

HIL/LHD/ENV/MoEF/GURDARI/992

Date: 20.11.2024

**To,**  
**The Dy. Director General of Forest (C)**  
**Ministry of Environment, Forests and Climate Changes**  
**2nd Floor, Headquarter-Jharkhand State Housing Board**  
**Harmu Chowk, Ranchi, Jharkhand-834002**

**Sub:** Compliance Report of EC conditions for Gurdari Bauxite Mining project of M/s Hindalco Industries Limited located in Gumla, Jharkhand for the period April'24 to September'24.

**Ref:** Environmental Clearance letter no J-11015/136/2006-IA II (M) dated 7<sup>th</sup> February 2007

Sir,

With reference to the above, we are submitting herewith the Compliance status report of EC conditions for **Gurdari (584.19 ha)** Bauxite Mining project of **M/s Hindalco Industries Limited** located in Gumla, Jharkhand for the period April'24 to September'24.

The lease details are below:

Lease area (ha)	Production Capacity (MT)	Lease Period
584.19	325000	23.03.1985 to 22.03.2035

Hope you will find the same in order.

Thanking You

Yours Sincerely

FOR **HINDALCO INDUSTRIES LIMITED**

(Basudev Gangopadhyay)  
AVP (Planning, Environment & Compliance)

Enclosure: - As Above

CC: [ro.ranchi-mef@gov.in](mailto:ro.ranchi-mef@gov.in), [mef@ori.nic.in](mailto:mef@ori.nic.in), [mef@nic.in](mailto:mef@nic.in), [mef.or@nic.in](mailto:mef.or@nic.in), [mscb.cpcb@nic.in](mailto:mscb.cpcb@nic.in), [zokolkatta.cpcb@nic.in](mailto:zokolkatta.cpcb@nic.in), [ranchijspcb@gmail.com](mailto:ranchijspcb@gmail.com), [roranchi47@gmail.com](mailto:roranchi47@gmail.com)

Hindalco Industries Limited  
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Corporate Office : 6th & 7th Floor, Birla Birla Centurion, Pandurang Budhakar Marg, Worli, Mumbai-400030, India  
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W: [www.hindalco.com](http://www.hindalco.com) | E: [hilinvestors@adityabirla.com](mailto:hilinvestors@adityabirla.com)

**Name of the Project** : **Gurdari Bauxite Mine (584.19 ha)**  
**M/s Hindalco Industries Ltd**

**Environment Clearance No & date** : **J-11015/136/2006-IA.II (M), dated 07.02.2007.**

**Period of compliance Report** : **From 1<sup>st</sup> April 2024 to 30<sup>th</sup> September 2024**

**A. Specific Conditions**

**Condition 1- All the conditions stipulated by the State Pollution Control Board in their NOC should be effectively implemented.**

**Reply to Condition 1** - Implementations of stipulated conditions in NOC are fulfilled post which consent to operate has been granted by SPCB from time to time. The existing consent to operate is valid up to 31.03.2027. Production of bauxites is within limits specified in Consent to Operate.

**Condition 2- The environmental clearance is subject to approval of the state land use Department, Government of Jharkhand for diversion of agricultural land for non-agricultural use.**

**Reply to Condition 2-** Land acquisition is being done with the permission of competent authority of State Government i.e. concerned Deputy Commissioner (D.C.) under CNT Act. The land lease agreement is being done with raiyat (Landowner) after permission of State Govt with provision of returning the land as per the norms set by D.C. The compensation and facilities are being provided as per norms set in agreement. Thus, land acquisition has the approval of the State Government.

**Condition 3- The exploration shall be completed within 2.5 years and thereafter the proponent shall come up with a firm proposal for mining, based on the estimated reserves. The reclamation plan, post mine land use and progressive greenbelt development plan shall also be prepared and submitted with the revised proposal.**

**Reply to Condition 3-** Required exploration is already done. Mining plan/ Mining Scheme based on current reserves/resource estimate is duly approved by IBM. The reclamation plan, post mine land use and progressive greenbelt development plan have been covered in Mining Plan/Mining scheme which is approved by IBM.

**Condition 4- Mining shall not intersect groundwater. The mine working shall be restricted to ground water table. Prior approval of the Ministry of Environment & Forests and Central Ground Water Authority shall be obtained for mining below water table.**

**Reply to Condition 4-** Since shallow depth mining is being carried out, hence there is no intersection with the groundwater table. In future also, working zones will be restricted to above ground water table. We undertake that no mining is/was carried out below ground water table and the same status will be maintain in future also. Moreover, we are regularly monitoring the groundwater table through the installation of a piezometer. A copy of the water level report is attached herewith as **Annexure-1**.

**Condition 5- Topsoil shall be stacked properly with proper slope with adequate measures and should be used for reclamation and rehabilitation of mined out areas.**

**Reply to Condition 5-** Topsoil is being stacked properly with proper slope as and when required for reclamation and rehabilitation. Sequential backfilling and reclamation of the mined-out area are being exercised for which topsoil is being spread on backfilled area for reclamation. The mining is being carried out as per the approved mining plan. Monitoring and management of rehabilitated areas is being done through effective supervision. Data pertaining to backfilling is enclosed as **Annexure 4**.

**Condition 6- The waste generated shall be concurrently backfilled in the mined-out area. There shall be no external OB dump. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status should be submitted to the Ministry of Environment & Forest on a six-month basis.**

**Reply to Condition 6-** Overburden and waste rock are being used for concurrent backfilling, and topsoil is being spread on the backfilled area for reclamation. Currently, there is no OB dump present in the mine lease area. Monitoring and management of rehabilitated areas is continuing until vegetation becomes self-sustaining through supervision. Data pertaining to backfilling is enclosed as **Annexure 4**. Compliance status is being submitted to MoEF&CC on six monthly basis.

**Condition 7- Catch drains and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from mine working. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains should be regularly desilted particularly after monsoon and maintained properly.**

**Garland drains (size, gradient and length) shall be constructed for mine pit and sump capacity should be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper setting of silt material. Sedimentation pits should be constructed at the corners of the garland drains and desilted at regular intervals.**

**Reply to Condition 7-** To collect & manage rainwater during monsoon, part of mined out area is used as a settling tank for the runoff. Rainwater stored is being used for watering the mine area, roads, green belt development and sprinkling as necessary.

Catch drains, Garland drains of appropriate size are being constructed in both around the mine pit to prevent runoff of water and flow of sediments directly into the agricultural field and water bodies, if applicable.



Garland drain around mine pit.



Catch drain Near mine pit.



**Condition 8- Plantation shall be raised in an area of 78.44 ha including a green belt of adequate width by planting the native species around the ML area, roads, reclaimed area etc. in consultation with the local DFO / Agriculture Department. The density of the trees should be around 1500 plants per ha.**

**Reply to Condition 8-** Progressive plantation of native species is being carried out in and around mining lease, reclaimed area etc. in consultation with local forest department on regular basis.

Total 1350 saplings have been planted on reclaimed area during the period from April'24 to September'24. Cumulative 25.11 ha areas have been planted till date. In addition to this agricultural activity is going on reclaimed land as per the consent from the landowners. Rest to be complied during project period.



Plantation and Agriculture on Reclaimed land

**sCondition 9- The project authority should implement suitable conservation measures to augment ground water resources in area in consultation with Regional Director, Central Ground Water Board.**

**Reply to Condition 9-** A detailed plan to augment groundwater has been prepared, and suitable measures like the creation of water harvesting ponds, etc., are being taken for the augmentation of groundwater in the area, in consultation with the Central Ground Water Board.



Rainwater Harvesting Pond.

**Condition 10- Regular monitoring of ground water level and quality should be carried out by establishing a network of existing wells and constructing new piezometers during the mining operation. The monitoring should be carried out four times in a year – pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January) and the data thus collected may be sent regularly to MOEF, Central Ground water Authority and Regional Director Central Ground Water Board.**

**Reply to Condition 10-** We are not using ground water for mining purposes. Shallow depth mining is being carried out, hence there is no intersection of ground water table during the mining operation at present and in future. A piezometer has been installed for monitoring of ground water level. The Water level and water quality reports are being sent regular to regional office of Ministry, CGWA and JSPCB. The same is attached herewith as **Annexure 1 & 2**




Piezometer Installed at Mine

**Condition 11- Prior permission from the competent authority should be obtained for drawl of water from the surface water bodies.**

**Reply to Condition 11-** We are not using any water from natural streams/ ground water for mining operation. Rainwater harvesting ponds with proper fencing have been already constructed in the mine premises. Rainwater harvested during rainy season is being used for sprinkling on haul roads and raising plantation.

However, we have obtained NOC for extraction of ground water from CGWA/ CGWB for drinking purpose only. The copy of same NOC and photographs of Rainwater harvesting ponds are attached below.



भारत सरकार  
जल शक्ति मंत्रालय  
जल संसाधन, नदी निवारण  
और शिव संरक्षण विभाग  
संघीय प्रतिष्ठान जल प्रतिकारण  
Government of India  
Ministry of Jal Shakti  
Department of Water Resources,  
River Development & Ganga Rejuvenation  
Central Ground Water Authority

(भूजल निकासी हेतु अनापत्ति प्रमाण पत्र)  
**NO OBJECTION CERTIFICATE (NOC) FOR GROUND WATER ABSTRACTION**

Project Name:	Gurdari Bauxite Mining						
Project Address:	Gurdari Bauxite Mining (584.19 Ha), Villages - Gurdari, Ambakons, Rajadara And Janawal, Tehsil - Bishunpur						
Village:	Gurdari	Block:	Bishunpur				
District:	Gumla	State:	Jharkhand				
Pin Code:							
Communication Address:	Hindalco Industries Limited, Johardaga, Lohardaga, Jharkhand - 835302						
Address of CGWB Regional Office:	Central Ground Water Board Mid Eastern Region, 8th & 7th Floor, Lok Nayak Jai Prakash Bhawan, Frazer Road Dak Banglow, Patna, Bihar - 800011						

1. NOC No.:	CGWA/NOC/MIN/REN/2/2023/8045			3. Category:	Safe	
2. Application No.:	21-4483/JH/MIN/2019			(GWRE 2022)		
4. Project Status:	Existing Ground Water			5. NOC Type:	2nd Renewal	
6. Valid from:	09/09/2023			7. Valid up to:	08/09/2025	

8. Ground Water Abstraction Permitted:							
Fresh Water		Saline Water		Dewatering		Total	
m <sup>3</sup> /day	m <sup>3</sup> /year	m <sup>3</sup> /day	m <sup>3</sup> /year	m <sup>3</sup> /day	m <sup>3</sup> /year	m <sup>3</sup> /day	m <sup>3</sup> /year
9.50	3487.50						

9. Details of ground water abstraction /Dewatering structures										
Total Existing No.: 1					Total Proposed No.: 0					
Abstraction Structure*	DW	DCB	BW	TW	MP	DW	DCB	BW	TW	MP
	0	0	1	0	0	0	0	0	0	0

\*DW- Dug Well; DCB-Dug-cum-Bore Well; BW-Bore Well; TW-Tube Well; MP-Mina Pit

10. Ground Water Abstraction/Restoration Charges paid (Rs.):	6936.00
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(Compliance Conditions given overleaf)  
This is an auto generated document & need not to be signed.

NOC for Ground water Extraction





Rainwater Harvesting Pond at mines.

**Condition 12- Water monitoring both for quality and quantity shall be carried out at four locations namely one spring and three streams. Six monthly report should be submitted to the Ministry of Environment and Forest and its Regional Office located at Bhubaneshwar.**

**Reply to Condition 12-** Water Monitoring of Spring and Stream water are being monitored and Analysis report is attached as **Annexure 2**. Six monthly report is being submitted regularly. Now, the Regional office of MoEF&CC is located in Ranchi.

**Condition 13- Vehicular emissions should be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and transportation of minerals. The vehicles should be covered with a tarpaulin and shall not be overloaded.**

**Reply to Condition 13-** To keep vehicular emissions under control, vehicles are periodically checked & repaired. All measures are being taken to control vehicular emission. All vehicles are covered with tarpaulins, and non-overloading guidelines are being followed during transportation of mineral. Photograph of Tarpaulin Covered Vehicle and PUC Certificate are attached below.





Tarpaulin covered Vehicle

Form 69  
(See rules 115 G)

**Pollution Under Control Certificate**  
Authorized By: Government of Jharkhand

Date: 26/08/2024  
Time: 09:51:21 AM  
Validity upto: 25/02/2025

QR Code

Certificate No.: JH019024005973  
Registration No.: BH150885  
Date of Registration: 13/Apr/1993  
Make & Year of Manufacturing: April 1993  
Veh Model Number: 2000000  
Emission Norms: Bharat Stage I  
Fuel: Diesel  
PUC Code: JH0190024  
GSTIN: -  
Fees: Rs.300.00  
Veh. category: No

Vehicle Photo with Registration plate  
60 mm x 30 mm

Sr. No.	Pollutant (as applicable)	Units (as applicable)	Emission limits	Measured Value (upto 2 decimal places)
1	Carbon Monoxide (CO)	percentage (%)		
	Hydrocarbon, (THC)/HC	ppm		
	CO	percentage (%)		
High idling emissions	g/m <sup>3</sup>	g/m <sup>3</sup>	2500 ± 200	
	Lambda	-	1 ± 0.03	
Smoke Density	Light absorption coefficient	1/metre	2.45	0.61

This PUC certificate is system generated through the national register of motor vehicles and does not require any signature.

Note - 1. Vehicle owners to link their mobile numbers to registered vehicle by logging to <https://puc.jharkhand.gov.in>

Authorized Signature with stamp of PUC Operator  
60mm x 20 mm

PUC Certificate

**Condition 14- Drills should either be operated with dust extractors or should be equipped with a water injection system.**

**Reply to Condition 14- Wet drilling is in practice.**



Wet drilling is being carried out.

**Condition 15- Blasting operation should be carried out only during the daytime. Controlled blasting should be practiced. The mitigative measures for control of ground vibration and to arrest fly rocks and boulders should be implemented.**

**Reply to Condition 15-** Blasting time is fixed during Lunch Time i.e. 1.00 PM-2.00 PM. We have control blasting permission. Controlled blasting method is in practice. Ground vibration study has been conducted periodically. Efforts and mitigative measures are being taken to reduce the impact of the blast.

**Condition 16- Consent to operate should be obtained from SPCB prior to start of enhanced production from the mine.**

**Reply to Condition 16-** We have already obtained the Consent to Operate for Bauxite Ore as per production capacity mentioned in EC.

**Condition 17- Sewage treatment plant should be installed for the colony. ETP should also be provided for workshops and wastewater generated from mining operations.**

**Reply to Condition 17-** No wastewater is generated from our mining operation. However, only negligible amount of effluent is being generated from workshop and Oil & grease trap system is already installed for treatment of this effluent. The treated water is in close circuit and being reused for washing of vehicle in the workshop. We are not discharging any wastewater outside the mine lease area.

Furthermore, the quality of this treated water is being monitored regularly and the monitoring report is enclosed herewith as **Annexure 2**.

The sewage water from domestic uses is being collected through individual Septic Tank and followed by Soak Pit.



Washing Ramp with Oil and Grease trap

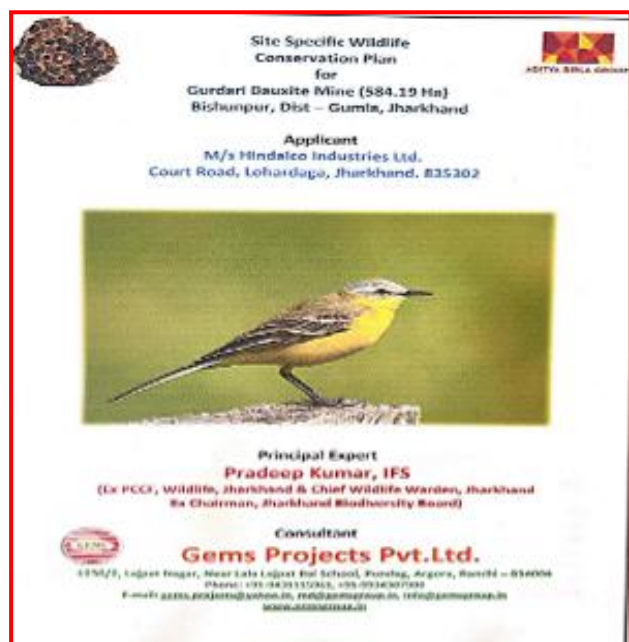
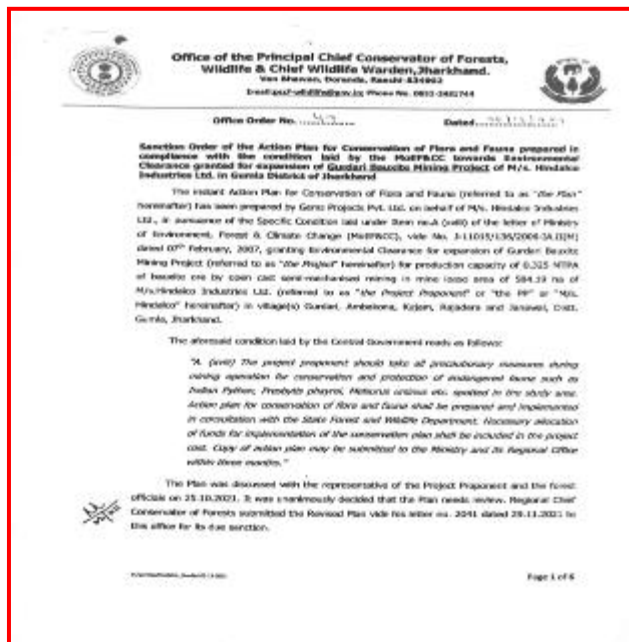
**Condition 18-** The project proponent should take all precautionary measures during mining operation for conservation and protection of endangered fauna such as Indian Python, Presbytis phayrei , Melurus ursinus etc. Spotted in the study area. Action plan for conservation of flora and fauna shall be prepared and implemented in consultation with the State Forest and Wildlife Department. The necessary allocation of funds for implementation of the conservation plan shall be made and the funds so allocated shall be included in the project cost. A copy of the action plan may be submitted to the Ministry and its Regional Office within 3 months.

**Reply to Condition 18-** Safeguard Measures already implemented and being implemented as suggested by forest department are as follows: -

1. Minimum level of Noise during Mining.
2. Permanent pillars are established within in the mine lease area.
3. Daily water sprinkling on haul road.
4. Transportation is carried out during daytime only.
5. Maintenance of mineral transportation road is being done regularly.
6. Social activities are being undertaken in nearby areas etc.

