l,	0.1	0.15	5	15	IS 3025 (P-42):1992
23.	Total Coliform, No./100ml	Absent	Absent	Absent	Absent	IS 3025 (P-49):1994
24.	Hexavalent Chromium as Cr, mg/l	BDL	BDL	0.05	No. Relax	IS 3025 (P-52):2003
25.	Mineral Oil, mg/l	BDL	BDL	0.5	No. Relax	IS 3025 (P-39):1989
26.	Alkalinity as CaCO <sub>3</sub> , mg/l,	380	390	200	600	IS 3025 (P-23):1983
27.	Aluminium as Al, mg/l	BDL	BDL	0.03	0.2	IS 3025 (P-55):2003
28.	Boran as B, mg/l	BDL	BDL	0.5	1.0	IS 3025 (P-57):2005

NOTE: BDL - Below Detection Limit

  
Sr. Chemist  
Aditi R&D Services



  
Technical Manager  
Aditi R&D Services, Sindri

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Ref. No.: - ARDS/21-22/4630

Date: 23.11.2021

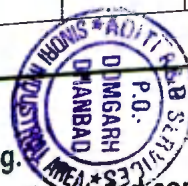
## TEST REPORT OF GROUND WATER

- Name of the industry : M/S TATA STEEL, JAMADOBA, TATA STEEL LIMITED, JAMADOBA GROUP PLANT, DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO. : 4700092573/932 Dt. 20.07.2021
- Sample Code :
  1. Purnadih Jorapokhar
  2. Digwadih 10 No. F&5
  3. Kalimela Kalimandir
  4. Upper Dungri
  5. Kenduadih Basti
  6. 6 & 7 Pit Ayodhya Nagari
- Date of Sample Collection : 17.11.2021
- Date of Testing : 19.11.2021 – 22.11.2021
- Test : Colour, Odour, Taste, Turbidity, pH, Total Hardness, Iron, Chloride, Res. Free chlorine, Total Dissolved Solids, Calcium, Copper, Manganese, Sulphate, Nitrate, Fluoride, Phenolic Compound, Mercury, Cadmium, Arsenic, Cyanide, Lead, Zinc, Total Coliform, Hexavalent Chromium, Mineral Oil, Alkalinity, Aluminium & Boron.

### TEST RESULT

PARAMETERS OF TEST	VALUE						IS as per IS 10500:1991		Test Method
	Purnadih Jorapokhar	Digwadih 10 No. F&5	Kalimela Kalimandir	Upper Dungri	Kenduadih Basti	6&7 Pit Ayodhya Nagari	Desirable	Permissible	
Colour, (Hazen Unit)	2	1	2	1	2	1	5	15	IS 3025 (P-4):2021
Temperature °C	18	19	18	19	18	18	-	-	-
Electrical Conductivity, µmhos/cm	960	1320	1020	1050	990	1010	-	-	-
Total Dissolved Solids, mg/l	624	858	665	685	645	655	-	-	IS 3025(P-16):1984
pH	7.7	7.9	7.6	7.8	7.6	7.7	6.5-8.5	No Relax	IS-3025(P-11):1983
Total Hardness as CaCO <sub>3</sub> , mg/l	355	165.78	128.71	224.80	256.77	316.05	200	600	IS 3025(P-21):2009
Calcium as Ca, mg/l	98	33.7	25.90	53.04	62.15	78.15	75	200	IS 3025(P-40):1991
Magnesium as Mg, mg/l	26	20.28	15.99	23.05	25.35	30.18	30	100	IS 3025(P-46):1994
Chloride as Cl, mg/l	33	30	48.5	40.2	53	60	250	1000	IS 3025(P-32):1988
Fluoride as F, mg/l	0.27	0.26	0.52	0.41	0.38	0.38	1.0	1.5	IS 3025(P-60):2008

Continued on Page -2



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# ADITI R&D SERVICES

Testing Laboratory

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Mobile: 09471358492, 09431512608

2 -

Sl. No	PARAMETERS OF TEST	VALUE						IS as per IS 10500:1991		Test Method
		Purnadi h Jorapok har	Digwadih 10 No. F&5	Kalimela Kaliman dir	Upper Dungri	Kendua- dih Basti	6&7 Pit Ayodh ya Nagri	Desir -able	Permi s-sible	
11	Sulphate as SO <sub>4</sub> , mg/l	40.5	44.2	46.5	48	52	58.4	200	400	IS 3025(P-24):1986
12	Nitrate as NO <sub>3</sub> , mg/l	12.8	15.8	7.8	10.8	9.5	9.3	45	No. Relax	IS 3025(P-34):1988
13	Alkalinity as CaCO <sub>3</sub> , mg/l,	265	290	305	395	340	340	200	600	IS 3025(P-23):1983
14	Lead as Pb, mg/l	BDL	BDL	BDL	BDL	BDL	BDL	0.01	No. Relax	IS 3025(P-47):1994
15	Zinc as Zn, mg/l,	0.12	0.10	0.14	0.12	0.17	0.15	5	15	IS 3025(P-42):1992
16	Iron a Fe, mg/l	0.15	0.13	0.16	0.14	0.18	0.18	0.3	No. Relax	IS 3025(P-53):2003
17	Copper as Cu, mg/l	BDL	BDL	BDL	BDL	BDL	BDL	0.05	1.5	IS3025 (P-42):1992
18	Mercury as Hg, mg/l	BDL	BDL	BDL	BDL	BDL	BDL	0.001	No. Relax	IS 3025(P-48):1994
19	Cadmium as Cd, mg/l	BDL	BDL	BDL	BDL	BDL	BDL	0.003	No. Relax	IS 3025(P-41):1992
20	Nickel as Ni, mg/l	BDL	BDL	BDL	BDL	BDL	BDL	0.02	No. Relax	IS 3025(P-37):1992
21	Arsenic as As, mg/l	BDL	BDL	BDL	BDL	BDL	BDL	0.01	No. Relax	IS 3025(P-37):1988
22	Cyanide as CN, mg/l	BDL	BDL	BDL	BDL	BDL	BDL	0.05	No. Relax	IS 3025(P-27):1986
23	Total Chromium as Cr, mg/l	BDL	BDL	BDL	BDL	BDL	BDL	0.05	No. Relax	IS 3025(P-52):2003