We have also prepared Site-Specific Wildlife Conservation Plan (WLCP) in consultation with State Forest Department and obtained approval letter from Principal Chief Conservator of Forest, Wildlife & Chief Wildlife Warden, Jharkhand via Office Order No. 48 dated 02.12.2021 for conservation and protection of flora and fauna in the core and buffer zone for Gurdari Bauxite Mine.

A copy of same Approval letter has been submitted to your good office on 21.02.2022



Site Specific Wildlife Conservation Plan

**Condition 19- A Final Mine Closure plan along with details of Corpus Fund should be submitted to the Ministry of Environment & Forest 5 years in advance of final mine closure for approval.**

**Reply to Condition 19-** Mining Plan along with progressive mine closure plan has been approved by Indian Bureau of Mines. Final Mine Closure Plan will be submitted in due time as per applicable guideline and timelines mentioned in MCDR/IBM guideline who are competent authority to approve the same. Based on present resource estimate and peak rated production capacity mentioned in EC, Mining operation is being carried out.

**B. General Conditions**

**Condition 1- No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forest.**

**Reply to Condition 1-** Noted.

**Condition 2- No change in the calendar plan including excavation, quantum of mineral bauxite and waste should be made.**

**Reply to Condition 2-** Calendar plan including excavation, quantum of mineral bauxite and waste is being done as per IBM approved mining scheme and in scientific manner. Data pertaining to excavation, quantum of mineral bauxite etc. are mentioned in report attached as **Annexure 4**.

**Condition 3- Four ambient air quality-monitoring stations should be established in the core zone as well as in the buffer zone for RPM, SPM, SO<sub>2</sub>, NO<sub>x</sub> monitoring. Location of the stations should be decided based on the metrological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board**

**Reply to Condition 3-** We have already established four ambient air quality monitoring stations in the core zone as well as buffer zone. Monitoring is being carried out and reported to the concerned authorities. Monitoring Report is attached as **Annexure 2**.

**Condition 4- Data on ambient air quality (RPM, SPM, SO<sub>2</sub>, NO<sub>x</sub>) should be regularly submitted to the Ministry including its Regional office located at Bhubneshwar and the State Pollution Control Board / Central pollution Control Board once in six months.**

**Reply to Condition 4-** Being adhered to. Monitoring Reports for the reporting period are attached as **Annexure-2**. Now, the Regional office of MoEF&CC is in Ranchi.



**Condition 5- Fugitive dust emission from all the sources should be controlled regularly. Water spraying arrangements on haul roads, loading and unloading and at transfer points should be provided and properly maintained.**

**Reply to Condition 5-** Water tankers have been provided for sprinkling of water on haul roads and active mining areas to suppress the fugitive dust. Water spraying at loading, unloading, etc. is also being done regularly.



Water Tanker for dust suppression

**Condition 6- Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operation of HEMM, etc. should be provided with ear plug / muffs.**

**Reply to Condition 6-** Noise monitoring is being done regularly. Workers engaged in the operation of HEMMs, etc., have also been provided with PPEs such as ear plugs and earmuffs. Monitoring of noise level is being conducted at various locations of the work zone area.

Report is attached as **Annexure 2**.

**Condition 7- Industrial wastewater (workshops and wastewater from the mine) Should be properly collected and treated so as to conform to the standards prescribed under GSR 422 (E) dated 19<sup>th</sup> May 1993 and 31<sup>st</sup> December 1993 or as amended from time to time. Oil and grease traps should be installed before discharge of workshop effluents.**

**Reply to Condition 7-** There is no industrial wastewater generation from mining operation. We are not discharging any wastewater outside the mine lease area. However, negligible amount of wastewater is generated in workshop from washing of vehicles and Oil & grease trap system is

already installed for treatment of this effluent. The treated water is in close circuit and being reused for washing of vehicles in the workshop.

Furthermore, the quality of this treated water is being monitored regularly and all water parameters are within permissible limits. The monitoring report is attached herewith as **Annexure- 2**.

Photograph of Oil and grease traps is already attached below.



Washing Ramp with Oil and Grease trap

**Condition 8- Personnel working in dusty areas should wear protective respiratory devices and they should also provide with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.**

**Reply to Condition 8-** All the workers have been provided with PPEs including dust mask and dust respirators. Apart from PPEs distribution to all workers, we are also providing adequate safety training and conducting awareness session on Safety and health aspects on regular basis. Periodical Occupational health surveillance program of the workers is being carried out and records maintained as per statute.

**Condition 9- A separate environmental management cell with suitable qualified personnel should be set up under the control of a Senior Executive, who will report directly to the Head of the Organization.**

**Reply to Condition 9-** A separate environmental management cell with suitable qualified personnel has been set up under the control of a Senior Executive, who is reporting directly to the Head of the Organization. The same is attached herewith as **Annexure 3**.

**Condition 10-** The project authorities should inform the Regional Office located at Bhubaneswar regarding the date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.

**Reply to Condition 10-** This is an operating mine. Hence, the provision related to financial closure is not applicable. Now, the Regional office of MoEF&CC is in Ranchi.

**Condition 11-** The funds earmarked for environmental protection measures should be kept in separate accounts and should not be diverted for other purposes. Year-wise expenditure should be reported to the Ministry and its Regional Office located at Bhubaneswar.

**Reply to Condition 11-** Every year, the funds earmarked for environmental protection measures is being budgeted separately and its expenditure is being reported to the Ministry. The copy of the same is attached as **Annexure 5**. Now, the Regional Office of MoEF&CC is in Ranchi

**Condition 12-** The Regional Office of this Ministry located at Bhubaneswar shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information / monitoring reports.

**Reply to Condition 12-** Noted and Agreed.

**Condition 13-** A copy of clearance letter will be marked to concerned Panchayat / local NGO, if any, from whom suggestion / representation has been received while processing the proposal.

**Reply to Condition 13-** Complied. A copy of clearance letter has already been submitted.

**Condition 14-** State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Center and Collector's office / Tehsildar's Office for 30 days.

**Reply to Condition 14-** Noted. The EC Letter has been submitted to JSPCB for display of same at its Regional office and other government offices.

**Condition 15-** The project authorities should advertise at least in two local newspapers widely circulated, one of which locality concerned, within 7days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment and Forests at <http://envfor.nic.in> and a copy of the same should be forwarded to the Regional Office of this Ministry located Bhubaneswar.

**Reply to Condition 15-** Noted and complied. The information on grant of the EC has been published in two local newspapers. The copy of the advertisement has already been submitted to the Regional Office vide letter no HIL/GMO(M)/ENV/140 Dated 23.04.2007. Now, the Regional office of MoEF&CC is in Ranchi.



**Annexure 1**

<b>Piezometer Reading - Gurdari Bauxite Mine</b>		
<b>S No</b>	<b>Month</b>	<b>Depth (meter)</b>
1	Apr-24	32.42
2	May-24	32.52
3	Jun-24	32.58
4	Jul-24	32.83
5	Aug-24	31.97
6	Sep-24	31.76

**ENVIROCHECK**

Lab: MIG, R-3 Housing Colony, Dhanbad, Pin-826001,

State- Jharkhand.

Gurdari Bauxite Mine-Environmental Monitoring Report

April 2024

## CONTENT

Hindalco Industries : Gardari Bauxite Mine Environmental Monitoring Report		April 2014
Gardari Bauxite Mine		
<b>AMBIENT AIR QUALITY - CORE ZONE</b>		
1	Entrance Gate / Near Mine Office	
2	Near Kothwaspori Ph-23	
3	Near Mine Weigh Bridge	
4	Near Dhobi Kumbh	
<b>AMBIENT AIR QUALITY - BUFFER ZONE</b>		
1	Near PakriGuda Village	
2	Near Pol Pol Village	
3	Near Shikhsaari Village	
4	Near Digakujan Village	



### TEST REPORT

Test Report No. : ENVJK/1143/APR/TR(W)24-25	Report Release Date : 28.04.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	Hindako Industries Limited	Sample Ref. No.	ENVJK/2024/AA/1668
Address	Loharlagi, Bhiarkhad-435302	Location	Entrance Gate/Near Mine Office Gardhi Hindako Mine (584.19ha)
		Sampling Date	17.04.2024 to 18.04.2024
Minas Status	Operational	Sample Received Date	22.04.2024
Period of Analysis	22.04.2024 to 28.04.2024	Type of Sample	Ambient Air
		Sampling Procedure	ELES/IOC/SAMPL/02
		Sampling Done By	ELES Pvt. Ltd.
		Sample Condition	Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	31	2	Barometric Pressure (mmHg)	742
3	Relative Humidity (%)	59	4	Weather Condition	Clear

Discipline: Chemical Group: Atmospheric Pollution				
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part 21): 2006	60	100 (24hrs)
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	USEPA 1997a, 40 CFR Part 50, Appendix L: 2006	32	60 (24hrs)
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part 2): 2001	9.5	80 (24hrs)
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part 6): 2006	22.8	80 (24hrs)
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part 9): 2019	<20.0	100 (8hrs)
Ammونيا (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part 10): 2019 (NDIR Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part 22): 2019	0.009	1 (24hrs)
Nickel (Ni)	µg/m <sup>3</sup>	IS 5182 (Part 26): 2020	<6.0	20 (Annual)
Arsenic (As)	µg/m <sup>3</sup>	USEPA Method - IO-3.3 (ICP-MS Method)	<2.0	05 (Annual)
Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	USEPA Method - TO-3 (GC-MS Method)	<2.5	05 (Annual)
Benzo(a)-Pyrene	µg/m <sup>3</sup>	USEPA Method - TO-3A (GC-MS Method)	<0.5	01 (Annual)

Reviewed by :

(Sitawata Berman Roy, Dy. Quality Manager)

\*\*\*\*End of Report\*\*\*\*



Authorized Signatory :

(Bipan Das, Dy. Technical Manager)



### TEST REPORT

Test Report No. : ENVJK/1144/APR/TR(W)24-25	Report Release Date : 28.04.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	Hindalco Industries Limited	Sample Ref. No.	ENVJK/2024/AA/1669
Address	Lohardaga, Bhubaneswar-751002	Location	Near Kathwapani Pit-23 Gardari Bauxite Mine (384.10ha)
		Sampling Date	17.04.2024 to 18.04.2024
Mines Status	Operational	Sample Received Date	22.04.2024
Period of Analysis	22.04.2024 to 28.04.2024	Type of Sample	Ambient Air
		Sampling Procedure	ELES/DOC/SMP1/02
		Sampling Done By	ELES Pvc. Ltd.
		Sample Condition	Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 31	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 59	4	Weather Condition	: Clear

Discipline: Chemical Group: Atmospheric Pollution				
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM <sub>10</sub> )	µg/m <sup>3</sup>	IS 5182 (Part 23): 2006	68	100 (24hrs)
Particulate Matter (PM <sub>2.5</sub> )	µg/m <sup>3</sup>	USEPA 1997a-40 CFR Part 50, Appendix L: 2006	45	60 (24hrs)
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part 2): 2001	9.7	80 (24hrs)
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part 6): 2006	23.1	80 (24hrs)
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 9): 2019	<20.0	160 (8hrs)
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part- 10): 2019 (NDIR Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part- 22): 2019	0.012	1 (24hrs)
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182 (Part- 26): 2020	<0.0	20 (Annual)
Arsenic (As)	ng/m <sup>3</sup>	USEPA Method - IO-3.5 (ICP-MS Method)	<2.0	06 (Annual)
Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	USEPA Method - TO-15 (GC-MS Method)	<2.5	03 (Annual)
Benzo-(a)-Pyrene	ng/m <sup>3</sup>	USEPA Method - TO-15A (GC-MS Method)	<0.5	01 (Annual)

Reviewed by:



(Savruta Duttan Roy, Dy. Quality Manager)



Authorized Signatory:



(Bijan Das, Dy. Technical Manager)

Page 1 of 1





### TEST REPORT

Test Report No. : ENVJK/1146/APR/TR(W)24-25	Report Release Date : 28.04.2024
Work Order No. : 1361231213	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	Hindalco Industries Limited	Sample Ref. No.	: ENVJK/2024/AA/1671
Address	Loharlaga, Bhabhyan-825302	Location	: Near Dhobi Katamh, Gurdan Bansite Mine (584.19ha)
		Sampling Date	: 17.04.2024 to 18.04.2024
Mines Status	: Operational	Sample Received Date	: 22.04.2024
Period of Analysis	22.04.2024 to 28.04.2024	Type of Sample	: Ambient Air
		Sampling Procedure	: ELIS/DOC/SMP/42
		Sampling Done By	: ELIS Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 31	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 59	4	Weather Condition	: Clear

Discipline: Chemical Group: Atmospheric Pollution				
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part 23): 2006	62	100 (24hrs)
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	USEPA 1997a,40 CFR Part 50, Appendix L: 2006	37	60 (24hrs)
Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part 2): 2001	8.3	80 (24hrs)
Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part 6): 2006	25.8	80 (24hrs)
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 9): 2019	<20.0	100 (8hrs)
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part- 10): 2019 (NDR Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part- 22): 2019	<0.002	1 (24hrs)
Nickel (Ni)	µg/m <sup>3</sup>	IS 5182 (Part- 26): 2020	<6.0	20 (Annual)
Arsenic (As)	µg/m <sup>3</sup>	USEPA Method - 80-3.5 (ICP-MS Method)	<2.0	06 (Annual)
Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	USEPA Method - TO-3 (GC-MS Method)	<2.5	05 (Annual)
Benzo(a)-Pyrene	µg/m <sup>3</sup>	USEPA Method - TO-3A (GC-MS Method)	<0.5	01 (Annual)

Reviewed by :

(Sitawata Burman Roy, Dy. Quality Manager)



Authorized Signatory :

(Rajen Das, Dy. Technical Manager)



## TEST REPORT

Test Report No. : ENV2024/04PCTR/W/24-25	Report Release Date : 28.04.2024
Work Order No. : 1301231211	Work Order Date : 28.03.2024

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name :	Hirovia Industries Limited	Sample Ref. No. :	ENV2024/04-1301
Address :	Loringway, Woodlands-77002	Location :	Near ParkGate VVgate
Area/Status :	Operational	Sampling Date :	17.04.2024 to 18.04.2024
Period of Analysis :	22.04.2024 to 26.04.2024	Sample Received Date :	22.04.2024
		Type of Sample :	Ambient Air
		Sampling Procedure :	10.05/DOC/SMPL/01
		Sampling Done By :	EUES Pte. Ltd.
		Sample Condition :	Sealed & Preserved

METEOROLOGICAL INFORMATION			
1. Average Temperature (°C) :	29	2. Barometric Pressure (mmHg) :	1012
3. Relative Humidity (%) :	61	4. Weather Condition :	Clear

Discipline: Chemical Group: Atmospheric Pollution				
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part 2): 2004	62	100 (24hrs)
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	USEPA 1997a/10 CFR Part 51, Appendix I - 2006	34	50 (24hrs)
Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part 2): 2004	8.1	30 (24hrs)
Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part 2): 2004	18.5	30 (24hrs)
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part 2): 2004	<0.0	160 (8hrs)
Ambient (PM <sub>10</sub> )	µg/m <sup>3</sup>	IS 5182 (Part 2): 2004	<0.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part 2): 2004 (NDB Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part 2): 2004	<0.002	1 (24hrs)
Nickel (Ni)	µg/m <sup>3</sup>	IS 5182 (Part 2): 2004	<1.0	20 (Annual)
Arsenic (As)	µg/m <sup>3</sup>	USEPA Method - 8453 (ICP-MS Method)	<1.0	30 (Annual)
Boron (B)	µg/m <sup>3</sup>	USEPA Method - 7031 (ICP-MS Method)	<1.0	30 (Annual)
Barium (Ba)	µg/m <sup>3</sup>	USEPA Method - 7031 (ICP-MS Method)	<1.0	30 (Annual)

Reviewed by :

(Sarwan Burnas Reg. Qy. Quality Mnggr)

Authorized Signatory :

(Rajan Das, Dy. Technical Mnggr)







## TEST REPORT

Test Report No. : ENVJG1140/APR/TR/W/24-25	Report Release Date : 28.04.2024
Work Order No. : 4502312113	Work Order Date : 28.03.2024

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	Fendalco Industries Limited	Sample Ref. No.	ENVJG2024AA/1363
Address	Lohardaga, Bhubaneswar-751002	Location	New Pol Pol Village
		Sampling Date	17.04.2024 to 20.04.2024
Mines Status	Operational	Sample Received Date	22.04.2024
Period of Analysis	22.04.2024 to 28.04.2024	Type of Sample	Ambient Air
		Sampling Procedure	ILIS/DOC/SAMPLE
		Sampling Done By	ILIS Pvt. Ltd.
		Sample Condition	Sealed & Preserved

## METEOROLOGICAL INFORMATION

1   Average Temperature (°C)	: 29	2   Barometric Pressure (mmHg)	: 742
3   Relative Humidity (%)	: 61	4   Weather Condition	: Clear

### Discipline: Chemistry Group: Atmospheric Pollution

Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part 3): 2008	56	100 (24hrs)
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	USEPA (1997), 40 CFR Part 50, Appendix L, 2006	32	60 (24hrs)
Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part 2): 2001	6.5	80 (24hrs)
Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part 6): 2006	24.1	80 (24hrs)
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part 9): 2019	<2.6	100 (8hrs)
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part 10): 2019 (NIOB Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part 22): 2019	<0.6	1 (24hrs)
Nickel (Ni)	µg/m <sup>3</sup>	IS 5182 (Part 26): 2020	<6.0	20 (Annual)
Arsenic (As)	µg/m <sup>3</sup>	USEPA Method - IO-3.5 (ICP-MS Method)	<2.6	06 (Annual)
Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	USEPA Method - TD-3 (GC-MS Method)	<2.5	05 (Annual)
Benzene(a)-P-yrans	µg/m <sup>3</sup>	USEPA Method - TO-3A (GC-MS Method)	<0.1	01 (Annual)

Reviewed by:

(Sarwata Barman Ray, Dy. Quality Manager)



Authorized Signatory:

(Rajat Das, Dy. Technical Manager)





## TEST REPORT

Test Report No. : KVVZR/1142/APR/TR/W/24-25	Report Release Date : 28.04.2024
Work Order No. : 13612502113	Work Order Date : 28.03.2024

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name : Hindustan Industries Limited	Address : Lohadaga, Barhampur-833302	Sample Ref. No. : ENV/002024/1607	Location : Near DibaRajon Village
Minors Items : Operational	Period of Analysis : 22.04.2024 to 28.04.2024	Sampling Date : 17.04.2024 to 18.04.2024	Sample Received Date : 23.04.2024
		Type of Sample : Ambient Air	Sampling Procedure : ELBS/DOC/IMP/02
		Sampling Done By : ELBS Pvt. Ltd.	Sample Condition : Sealed & Preserved

METEOROLOGICAL INFORMATION			
1. Average Temperature (°C) : 31	2. Barometric Pressure (mmHg) : 742	3. Relative Humidity (%) : 39	4. Weather Condition : Clear

Discipline: Chemical Group: Atmospheric Pollution				
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part 27): 2006	58	100 (24hrs)
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	USEPA (9974.40 CFR Part 50, Appendix I): 2006	33	60 (24hrs)
Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part 2): 2001	7.2	80 (24hrs)
Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part 6): 2006	23.1	80 (24hrs)
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 9): 2019	<20.0	100 (8hrs)
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-23): 2014	<10.0	400 (24hrs)
Carbon Monoxide (CO)	µg/m <sup>3</sup>	IS 5182 (Part- 10): 2019 (NMR Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part- 22): 2019	0.011	1 (24hrs)
Nickel (Ni)	µg/m <sup>3</sup>	IS 5182 (Part- 26): 2020	<4.0	20 (Annual)
Arsenic (As)	µg/m <sup>3</sup>	USEPA Method - 8330.5 (ICP-MS Method)	<2.0	06 (Annual)
Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	USEPA Method - 7033 (GC-MS Method)	<2.5	05 (Annual)
Benzo(a)-Pyrene	µg/m <sup>3</sup>	USEPA Method - 7033A (GC-MS Method)	<0.5	01 (Annual)

Reviewed by:

(Ravindra Kumar Roy, Dy. Quality Manager)



Authorized Signatory:

(Rajan Das, Dy. Technical Manager)

Page 1 of 1

**ENVIRONMENTAL LABORATORIES & ENGINEERING  
SERVICES PVT.LTD.**

Plot No.30, Mansarovar Enclave, Tupudana,Hatia,Ranchi-834003,  
Jharkhand.

Gurdari Bauxite Mine-Environmental Monitoring Report

May 2024



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Gardari Bauxite Mine		
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4	Near Dinkujam Village	
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	<b>Effluent Water</b>	







# ENVIRONMENTAL LABORATORIES & ENGINEERING SERVICES PVT. LTD.

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## TEST REPORT

Test Report No. : ELES/RNC/2024/2676	Report Release Date : 18.05.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
ELR No. : TC13587240000645F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	Hindalco Industries Limited	Sample Ref. No.	ELES/RNC/2024/AA/2967
Address	Lohardaga, Barchard-835302	Location	Entrance Gate/Near Mine Office Gundari Bauxite Mine (584.19ha)
		Sampling Date	10.05.2024 to 11.05.2024
Mines Status	Operational	Sample Received Date	13.05.2024
		Type of Sample	Ambient Air
Period of Analysis	13.05.2024 to 18.05.2024	Sampling Procedure	ELES/DOC/SAMPL/02
		Sampling Done By	ELES Pvt. Ltd.
		Sample Condition	Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 33	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 59	4	Weather Condition	: Clear

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part- 23) : 2022	68	100 (24hrs)
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24) : 2019	35	60 (24hrs)
Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 11/Sec- 1) : 2023	10.1	80 (24hrs)
Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 6) : 2022	24.7	80 (24hrs)
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 9) : 2019	<20.0	100 (8hrs)
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25) : 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part- 10) : 2019 (NDIR Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part- 22) : 2019	0.011	1 (24hrs)
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182 (Part- 26) : 2020	<6.0	20 (Annual)
Arsenic (As)	ng/m <sup>3</sup>	ELES/ADR/SOP/01 : 2021	<2.0	06 (Annual)

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**TEST REPORT**

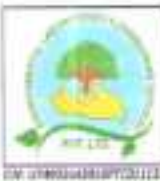
Test Report No. : ELES/RNC/2024/2676	Report Release Date : 18.05.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
ULR No. : TC13587240000645F	

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	ELES/GC/SOP16: 2023	<2.5	05(Annual)
Benzo (a) Pyrene	ng/m <sup>3</sup>	ELES/GC/SOP05: 2023	<8.5	01(Annual)

*Akash Kumar*  
**Received by**  
**AKASH KUMAR**  
 Quality Manager  
 ELES PVT. LTD.

\*\*\*\*End of Report\*\*\*\*

*Dr. Deependra Kumar Sinha*  
**Authorized Signatory**  
 Dr. Deependra Kumar Sinha  
 Ph. D Environmental Engg  
 ELES Pvt. Ltd. Technical Manager

**TEST REPORT**

Test Report No. : ELES/RNC/2024/2677	Report Release Date : 18.05.2024
Work Order No. : 136123121EJ	Work Order Date : 18.03.2024
ULR No. : TC13587240000646F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	Hindalco Industries Limited	Sample Ref. No.	ELES/RNC/2024/AA/2965
Address	Lohardaga, Jharkhand-833302	Location	Near Karkang Mines Gardri Bausite Mine (384.19ha)
		Sampling Date	10.05.2024 to 11.05.2024
Mixes Status	Operational	Sample Received Date	13.05.2024
		Type of Sample	Ambient Air
Period of Analysis	13.05.2024 to 18.05.2024	Sampling Procedure	ELES/DOC/SMPL/02
		Sampling Done By	ELES Pvt. Ltd.
		Sample Condition	Sealed & Preserved

**METEOROLOGICAL INFORMATION**

1	Average Temperature (°C)	: 33	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 59	4	Weather Condition	: Clear

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part- 23): 2022	61	100 (24hrs)
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	37	60 (24hrs)
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- II/Sec- 1): 2023	8.4	80 (24hrs)
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 6): 2022	23.9	80 (24hrs)
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 9): 2019	<20.0	100 (8hrs)
Ammونيا (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	<10.0	600 (24hrs)
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part- 10): 2019 (NDRM Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part- 22): 2019	0.010	1 (24hrs)
Nickel (Ni)	µg/m <sup>3</sup>	IS 5182 (Part- 26): 2020	<0.8	20 (Annual)
Arsenic (As)	µg/m <sup>3</sup>	ELES/AIR/SOP/01: 2021	<2.0	06 (Annual)

**Page 1 of 2**

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**TEST REPORT**

Test Report No. : ELES/RNC/2024/2677	Report Release Date : 18.05.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
ULR No. : TC13587240800646F	

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	ELENGC/SOP/06/2023	<1.5	05(Annual)
Benz(a)-Pyrene	ng/m <sup>3</sup>	ELENGC/SOP/05/2023	<0.5	01(Annual)

Reviewed by

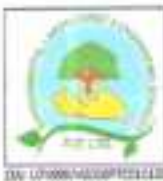
AKASH KUMAR  
Quality Manager  
ELES PVT. LTD.

\*\*\*\*End of Report\*\*\*\*

Authorized Signatory

Dr. Deependra Kumar Sinha  
Ph. D Environmental Engg  
ELES PVT. Ltd. Technical Manager



**TEST REPORT**

Test Report No. : ELES/RNC/2024/2678	Report Release Date : 18.05.2024
Work Order No. : J3612312113	Work Order Date : 28.03.2024
ULR No. : TC13587240009647F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name : Hindalco Industries Limited	Address : Lehardaga, Jharkhand-835302	Sample Ref. No. : ELES/RNC/2024/AA/2969	Location : Near Mine Weigh Bridge Gurdari Bauxite Mine (584.136a)
Mines Status : Operational	Period of Analysis : 13.05.2024 to 18.05.2024	Sampling Date : 16.05.2024 to 16.05.2024	Sample Received Date : 13.05.2024
		Type of Sample : Ambient Air	Sampling Procedure : ELES/DOC/SMP/02
		Sampling Done By : ELES Pvt. Ltd.	Sample Condition : Sealed & Preserved

**METEOROLOGICAL INFORMATION**

1 Average Temperature (°C) : 33	2 Barometric Pressure (mmHg) : 742
3 Relative Humidity (%) : 99	4 Weather Condition : Clear

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part- 23): 2022	70	100 (24hrs)
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	46	60 (24hrs)
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 11/Sec- 1): 2023	12.1	80 (24hrs)
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 6): 2022	35.7	80 (24hrs)
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 9): 2019	<20.0	100 (8hrs)
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part- 10): 2019 (NDIR Method)	<1.0	1 (8hrs)
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part- 22): 2019	0.015	1 (24hrs)
Nickel (Ni)	µg/m <sup>3</sup>	IS 5182 (Part- 26): 2020	<4.0	20 (Annual)
Arsenic (As)	µg/m <sup>3</sup>	ELES/AIR/SOP/01: 2021	<2.0	06 (Annual)



**TEST REPORT**

Test Report No. : ELES/RNC/2024/2678	Report Release Date : 18.05.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
ULR No. : TC13887240080647E	

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	ELES/GC/SOP/06: 2023	<2.5	05(Annual)
Benz(a)-Pyrene	ng/m <sup>3</sup>	ELES/GC/SOP/06: 2023	<0.5	01(Annual)

Reviewed by  
**AKASH KUMAR**  
Quality Manager  
ELES PVT. LTD.

**\*\*\*\*End of Report\*\*\*\***

Authorized Signatory  
**Dr. Deependra Kumar Singh**  
Ph. D Environment Engg  
ELES Pvt. Ltd. Technical Director

**TEST REPORT**

Test Report No. : ELES/RNC/2024/2679	Report Release Date : 18.05.2024
Work Order No. : E361231211J	Work Order Date : 28.03.2024
ULR No. : TC13587240000648F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindico Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/2970
Address	: Lohardaga, Raichand-835302	Location	: Near Dhob Kanambh Gardari Bazaar Miro (584.19ha)
		Sampling Date	: 18.05.2024 to 19.05.2024
Mines Status	: Operational	Sample Received Date	: 13.05.2024
		Type of Sample	: Ambient Air
Period of Analysis	: 13.05.2024 to 18.05.2024	Sampling Procedure	: ELES/DOC/SMP/02
		Sampling Done By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

**METEOROLOGICAL INFORMATION**

1 Average Temperature (°C) : 31	2 Barometric Pressure (mmHg) : 742
3 Relative Humidity (%) : 99	4 Weather Condition : Clear

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part- 23): 2022	64	100 (24hrs)
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	38	60 (24hrs)
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 11/Sec- 1): 2023	8.9	80 (24hrs)
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 6): 2022	25.7	80 (24hrs)
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 9): 2019	<21.0	100 (8hrs)
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	<11.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part- 10): 2019 (NDIR Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part- 22): 2019	0.01	1 (24hrs)
Nickel (Ni)	µg/m <sup>3</sup>	IS 5182 (Part- 26): 2020	<6.0	20 (Annual)
Arsenic (As)	µg/m <sup>3</sup>	ELES/AIR/SOP/01: 2021	<2.0	06 (Annual)

**TEST REPORT**

Test Report No. : ELES/RNC/2024-2479	Report Release Date : 18.05.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
ULR No. : TC13587240000648F	

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	ELES/GC/SOP06-2023	<2.5	05(Arnuul)
Benzo(a)-Pyrene	ng/m <sup>3</sup>	ELES/GC/SOP05-2023	<0.5	01(Arnuul)

Reviewed by  
**AKASH KUMAR**  
Quality Manager  
ELES PVT. LTD.

**\*\*\*\*End of Report\*\*\*\***

Authorised Signatory  
**Dr. Deependra Kumar Shrivastava**  
Ph. D. Environmental Engg.  
ELES Pvt. Ltd. Technical Director

**TEST REPORT**

Test Report No. : ELES/RNC/2024/2680	Report Release Date : 18.05.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
ULR No. : TC135872400006409	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	Hirdaku Industries Limited	Sample Ref. No.	ELES/RNC/2024/AA/2971
Address	Luharagi, Backward-833302	Location	Near Pakri Gavi Village
		Sampling Date	10.05.2024 to 11.05.2024
Mines Status	Operational	Sample Received Date	13.05.2024
		Type of Sample	Ambient Air
Period of Analysis	13.05.2024 to 18.05.2024	Sampling Procedure	ELES/DOC/SMP/02
		Sampling Done By	ELES Pvc. Ltd.
		Sample Condition	Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	33	2	Barometric Pressure (mmHg)	742
3	Relative Humidity (%)	59	4	Weather Condition	Clear

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part- 23) 2022	89	100 (24hrs)
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24) 2019	82	60 (24hrs)
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 03/Sec- 1) 2023	8.5	80 (24hrs)
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 6) 2022	34.9	80 (24hrs)
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 09) 2019	<20.0	100 (8hrs)
Ambient (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25) 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part- 10) 2019 (NDR Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part- 22) 2019	<0.080	1 (24hrs)
Nickel (Ni)	µg/m <sup>3</sup>	IS 5182 (Part- 26) 2020	<6.0	20 (Annual)
Arsenic (As)	µg/m <sup>3</sup>	ELES/AR/01/01-2021	<0.8	05 (Annual)

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**TEST REPORT**

Test Report No. : ELES/ENC/2024/2080	Report Release Date : 18.05.2024
Work Order No. : 13612412113	Work Order Date : 28.05.2024
U.S.R. No. : DC11587240000689	

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	ELES/CC/SOP/06-2023	<2.5	05(Ambient)
Benzene-(d <sub>6</sub> )-Pyrene	µg/m <sup>3</sup>	ELES/CC/SOP/09-2023	<0.5	01(Ambient)

  
**AKSHAY KUMAR**  
 Quality Manager  
 ELES PVT. LTD.

\*\*\*\*End of Report\*\*\*\*

  
**Dr. Deependra Kumar Singh**  
 Ph.D Environmental Engg  
 ELES PVT. LTD. Technical Director







**TEST REPORT**

Test Report No. : ELES/ENC/2024/2492	Report Release Date : 18.05.2024
Work Order No. : 1361231111	Work Order Date : 28.03.2024
ULR No. : TC125872400066511	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindcon Industries Limited	Sample Ref. No.	: ELES/ENC/2024/AA/2973
Address	: Lohariga, Barkhad-835302	Location	: Near Shalhanpuri Village
Miss. Name	: Operational	Sampling Date	: 10.05.2024 to 11.05.2024
Period of Analysis	: 13.05.2024 to 18.05.2024	Sample Received Date	: 13.05.2024
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMP/LA02
		Sampling Done By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 33	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 55	4	Weather Condition	: Clear

Dichlorine Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2022	68	100 (24hrs)
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part-24): 2019	33	60 (24hrs)
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-B/Sec-1): 2023	7.1	80 (24hrs)
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2022	33.5	80 (24hrs)
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 2019	<26.0	100 (8hrs)
Amonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-17): 2019 (NDR Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2019	0.018	1 (24hrs)
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182 (Part-26): 2020	<6.0	20 (Annual)
Arsenic (As)	ng/m <sup>3</sup>	EL29/ATL/SOP/DA: 2021	<2.0	56 (Annual)

Page 1 of 2

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**TEST REPORT**

Test Report No. : ELES/RNC/2024/2082	Report Release Date : 18.05.2024
Work Order No. : 13012312113	Work Order Date : 28.03.2024
CLR No. : TC1A5872400000529	

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	ELES/GC/SOP/06/2023	<2.5	05(Annual)
Benz(a)-Pyrene	ng/m <sup>3</sup>	ELES/GC/SOP/06/2023	<0.5	01(Annual)

  
AKASH KUMAR  
Quality Manager  
ELES PVT. LTD.

\*\*\*\*End of Report\*\*\*\*

  
Authorial Signature  
Dr. Deshpande Karan  
Ph. D. Environmental Engg.  
ELES Pvt. Ltd. Technical Director

**TEST REPORT**

Test Report No. : ELES/RNC/2024/260	Report Release Date : 18.05.2024
Work Order No. : D012342113	Work Order Date : 28.03.2024
U.L.R.No. : TC-1388724000000209	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/297A
Address	: Loharaga, Jharkhand-831002	Location	: Near Dipsa Kujan Village
		Sampling Date	: 10.05.2024 to 11.05.2024
Millers Status	: Operational	Sample Received Date	: 13.05.2024
Period of Analysis	: 13.05.2024 to 18.05.2024	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SAMPL-02
		Sampling Done By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 33	2	Barometric Pressure (mm/Hg)	: 742
3	Relative Humidity (%)	: 59	4	Weather Condition	: Clear


Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2022	62	100 (24hrs)
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part-24): 2019	35	90 (24hrs)
Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-07Sec-1): 2023	7.4	80 (24hrs)
Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-8): 2023	34.7	80 (24hrs)
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 2019	<20.0	100 (8hrs)
Acetone (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-25): 2019	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 2019 (NDIR Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2019	0.003	1 (24hrs)
Nickel (Ni)	µg/m <sup>3</sup>	IS 5182 (Part-26): 2019	<0.0	20 (Annual)
Arsenic (As)	µg/m <sup>3</sup>	ELES/AR/SOP01: 2021	<0.0	05 (Annual)



**TEST REPORT**

Test Report No. : ELES/RNC/2024-2683	Report Release Date : 18.05.2024
Work Order No. : 1301231211	Work Order Date : 18.03.2024
ULR No. : TC1387140000052F	

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	ELES/OC/SOP/08-2023	<2.5	05(Annual)
Benzene (as Pyrene)	ng/m <sup>3</sup>	ELES/OC/SOP/08-2023	<0.5	01(Annual)

  
 Authorized by:  
**AKASH NIGAM**  
 Quality Manager  
 ELES PVT. LTD.