NOTE: BDL - Below Detection Limit

  
Sr. Chemist  
Aditi R&D Services



  
Technical Manager  
Aditi R&D Services, Sindri

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Ref. No.: - ARDS/21-22/4631

Date: 23.11.2021

## TEST REPORT OF ETP

- Name of the industry : M/S TATA STEEL, JAMADOBA,  
TATA STEEL LIMITED  
JAMADOBA GROUP PLANT,  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Sample Code : ETP - TCH (Inlet and Outlet)
- Date of Sample Collection: 18.11.2021
- Date of Testing : 19.11.2021 - 22.11.2021
- Test : pH, TDS, TSS, BOD, COD AND OIL & GREASE

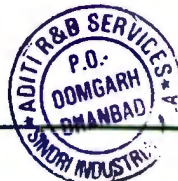
## TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE		G.S.R 422 (E) Max. Desirable Limit	Test Method
		ETP INLET-TCH	ETP OUTLET-TCH		
1.	pH,	7.5	7.8	5.5-9.0	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	1025	812	-	IS-3025 (P-16): 1984
3.	Total Suspended Solids	132	37	100	IS-3025 (P-17): 1984
4.	Bio chemical Oxygen Demand, mg/l	23.4	18.2	30.0	IS-3025 (P-44):1994
5.	Chemical Oxygen Demand, mg/l	165.8	60	250	IS-3025 (P-58):2006
6.	Oil & Grease	2.2	BDL	10	IS-3025 (P-39):2021



Sr. Chemist

Aditi R&D Services



  
Technical Manager

Aditi R&D Services, Sindri

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Ref. No.: - ARDS/21-22/4632


Date: 23.11.2021

## TEST REPORT OF ETP

- Name of the industry : M/S TATA STEEL, JAMADOBA,  
TATA STEEL LIMITED  
JAMADOBA GROUP PLANT,  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Sample Code : ETP – GARAGE (Inlet and Outlet)
- Date of Sample Collection: 18.11.2021
- Date of Testing : 19.11.2021 – 22.11.2021
- Test : pH, TDS, TSS, BOD, COD AND OIL & GREASE

## TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE		G.S.R 422(E) Desirable Limit	Test Method
		ETP INLET- GARAGE	ETP OUTLET- GARAGE		
1.	pH,	7.70	7.60	5.5-9.0	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	925	765	-	IS-3025 (P-16): 1984
3.	Total Suspended Solids	73	18	100	IS-3025 (P-17): 1984
4.	Bio chemical Oxygen Demand, mg/l	22.8	8.4	30.0	IS-3025 (P-44):1994
5.	Chemical Oxygen Demand, mg/l	180.5	76.5	250	IS-3025 (P-58):2006
6.	Oil & Grease	2.8	BDL	10	IS-3025 (P-39):2021

  
Sr. Chemist  
Aditi R&D Services



  
Technical Manager  
Aditi R&D Services, Sindri

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Ref. No.: - ARDS/21-22/4633


Date: 23.11.2021

## TEST REPORT OF STP

- Name of the industry : M/S TATA STEEL, JAMADOBA,  
TATA STEEL LIMITED  
JAMADOBA GROUP PLANT,  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Sample Code : STP – RAILWAY COLONY (Inlet and Outlet)
- Date of Sample Collection: 17.11.2021
- Date of Testing : 19.11.2021 – 22.11.2021
- Test : pH, TDS, TSS, BOD, COD AND OIL & GREASE

## TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE		LIMIT G.S.R 422(E) (Inland Surface Water Discharge)		Test Method
		STP INLET- RAILWAY COLONY	STP OUTLET- RAILWAY COLONY	Inlet	Outlet	
1.	pH,	8.30	7.90	-	5.5-9.0	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	790	745	-	-	IS-3025 (P-16): 1984
3.	Total Suspended Solids	128	85	-	100	IS-3025 (P-17): 1984
4.	Bio chemical Oxygen Demand, mg/l	41.8	15.8	-	30.0	IS-3025 (P-44):1994
5.	Chemical Oxygen Demand, mg/l	365	95	-	250	IS-3025 (P-58):2006
6.	Oil & Grease	BDL	BDL	-	10	IS-3025 (P-39):2021

  
Sr. Chemist  
Aditi R&D Services



  
Technical Manager  
Aditi R&D Services, Sindri

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Ref. No.: - ARDS/21-22/4634

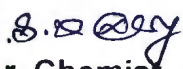
Date: 23.11.2021

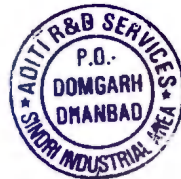
## TEST REPORT OF ETP

- Name of the industry : M/S TATA STEEL, JAMADOBA,  
TATA STEEL LIMITED  
JAMADOBA GROUP PLANT,  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Sample Code : JAMADOBA CANTEEN (Inlet and Outlet)
- Date of Sample Collection: 18.11.2021
- Date of Testing : 19.11.2021 – 22.11.2021
- Test : pH, TDS, TSS, BOD, COD AND OIL & GREASE

## TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE		G.S.R 422(E) Desirable Limit	Test Method
		ETP INLET- JAMADOBA CANTEEN	ETP OUTLET- JAMADOBA CANTEEN		
1.	pH,	7.48	7.91	5.5-9.0	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	985	795	-	IS-3025 (P-16): 1984
3.	Total Suspended Solids	142	39	100	IS-3025 (P-17): 1984
4.	Bio chemical Oxygen Demand, mg/l	22.8	17.5	30.0	IS-3025 (P-44):1994
5.	Chemical Oxygen Demand, mg/l	170.5	65	250	IS-3025 (P-58):2006
6.	Oil & Grease	2.1	BDL	10	IS-3025 (P-39):2021

  
Sr. Chemist  
Aditi R&D Services



  
Technical Manager  
Aditi R&D Services, Sindri

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Ref. No.: - ARDS/21-22/4635


Date: 23.11.2021

## TEST REPORT OF ETP

- Name of the industry : M/S TATA STEEL, JAMADOBA,  
TATA STEEL LIMITED  
JAMADOBA GROUP PLANT,  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Sample Code : ETP – JCPP CANTEEN (Inlet and Outlet)
- Date of Sample Collection: 18.11.2021
- Date of Testing : 19.11.2021 – 22.11.2021
- Test : pH, TDS, TSS, BOD, COD AND OIL & GREASE

## TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE		G.S.R 422(E) Desirable Limit	Test Method
		ETP INLET- JCPP CANTEEN	ETP OUTLET- JCPP CANTEEN		
1.	pH,	7.6	7.7	5.5-9.0	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	960	880	-	IS-3025 (P-16): 1984
3.	Total Suspended Solids	122	28	100	IS-3025 (P-17): 1984
4.	Bio chemical Oxygen Demand, mg/l	21.8	16.8	30.0	IS-3025 (P-44):1994
5.	Chemical Oxygen Demand, mg/l	158.5	70	250	IS-3025 (P-58):2006
6.	Oil & Grease	1.8	BD L	10	IS-3025 (P-39):2021

  
Sr. Chemist  
Aditi R&D Services



  
Technical Manager  
Aditi R&D Services, Sindri

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**ENVIRONMENTAL MONITORING REPORT**

**OF**

**M/S TATA STEEL LIMITED**

**DHANBAD**

*for*

**FEBRUARY - 2022**

*Prepared by:*

**ADITI R&D SERVICES**

**PLOT NO. I-B/17(P), SINDRI INDUSTRIAL AREA,  
P.O.- DOMGARH, DIST. - DHANBAD-828107  
(JHARKHAND)**

**M/S TATA STEEL LIMITED**  
**(JAMADOBA GROUP)**



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Mobile: 09471358492, 09431512608

Ref. No.: - ARDS/21-22/6561

Date: 26.02.2022

### TEST REPORT OF AMBIENT AIR QUALITY

- Name of the industry : M/S TATA STEEL, JAMADOBA,  
TATA STEEL LIMITED  
JAMADOBA GROUP PLANT,  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Date of Sample Collection : 23.02.2022 TO 24.02.2022
- Date of Testing : 25.02.2022
- Test Procedure : As per IS-5182

### TEST RESULTS

LOCATION - OFFICERS COLONY, 12 NO. DIGWADIH

Sl No.	Particulars	Avg. Ambient Temperature 21°C Value	Avg. Humidity 49%
1.	Particulate Matter (PM <sub>10</sub> ), µg/m <sup>3</sup>	82.44	NAAQ - CPCB STANDARD 100 µg/m <sup>3</sup>
2.	Particulate Matter (PM <sub>2.5</sub> ), µg/m <sup>3</sup>	41.50	60 µg/m <sup>3</sup>
3.	SO <sub>2</sub> , µg/m <sup>3</sup>	15.10	80 µg/m <sup>3</sup>
4.	NO <sub>2</sub> , µg/m <sup>3</sup>	23.36	80 µg/m <sup>3</sup>
5.	Ozone, µg/m <sup>3</sup>	14.25	180 µg/m <sup>3</sup>
6.	NH <sub>3</sub> , µg/m <sup>3</sup>	12.62	400 µg/m <sup>3</sup>
7.	CO, mg/m <sup>3</sup>	0.64	4 mg/m <sup>3</sup>
8.	Pb, µg/m <sup>3</sup>	BDL	1 µg/m <sup>3</sup>
9.	As, ng/m <sup>3</sup>	BDL	6 ng/m <sup>3</sup>
10.	Ni, ng/m <sup>3</sup>	BDL	20 ng/m <sup>3</sup>
11.	Benzene, µg/m <sup>3</sup>	BDL	5 µg/m <sup>3</sup>
12.	Benzoapyrene ng/m <sup>3</sup>	BDL	1 ng/m <sup>3</sup>

NOTE: BDL - Below Detection Limit

*S. R. Singh*  
Sr. Chemist

Aditi R&D Services



*[Signature]*  
Technical Manager  
Aditi R&D Services, Sindri

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Ref. No.: - ARDS/21-22/6562

Date: 26.02.2022

## TEST REPORT OF AMBIENT AIR QUALITY

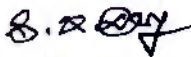
- Name of the industry : M/S TATA STEEL, JAMADOBA,  
TATA STEEL LIMITED  
JAMADOBA GROUP PLANT,  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Date of Sample Collection : 23.02.2022 TO 24.02.2022
- Date of Testing : 25.02.2022
- Test Procedure : As per IS-5182

### TEST RESULTS

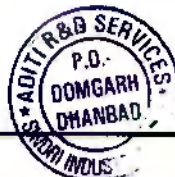
LOCATION – CENTRAL WORKSHOP AREA , JAMADOBA