\*\*\*\*End of Report\*\*\*\*

  
 Authorized Signatory  
 Dr. Deependra Kumar Shrivastava  
 Ph. D Environmental Engg  
 ELES Pvt. Ltd. Technical Staff

**TEST REPORT**

Test Report No. : ELES/RNC/2024/2891	Report Release Date : 28.05.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
ULR No. : TC13587240000851F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/DW/2978
Address	: Loharhaga, Jharkhand-835302	Sampling Date	: 11.05.2024
		Sample Received Date	: 13.05.2024
Mines Status	: Operational	Type of Sample	: Drinking Water
Period of Analysis	: 13.05.2024 to 20.05.2024	Source/Location of Sample	: Gardari Bauxite Mines (584.19ha)
		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 10300:2012	
Parameter	Unit	Test Protocol	Result	Acceptable Limit	Permissible Limit
pH (at 25.3 °C)	-	APHA 24 <sup>th</sup> Ed.2023, 4500-H <sup>+</sup>	6.52	6.5-8.5	No Relaxation
Turbidity	NTU	APHA 24 <sup>th</sup> Ed.2023, 2120 B	0.88	1.0	5.0
Taste	-	APHA 24 <sup>th</sup> Ed.2023, 2160 C	Agreeable	Agreeable	Agreeable
Odour	-	IS 3025 (Part-3) :2018	Agreeable	Agreeable	Agreeable
Colour	Hazen	APHA 24 <sup>th</sup> Ed.2023, 2120B&D	1.0	5	15
Total Dissolved Solids (TDS)	mg/L	APHA 24 <sup>th</sup> Ed.2023, 2540B,C&D	50	500	2000
Chloride (as Cl)	mg/L	APHA 24 <sup>th</sup> Ed.2023, 4500 Cl B	9.6	250	1000
Fluoride (as F)	mg/L	APHA 24 <sup>th</sup> Ed.2023, 4500 F-D	BDL (DL: 0.1)	1.0	1.5
Total Alkalinity (as CaCO <sub>3</sub> )	mg/L	APHA 24 <sup>th</sup> Ed.2023, 2320 B	6.1	200	600
Total Hardness (as CaCO <sub>3</sub> )	mg/L	APHA 24 <sup>th</sup> Ed.2023, 2340 C	4.0	200	500
Sulphate (as SO <sub>4</sub> )	mg/L	APHA 24 <sup>th</sup> Ed.2023, 4500 SO <sub>4</sub> <sup>-2</sup> -E	BDL (DL: 1.0)	200	400
Nitrate (as NO <sub>3</sub> )	mg/L	APHA 24 <sup>th</sup> Ed.2023, 4500 NO <sub>3</sub> -B	BDL (DL: 0.5)	45	No Relaxation

**TEST REPORT**

Test Report No. : ELES/RNC/2024/2891	Report Release Date : 28.05.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
ULR No. : TC13587240000851F	

Discipline : Chemical		Group : Water		Regulatory Limit as per IS10500:2012	
Parameter	Unit	Test Protocol	Result	Acceptable Limit	Permissible Limit
Phenolic Compound (as C <sub>6</sub> H <sub>5</sub> OH)	mg/L	IS 3025 (Part 43:Sec1): 2022	BDL (DL: 0.001)	0.001	0.002
Free Residual Chlorine (RFC)	mg/L	IS 3025 (Part-26): 2021	BDL (DL: 0.1)	0.2	1.0
Calcium (as Ca)	mg/L	APHA 24 <sup>th</sup> Ed.2023, 3500 Ca B	1.0	75	200
Amionic Surfactants (as MBAS)	mg/L	APHA 24 <sup>th</sup> Ed.2023, 5540-C	BDL (DL: 0.025)	0.2	1.0
Discipline : Chemical		Group : Residues in Water			
Aluminium (as Al)	mg/L	IS 3025 (Part-55):2003; RA2019	BDL (DL: 0.02)	0.03	0.2
Arsenic (as As)	mg/L	IS 3025 (Part-37): 2022	BDL (DL: 0.005)	0.01	No Relaxation
Boron (as B)	mg/L	IS 3025 (Part-17): 2021	BDL (DL: 0.2)	0.5	2.4
Cadmium (as Cd)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	BDL (DL: 0.003)	0.003	No Relaxation
Total Chromium(as Cr)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	BDL (DL: 0.03)	0.05	No Relaxation
Copper (as Cu)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	BDL (DL: 0.03)	0.05	1.5
Cyanide (as CN)	mg/L	APHA 24 <sup>th</sup> Ed.2023, 4500 CN-2	BDL (DL: 0.012)	0.05	No Relaxation
Iron (as Fe)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	0.079	1.0	1.0
Lead (as Pb)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	BDL (DL: 0.01)	0.01	No Relaxation
Manganese (as Mn)	mg/L	APHA 24 <sup>th</sup> 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
Selenium (as Se)	mg/L	IS 3025 (Part-56): 2019	BDL (DL: 0.01)	0.01	No Relaxation

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The Document stated in Test Report, is issued by the Laboratory under General Terms and Conditions, only on Company letter head in pre-approved format. The results shown in the Test Report refer or relate only to the subanalysis done by the Laboratory only. The information stated on the Test Report reflects the findings done by the Laboratory at the time of involvement only and within the limits of client's instructions. The Laboratory is responsible for all the information or data provided in the report, except the information which is provided by the client. The Report cannot be reproduced except in full and any part of the Report is not taken out of context, without prior written approval of the Laboratory. The Report in full or in part shall not be published, advertised, used for any legal action unless prior permission has been received from the Management of the Laboratory. Attention is drawn to the limitations of liability, compensation and jurisdiction issues. Any unauthorised alteration or falsification of the content or appearance of the Test Report is a criminal and offence may be prosecuted to the fullest extent of the law. All the samples are submitted for testing from the Date of release of the Test Report. The samples from Regulatory bodies are to be received as specified. Any type of Observations or Comments regarding the Reports shall be done within 15 days from the Date of Test Report released/issued. After the time period stated before, no complaints will be accepted. The entire Test without reservation in Test Report is in 20% excess format. Abbreviation used: N/A (Not Applicable); BDL (Below Detection Limit); LDR (Lower Detection Limit).

**TEST REPORT**

Test Report No. : ELES/RNC/2024/2891	Report Release Date : 28.05.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
U/R No. : TC13587240000851F	

Discipline : Chemical		Group : Residues in Water		Regulatory Limit as per IS10509:2012	
Parameter	Unit	Test Protocol	Result	Acceptable Limit	Permissible Limit
Zinc (as Zn)	mg/L	APHA 24 <sup>th</sup> Ed.2023; J111B	BDL (DL: 0.1)	5	15
Polynuclear Aromatic Hydrocarbons (PAH)	µg/L	ELES/GC/SOP/04: 2023	BDL (DL: 0.05)	0.1	No Relaxation
Polychlorinated biphenyls (PCB)	µg/L	ELES/GC/SOP/03: 2023	BDL (DL: 0.1)	0.5	No Relaxation
<b>Pesticides</b>				<b>Limit</b>	
Akathor	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	
Methy] 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	



**TEST REPORT**

Test Report No. : ELES/RNC/2024/2891	Report Release Date : 28.05.2024
Work Order No. : 13612312133	Work Order Date : 28.03.2024
ULR No. : TC13587240000851F	

Pesticides				
Parameter	Unit	Test Protocol	Result	Limit
Delta HCH	ug/L	ELES/GC/SOP/02: 2023	BDL (DL: 0.02)	0.04
Gamma HCH (Lindane)	ug/L	ELES/GC/SOP/02: 2023	BDL (DL: 0.02)	2.0
Endosulfan (alpha, beta and sulfate)	ug/L	ELES/GC/SOP/02: 2023	BDL (DL: 0.05)	0.40
DDT(o,p and p,p-isomers of DDT,DDEand DDD)	ug/L	ELES/GC/SOP/02: 2023	BDL (DL: 0.05)	1.0
<b>Discipline : Biological</b>		<b>Group : Water</b>		
Total Coliform (Qualitative)	Per 100 mL	IS-15185: 2021	Not Detected	Shall not be detected
Escherichia coli (Qualitative)	Per 100 mL	IS-15185: 2021	Not Detected	

Remarks: pH and RFC done at Lab.

Authorized by  
**AKASH KUMAR**  
Quality Manager  
ELES PVT. LTD.

\*\*\*\*End of Report\*\*\*\*

Authorized Signatory  
**Dr. Deependra Kumar Sinha**  
Ph. D Environmental Engg.  
ELES Pvt. Ltd. Technical Manager





# ENVIRONMENTAL LABORATORIES &

ENGINEERING SERVICES PVT. LTD.

PLOT NO-30, MAKASAROVAR ENCLAVE, TUPU/DAM  
HATA, RANCHI-834003 (JHARKHAND)  
GIT NO- 20A/CR87/1313H

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## TEST REPORT

Test Report No. : ELES/RNC/2024/2891	Report Release Date : 28.05.2024
Work Order No. : 43612312113	Work Order Date : 28.03.2024

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/DW/2978
Address	: Lohardaga, Jharkhand-835302	Sampling Date	: 11.05.2024
		Sample Received Date	: 13.05.2024
Mining Status	: Operational	Type of Sample	: Drinking Water
		Source/Location of Sample	: Gurdari Bauxite Mines (58A.19ha)
Period of Analysis	: 13.05.2024 to 20.05.2024	Sampling Procedure	: ELES/DOC/SAMPL-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
Mineral O <sub>2</sub>	mg/L	CL-6, IS: 3025 (P-39)	BDL (DL: 0.1)	1.0	No Relaxation

Remarks (\*) Parameters are outsourced to other Lab.

**ANAND KUMAR**  
Quality Manager  
ELES PVT. LTD.

\*\*\*\*End of Report\*\*\*\*

**Authorized Signatory**  
**Dr. Deependra Kumar Sinha**  
Ph. D Environmental Engg.  
ELES Pvt. Ltd. Technical Manager

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The Document stated as Test Report, is issued by the Laboratory under General Terms and Conditions, only on Company letter head in pre-approved format. The results shown in the Test Report refer or relate only to the job/analysis done by the Laboratory only. The information stated on the Test Report reflects the findings done by the Laboratory at the time of involvement only and within the limits of client's instructions. The Laboratory is responsible for all the information or data provided on the report, except the information which is provided by the client. The Report cannot be reproduced except in full and any part of the report is not taken out of context, without prior written approval of the Laboratory. The Report in full or in part shall not be published, advertised, used for any legal action unless prior permission has been received from the Management of the Laboratory. Attention is drawn to the limitation of liability, compensation and jurisdiction issues. Any unauthorised alteration or falsification of the content or appearance of the Test Report is unlawful and offences may be prosecuted to the fullest extent of the law. All the samples are retained for 30 days from the Date of release/issue of the Test Report. The samples from Regulatory bodies are to be retained as specified. Any type of Observations or Complaints regarding the Reports shall be done within 15 days from the Date of Test Report release/issue. After the time period stated before, no complaints will be accepted. The entire Test schedule mentioned in Test Report is in 24-hour format. Abbreviation used: N/A (Not Applicable), MDL (Below Detection Limit) LDC (Lower Detection Limit).

**TEST REPORT**

Test Report No. : ELES/RNC/2024/2907	Report Release Date : 28.05.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
ULR No. : TC13587240000867P	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindelco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/EP/2980
Address	: Lohandaga, Jharkhand-833302	Sampling Date	: 10.05.2024
		Sample Received Date	: 13.05.2024
Mines Status	: Operational	Type of Sample	: Effluent Water
		Source of Sample	: Work Shop Effluent - Gurdari Hauxite Mines (584.19 ha)
Period of Analysis	: 13.05.2024 to 20.05.2024	Sampling Procedure	: ELES/DOC/SMP/01
		Sample Collected By	: ELES Pvt. Ltd.
		Sample Condition:	: Sealed & Preserved

Discipline : Chemical		Group : Pollution & Environment		Discharge Limits - CPCB EPR, 1984 Schedule VI	
Parameter	Unit	Test Protocol	Result	Inflow Surface Water	Land for Irrigation
pH (at 25.3°C)	-	APHA 24 <sup>th</sup> Ed.2023.4500-04	6.98	5.5-9.0	5.5-9.0
Total Dissolved Solids (TDS)	mg/L	IS 3025 (Part-16): 2023	497	-	-
Total Suspended Solids (TSS)	mg/L	IS 3025 (Part-17): 2022	8.0	100	300
Dissolved Oxygen (DO)	mg/L	IS 3025 (Part-38): 2019	6.2	-	-
Biochemical Oxygen Demand (BOD) (at 27 °C for 3 days)	mg/L	IS 3025 (Part-44): 2023	4.3	30	100
Chemical Oxygen Demand (COD)	mg/L	IS 3025 (Part-58): 2023	39.6	250	-
Dissolved Phosphate (as P)	mg/L	IS 3025 (Part-31/Sec-1): 2022	BDL (DL: 0.04)	5.0	-
Fluoride (as F)	mg/L	IS 3025 (Part-60): 2019	0.75	2.0	1.5
Sulphide (as S)	mg/L	IS 3025 (Part-29): 2019	BDL (DL: 0.04)	2.0	-
Oil & Grease	mg/L	IS 3025 (Part-39): 2021	1.2	10	10

**TEST REPORT**

Test Report No. : ELES/RNC/2024/2907	Report Release Date : 28.05.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
ULR No. : TC13587240060867F	

Discipline : Chemical		Group : Residues in Water		Discharge Limits – CPCB EPR, 1986 Schedule VI	
Parameter	Unit	Test Protocol	Result	Inland Surface Water	Land for Irrigation
Lead (as Pb)	mg/L	APHA 24 <sup>th</sup> Ed 2023, 3111 B	BDL (DL: 0.01)	0.1	--
Manganese (as Mn)	mg/L	APHA 24 <sup>th</sup> Ed 2023, 3111 B	BDL (DL: 0.05)	2.0	--
Mercury (as Hg)	mg/L	IS 3025(Part-4B): (994; RA2019)	BDL (DL: 0.001)	0.01	--
Nickel (as Ni)	mg/L	APHA 24 <sup>th</sup> Ed 2023, 3111 B	BDL (DL: 0.01)	3.0	--
Zinc (as Zn)	mg/L	APHA 24 <sup>th</sup> Ed 2023, 3111 B	BDL (DL: 0.1)	5.0	--

Remarks: pH done at Lab.

  
Reviewed by  
**AKASH KUMAR**  
Quality Manager  
ELES PVT. LTD.

\*\*\*\*End of Report\*\*\*\*

  
Authorized Signatory  
**Dr. Deependra Kumar Sinha**  
Ph. D Environmental Engg  
ELES PVT. Ltd. Technical Manager

**ENVIRONMENTAL LABORATORIES & ENGINEERING  
SERVICES PVT.LTD.**

Plot No.30, Mansarovar Enclave, Tupudana, Hatia, Ranchi-834003,  
Jharkhand.

Gurdari Bauxite Mine-Environmental Monitoring Report

June 2024



## CONTENT

Handbook Enforcement of Land Use Ban on Mine Environmental Monitoring Report		June 2024
<b>Gurdari Baso (the Mine)</b>		
<b>AMBIENT AIR QUALITY- CORE ZONE</b>		
1	Entrance Gate / Near Mine Office	
2	Near Karkang Mines	
3	Near Mine Weigh Bridge	
4	Near Dhobi Kumbang	
<b>AMBIENT AIR QUALITY- BUFFER ZONE</b>		
1	Near Pakri Gata Village	
2	Near Pui Pui Village	
3	Near Srahmagari Village	
4	Near Dipokujam Village	







### TEST REPORT

Test Report No. : ELES/RNC/2024/3589	Report Release Date : 24.06.2024
Work Order No. : I3612312113	Work Order Date : 28.03.2024
ULR No. : TCL35872400001340F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/3840
Address	: Lohardaga, Jharkhand-833302	Location	: Entrance Gate/Near Mine Office Gandri Bauxite Mine (584.19ha)
		Sampling Date	: 17.06.2024 to 18.06.2024
Mines Status	: Operational	Sample Received Date	: 20.06.2024
Period of Analysis	: 20.06.2024 to 24.06.2024	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SAMPL/02
		Sampling Done By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

### METEOROLOGICAL INFORMATION

1	Average Temperature (°C)	: 38	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 39	4	Weather Condition	: Clear

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-23): 2022	71	100 (24hrs)
Particulate Matter (PM2.5)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-24): 2019	40	60 (24hrs)
Sulphur Di-Oxide (SO <sub>2</sub> )	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-3)/Sec-1: 2023	10.8	80 (24hrs)
Nitrogen Di-Oxide (NO <sub>2</sub> )	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-6): 2022	26.1	80 (24hrs)
Ozone (O <sub>3</sub> )	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-9): 2019	<20.0	100 (8hrs)
Ammonia (NH <sub>3</sub> )	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-23): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	$\text{mg}/\text{m}^3$	IS 5182 (Part-10): 2019 (NDIR Method)	<1.0	2 (8hrs)
Lead (Pb)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-22): 2019	0.015	1 (24hrs)
Nickel (Ni)	$\text{ng}/\text{m}^3$	IS 5182 (Part-26): 2020	<6.0	20 (Annual)
Arsonic (As)	$\text{ng}/\text{m}^3$	ELES/AIR/SOP/01: 2021	<2.0	06 (Annual)

**TEST REPORT**

Test Report No. : ELES/RNC/2024/3389	Report Release Date : 24.06.2024
Work Order No. : E3612312113	Work Order Date : 28.03.2024
ULR No. : TC13587240001340F	

Discipline: Chemical

Group: Atmospheric Pollution

Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	ELES/GC/SOP/06: 2023	<2.5	03(Annual)
Benz(a)-Pyrene	ng/m <sup>3</sup>	ELES/GC/SOP/05: 2023	<0.5	01(Annual)

*A. K. Singh*  
AKASH KUMAR  
Quality Manager  
ELES PVT. LTD.

\*\*\*\*End of Report\*\*\*\*

*Dr. Deependra Kumar Sinha*  
Authorized Signatory  
Dr. Deependra Kumar Sinha  
Ph. D Environmental Engg  
ELES Pvt. Ltd, Technical Manager

**TEST REPORT**

Test Report No. : ELES/RNC/2024/3390	Report Release Date : 24.06.2024
Work Order No. : 13612312115	Work Order Date : 28.05.2024
ULR No. : TCIJ587240000LJ41F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	Hindalco Industries Limited	Sample Ref. No.	ELES/RNC/2024/AA/3841
Address	Lohardiga, Jharkhand-835302	Location	Near Karkarg Mines Gurdah Bauxite Mine (584 /58a)
		Sampling Date	17.06.2024 to 18.06.2024
Mines Status	Operational	Sample Received Date	20.06.2024
Period of Analysis	20.06.2024 to 24.06.2024	Type of Sample	Ambient Air
		Sampling Procedure	ELES/DOC/SAMPL/02
		Sampling Done By	ELES Pvt. Ltd.
		Sample Condition	Sealed & Preserved

**METEOROLOGICAL INFORMATION**

1 Average Temperature (°C) : 38	2 Barometric Pressure (mmHg) : 762
3 Relative Humidity (%) : 59	4 Weather Condition : Clear

**Discipline: Chemical****Group: Atmospheric Pollution**

Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part- 23): 2022	58	100 (24hrs)
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	32	60 (24hrs)
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- II/Sec- 1): 2021	7.8	80 (24hrs)
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 6): 2022	22.5	80 (24hrs)
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 9): 2019	<20.0	100 (Rts)
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part- 10): 2019 (NDR Method)	<1.0	2 (Rts)
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part- 22): 2019	0.009	1 (24hrs)
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182 (Part- 26): 2020	<6.0	20 (Annual)
Arsenic (As)	ng/m <sup>3</sup>	ELES/ATR/SOP/01: 2021	<2.0	06 (Annual)



### TEST REPORT

Test Report No. : ELES/RNC/2024/3398	Report Release Date : 24.06.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
ULR No. : TC135872400001341F	

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	ELES/GC/SOP/06: 2023	<2.5	05(Annual)
Benzo(a)-Pyrene	ng/m <sup>3</sup>	ELES/GC/SOP/06: 2023	<0.5	01(Annual)

Reviewed by  
**AKASH KUMAR**  
Quality Manager  
ELES PVT. LTD.