SI No.	Particulars	Value	NAAQ - CPCB STANDARD
1.	Particulate Matter (PM <sub>10</sub> ), µg/m <sup>3</sup>	79.24	100 µg/m <sup>3</sup>
2.	Particulate Matter (PM <sub>2.5</sub> ), µg/m <sup>3</sup>	33.68	60 µg/m <sup>3</sup>
3.	SO <sub>2</sub> , µg/m <sup>3</sup>	12.80	80 µg/m <sup>3</sup>
4.	NO <sub>2</sub> , µg/m <sup>3</sup>	20.46	80 µg/m <sup>3</sup>
5.	Ozone, µg/m <sup>3</sup>	11.22	180 µg/m <sup>3</sup>
6.	NH <sub>3</sub> , µg/m <sup>3</sup>	13.63	400 µg/m <sup>3</sup>
7.	CO, mg/m <sup>3</sup>	0.97	4 mg/m <sup>3</sup>
8.	Pb, µg/m <sup>3</sup>	BDL	1 µg/m <sup>3</sup>
9.	As, ng/m <sup>3</sup>	BDL	6 ng/m <sup>3</sup>
10.	Ni, ng/m <sup>3</sup>	BDL	20 ng/m <sup>3</sup>
11.	Benzene, µg/m <sup>3</sup>	BDL	5 µg/m <sup>3</sup>
12.	Benzoapyrene ng/m <sup>3</sup>	BDL	1 ng/m <sup>3</sup>

NOTE: BDL - Below Detection Limit

  
Sr. Chemist

Aditi R&D Services



  
Technical Manager

Aditi R&D Services, Sindri

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### TEST REPORT OF NOISE (AMBIENT) LEVEL MONITORING

Ref. No. & Date	NAME AND ADDRESS OF THE CLIENT			
ARDS/21-22/ 6563 Date:26.02.2022	M/S TATA STEEL, JAMADOBA,			
Date of Monitoring	TATA STEEL LIMITED, JAMADOBA GROUP PLANT, DIST. - DHANBAD (JHARKHAND)			
23.02.2022 – 24.02.2022	Avg. Ambient Temperature (°C)	Average Humidity (%)	Weather Condition	Status of the plant
Work Order 4700092573/932 Dt. 20.07.2021	21	49	Clear	Running

#### MONITORING RESULTS

Sl. No	Place of Monitoring	Day Time (6 AM to 10 PM) Avg. dB(A)			Night Time (10 PM to 6 AM) Avg. dB(A)			Noise level (Ambient standard) for Industrial Area as per CPCB Noise Pollution (Regulation and Control) (Amendment) Rules, 2000 notified vide S.O. 1046(E) Dt. 22.11.2020 Limit in dB(A) Leq	
		MAX	MIN	AVG. dB(A) Leq	MAX	MIN	AVERAGE dB(A) Leq	Day Time	Night Time
	LOCATION							Industrial Area	Industrial Area
	JAMADOBA GROUP								
1.	Central Workshop	72.8	54.2	69.85	56.3	49.2	54.06		
2.	Jamadoba Colliery	65.3	60.5	63.53	52.1	51.80	51.95	75	70
3.	GM Office Area	56.8	48.3	54.36	43.6	39.2	41.93		
								Residential Area	Residential Area
4.	Officer Colony 12 No. Digwadih	51.8	46.3	49.87	41.4	36.2	39.54	55	45

*B. R. Singh*  
Sr. Chemist  
Aditi R&D Services



*[Signature]*  
Technical Manager  
Aditi R&D Services, Sindri

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Mobile: 09471358492, 09431512608

Ref. No.: - ARDS/21-22/6569

Date: 27.02.2022

## TEST REPORT OF AMBIENT AIR QUALITY

- Name of the industry : M/S TATA STEEL, JAMADOBA,  
TATA STEEL LIMITED  
JAMADOBA GROUP PLANT,  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO. : 4700092573/932 Dt. 20.07.2021
- Date of Sample Collection : 24.02.2022 TO 25.02.2022
- Date of Testing : 26.02.2022
- Test Procedure : As per IS-5182

### TEST RESULTS

LOCATION - JAMADOBA COLLIERY

SI No.	Particulars	Value	CPCB STANDARD
	Avg. Ambient Temperature	21°C	Avg. Humidity 49%
1.	Particulate Matter (PM <sub>10</sub> ), µg/m <sup>3</sup>	93.14	100 µg/m <sup>3</sup>
2.	Particulate Matter (PM <sub>2.5</sub> ), µg/m <sup>3</sup>	42.50	60 µg/m <sup>3</sup>
3.	SO <sub>2</sub> , µg/m <sup>3</sup>	24.66	80 µg/m <sup>3</sup>
4.	NO <sub>2</sub> , µg/m <sup>3</sup>	29.40	80 µg/m <sup>3</sup>
5.	Ozone, µg/m <sup>3</sup>	22.28	180 µg/m <sup>3</sup>
6.	NH <sub>3</sub> , µg/m <sup>3</sup>	21.23	400 µg/m <sup>3</sup>
7.	CO, mg/m <sup>3</sup>	1.02	4 mg/m <sup>3</sup>
8.	Pb, µg/m <sup>3</sup>	BDL	1 µg/m <sup>3</sup>
9.	As, ng/m <sup>3</sup>	BDL	6 ng/m <sup>3</sup>
10.	Ni, ng/m <sup>3</sup>	BDL	20 ng/m <sup>3</sup>
11.	Benzene, µg/m <sup>3</sup>	BDL	5 µg/m <sup>3</sup>
12.	Benzoapyrene ng/m <sup>3</sup>	BDL	1 ng/m <sup>3</sup>