\*\*\*\*End of Report\*\*\*\*

Authorized Signatory  
**Dr. Deependra Kumar Sinha**  
Ph. D Environmental Engg  
ELES Pvt. Ltd. Technical Manager





### TEST REPORT

Test Report No. : ELES/RNC/2024/391	Report Release Date : 24.06.2024
Work Order No. : E3612512113	Work Order Date : 28.03.2024
ULR No. : TCL35872400901342F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name : Hindalco Industries Limited	Address : Lohardaga, Jharkhand-835302	Sample Ref. No. : ELES/RNC/2024/AA/3842	Location : Near Mine Weigh Bridge, Gurdai Basuic Mine (584.19ha)
Mines Status : Operational	Period of Analysis : 20.06.2024 to 24.06.2024	Sampling Date : 17.06.2024 to 18.06.2024	Sample Received Date : 20.06.2024
		Type of Sample : Ambient Air	Sampling Procedure : ELES/DOC/SMP/02
		Sampling Done By : ELES Pvt. Ltd.	Sample Condition : Sealed & Preserved

### METEOROLOGICAL INFORMATION

1. Average Temperature (°C) : 38	2. Barometric Pressure (mmHg) : 742
3. Relative Humidity (%) : 59	4. Weather Condition : Clear

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part- 2): 2022	69	100 (24hrs)
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 2): 2018	41	60 (24hrs)
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 1)Sec- 1): 2023	11.5	80 (24hrs)
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 6): 2022	35.9	80 (24hrs)
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 9): 2019	<20.0	100 (8hrs)
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	<16.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part- 10): 2019 (NDR Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part- 22): 2019	0.014	1 (24hrs)
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182 (Part- 26): 2020	<6.0	20 (Annual)
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01: 2021	<2.0	06 (Annual)



**TEST REPORT**

Test Report No. : ELES/RNC/2024/3391	Report Release Date : 24.06.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
ULR No. : TC135872400001342F	

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	ELES/GC/SOP/06: 2023	<2.5	05(Annual)
Benzo-(a)-Pyrene	µg/m <sup>3</sup>	ELES/GC/SOP/05: 2023	<0.5	01(Annual)

Reviewed by  
**AKASH KUMAR**  
Quality Manager  
ELES PVT. LTD.

\*\*\*\*End of Report\*\*\*\*

Authorized Signatory  
**Dr. Deependra Kumar Sinha**  
Ph. D Environmental Engg  
ELES Pvt. Ltd. Technical Manager



### TEST REPORT

Test Report No. : ELES/RNC/2024/392	Report Release Date : 24.06.2024
Work Order No. : 1361231213	Work Order Date : 28.03.2024
ULR No. : TC13587240001343F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	Hindustan Industries Limited	Sample Ref. No.	ELES/RNC/2024/AA/3843
Address	Lohandiga, Jharkhand-835302	Location	Near Dhoti Kumbh Gurdari Bauxite Mine (584.19ha)
		Sampling Date	17.06.2024 to 18.06.2024
Mines Status	Operational	Sample Received Date	20.06.2024
Period of Analysis	20.06.2024 to 24.06.2024	Type of Sample	Ambient Air
		Sampling Procedure	ELES/DOC/SAMPL/02
		Sampling Done By	ELES Pvt. Ltd.
		Sample Condition	Sealed & Preserved

### METEOROLOGICAL INFORMATION

1 Average Temperature (°C) : 38	2 Barometric Pressure (mmHg) : 742
3 Relative Humidity (%) : 39	4 Weather Condition : Clear

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part- 23): 2022	60	100 (24hrs)
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	35	60 (24hrs)
Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 11/Sec- 1): 2023	7.8	80 (24hrs)
Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 6): 2022	24.5	80 (24hrs)
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 9): 2019	<20.0	100 (8hrs)
Amonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part- 10): 2019 (NIR Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part- 22): 2019	0.007	1 (24hrs)
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182 (Part- 26): 2020	<6.0	20 (Annual)
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01: 2021	<2.0	06 (Annual)

**TEST REPORT**

Test Report No. : ELES/RNC/2024/3392	Report Release Date : 24.06.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
ULR No. : TC135872800001343F	

Discipline: Chemical

Group: Atmospheric Pollution

Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	ELES/GC/SOP/06-3023	<2.5	03(Annual)
Benz(a)-Pyrene	ng/m <sup>3</sup>	ELES/GC/SOP/05-3023	<0.5	01(Annual)

Reviewed by  
**AKASH KUMAR**  
Quality Manager,  
ELES PVT. LTD.

\*\*\*\*End of Report\*\*\*\*

Authorized Signatory  
**Dr. Deependra Kumar Sinha**  
Ph. D Environmental Engg  
ELES Pvt. Ltd, Technical Manager



## TEST REPORT

Test Report No. : ELES/RNC/2024/3393	Report Release Date : 24.06.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
ULR No. : TCI35872400013449	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name :	Hindalco Industries Limited	Sample Ref. No. :	ELES/RNC/2624/AA/3844
Address :	Lohandega, Bunkhans-815702	Location :	Near Phul Gadu Village
		Sampling Date :	17.06.2024 to 18.06.2024
Plant Name :	Operational	Sample Received Date :	20.06.2024
Period of Analysis :	20.06.2024 to 24.06.2024	Type of Sample :	Ambient Air
		Sampling Procedure :	ELES/DOC/SMP/02
		Sampling Done By :	ELES Pvt. Ltd.
		Sample Condition :	Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C) :	33	2	Barometric Pressure (mmHg) :	742
3	Relative Humidity (%) :	39	4	Weather Condition :	Clear

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part- 23): 2022	87	100 (24hrs)
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	38	90 (24hrs)
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 15)Sec- 1): 2023	7.9	90 (24hrs)
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 6): 2022	24.1	90 (24hrs)
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 9): 2019	<20.0	100 (8hrs)
Amonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part- 10): 2019 (NDSR Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part- 22): 2019	<0.002	1 (24hrs)
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182 (Part- 26): 2020	<6.0	20 (Annual)
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01: 2021	<2.0	66 (Annual)



**TEST REPORT**

Test Report No.	: ELES/RNC/2024/3393	Report Release Date	: 24.06.2024
Work Order No.	: 1361212113	Work Order Date	: 28.03.2024
ELR No.	: TC13587240001340		

**Discipline: Chemical****Group: Atmospheric Pollution**

Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	ELES/GC/SOP/06-2023	<2.5	IS (Annual)
Benzo-(a)-Pyrene	ng/m <sup>3</sup>	ELES/GC/SOP/05-2023	<0.5	IS (Annual)

Reviewed by  
**AKASH KUMAR**  
Quality Manager/  
ELES PVT. LTD

\*\*\*\*End of Report\*\*\*\*

Authorized Signatory  
**Dr. Geopandora Kumar Sinha**  
Ph. 03 Environmental Engrg.  
ELES Pvt. Ltd. Technical Manager



**TEST REPORT**

Test Report No. : ELES/RNC/2024/3394	Report Release Date : 24.06.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
ULB No. : TC135872400091345F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	Hindalco Industries Limited	Sample Ref. No.	ELES/RNC/2024/AA3845
Address	Lobardaga, Bunkhand-815302	Location	Near Pvi Pul Village
		Sampling Date	17.06.2024 to 18.06.2024
Mines Status	Operational	Sample Received Date	20.06.2024
Period of Analysis	20.06.2024 to 24.06.2024	Type of Sample	Ambient Air
		Sampling Procedure	ELES-DOC/SAMPL-02
		Sampling Done By	ELES Pvt. Ltd.
		Sample Condition	Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 38	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 59	4	Weather Condition	: Clear

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2022	57	100 (24hrs)
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part-24): 2019	38	60 (24hrs)
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2)/Sec-1: 2023	7.2	80 (24hrs)
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2023	24.0	80 (24hrs)
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 2019	<0.0	100 (8hrs)
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-25): 2018	<0.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 2019 (NDIR Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2019	0.007	1 (24hrs)
Nickel (Ni)	µg/m <sup>3</sup>	IS 5182 (Part-26): 2020	<5.0	20 (Annual)
Arsenic (As)	ng/m <sup>3</sup>	ELES/AJR-SOP/01: 2021	<2.0	96 (Annual)



### TEST REPORT

Test Report No. : ELES/RNC/2024/3394	Report Release Date : 24.06.2024
Work Order No. : 1361231213	Work Order Date : 28.03.2024
ULR No. : YCL15872400001345F	

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	ELES/CO/SOP/06/2023	<2.5	05(Annual)
Benz(a)-Pyrene	ng/m <sup>3</sup>	ELES/CO/SOP/05/2023	<0.5	01(Annual)

  
**AKASH KUMAR**  
 Quality Manager  
 ELES PVT. LTD.

\*\*\*\*End of Report\*\*\*\*

  
**Dr. Deependra Kumar Singh**  
 Ph. D Environmental Engg  
 ELES Pvt. Ltd. Technical Manager

**TEST REPORT**

Test Report No. : ELES/RNC/2024/2095	Report Release Date : 24.06.2024
Work Order No. : 1361231213	Work Order Date : 22.03.2024
ULR No. : TC135872400001346F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindustan Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/3846
Address	: Lehanda, Ranchi-835302	Location	: Near Shakhazam Village
		Sampling Date	: 17.06.2024 to 18.06.2024
Mines Status	: Operational	Sample Received Date	: 20.06.2024
		Type of Sample	: Ambient Air
Period of Analysis	: 20.06.2024 to 24.06.2024	Sampling Procedure	: ELES/DOC/SMPLO2
		Sampling Done By	: ELES Pvc Ltd.
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 38	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 59	4	Weather Condition	: Clear

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 23): 2022	58	100 (24hrs)
Particulate Matter (PM2.5)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 24): 2019	31	60 (24hrs)
Sulphur Dioxide (SO <sub>2</sub> )	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- II/Sec- 1): 2023	6.9	80 (24hrs)
Nitrogen Dioxide (NO <sub>2</sub> )	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 6): 2022	24.2	80 (24hrs)
Ozone (O <sub>3</sub> )	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 9): 2019	<10.0	100 (8hrs)
Ammonia (NH <sub>3</sub> )	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	$\text{mg}/\text{m}^3$	IS 5182 (Part- 10): 2019 (NDR Method)	<1.0	2 (8hrs)
Lead (Pb)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 22): 2019	0.007	1 (24hrs)
Nickel (Ni)	$\text{ng}/\text{m}^3$	IS 5182 (Part- 26): 2020	<6.0	20 (Annual)
Arsenic (As)	$\text{ng}/\text{m}^3$	ELES/ASR/SOP/01: 2021	<2.0	06 (Annual)

Page 1 of 2

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### TEST REPORT

Test Report No.	: ELES/BNC/2024/3295	Report Release Date	: 24.06.2024
Work Order No.	: 15612312113	Work Order Date	: 28.03.2024
U.R. No.	: TC135873400091346P		

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	ELES/GC/SCIP/05-2023	<1.5	01(Annual)
Benz(a)-Pyrene	ng/m <sup>3</sup>	ELES/GC/SCIP/05-2023	<0.5	01(Annual)

  
 Received By  
**AKASH KUMAR**  
 Quality Manager  
 ELES PVT. LTD.

\*\*\*\*End of Report\*\*\*\*

  
 Authorized Signatory  
 Dr. Deependra Kumar Ginkh  
 Ph. D Environmental Engg.  
 ELES Pvt. Ltd. Technical Manager

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**TEST REPORT**

Test Report No. : ELES/RNC/2024/5396	Report Release Date : 24.06.2024
Work Order No. : 1361231213	Work Order Date : 28.03.2024
CLR No. : TCI3587240001347P	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/0847
Address	: Lohardiga, Bhatkhera-835302	Location	: Near Diga Kijam Village
		Sampling Date	: 17.06.2024 to 18.06.2024
Plant Status	: Operational	Sample Received Date	: 20.06.2024
Period of Analysis	: 20.06.2024 to 24.06.2024	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMP/02
		Sampling Done By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 38	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 59	4	Weather Condition	: Clear

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 23): 2022	57	100 (24hrs)
Particulate Matter (PM2.5)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 24): 2019	32	80 (24hrs)
Sulphur Di-Oxide (SO <sub>2</sub> )	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 17)Sec- 1): 2023	7.4	80 (24hrs)
Nitrogen Di-Oxide (NO <sub>2</sub> )	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 6): 2022	23.8	80 (24hrs)
Ozone (O <sub>3</sub> )	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 9): 2019	<10.0	100 (8hrs)
Ammonia (NH <sub>3</sub> )	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	$\text{mg}/\text{m}^3$	IS 5182 (Part- 10): 2010 (NDSR Method)	<1.0	2 (8hrs)
Lead (Pb)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 22): 2019	0.007	1 (24hrs)
Nickel (Ni)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 26): 2020	<4.0	20 (Annual)
Arsenic (As)	$\text{ng}/\text{m}^3$	EL/ES/ADR/BOP/01: 2021	<2.0	100 (Annual)

Page 1 of 2

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**TEST REPORT**

Test Report No. : ELES/RNC/2024/3396	Report Release Date : 24.06.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
ULR No. : TCI1507240001347F	

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	ELES/GC/SOP/08: 2023	<2.5	05(Annual)
Benz(a)-Pyrene	µg/m <sup>3</sup>	ELES/GC/SOP/05: 2023	<0.5	01(Annual)

Reviewed by  
**AKASH KUMAR**  
Quality Manager  
ELES PVT. LTD.

\*\*\*End of Report\*\*\*

Authorized Signatory  
**Dr. Deependra Kumar Sinha**  
Ph.D. Environmental Engg.  
ELES PVT. LTD. Technical Manager

**ENVIRONMENTAL LABORATORIES & ENGINEERING  
SERVICES PVT.LTD.**

Plot No.30, Mansarovar Enclave, Tupudana, Hatia, Ranchi-834003,  
Jharkhand.

**Gurhari Bauxite Mine-Environmental Monitoring Report**

July 2024



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## TEST REPORT

Test Report No. : ELES/RNC/2024/4093	Report Release Date : 22.07.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
ULR No. : TC12587240062028F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/4684
Address	: Loknagda, Birkhand-815302	Location	: Entrance Gate/Near Mine Office Gurdari Bauxite Mine (584.19ha)
		Sampling Date	: 15.07.2024 to 16.07.2024
Mines Status	: Operational	Sample Received Date	: 17.07.2024
Period of Analysis	: 17.07.2024 to 22.07.2024	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMP/02
		Sampling Done By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

## METEOROLOGICAL INFORMATION

1 Average Temperature (°C) : 38	2 Barometric Pressure (mmHg) : 741
3 Relative Humidity (%) : 67	4 Weather Condition : Cloudy

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 23): 2022	56	100 (24hrs)
Particulate Matter (PM2.5)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 24): 2019	30	60 (24hrs)
Sulphur Dioxide ( $\text{SO}_2$ )	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 18/Sec- 1): 2023	7.3	80 (24hrs)
Nitrogen Dioxide ( $\text{NO}_2$ )	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 6): 2022	20.4	80 (24hrs)
Ozone ( $\text{O}_3$ )	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 9): 2019	<20.0	100 (8hrs)
Ammonia ( $\text{NH}_3$ )	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	$\text{mg}/\text{m}^3$	IS 5182 (Part- 10): 2019 (NDIR Method)	<1.0	2 (8hrs)
Lead (Pb)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 22): 2019	0.012	1 (24hrs)
Nickel (Ni)	$\text{ng}/\text{m}^3$	IS 5182 (Part- 26): 2020	<6.0	20 (Annual)
Arsenic (As)	$\text{ng}/\text{m}^3$	ELES/AIR/SOP/01: 2021	<2.0	06 (Annual)

**TEST REPORT**

Test Report No. : ELES/RNC/2024/4093	Report Release Date : 22.07.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
U/LR No. : TC135872400002028F	

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	ELES/GC/SOP/06/2023	<1.5	05(Annual)
Benz(a)-Pyrene	ng/m <sup>3</sup>	ELES/GC/SOP/05/2023	<0.5	01(Annual)

Reviewed by  
**AKASH KUMAR**  
Quality Manager  
ELES PVT. LTD.

\*\*\*\* End of Report \*\*\*\*

Authorized Signatory:  
**Dr. Deependra Kumar Sinha**  
Ph. D Environmental Engg  
ELES Pvt. Ltd. Technical Manager



**TEST REPORT**

Test Report No. : ELES/RNC/2024/0094	Report Release Date : 22.07.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
ULR No. : TC13587240002029F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	Hindalco Industries Limited	Sample Ref. No.	ELES/RNC/2024/AA/4680
Address	Lohardaga, Jharkhand-835302	Location	Near Karkang Mines Gurdari Bauxite Mine (584.19ha)
		Sampling Date	15.07.2024 to 16.07.2024
Mines Status	Operational	Sample Received Date	17.07.2024
Period of Analysis	17.07.2024 to 22.07.2024	Type of Sample	Ambient Air
		Sampling Procedure	ELES/00C/SAMPL/02
		Sampling Done By	ELES Pvt. Ltd.
		Sample Condition	Sealed & Preserved

**METEOROLOGICAL INFORMATION**

1 Average Temperature (°C) : 28	2 Barometric Pressure (mmHg) : 741
3 Relative Humidity (%) : 67	4 Weather Conditions : Cloudy

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part- 23): 2022	58	100 (24hrs)
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	32	60 (24hrs)
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 1/Sec- 1): 2023	8.5	80 (24hrs)
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 6): 2022	20.7	80 (24hrs)
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 9): 2019	<20.0	100 (8hrs)
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part- 10): 2019 (NDIR Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part- 22): 2019	0.006	1 (24hrs)
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182 (Part- 20): 2020	<6.0	20 (Annual)
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01: 2021	<2.0	06 (Annual)

**TEST REPORT**

Test Report No. : ELES/RNC/2024/4094	Report Release Date : 22.07.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
U.R. No. : TC135872400062029F	

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	ELES/GC/SOP/05/2023	<2.5	05(Annual)
Benz(a)-Pyrene	ng/m <sup>3</sup>	ELES/GC/SOP/05/2023	<1.5	01(Annual)

Reviewed by

**AKASH KUMAR**  
Quality Manager  
ELES PVT. LTD.

\*\*\*\*End of Report\*\*\*\*

Authorized Signatory  
**Dr. Deependra Kumar Sinha**  
Ph. D Environmental Engg.  
ELES Pvt. Ltd. Technical Manager



# ENVIRONMENTAL LABORATORIES &

Plot No-08, Mansarovar Enclave, Surudana  
M7A, Ranchi-834003 (Jharkhand)  
GIT No- 25AFC28713D128

ENGINEERING SERVICES PVT. LTD.

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Phone no.: 9652-229050  
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## TEST REPORT

Test Report No. : ELES/RNC/2024/4095	Report Release Date : 22.07.2024
Work Order No. : 1361231213	Work Order Date : 28.03.2024
ULR No. : TC135872409002030F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	Hindalei Industries Limited	Sample Ref. No.	ELES/RNC/2024/AA/4690
Address	Lehardaga, Barkhad-833302	Location	Near Mine Weigh Bridge Gundri Bauxite Mine (584.19ha)
		Sampling Date	15.07.2024 to 16.07.2024
Mines Status	Operational	Sample Received Date	17.07.2024
Period of Analysis	17.07.2024 to 22.07.2024	Type of Sample	Ambient Air
		Sampling Procedure	ELES/DOC/SMP/02
		Sampling Done By	ELES Pvt. Ltd.
		Sample Condition	Sealed & Preserved

## METEOROLOGICAL INFORMATION

1   Average Temperature (°C) : 28	2   Barometric Pressure (mmHg) : 741
3   Relative Humidity (%) : 67	4   Weather Condition : Cloudy

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 23): 2022	62	100 (24hrs)
Particulate Matter (PM2.5)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 24): 2019	30	80 (24hrs)
Sulphur Di-Oxide ( $\text{SO}_2$ )	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 0/Sec- 1): 2023	7.2	80 (24hrs)
Nitrogen Di-Oxide ( $\text{NO}_2$ )	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-6): 2022	22.7	80 (24hrs)
Ozone ( $\text{O}_3$ )	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 0): 2019	<20.0	100 (8hrs)
Ammonia ( $\text{NH}_3$ )	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	$\text{mg}/\text{m}^3$	IS 5182 (Part- 10): 2019 (NIDIR Method)	<1.0	2 (8hrs)
Lead (Pb)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 22): 2019	0.009	1 (24hrs)
Nickel (Ni)	$\text{ng}/\text{m}^3$	IS 5182 (Part- 20): 2020	<8.0	20 (Annual)
Arsenic (As)	$\text{ng}/\text{m}^3$	ELES/AIR/SOP/01: 2021	<2.0	06 (Annual)

Page 1 of 2

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**TEST REPORT**

Test Report No. : ELES/RNC/2024/4095	Report Release Date : 22.07.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
ULR No. : TCL1587240002030F	

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	ELES/GC/SOP/06: 2023	<2.5	05(Annual)
Benz(a)-Pyrene	ng/m <sup>3</sup>	ELES/GC/SOP/05: 2023	<0.5	01(Annual)

Reviewed by  
**AKASH KUMAR**  
Quality Manager  
ELES PVT. LTD.

\*\*\*\*End of Report\*\*\*\*

Authorised Signatory  
**Dr. Doopendra Kumar Singh**  
Ph. D Environmental Engg.  
ELES Pvt. Ltd. Technical Manager





### TEST REPORT

Test Report No. : ELES/RNC/2024/0096	Report Release Date : 22.07.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
ULR No. : TC135872400002031F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	Hindalco Industries Limited	Sample Ref. No.	ELES/RNC/2024/AA/4691
Address	Lohardaga, Jharkhand-835302	Location	Near Dhobi Kutumb, Gondri Bauxite Mine (SB4, 19th)
		Sampling Date	15.07.2024 to 16.07.2024
Mines Status	Operational	Sample Received Date	17.07.2024
Period of Analysis	17.07.2024 to 22.07.2024	Type of Sample	Ambient Air
		Sampling Procedure	ELES/DOC/SAMPL/02
		Sampling Done By	ELES Pvt. Ltd.
		Sample Condition	Sealed & Preserved

### METEOROLOGICAL INFORMATION

1. Average Temperature (°C)	: 38	2. Barometric Pressure (mmHg)	: 741
3. Relative Humidity (%)	: 67	4. Weather Condition	: Cloudy

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part- 23): 2022	67	100 (24hrs)
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	46	50 (24hrs)
Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 11/Sec- 1): 2023	16.4	80 (24hrs)
Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 6): 2022	29.7	80 (24hrs)
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 9): 2019	<20.0	100 (8hrs)
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part- 10): 2019 (NDR Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part- 22): 2019	0.009	1 (24hrs)
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182 (Part- 20): 2020	<6.0	20 (Annual)
Arsonic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01, 2021	<2.0	06 (Annual)





# ENVIRONMENTAL LABORATORIES &

Plot No-38, Mansardiyar Enclave, Turubagan  
NATYA, BANGLORE-560032 (KARNATAKA)  
GST No - 29AACE3713E224

ENGINEERING SERVICES PVT. LTD.

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Website : www.elespl.co.in



10-0407

## TEST REPORT

Test Report No. : ELES/RNC/2024-4096	Report Release Date : 22.07.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
ULR No. : TCI1587240002031F	

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	ELES/GC/SOP/06/2023	<2.5	05(Annual)
Benzo-(a)-Pyrene	ng/m <sup>3</sup>	ELES/GC/SOP/05/2023	<0.5	01(Annual)

Reviewed by  
**AKASH KUMAR**  
Quality Manager  
ELES PVT. LTD.

\*\*\*\*End of Report\*\*\*\*

Authorized Signatory  
**Dr. Deependra Kumar Sinha**  
Ph. D Environmental Engg.  
ELES PVT. LTD. Technical Manager



**TEST REPORT**

Test Report No. :	ELES/RNC/2024/4097	Report Release Date :	22.07.2024
Work Order No. :	12612112113	Work Order Date :	28.03.2024
U/LR No. :	TCL3887240002032F		

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	ELES/GC/SOP/08: 2023	<2.5	05(A/week)
Benz(a)Pyrene	ng/m <sup>3</sup>	ELES/GC/SOP/09: 2023	<0.5	01(A/week)

  
 Reviewed by  
**AKASH KUMAR**  
 Quality Manager,  
 ELES PVT. LTD.

\*\*\*\*End of Report\*\*\*\*

  
 Approved Signature  
**Dr. Deependra Kumar Sinha**  
 Ph. D Environmental Engg.  
 ELES Pvt. Ltd. Technical Manager

**TEST REPORT**

Test Report No. : ELES/WNC/2024/0008	Report Release Date : 22.07.2024
Work Order No. : 13612212113	Work Order Date : 28.03.2024
ULR No. : TC135872400042633F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	Hindalco Industries Limited	Sample Ref. No.	ELES/WNC/2024/AA/4603
Address	Leinadaga, Harband-435502	Location	Near Pol Pol Village
		Sampling Date	13.07.2024 to 16.07.2024
Mines Status	Operational	Sample Received Date	17.07.2024
Period of Analysis	13.07.2024 to 22.07.2024	Type of Sample	Ambient Air
		Sampling Procedure	ELES/DOC/SMP1_00
		Sampling Done By	ELES Pvt. Ltd.
		Sample Condition	Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	28	2	Barometric Pressure (mmHg)	761
3	Relative Humidity (%)	67	4	Weather Condition	Cloudy

Designated Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part- 23): 2012	51	100 (24hrs)
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	26	60 (24hrs)
Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 1/ISac- 1): 2023	6.5	80 (24hrs)
Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 6): 2022	16.1	80 (24hrs)
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 9): 2016	<10.0	100 (8hrs)
Amonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part- 10): 2016 (NDR Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part- 22): 2019	<0.002	1 (24hrs)
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182 (Part- 26): 2020	<0.0	20 (Annual)
Acetone (Ac)	ng/m <sup>3</sup>	ELES/ADR/SOP/1: 2021	<0.0	00 (Annual)

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### TEST REPORT

Test Report No. : ELES/RNC/2024/4098	Report Release Date : 22.07.2024
Work Order No. : 13612312113	Work Order Date : 28.05.2024
ULR No. : TCE136872400020339	

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	ELES/GC/SOP96: 2021	<2.5	05(Annual)
Benz(a)-Pyrene	ng/m <sup>3</sup>	ELES/GC/SOP95: 2021	<0.5	01(Annual)

Reviewed by  
**AKASH KUMAR**  
Quality Manager  
ELES PVT. LTD.

\*\*\*\*End of Report\*\*\*\*

Technical Signatory  
**Dr. Deepshikha Kumar Singh**  
Ph. D Environmental Engg.  
ELES Pvt. Ltd. Technical Manager

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**TEST REPORT**

Test Report No. : ELES/RNC/2024/0099	Report Release Date : 22.07.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
ULR No. : TC13587240002054F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	Hindalco Industries Limited	Sample Ref. No.	ELES/RNC/2024/AA/4696
Address	Loknagda, Jharkhand-833002	Location	Near Shikharpur Village
		Sampling Date	15.07.2024 to 16.07.2024
Plant Status	Operational	Sample Received Date	17.07.2024
Period of Analysis	17.07.2024 to 22.07.2024	Type of Sample	Ambient Air
		Sampling Procedure	ELES/DOC/SAMPL/02
		Sampling Done By	ELES Pvt. Ltd.
		Sample Condition	Sealed & Preserved

METEOROLOGICAL INFORMATION			
1. Average Temperature (°C)	: 28	2. Barometric Pressure (mmHg)	: 741
3. Relative Humidity (%)	: 67	4. Weather Condition	: Cloudy

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part- 23): 2022	98	100 (24hrs)
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	29	60 (24hrs)
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 11/Sec- 1): 2021	6.2	80 (24hrs)
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 6): 2022	18.8	80 (24hrs)
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 9): 2019	<20.0	100 (8hrs)
Arsenic (As)	µg/m <sup>3</sup>	IS 5182 (Part- 23): 2019	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part- 10): 2019 (NDM Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part- 22): 2019	<0.002	1 (24hrs)
Nickel (Ni)	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2021	<6.0	20 (Annual)
Acetone (Ac)	µg/m <sup>3</sup>	ELES/ADR/SOP(1): 2021	<2.0	05 (Annual)

**TEST REPORT**

Test Report No. : ELES/RNC/2024/0098	Report Release Date : 22.07.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
CLR No. : TC135872400082034F	

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	ELES/GC/SOP/06: 2022	<2.5	05(Annual)
Benzene(x)-Pneumo	ug/m <sup>3</sup>	ELES/GC/SOP/05: 2023	<0.5	05(Annual)

Reviewed by  
**AKASH KUMAR,**  
Quality Manager  
ELES PVT. LTD.

\*\*\*\*End of Report\*\*\*\*

Approved Signatory  
**Dr. Deependra Kumar Sinha**  
Ph. D Environmental Engg  
ELES Pvt. Ltd. Technical Manager

**TEST REPORT**

Test Report No. : ELES/RNC/2024/0106	Report Release Date : 22.07.2024
Work Order No. : 13612312115	Work Order Date : 28.03.2024
ULR No. : TC135872400002035F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	Hindalco Industries Limited	Sample Ref. No.	ELES/RNC/2024/AA/9695
Address	Loharings, Bharkhand-835302	Location	New Dips Kojan Village
		Sampling Date	15.07.2024 to 16.07.2024
Plant Status	Operational	Sample Received Date	17.07.2024
Period of Analysis	17.07.2024 to 22.07.2024	Type of Sample	Ambient Air
		Sampling Procedure	ELES/DOC/SMPL/02
		Sampling Done By	ELES Pvc. Ltd.
		Sample Condition	Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 28	2	Barometric Pressure (mmHg)	: 743
3	Relative Humidity (%)	: 67	4	Weather Condition	: Cloudy

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part- 23) 2022	51	100 (24hrs)
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24) 2019	28	60 (24hrs)
Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- II/Sec- 1) 2023	6.1	80 (24hrs)
Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 6) 2002	20.5	80 (24hrs)
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 9) 2019	<20.0	100 (8hrs)
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25) 2019	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part- 10) 2010 (NDIB Method)	<1.0	7 (8hrs)
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part- 22) 2019	0.004	1 (24hrs)
Nickel (Ni)	µg/m <sup>3</sup>	IS 5182 (Part- 20) 2020	<0.6	20 (Annual)
Arsenic (As)	µg/m <sup>3</sup>	IS 5182 (Part- 11) 2021	<2.0	05 (Annual)



**ENVIRONMENTAL LABORATORIES & ENGINEERING  
SERVICES PVT. LTD.**

Plot No.30, Mansarovar Enclave, Tupudana, Hatia, Ranchi-834003,  
Jharkhand.

**Gurdari Bauxite Mine-Environmental Monitoring Report**

**August 2024**





## CONTENT

Mindaka Industries / Gardani Bauxite Mine Environmental Monitoring Report		August 2021
Gardani Bauxite Mine		
<b>AMBIENT AIR QUALITY - CORE ZONE</b>		
1	Entrance Gate / Near Mine Office	
2	Near Karkang Mines	
3	Near Mine Weigh Bridge	
4	Near Dhoti Karambi	
<b>AMBIENT AIR QUALITY - BUFFER ZONE</b>		
1	Near PakriGudu Village	
2	Near Pol Pol Village	
3	Near Srikusapati Village	
4	Near Dipakujam Village	
<b>Drinking Water</b>		
<b>Effluent Water</b>		





### TEST REPORT

Test Report No. : ELES/RNC/2024/4753	Report Release Date : 22.08.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
ULR No. : TC135872400902672F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/5436
Address	: Lohardaga, Jharkhand-835302	Location	: Entrance Gate/Near Mine Office Gurdari Busside Mine (584.19ha)
		Sampling Date	: 12.08.2024 to 13.08.2024
Mine Status	: Operational	Sample Received Date	: 14.08.2024
Period of Analysis	: 14.08.2024 to 22.08.2024	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sampling Done By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 27	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 68	4	Weather Condition	: Cloudy

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-23): 2022	48	100 (24hrs)
Particulate Matter (PM2.5)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-24): 2019	26	60 (24hrs)
Sulphur Di-Oxide (SO <sub>2</sub> )	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-10/Sec-1): 2022	9.1	80 (24hrs)
Nitrogen Di-Oxide (NO <sub>2</sub> )	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-6): 2022	18.7	80 (24hrs)
Ozone (O <sub>3</sub> )	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-9): 2019	<20.0	100 (8hrs)
Ammonia (NH <sub>3</sub> )	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	$\text{mg}/\text{m}^3$	IS 5182 (Part-10): 2019 (NDIR Method)	<4.0	2 (8hrs)
Lead (Pb)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-22): 2019	0.006	1 (24hrs)
Nickel (Ni)	$\text{ng}/\text{m}^3$	IS 5182 (Part-26): 2020	<6.0	20 (Annual)
Arsenic (As)	$\text{ng}/\text{m}^3$	ELES/AIR/SOP/01: 2021	<2.0	06 (Annual)

#### Page 1 of 2

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**TEST REPORT**

Test Report No. : ELES/RNC/2024/4753	Report Release Date : 22.08.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
ULR No. : TC13587249002672F	

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	ELES/GC/SOP06: 2023	<3.5	05(Annual)
Benz(a)-Pyrene	ng/m <sup>3</sup>	ELES/GC/SOP05: 2023	<3.5	01(Annual)

Reviewed by  
**AKASH KUMAR**  
Quality Manager  
ELES PVT. LTD.

\*\*\*\*End of Report\*\*\*\*

Authorized Signatory  
**Dr. Deependra Kumar Giriha**  
Ph. D Environmental Engg  
ELES Pvt. Ltd. Technical Manager



## TEST REPORT

Test Report No. : ELES/RNC/2024/4754	Report Release Date : 22.08.2024
Work Order No. : 1361231211J	Work Order Date : 28.03.2024
ULR No. : TCLJ587240002673F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name :	Hindalco Industries Limited	Sample Ref. No. :	ELES/RNC/2024/AA/5437
Address :	Lohardaga, Jharkhand-835302	Location :	Near Karkang Mines Gurdari Busside Mine (584.19ha)
		Sampling Date :	12.08.2024 to 13.08.2024
Mines Status :	Operational	Sample Received Date :	14.08.2024
		Type of Sample :	Ambient Air
Period of Analysis :	14.08.2024 to 22.08.2024	Sampling Procedure :	ELES/DOC/SMPL/02
		Sampling Done By :	ELES Pvt. Ltd.
		Sample Condition :	Sealed & Preserved

### METEOROLOGICAL INFORMATION

1. Average Temperature (°C) : 27	2. Barometric Pressure (mm Hg) : 741
3. Relative Humidity (%) : 68	4. Weather Condition : Cloudy

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part- 23): 2023	50	100 (24hrs)
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	28	60 (24hrs)
Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 15-Sub- 1): 2023	6.1	80 (24hrs)
Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 6): 2022	18.5	80 (24hrs)
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 9): 2019	<20.0	100 (8hrs)
Amonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part- 10): 2019 (NDR Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part- 22): 2019	<0.002	1 (24hrs)
Nickel (Ni)	µg/m <sup>3</sup>	IS 5182 (Part- 26): 2020	<6.0	20 (Annual)
Arsenic (As)	µg/m <sup>3</sup>	ELES-AIR/SOP/01: 2021	<2.0	06 (Annual)

### Page 1 of 2

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**TEST REPORT**

Test Report No. : ELES/RNC/2024/4754	Report Release Date : 22.08.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
ULR No. : TC135872400002673F	

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	ELES/GC/SOP/06; 2023	<0.5	05(Annual)
Benz(a)-Pyrene	ng/m <sup>3</sup>	ELES/GC/SOP/115; 2023	<0.5	01(Annual)

Reviewed by  
**AKASH KUMAR**  
Quality Manager  
ELES PVT. LTD.