NOTE: BDL - Below Detection Limit

*S. R. Roy*  
Sr. Chemist

Aditi R&D Services



*[Signature]*  
Technical Manager  
Aditi R&D Services, Sindri

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Ref. No.: - ARDS/21-22/6589

Date: 28.02.2022

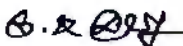
## TEST REPORT OF MINERALOGICAL COMPOSITION

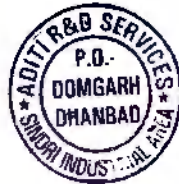
### OF PARTICULATE MATTER

- Name of the industry : M/S TATA STEEL, JAMADOBA,  
TATA STEEL LIMITED  
JAMADOBA GROUP PLANT,  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Date of Sample Collection : 24.02.2022
- Date of Testing : 25.02.2022 – 27.02.2022

### TEST RESULTS

Sl No.	Particulars	Mineralogical Composition (%)			
		SiO <sub>2</sub>	FeO	Al <sub>2</sub> O <sub>3</sub>	CaO
1.	Jamadoba Colliery	1.79	0.06	1.10	1.9

  
Sr. Chemist  
Aditi R&D Services



  
Technical Manager  
Aditi R&D Services, Sindri

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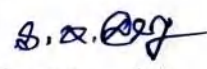
Date: 01.03.2022

## TEST REPORT OF EFFLUENT

- Name of the industry : M/S TATA STEEL, JAMADOBA,  
TATA STEEL LIMITED  
JAMADOBA GROUP PLANT,  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Sample Code : 1. JCPP (Final Settling Pond)  
2. T.C.H, Point (Near Casualty)
- Date of Sample Collection: 24.02.2022
- Date of Testing : 25.02.2022 – 28.02.2022
- Test : pH, TDS, TSS, BOD, COD, OIL & GREASE.

### TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE		MoEF&C Notification 1 <sup>st</sup> Jan.2016 Permissible Max. Desirable Limit	Test Method
		JCPP (Final Settling Pond)	TCH Point (Near Casualty)		
1.	pH,	8.15	7.9	6.0-9.0	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	935	860	2100	IS-3025 (P-16): 1984
3.	Total Suspended Solids, mg/l	19	57	100	IS-3025(P-17) : 1984
4.	Bio chemical Oxygen Demand, mg/l	1.8	2.4	30	IS-3025 (P-44):1994
5.	Chemical Oxygen Demand, mg/l	36	104	250	IS-3025 (P-58):2006
6.	Oil & Grease, mg/l	B.D.L	B.D.L	10	IS-3025 (P-39):2021

  
Sr. Chemist  
Aditi R&D Services



  
Technical Manager  
Aditi R&D Services, Sindri

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Ref. No.: - ARDS/21-22/6623

Date: 01.03.2022

### TEST REPORT OF DRINKING WATER

- Name of the industry : M/S TATA STEEL, JAMADOBA,  
TATA STEEL LIMITED  
JAMADOBA GROUP PLANT,  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Sample Code : 1. Digwadih Canteen  
2. W. T. P. (Jamadoba)
- Date of Sample Collection: 24.02.2022
- Date of Testing : 25.02.2022 – 28.02.2022
- Test :

Colour, Odour, Taste, Turbidity, pH, Total Hardness, Iron, Chloride, Res. Free chlorine, Total Dissolved Solids, Calcium, Copper, Manganese, Sulphate, Nitrate, Fluoride, Phenolic Compound, Mercury, Cadmium, Arsenic, Cyanide, Lead, Zinc, Total Coliform, Hexavalent Chromium, Mineral Oil, Alkalinity, Aluminium & Boron.

#### TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE		IS as per IS 10500:2012		Test Method
		Digwadih Canteen	W.T.P Jamadoba	Desirable	Permissible	
1.	Colour, (Hazen Unit)	1	1	5.00	15.0	IS 3025 (P-4):2021
2.	Odour	Agreeable	Agreeable	Agreeable	Agreeable	IS 3025 (P-5):2018
3.	Taste	Agreeable	Agreeable	Agreeable	Agreeable	IS 3025 (P-7):2017
4.	Turbidity, NTU	1	1	1.0	5.0	IS 3025 (P-10):1984
5.	pH	7.85	8.15	6.5-8.5	No. Relax.	IS-3025 (P-11):1983
6.	Total Hardness as CaCO <sub>3</sub> , mg/l	270.48	312.45	200	600	IS 3025 (P-21):2009
7.	Chloride as Cl, mg/l	52	56	250	1000	IS 3025 (P-32):1988
8.	Res. Free chlorine as Cl <sub>2</sub> mg/l	NIL	NIL	0.20	1.0	IS 3025 (P-26):2021
9.	Total Dissolved Solids, mg/l	482	510	500	2000	IS 3025 (P-16):1984
10.	Calcium as CaCO <sub>3</sub> , mg/l	77	107	75	200	IS 3025 (P-40):1991
11.	Copper as Cu, mg/l	BDL		0.05	1.5	IS 3025 (P-42):1992



*[Signature]*

Continued on Page 2

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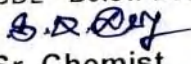
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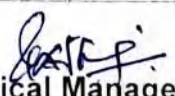
- 2 -