\*\*\*\*End of Report\*\*\*\*

Authorized Signatory  
**Dr. Deependra Kumar Sinha**  
Ph. D Environmental Engg.  
ELES Pvt. Ltd. Technical Manager



**TEST REPORT**

Test Report No. : ELES/RNC/2024/4755	Report Release Date : 22.08.2024
Work Order No. : 13612312113	Work Order Date : 28.05.2024
ULR No. : TCL3887240002674F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	Hindalco Industries Limited	Sample Ref. No.	ELES/RNC/2024/AA/5438
Address	Lotandaga, Bharkhand-835302	Location	Near Mine Weigh Bridge Gurdal Basude Mine (54.19ha)
		Sampling Date	12.08.2024 to 13.08.2024
Mines Status	: Operational	Sample Received Date	14.08.2024
		Type of Sample	Ambient Air
Period of Analysis	14.08.2024 to 22.08.2024	Sampling Procedure	ELES/DOC/SMPL/02
		Sampling Done By	ELES Pvt. Ltd.
		Sample Condition	Sealed & Preserved

**METEOROLOGICAL INFORMATION**

1 Average Temperature (°C) : 27	2 Barometric Pressure (mmHg) : 741
3 Relative Humidity (%) : 68	4 Weather Condition : Cloudy

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 23): 2022	62	100 (24hrs)
Particulate Matter (PM2.5)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 24): 2019	37	60 (24hrs)
Sulphur Di-Oxide (SO <sub>2</sub> )	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 3)/Sec- 1): 2023	9.1	80 (24hrs)
Nitrogen Di-Oxide (NO <sub>2</sub> )	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 6): 2022	24.4	80 (24hrs)
Ozone (O <sub>3</sub> )	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 9): 2019	<20.0	100 (8hrs)
Amonia (NH <sub>3</sub> )	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	$\text{mg}/\text{m}^3$	IS 5182 (Part- 10): 2019 (NDR Method)	<1.0	2 (8hrs)
Lead (Pb)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 22): 2019	0.008	1 (24hrs)
Nickel (Ni)	$\text{ng}/\text{m}^3$	IS 5182 (Part- 26): 2020	<6.0	20 (Annual)
Arsenic (As)	$\text{ng}/\text{m}^3$	ELES/AIR/SOP/01: 2021	<2.0	06 (Annual)

**Page 1 of 2**

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**TEST REPORT**

Test Report No. : ELES/RNC/2024/4755	Report Release Date : 22.08.2024
Work Order No. : 13612512113	Work Order Date : 28.03.2024
ULR No. : TC13587240002674P	

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C <sub>6</sub> H <sub>6</sub> )	ng/m <sup>3</sup>	ELES/GC/SCM/06: 2023	<2.5	DS(Annual)
Benzo(a)-Pyrene	ng/m <sup>3</sup>	ELES/GC/SCM/05: 2023	<0.5	DI(Annual)

Reviewed by  
**AKASH KUMAR**  
 Quality Manager  
 ELES PVT. LTD.

\*\*\*\*End of Report\*\*\*\*

Authorized Signatory  
**Dr. Deependra Kumar Sinha**  
 Ph. D Environmental Engg  
 ELES Pvt. Ltd. Technical Manager

**TEST REPORT**

Test Report No. : ELES/RNC/2024/4756	Report Release Date : 22.08.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
ULR No. : TC135872400802675F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	Hindalco Industries Limited	Sample Ref. No.	ELES/RNC/2024/AA/5439
Address	Lohardaga, Bhubaneswar-751002	Location	Near Dhoob Khatamb, Gudari Basalt Mine (384.19ha)
		Sampling Date	12.08.2024 to 13.08.2024
Mines Status	Operational	Sample Received Date	14.08.2024
		Type of Sample	Ambient Air
Period of Analysis	14.08.2024 to 22.08.2024	Sampling Procedure	ELES-DOC/SMP/02
		Sampling Done By	ELES Pvt. Ltd.
		Sample Condition	Sealed & Preserved

**METEOROLOGICAL INFORMATION**

1   Average Temperature (°C) : 27	2   Barometric Pressure (mmHg) : 741
3   Relative Humidity (%) : 68	4   Weather Condition : Cloudy

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2022	58	100 (24hrs)
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	25	60 (24hrs)
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- II/Sec- 1): 2023	6.3	80 (24hrs)
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 6): 2022	19.1	80 (24hrs)
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 9): 2019	<2.0	100 (8hrs)
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	<16.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part- 10): 2019 (NDIR Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part- 22): 2019	0.015	1 (24hrs)
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182 (Part- 26): 2020	<6.0	20 (Annual)
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01: 2021	<2.0	06 (Annual)

**TEST REPORT**

Test Report No. : ELES/RNC/2024/4756	Report Release Date : 22.08.2024
Work Order No. : 13612112113	Work Order Date : 28.03.2024
ULR No. : TC125872409026757	

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	ELES/OC/SOP/05: 2023	<2.5	05(Annual)
Benz(a)-Pyrene	ng/m <sup>3</sup>	ELES/OC/SOP/05: 2023	<0.5	01(Annual)

Reviewed by  
**AKASH KUMAR**  
Quality Manager  
ELES PVT. LTD.

\*\*\*\*End of Report\*\*\*\*

Authorized Signatory  
**Dr. Deependra Kumar Sinha**  
Ph.D Environmental Engg.  
ELES Pvt. Ltd. Technical Manager







**TEST REPORT**

Test Report No.	: ELEN/RNC/2024/4757	Report Release Date	: 22.08.2024
Work Order No.	: 13612312113	Work Order Date	: 28.03.2024
ULR No.	: TCU2887240002676F		

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	ELES/GC/SOP/06/2023	<2.5	0Y(Annual)
Benz(a)-Pyrene	µg/m <sup>3</sup>	ELES/GC/SOP/05/2023	<0.5	0Y(Annual)

Received by  
**AKASH KUMAR**  
Quality Manager  
ELES PVT. LTD.

**\*\*\*\*End of Report\*\*\*\***

Authorized Signatory  
**Dr. Deependra Kumar Singh**  
Ph. D Environmental Engg  
ELES Pvt Ltd, Technical Manager



## TEST REPORT

Test Report No. : ELES/RNC/2024-4750	Report Release Date : 22.08.2024
Work Order No. : U612312133	Work Order Date : 28.03.2024
ULR No. : TC125872406002577	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	Hindalco Industries Limited	Sample Ref. No.	ELES/RNC/2024/AA/3441
Address	Lohardaga, Backhand-433302	Location	Near Pn Pd Village
		Sampling Date	12.08.2024 to 13.08.2024
Plant Status	Operational	Sample Received Date	14.08.2024
Period of Analysis	14.08.2024 to 22.08.2024	Type of Sample	Ambient Air
		Sampling Procedure	ELES/DQC/SMP/02
		Sampling Done By	ELES Pvt. Ltd.
		Sample Condition	Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	:27	2	Barometric Pressure (mmHg)	741
3	Relative Humidity (%)	:88	4	Weather Condition	Cloudy

Designated Chemical		Group: Atmospheric Pollutants		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2022	41	100 (24hrs)
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part-24): 2019	18	60 (24hrs)
Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-11)Sec-1: 2023	5.2	80 (24hrs)
Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2022	14.8	80 (24hrs)
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 2019	<28.0	100 (8hrs)
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-23): 2022	<18.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 2019 (%TDR Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-20): 2019	<0.02	1 (24hrs)
Sulphur (S)	µg/m <sup>3</sup>	IS 5182 (Part-26): 2020	<5.0	30 (Annual)
Arsenic (As)	µg/m <sup>3</sup>	ELES/ADR/SOP/01: 2023	<0.0	06 (Annual)

**TEST REPORT**

Test Report No. : ELES/RUC/2024/758	Report Release Date : 22.08.2024
Work Order No. : 1361231113	Work Order Date : 18.08.2024
ULR No. : TC13887240002677F	

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Sulfur (S <sub>2</sub> )	ug/m <sup>3</sup>	ELES/OC/SOP/05-2023	<2.5	01(Annual)
Benzo(a)-Pyrene	ug/m <sup>3</sup>	ELES/OC/SOP/05-2023	<0.5	01(Annual)

Reviewed by  
**AKASH KUMAR**  
Quality Manager  
ELES PVT. LTD.

\*\*\*\*End of Report\*\*\*\*

Authorized Signatory  
**Dr. Deependra Kumar Sinha**  
P.O. Environmental Engg  
ELES Pvt. Ltd. Technical Director



## TEST REPORT

Test Report No. : ELES/RNC/2024/0789	Report Release Date : 22.08.2024
Work Order No. : LM12312113	Work Order Date : 28.03.2024
ELR No. : TC125872406060789	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindustan Industries Limited	Sample Ref. No.	: ELES-RNC/2024/AA/5442
Address	: Lohandaga, Barchand-EJ5302	Location	: Near Shukhavan, Village
		Sampling Date	: 12.08.2024 to 13.08.2024
Plant Status	: Operational	Sample Received Date	: 14.08.2024
Period of Analysis	: 14.08.2024 to 22.08.2024	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SAMPL-02
		Sampling Done By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 27	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 68	4	Weather Condition	: Cloudy

Analyte/Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2012	44	100 (24hrs)
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5183 (Part-24): 2019	34	80 (24hrs)
Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-11/Sec-1): 2012	5.2	80 (24hrs)
Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2012	15.1	80 (24hrs)
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 2014	<20.8	100 (8hrs)
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-25): 2011	<10.0	80 (24hrs)
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 2019 (NORM Method)	<1.8	2 (8hrs)
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2019	<0.01	1 (24hrs)
Nickel (Ni)	µg/m <sup>3</sup>	IS 5182 (Part-20): 2012	<0.6	35 (Annual)
Arsenic (As)	ng/m <sup>3</sup>	IS 5182 (Part-21): 2012	<0.2	06 (Annual)

**TEST REPORT**

Test Report No.	: ELES/RNC/2024/0759	Report Release Date	: 22.08.2024
Work Order No.	: 13612312115	Work Order Date	: 28.03.2024
U.R. No.	: TC158971400002678F		

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	ELES/OC/SOP/06/ 2023	<2.5	35 (Annual)
Benzene-o-Pyrene	ng/m <sup>3</sup>	ELES/OC/SOP/05/ 2023	<0.5	01 (Annual)

Reviewed by  
**AKASH KUMAR**  
Quality Manager  
ELES PVT. LTD.

\*\*\*\*End of Report\*\*\*\*

Authorized Signatory  
**Dr. Deependra Kumar Srinivas**  
Ph. D. Environmental Engg.  
ELES Pvt. Ltd. Technical Director





**TEST REPORT**

Test Report No.	: ELES/RNC/2024-4760	Report Release Date	: 22.08.2024
Work Order No.	: 13612312113	Work Order Date	: 28.03.2024
CLR No.	: TC1358724000027W		

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C <sub>6</sub> H <sub>6</sub> )	ug/m <sup>3</sup>	ELES/DC/SC/06: 2023	<2.5	05(Annual)
Benzene (a)-Pyrene	ug/m <sup>3</sup>	ELES/DC/SOP/05: 2023	<0.5	01(Annual)

  
Reviewed by  
**AKASH KUMAR**  
Quality Manager  
ELES PVT. LTD.

\*\*\*\*End of Report\*\*\*\*

  
Authorized Signatory  
**Dr. Deshpande Kumar Singh**  
Ph. D Environmental Engg  
ELES PVT. LTD. Technical Manager



### TEST REPORT

Test Report No.	: ELES/RNC/2024/4810	Report Release Date	: 24.08.2024
Work Order No.	: 13612312113	Work Order Date	: 28.03.2024
ULR No.	: TC13587240002729P		

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindaleo Industries Limited	Sample Ref. No.	: ELES/RNC/2024/DW/5452
Address	: Lohantaga, Jharkhand-833302	Sampling Date	: 12.08.2024
		Sample Received Date	: 14.08.2024
Mines Status	: Operational	Type of Sample	: Drinking Water
		Source of Sample	: Tap Water
Period of Analysis	: 14.08.2024 to 24.08.2024	Location of Sample	: Near Entrance Gate (Gurhari Bauxite Mines)
		Sampling Procedure	: ELES/DOC/SMP/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 24.6 °C)	-	APHA 24 <sup>th</sup> Ed.2023, 4500-H	6.63	6.5-8.5	No Relaxation
Turbidity	NTU	APHA 24 <sup>th</sup> Ed.2023, 2130 B	0.42	1.0	5.0
Taste	-	APHA 24 <sup>th</sup> Ed.2023, 2180 C	Agreeable	Agreeable	Agreeable
Odour	-	IS 3025 (Part-5) :2018	Agreeable	Agreeable	Agreeable
Colour	Hazen	APHA 24 <sup>th</sup> Ed.2023, 2120B&D	1.0	5.0	15
Total Dissolved Solids (TDS)	mg/L	APHA 24 <sup>th</sup> Ed.2023, 2540B,C&D	63	500	2000
Chloride (as Cl)	mg/L	APHA 24 <sup>th</sup> Ed.2023, 4500 Cl B	12.4	250	1000
Fluoride (as F)	mg/L	APHA 24 <sup>th</sup> Ed.2023, 4500 F-D	BDL (DL: 0.1)	1.0	1.5
Total Alkalinity (as CaCO <sub>3</sub> )	mg/L	APHA 24 <sup>th</sup> Ed.2023, 2320 B	13.2	200	600
Total Hardness (as CaCO <sub>3</sub> )	mg/L	APHA 24 <sup>th</sup> Ed.2023, 2340 C	21.3	200	600
Sulphate (as SO <sub>4</sub> )	mg/L	APHA 24 <sup>th</sup> Ed.2023, 4500 SO <sub>4</sub> <sup>2-</sup> E	1.8	200	400
Nitrate (as NO <sub>3</sub> )	mg/L	APHA 24 <sup>th</sup> Ed.2023, 4500 NO <sub>3</sub> -N	BDL (DL: 0.5)	45	No Relaxation

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The Conclusion stated in Test Report, is issued by the Laboratory under General Terms and Conditions, only on Company letter head in pre-approved format. The results shown in the Test Report refer or relate only to the job/analysis done by the Laboratory only. The information stated in the Test Report reflects the findings done by the Laboratory at the time of assessment only and within the limits of client's instructions. The Laboratory is responsible for all the information or data provided in the report, except the information which is provided by the client. The Report cannot be reproduced except in full and any part of the report is not taken out of context, without prior written approval of the Laboratory. The Report is full or in part shall not be published, advertised, used for any legal actions unless prior permission has been received from the Management of the Laboratory. Attention is drawn to the limitation of liability, interpretation and jurisdiction clause. Any unauthorised alteration & falsification of the content or suppression of the Test Report is unlawful and offences may be prosecuted to the fullest extent of the law. All the samples are retained for 30 days from the date of release of the Test Report. The samples from Regulatory bodies are to be retained as specified. Any issue of Objections or Complaints regarding the Report shall be done within 15 days from the Date of Test Report submission. After the time period stated before, no complaints will be accepted. The entire Terms & conditions mentioned in Test Report is in 24hours format. Abbreviations used: N/A (Not Applicable); BDL (Below Detection Limit); L&L (Lower Detection Limit).

**TEST REPORT**

Test Report No. : ELES/RNC/2024/0810	Report Release Date : 24.08.2024
Work Order No. : IJ612312113	Work Order Date : 28.03.2024
ULR No. : TC135872400002729F	

Discipline : Chemical		Group : Water		Regulatory Limit as per IS10500:2012	
Parameter	Unit	Test Protocol	Result	Acceptable Limit	Permissible Limit
Phenolic Compound (as C <sub>12</sub> H <sub>10</sub> O) <sup>1</sup>	mg/L	IS 3025 (Part 43/Sec1) : 2022	BDL (DL: 0.001)	0.001	0.002
Free Residual Chlorine (RFC)	mg/L	IS 3025 (Part-26) : 2021	0.24	0.2 (Min)	1.0 (Min)
Calcium (as Ca)	mg/L	APHA 24 <sup>9</sup> Ed.2023, 3500 Ca B	5.4	75	200
Anionic Surfactants (as MBAS)	mg/L	APHA 24 <sup>9</sup> Ed.2023, 5540-C	BDL (DL: 0.025)	0.2	1.0

Discipline : Chemical		Group : Residues in Water			
Parameter	Unit	Test Protocol	Result	Acceptable Limit	Permissible Limit
Aluminum (as Al)	mg/L	IS 3025 (Part-55) : 2003; RA2019	BDL (DL: 0.02)	0.01	0.2
Arsenic (as As)	mg/L	IS 3025 (Part-37) : 2022	BDL (DL: 0.005)	0.01	No Relaxation
Boron (as B)	mg/L	IS 3025 (Part-57) : 2021	BDL (DL: 0.2)	0.5	1.0
Cadmium (as Cd)	mg/L	APHA 24 <sup>9</sup> Ed.2023; 3111B	BDL (DL: 0.003)	0.003	No Relaxation
Total Chromium (as Cr)	mg/L	APHA 24 <sup>9</sup> Ed.2023; 3111B	BDL (DL: 0.03)	0.05	No Relaxation
Copper (as Cu)	mg/L	APHA 24 <sup>9</sup> Ed.2023; 3111B	BDL (DL: 0.03)	0.05	1.5
Cyanide (as CN)	mg/L	APHA 24 <sup>9</sup> Ed.2023, 4500 CN-E	BDL (DL: 0.012)	0.05	No Relaxation
Iron (as Fe)	mg/L	APHA 24 <sup>9</sup> Ed.2023; 3111B	0.065	1.0	No Relaxation
Lead (as Pb)	mg/L	APHA 24 <sup>9</sup> Ed.2023; 3111B	BDL (DL: 0.01)	0.01	No Relaxation
Manganese (as Mn)	mg/L	APHA 24 <sup>9</sup> 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
Selenium (as Se)	mg/L	IS 3025 (Part-56) : 2019	BDL (DL: 0.01)	0.01	No Relaxation

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## TEST REPORT

Test Report No. : ELES/RNC/2024/4810	Report Release Date : 24.08.2024
Work Order No. : 13512312113	Work Order Date : 28.03.2024
ULR No. : TC135872400602729F	

Discipline : Chemical		Group : Residues in Water		Regulatory Limit as per IS11500:2012	
Parameter	Unit	Test Protocol	Result	Acceptable Limit	Permissible Limit
Zinc (as Zn)	mg/L	APHA 24 <sup>h</sup> Fil.2023; 3111B	BDL (DL: 0.1)	5.0	15
Polyaromatic Hydrocarbons (PAH)	µg/L	ELES/GC/SOP/04: 2023	BDL (DL: 0.05)	0.1	No Relaxation
Polychlorinated biphenyls (PCB)	µg/L	ELES/GC/SOP/03: 2023	BDL (DL: 0.1)	0.5	No Relaxation
<b>Pesticides</b>				<b>Limit</b>	
Atrachlor	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)	12.5	
Chlorpyrifos	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	10	
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)	--	
Diethat	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	



**TEST REPORT**

Test Report No. : ELES/RNC/2024/4810	Report Release Date : 24.08.2024
Work Order No. : 1361231213	Work Order Date : 28.03.2024
ULR No. : TC135872400002729F	

**Pesticides**

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

**Discipline : Biological****Group : Water**

Total Coliform (Qualitative)	Per 100 mL	IS 15185: 2021	Not Detected	Shall not be detected
Escherichia coli (Qualitative)	Per 100 mL	IS 15185: 2021	Not Detected	

**Remarks:** 1. pH and RPC done at Lab.Reviewed by  
**AKASH KUMAR**  
Quality Manager  
ELES PVT. LTD.

\*\*\*\*End of Report\*\*\*\*

Authorized Signatory  
**Dr. Deependra Kumar Sinha**  
Ph. D Environmental Engg  
ELES Pvt. Ltd. Technical Manager



# ENVIRONMENTAL LABORATORIES &

ENGINEERING SERVICES PVT. LTD.