Sl. No.	PARAMETERS OF TEST	VALUE		IS as per IS 10500:1991		Test Method
		Digwadih Canteen	W.T.P Jamadoba	Desirable	Permissible	
12.	Manganese as Mn, mg/l	BDL	BDL	0.10	0.30	IS 3025 (P-59):2006
13.	Sulphate as SO <sub>4</sub> , mg/l	51	62	200	400	IS 3025 (P-24):1986
14.	Nitrate as NO <sub>3</sub> , mg/l	3.2	3.4	45	No. Relax	IS 3025 (P-34):1988
15.	Fluoride as F, mg/l	0.28	0.32	1.0	1.5	IS 3025 (P-60):2008
16.	Phenolic Compound as (C <sub>6</sub> H <sub>5</sub> OH) mg/l	BDL	BDL	0.001	0.002	IS 3025 (P-43):1992
17.	Mercury as Hg, mg/l	BDL	BDL	0.001	No. Relax	IS 3025 (P-48):1994
18.	Cadmium as Cd, mg/l	BDL	BDL	0.003	No. Relax	IS 3025 (P-41):1992
19.	Arsenic as As, mg/l	BDL	BDL	0.01	No. Relax	IS 3025 (P-37):1988
20.	Cyanide as CN, mg/l	BDL	BDL	0.05	No. Relax	IS 3025 (P-27):1986
21.	Lead as Pb, mg/l	BDL	BDL	0.01	No. Relax	IS 3025 (P-47):1994
22.	Zinc as Zn, mg/l,	0.12	0.17	5	15	IS 3025 (P-42):1992
23.	Total Coliform, No./100ml	Absent	Absent	Absent	Absent	IS 3025 (P-49):1994
24.	Hexavalent Chromium as Cr, mg/l	BDL	BDL	0.05	No. Relax	IS 3025 (P-52):2003
25.	Mineral Oil, mg/l	BDL	BDL	0.5	No. Relax	IS 3025 (P-39):1989
26.	Alkalinity as CaCO <sub>3</sub> , mg/l,	376	388	200	600	IS 3025 (P-23):1983
27.	Aluminium as Al, mg/l	BDL	BDL	0.03	0.2	IS 3025 (P-55):2003
28.	Boran as B, mg/l	BDL	BDL	0.5	1.0	IS 3025 (P-57):2005

NOTE: BDL - Below Detection Limit

  
Sr. Chemist  
Aditi R&D Services



  
Technical Manager  
Aditi R&D Services, Sindri

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Ref. No.: - ARDS/21-22/6624

Date: 01.03.2022

### TEST REPORT OF GROUND WATER

- Name of the industry : M/S TATA STEEL, JAMADOBA, TATA STEEL LIMITED  
JAMADOBA GROUP PLANT,  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO. : 4700092573/932 Dt. 20.07.2021
- Sample Code :
  - Bhowra 13 No
  - Mohalbani Basti
  - Jamadoba 3 No.
  - Jorapokhar Kushtand
  - Lower Dungri
- Date of Sample Collection : 23.02.2022 – 24.02.2022
- Date of Testing : 25.02.2022 – 28.02.2022
- Test : Colour, Odour, Taste, Turbidity, pH, Total Hardness, Iron, Chloride, Res. Free chlorine, Total Dissolved Solids, Calcium, Copper, Manganese, Sulphate, Nitrate, Fluoride, Phenolic Compound, Mercury, Cadmium, Arsenic, Cyanide, Lead, Zinc, Total Coliform, Hexavalent Chromium, Mineral Oil, Alkalinity, Aluminium & Boron.

### TEST RESULT

PARAMETERS OF TEST	VALUE					IS as per IS 10500:1991		Test Method
	Bhowra 13 No	Mohalbani Basti	Jamadoba 3 No.	Jorapokhar Kushtand	Lower Dungri	Desirable	Permissible	
Colour, (Hazen Unit)	2	1	2	1	2	5	15	IS 3025 (P-4):2021
Temperature °C	26	27	26	27	26	-	-	-
Electrical Conductivity, µmhos/cm	605	740	830	640	710	-	-	-
Total Dissolved Solids, mg/l	390	368	524	430	452	-	-	IS 3025(P-16):1984
pH	7.8	7.7	7.6	7.8	7.9	6.5-8.5	No Relax	IS-3025(P-11):1983
Total Hardness as CaCO <sub>3</sub> , mg/l	352	431.2	435.12	413.44	399.84	200	600	IS 3025(P-21):2009
Calcium as Ca, mg/l	72.12	89.78	93.15	98.78	105.05	75	200	IS 3025(P-40):1991
Magnesium as Mg, mg/l	56.8	31.97	20.96	38.79	31.97	30	100	IS 3025(P-46):1994
Chloride as Cl, mg/l	49.98	69.90	89.97	78.95	78.95	83.90	1000	IS 3025(P-32):1988
Fluoride as F, mg/l	0.25	0.32	0.42	0.52	0.48	1.0	1.5	IS 3025(P-60):2008

Continued on Page -2

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2

Sl. No.	PARAMETERS OF TEST	VALUE					IS as per IS 10500:1991		Test Method
		Bhowra 13 No	Mohalban i Basti	Jamado 3 No.	Jorap okhar Kusht and	Lower Dungri	Desirable	Permissible	
11	Sulphate as SO <sub>4</sub> , mg/l	43.2	47.4	49.5	44.8	54	200	400	IS 3025(P-24):1986
12	Nitrate as NO <sub>3</sub> , mg/l	12.3	15.2	7.3	10.3	9.7	45	No. Relax	IS 3025(P-34):1988
13	Alkalinity as CaCO <sub>3</sub> , mg/l	285	235	377	296	305	200	600	IS 3025(P-23):1983
14	Lead as Pb, mg/l	BDL	BDL	BDL	BDL	BDL	0.01	No. Relax	IS 3025(P-47):1994
15	Zinc as Zn, mg/l	0.14	0.12	0.13	0.15	0.14	5	15	IS 3025(P-42):1992
16	Iron as Fe, mg/l	0.18	0.15	0.16	0.18	0.2	0.3	No. Relax	IS 3025(P-53):2003
17	Copper as Cu, mg/l	BDL	BDL	BDL	BDL	BDL	0.05	1.5	IS 3025 (P-42):1992
18	Mercury as Hg, mg/l	BDL	BDL	BDL	BDL	BDL	0.001	No. Relax	IS 3025(P-48):1994
19	Cadmium as Cd, mg/l	BDL	BDL	BDL	BDL	BDL	0.003	No. Relax	IS 3025(P-41):1992
20	Nickel as Ni, mg/l	BDL	BDL	BDL	BDL	BDL	0.02	No. Relax	IS 3025(P-37):1992
21	Arsenic as As, mg/l	BDL	BDL	BDL	BDL	BDL	0.01	No. Relax	IS 3025(P-37):1988
22	Cyanide as CN, mg/l	BDL	BDL	BDL	BDL	BDL	0.05	No. Relax	IS 3025(P-27):1986
23	Total Chromium as Cr, mg/l	BDL	BDL	BDL	BDL	BDL	0.05	No. Relax	IS 3025(P-52):2003

NOTE: BDL - Below Detection Limit

*S.K. Singh*  
Sr. Chemist  
Aditi R&D Services



*S.K. Singh*  
Technical Manager  
Aditi R&D Services, Sindri

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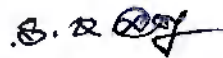
Date: 01.03.2022

## TEST REPORT OF ETP

- Name of the industry : M/S TATA STEEL, JAMADOBA,  
TATA STEEL LIMITED  
JAMADOBA GROUP PLANT,  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Sample Code : ETP – TCH (Inlet and Outlet)
- Date of Sample Collection: 24.02.2022
- Date of Testing : 25.02.2022 – 28.02.2022
- Test : pH, TDS, TSS, BOD, COD AND OIL & GREASE

### TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE		G.S.R 422 (E) Max. Desirable Limit	Test Method
		ETP INLET-TCH	ETP OUTLET-TCH		
1.	pH,	8.90	8.56	5.5-9.0	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	1030	845	-	IS-3025 (P-16): 1984
3.	Total Suspended Solids	125	32	100	IS-3025 (P-17): 1984
4.	Bio chemical Oxygen Demand, mg/l	22.8	17.4	30.0	IS-3025 (P-44):1994
5.	Chemical Oxygen Demand, mg/l	182.4	69.6	250	IS-3025 (P-58):2006
6.	Oil & Grease	2.3	BDL	10	IS-3025 (P-39):2021

  
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Aditi R&D Services



  
Technical Manager  
Aditi R&D Services, Sindri

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Ref. No.: - ARDS/21-22/6626

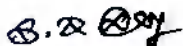
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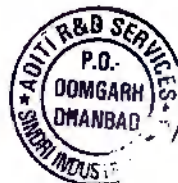
## TEST REPORT OF ETP


- Name of the industry : M/S TATA STEEL, JAMADOBA,  
TATA STEEL LIMITED  
JAMADOBA GROUP PLANT,  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Sample Code : ETP - GARAGE (Inlet and Outlet)
- Date of Sample Collection: 24.02.2022
- Date of Testing : 25.02.2022 - 28.02.2022
- Test : pH, TDS, TSS, BOD, COD AND OIL & GREASE

## TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE		G.S.R 422(E)	Test Method
		ETP INLET-GARAGE	ETP OUTLET-GARAGE	Desirable Limit	
1.	pH,	8.84	8.70	5.5-9.0	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	965	745	-	IS-3025 (P-16): 1984
3.	Total Suspended Solids	78	22	100	IS-3025 (P-17): 1984
4.	Bio chemical Oxygen Demand, mg/l	23.2	8.2	30.0	IS-3025 (P-44):1994
5.	Chemical Oxygen Demand, mg/l	185.6	65.6	250	IS-3025 (P-58):2006
6.	Oil & Grease	2.6	BDL	10	IS-3025 (P-39):2021

  
Sr. Chemist  
Aditi R&D Services



  
Technical Manager  
Aditi R&D Services, Sindri

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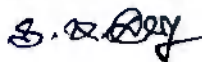
Date: 01.03.2022

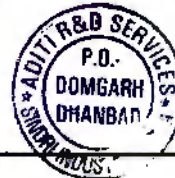
## TEST REPORT OF STP

- Name of the industry : M/S TATA STEEL, JAMADOBA,  
TATA STEEL LIMITED  
JAMADOBA GROUP PLANT,  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Sample Code : STP - RAILWAY COLONY (Inlet and Outlet)
- Date of Sample Collection: 23.02.2022
- Date of Testing : 24.02.2022 - 28.02.2022
- Test : pH, TDS, TSS, BOD, COD AND OIL & GREASE

### TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE		LIMIT G.S.R 422(E) (Inland Surface Water Discharge)		Test Method
		STP INLET- RAILWAY COLONY	STP OUTLET- RAILWAY COLONY	Inlet	Outlet	
2.	Total Dissolved Solids, mg/l	810	760	-	-	IS-3025 (P-16): 1984
3.	Total Suspended Solids	136	82	-	100	IS-3025 (P-17): 1984
4.	Bio chemical Oxygen Demand, mg/l	40.2	14.4	-	30.0	IS-3025 (P-44):1994
5.	Chemical Oxygen Demand, mg/l	321.6	90.5	-	250	IS-3025 (P-58):2006
6.	Oil & Grease	BDL	BDL	-	10	IS-3025 (P-39):2021

  
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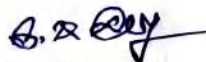
Date: 01.03.2022

## TEST REPORT OF ETP

- Name of the industry : M/S TATA STEEL, JAMADOBA,  
TATA STEEL LIMITED  
JAMADOBA GROUP PLANT,  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Sample Code : JAMADOBA CANTEEN (Inlet and Outlet)
- Date of Sample Collection: 23.02.2022
- Date of Testing : 24.02.2022 – 28.02.2022
- Test : pH, TDS, TSS, BOD, COD AND OIL & GREASE

### TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE		G.S.R 422(E) Desirable Limit	Test Method
		ETP INLET- JAMADOBA CANTEEN	ETP OUTLET- JAMADOBA CANTEEN		
1.	pH,	7.90	7.60	5.5-9.0	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	780	730	-	IS-3025 (P-16): 1984
3.	Total Suspended Solids	132	89	100	IS-3025 (P-17): 1984
4.	Bio chemical Oxygen Demand, mg/l	38.8	16.2	30.0	IS-3025 (P-44):1994
5.	Chemical Oxygen Demand, mg/l	310.40	78	250	IS-3025 (P-58):2006
6.	Oil & Grease	BDL	BDL	10	IS-3025 (P-39):2021

  
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Ref. No.: - ARDS/21-22/6629

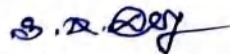
Date: 01.03.2022

## TEST REPORT OF ETP

- Name of the industry : M/S TATA STEEL, JAMADOBA,  
TATA STEEL LIMITED  
JAMADOBA GROUP PLANT,  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Sample Code : ETP – JCPP CANTEEN (Inlet and Outlet)
- Date of Sample Collection: 23.02.2022
- Date of Testing : 24.02.2022 – 28.02.2022
- Test : pH, TDS, TSS, BOD, COD AND OIL & GREASE

## TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE		G.S.R 422(E) Desirable Limit	Test Method
		ETP INLET- JCPP CANTEEN	ETP OUTLET- JCPP CANTEEN		
1.	pH,	7.94	7.6	5.5-9.0	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	935	870	-	IS-3025 (P-16): 1984
3.	Total Suspended Solids	128	34	100	IS-3025 (P-17): 1984
4.	Bio chemical Oxygen Demand, mg/l	22.5	17.2	30.0	IS-3025 (P-44):1994
5.	Chemical Oxygen Demand, mg/l	180.8	65.8	250	IS-3025 (P-58):2006
6.	Oil & Grease	1.6	BD L	10	IS-3025 (P-39):2021



Sr. Chemist  
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Technical Manager  
Aditi R&D Services, Sindri

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Ref. No.: - ARDS/21-22/6640

Date: 02.03.2022

## TEST REPORT OF SURFACE WATER

- Name of the industry : M/S TATA STEEL, JAMADOBA,  
TATA STEEL LIMITED  
JAMADOBA GROUP PLANT,  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Sample Code : 1. Damodar River Up Stream  
2. Damodar River Dn Stream
- Date of Sample Collection: 24.02.2022
- Date of Testing : 25.02.2022 - 01.03.2022
- Test : pH, TDS, Turbidity, DO, BOD, Cl, F, SO<sub>4</sub>

### TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE		Limit as per IS 2296 Class - C	Test Method
		Damodar River Up Stream	Damodar River Dn Stream		
1.	pH	7.90	7.95	6.5 -8.5	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	583	615	1500	IS-3025 (P-16): 1984
3.	Turbidity, NTU	10.2	12.3	-	IS-3025 (P-10):1984
4.	Dissolved Oxygen, mg/l	6.8	5.9	4.0	IS-3025 (P-38):1989
5.	Bio chemical Oxygen Demand, mg/l	1.3	1.6	3.0	IS-3025 (P-44):1994
6.	Chloride as Cl, mg/l	59	62	-	IS-3025 (P-32):1988
7.	Fluoride as F, mg/l	0.56	0.60	1.5	IS-3025 (P-60):2008
8.	Sulphate as SO <sub>4</sub> , mg/l	42.18	53.15	400	IS-3025 (P-24):1986

*B. R. Singh*

Sr. Chemist  
Aditi R&D Services



*Sanjay*  
Technical Manager  
Aditi R&D Services, Sindri

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Phone: 0326-2952377 (O)  
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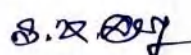
Date: 02.03.2022

## TEST REPORT OF MINE WATER DISCHARGE

- Name of the industry : M/S TATA STEEL, JAMADOBA, TATA STEEL LIMITED, JAMADOBA GROUP PLANT, DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Sample Code : 1. 2 Pit Jamadoba Colliery  
2. Digwadih Colliery  
3. 3 Pit Jamadoba Colliery  
4. 6 & 7 Pits Colliery
- Date of Sample Collection: 24.02.2022
- Date of Testing : 25.02.2022 – 01.03.2022
- Test : pH, TDS, TSS, BOD, COD, OIL & GREASE.

### TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE				Limit as per IS-2296 Class B (For Bathing)	Test Method
		2 Pit Jamadoba Colliery	Digwadih Colliery	2 Incline Jamadoba Colliery	6 & 7 Pits Colliery		
1.	pH,	7.9	7.6	7.8	7.7	6.5-8.5	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	658	642	585	665	-	IS-3025 (P-16): 1984
3.	Total Suspended Solids, mg/l	18	22	25	15	-	IS-3025(P-17): 1984
4.	Bio chemical Oxygen Demand, mg/l	2.3	1.9	1.6	1.8	3	IS-3025 (P-44):1994
5.	Chemical Oxygen Demand, mg/l	54	36	24	28	-	IS-3025 (P-58):2006
6.	Oil & Grease, mg/l	BDL	BDL	BDL	BDL	-	IS-3025 (P-39):2021

  
Sr. Chemist  
Aditi R&D Services



  
Technical Manager  
Aditi R&D Services, Sindri

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