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## TEST REPORT

Test Report No. : ELES/RNC/2024/4810	Report Release Date : 14.08.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name : Hindalco Industries Limited	Address : Lohardaga, Jharkhand-815302	Sample Ref. No. : ELES/RNC/2024/DW/5432	Type of Sample : Drinking Water
Address : Lohardaga, Jharkhand-815302		Sampling Date : 12.08.2024	
Miner Status : Operational	Period of Analysis : 14.08.2024 to 26.08.2024	Simple Received Date : 14.08.2024	Source of Sample : Tap Water
Period of Analysis : 14.08.2024 to 26.08.2024		Location of Sample : Near Entrance Gate (Gurdari Bauxite Mines)	Sampling Procedure : ELES/DOC/SMPL-01
		Sample Condition : Sealed & Preserved	

Discipline : Chemical		Group : Water		Regulatory Limit as per IS 10500:2012	
Parameter	Unit	Test Protocol	Result	Acceptable Limit	Permissible Limit
Mineral Oil*	mg/L	IS 3025 (Part-39): 2001, Clause 6 Infrared Spectroscopic method.	BDL (DL: 0.01)	0.5	No Relaxation

Remarks: (\*) Parameters are subsouced to other Lab.

Reviewed by  
**AKASH KUMAR**  
Quality Manager  
ELES PVT. LTD.

\*\*\*\*End of Report\*\*\*\*

Authorised Signatory  
**Dr. Deependra Kumar Singh**  
Ph. D Environmental Engg.  
ELES Pvt. Ltd. Technical Manager

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**TEST REPORT**

Test Report No. : ELES/RNC/2024/4812	Report Release Date : 24.08.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
ULR No. : TC135872400002731F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	Hindolon Industries Limited	Sample Ref. No.	ELES/RNC/2024/EEF/5454
Address	Lohardaga, Jharkhand-835302	Sampling Date	13.08.2024
		Sample Received Date	14.08.2024
Mines Status	Operational	Type of Sample	Effluent Water
		Source of Sample	Work Shop Effluent - Gurdari Bauxite Mines (584.19 ha)
Period of Analysis	14.08.2024 to 24.08.2024	Sampling Procedure	ELES/DOC/SMP1/01
		Sampling Done By	ELES Pvt. Ltd.
		Sample Condition	Sealed & Preserved

Discipline : Chemical		Group : Pollution & Environment		Discharge Limits - CPCB EPR, 1086 Schedule VI	
Parameter	Unit	Test Protocol	Result	Inland Surface Water	Load for Irrigation
pH (at 24.0°C)	-	APHA 24 <sup>th</sup> Ed.2023,4500-41	6.50	5.5-9.0	5.5-9.0
Total Dissolved Solids (TDS)	mg/L	IS 3025 (Part-16): 2023	480	--	--
Total Suspended Solids (TSS)	mg/L	IS 3025 (Part-17): 2022	14.8	100	200
Dissolved Oxygen (DO)	mg/L	IS 3025 (Part-38): 2019	6.9	--	--
Biochemical Oxygen Demand (BOD) (at 27 °C for 3 days)	mg/L	IS 3025 (Part-44): 2023	6.5	30	100
Chemical Oxygen Demand (COD)	mg/L	IS 3025 (Part-58): 2023	46.0	250	--
Dissolved Phosphate (as P)	mg/L	IS 3025 (Part-51/Sec-1): 2022	BDL (DL: 0.5)	5.0	--
Fluoride (as F)	mg/L	IS 3025 (Part-60): 2019	0.69	2.0	1.5
Sulphide (as S)	mg/L	IS 3025 (Part-29) : 2019	BDL (DL: 0.04)	2.0	--
Oil & Grease	mg/L	IS 3025 (Part-39): 2021	1.4	10	10

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**TEST REPORT**

Test Report No. : ELES/RNC/2024/4812	Report Release Date : 24.08.2024
Work Order No. : 13612312112	Work Order Date : 28.03.2024
ULR No. : TC135872400002731F	

Discipline : Chemical		Group : Residues in Water		Discharge Limits - CPCB EPR, 1986 Schedule VI	
Parameter	Unit	Test Protocol	Result	Inland Surface Water	Land for Irrigation
Lead (as Pb)	mg/L	APHA 24 <sup>th</sup> Ed.2023, 3111 B	BDL (DL: 0.01)	0.1	--
Manganese (as Mn)	mg/L	APHA 24 <sup>th</sup> Ed.2023, 3111 D	0.083	2.0	--
Mercury (as Hg)	mg/L	IS 3025 (Part-4E)-2010	BDL (DL: 0.001)	0.01	--
Nickel (as Ni)	mg/L	APHA 24 <sup>th</sup> Ed.2023, 3111 B	BDL (DL: 0.01)	3.0	--
Zinc (as Zn)	mg/L	APHA 24 <sup>th</sup> Ed.2023, 3111 B	BDL (DL: 0.1)	5.0	--

Remarks: pH done at Lab.

Reviewed by  
**AKASH KUMAR**  
Quality Manager  
ELES PVT. LTD.

\*\*\*\*End of Report\*\*\*\*

Authorized Signatory  
**Dr. Deependra Kumar Sinha**  
Ph. D Environmental Engg.  
ELES Pvt. Ltd. Technical Manager



**ENVIRONMENTAL LABORATORIES & ENGINEERING  
SERVICES PVT. LTD.**

Plot No.30, Mansarovar Enclave, Tupudana, Hatia, Ranchi-834003,  
Jharkhand

**Gurdari Bauxite Mine-Environmental Monitoring Report**

September 2024





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### TEST REPORT

Test Report No. : ELES/RNC/2024/5346	Report Release Date : 23.09.2024
Work Order No. : L361231211J	Work Order Date : 28.03.2024
ULR No. : TC/L358724000052508	


CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name : Hindalco Industries Limited	Address : Lohandigga, Jharkhand-835302	Sample Ref. No. : ELES/RNC/2024/AA/6180	Location : Entrance Gate/Near Mine Office Gurdari Bauxite Mine (586.19ha)
Mines Status : Operational	Period of Analysis : 16.09.2024 to 23.09.2024	Sampling Date : 14.09.2024 to 15.09.2024	Sample Received Date : 16.09.2024
		Type of Sample : Ambient Air	Sampling Procedure : ELES/DOC/SMP/02
		Sampling Done By : ELES Pvt. Ltd.	Sample Condition : Sealed & Preserved

METEOROLOGICAL INFORMATION			
1 Average Temperature (°C) : 26	2 Barometric Pressure (mmHg) : 742	3 Relative Humidity (%) : 72	4 Weather Condition : Rainy

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part- 23) : 2022	42	100 (24hrs)
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24) : 2019	20	60 (24hrs)
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 2/Sec1) : 2023	5.2	80 (24hrs)
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 6) : 2022	17.4	80 (24hrs)
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 9) : 2019	<20.0	100 (8hrs)
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25) : 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part- 16) : 2019 (NDIR Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part- 22) : 2019	<0.002	1 (24hrs)
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182 (Part- 26) : 2020	<6.0	20 (Annual)
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01 : 2021	<2.0	06 (Annual)
Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	ELES/GC/SOP/06 : 2023	<1.5	15 (Annual)
Benz(a)-Pyrene	µg/m <sup>3</sup>	ELES/GC/SOP/05 : 2023	<0.5	01 (Annual)

  
Reviewed By  
Anshu Kumar  
Quality Manager

\*\*\*\*End of Report\*\*\*\*

  
Authorized Signatory  
Dr. Dipendra Kumar Sinha  
Ph. D. Environmental Engg.  
Technical Manager



# ENVIRONMENTAL LABORATORIES & ENGINEERING SERVICES PVT. LTD.

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## TEST REPORT

Test Report No. : ELES/RNC/2024/5347	Report Release Date : 23.09.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
U.L.R No. : TC138872480903260F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name : Hindalco Industries Limited	Address : Laharlaga, Bhanohar-835302	Sample Ref. No. : ELES/RNC/2024/AA/6181	Location : Near Karkang Mines Gurdai Basaltic Mine (584.19ha)
Mines Status : Operational	Period of Analysis : 16.09.2024 to 23.09.2024	Sampling Date : 14.09.2024 to 15.09.2024	Sample Received Date : 15.09.2024
		Type of Sample : Ambient Air	Sampling Procedure : ELES/DOC/SMP/02
		Sampling Done By : ELES Pvt. Ltd.	Sample Condition : Sealed & Preserved

METEOROLOGICAL INFORMATION			
1	Average Temperature (°C) : 26	2	Barometric Pressure (mmHg) : 742
3	Relative Humidity (%) : 72	4	Weather Condition : Rainy

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part- 2): 2022	37	100 (24hrs)
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 2): 2019	20	60 (24hrs)
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 2)Sec I & 2023	<5.0	80 (24hrs)
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 6): 2022	12.8	80 (24hrs)
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 9): 2019	<20.0	100 (8hrs)
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2014	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part- 10): 2019 (NDR Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part- 22): 2019	<0.002	1 (24hrs)
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182 (Part- 26): 2020	<6.0	20 (Annual)
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01: 2021	<2.0	06 (Annual)
Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	ELES/GC/SOP/06: 2023	<2.5	03 (Annual)
Benz(a)-Pyrene	ng/m <sup>3</sup>	ELES/GC/SOP/05: 2023	<0.5	01 (Annual)

  
Reviewed by  
**Akash Kumar**  
Quality Manager

\*\*\*End of Report\*\*\*

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

Page 1 of 1

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## TEST REPORT

Test Report No. : ELES/RNC/2024/5348	Report Release Date : 23.09.2024
Work Order No. : LJ612312113	Work Order Date : 28.03.2024
ULR No. : TC138872400003261F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name : Hindako Industries Limited	Address : Loharlaga, Barhuchal-835302	Sample Ref. No. : ELES/RNC/2024/AA/6182	Location : Near Mine Weigh Bridge Gurdari Basalt Mine (384.19ha)
Mines Status : Operational	Period of Analysis : 16.09.2024 to 23.09.2024	Sampling Date : 14.09.2024 to 15.09.2024	Sample Received Date : 16.09.2024
		Type of Sample : Ambient Air	Sampling Procedure : ELES/DOC/SMP/L-02
		Sampling Done By : ELES Pvt. Ltd.	Sample Condition : Sealed & Preserved

METEOROLOGICAL INFORMATION			
1 Average Temperature (°C) : 26	2 Barometric Pressure (mmHg) : 742	3 Relative Humidity (%) : 72	4 Weather Condition : Rainy

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part- 23) : 2022	52	100 (24hrs)
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24) : 2019	25	60 (24hrs)
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 2/Sec1) : 2023	7.2	80 (24hrs)
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 6) : 2022	22.6	80 (24hrs)
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 9) : 2019	<20.0	100 (8hrs)
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25) : 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part- 10) : 2019 (NDR Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part- 22) : 2019	0.005	1 (24hrs)
Nickel (Ni)	µg/m <sup>3</sup>	IS 5182 (Part- 26) : 2020	<0.0	20 (Annual)
Arsenic (As)	µg/m <sup>3</sup>	ELES/AIR/SOP/01 : 2021	<2.0	06 (Annual)
Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	ELES/GC/SOP/06 : 2023	<2.5	05 (Annual)
Benz(a)-Pyrene	µg/m <sup>3</sup>	ELES/GC/SOP/05 : 2023	<0.5	01 (Annual)

Reviewed by  
**Anshu Kumar**  
Quality Manager

\*\*\*End of Report\*\*\*

Reviewed by  
**Dr. Deependra Kumar Sinha**  
Ph. D. Environmental Engg.  
Technical Manager

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Any unauthorized alteration of the contents or appearance of the Test Report is prohibited and all efforts may be made to identify the source of the same. All the samples are retained for 30 days from the date of submission of the Test Report. The original Test Report is valid only as per the conditions of the license. Any type of discrepancy or complaint regarding the Test Report shall be made within 15 days from the date of Test Report submission. After the time period mentioned, no complaint will be accepted. The entire Test Report mentioned in the Report is the property of the Laboratory. All rights reserved. Plot (New Application), B-10, Durgam Chauraha, Lucknow, India. Contact: 0522-2290109, 0522-2290110, 0522-2290111, 0522-2290112, 0522-2290113, 0522-2290114, 0522-2290115, 0522-2290116, 0522-2290117, 0522-2290118, 0522-2290119, 0522-2290120, 0522-2290121, 0522-2290122, 0522-2290123, 0522-2290124, 0522-2290125, 0522-2290126, 0522-2290127, 0522-2290128, 0522-2290129, 0522-2290130, 0522-2290131, 0522-2290132, 0522-2290133, 0522-2290134, 0522-2290135, 0522-2290136, 0522-2290137, 0522-2290138, 0522-2290139, 0522-2290140, 0522-2290141, 0522-2290142, 0522-2290143, 0522-2290144, 0522-2290145, 0522-2290146, 0522-2290147, 0522-2290148, 0522-2290149, 0522-2290150, 0522-2290151, 0522-2290152, 0522-2290153, 0522-2290154, 0522-2290155, 0522-2290156, 0522-2290157, 0522-2290158, 0522-2290159, 0522-2290160, 0522-2290161, 0522-2290162, 0522-2290163, 0522-2290164, 0522-2290165, 0522-2290166, 0522-2290167, 0522-2290168, 0522-2290169, 0522-2290170, 0522-2290171, 0522-2290172, 0522-2290173, 0522-2290174, 0522-2290175, 0522-2290176, 0522-2290177, 0522-2290178, 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**TEST REPORT**

Test Report No. :	ELES/RNC/2024/020	Report Release Date :	23.10.2024
Work Order No. :	1242212112	Work Order Date :	28.10.2023
U.R. No. :	TC/18/73/0000202		


CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name :	Shri. Jai Industries Limited	Sample Ref. No. :	ELES/RNC/2024/AA/0104
Address :	Loharuha, Barhird-205303	Location :	Hari Path, Gada Village
		Sampling Date :	14.09.2024 to 15.09.2024
		Sample Received Date :	18.09.2024
Witness Name :	Operational	Type of Sample :	Ambient Air
Period of Analysis :	14.09.2024 to 21.09.2024	Sampling Procedure :	ELES/DOC/09/103
		Sampling Done By :	ELES Pvt. Ltd.
		Sample Condition :	Sealed & Preserved

METEOROLOGICAL INFORMATION			
1	Average Temperature (°C) :	2	Barometric Pressure (mm/Hg) :
3	Relative Humidity (%) :	4	Weather Condition :
	26		742
	72		Rainy

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2021	38	100 (24hrs)
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part-24): 2019	17	60 (24hrs)
Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-25a): 2021	<5.0	80 (24hrs)
Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-3): 2021	13.8	80 (24hrs)
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 2019	<20.0	100 (8hrs)
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-25): 2014	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 2019 (NMR Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2019	<0.002	1 (24hrs)
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182 (Part-26): 2020	<6.0	20 (Annual)
Arsenic (As)	ng/m <sup>3</sup>	ELES/AR/SC/011: 2021	<3.0	05 (Annual)
Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	ELES/GC/SC/06: 2023	<3.5	05 (Annual)
Benz[a]-Pyrene	ng/m <sup>3</sup>	ELES/GC/SC/05: 2023	<0.5	01 (Annual)

  
 Reviewed by  
**ANSHU KISHORE**  
 Quality Manager

\*\*\*End of Report\*\*\*

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







### TEST REPORT

Test Report No. : ELES/RNC/2024/0353	Report Release Date : 23.03.2024
Work Order No. : 13022F1E12	Work Order Date : 28.03.2024
URL No. : TCL1807240000266F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name : Hindico Resources Limited.	Sample Ref. No. : ELES/RNC/2024/0353/17	Location : Near Diga Kujan Village	Sampling Date : 14.03.2024 to 15.03.2024
Address : Lohrdaga, Haryana-131502	Sample Received Date : 14.03.2024	Type of Sample : Ambient Air	Sampling Procedure : ELES/DC/009/203
Plant Status : Operational	Sampling Done By : ELES Pvt. Ltd.	Sample Condition : Sealed & Preserved	
Period of Analysis : 14.03.2024 to 23.03.2024			

METEOROLOGICAL INFORMATION			
1. Average Temperature (°C) : 26	2. Barometric Pressure (mmHg) : 762		
3. Relative Humidity (%) : 72	4. Weather Condition : Bsky		

Designation : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2022	48	100 (24hrs)
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part-24): 2019	24	60 (24hrs)
Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2/Sec3): 2022	6.2	80 (24hrs)
Nitrogen Dioxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2022	19.4	80 (24hrs)
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 2019	<28.0	100 (8hrs)
Amonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-25): 2018	<18.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 2019 (NMM Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2019	0.007	1 (24hrs)
Nickel (Ni)	µg/m <sup>3</sup>	IS 5182 (Part-26): 2020	<6.0	20 (Annual)
Arsenic (As)	µg/m <sup>3</sup>	ELES/AR/SOP/01: 2021	<1.0	05 (Annual)
Benzene (C <sub>6</sub> H <sub>6</sub> )	µg/m <sup>3</sup>	ELES/GC/SOP/06: 2023	<2.8	05 (Annual)
Benzene(a)-Pyrene	µg/m <sup>3</sup>	ELES/GC/SOP/05: 2023	<0.5	01 (Annual)

Witnessed By:  
 Anshu K. Singh  
 Quality Manager

\*\*\*\*End of Report\*\*\*\*

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

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**TEST REPORT**

Test Report No. : ELES/RNC/2024/5358	Report Release Date : 23.09.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
ELR No. : TC13587240000271F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sampling Date	: 14.09.2024 to 15.09.2024
Address	: Lohardaga, Bunkhand-815302	Sampling Received Date	: 16.09.2024
		Type of Sample	: Ambient Noise
		Sampling procedure	: ELES/DOC/SAMPL/03
		Sampling Done by	: ELES Pvt. Ltd.
Mines Status	: Operational	Period of Analysis	: 16.09.2024 to 23.09.2024

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 26	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 72	4	Weather Condition	: Rainy

Discipline : Chemical		Group : Atmospheric Pollution			
Location	Unit	Test Protocol	Result		Regulatory Limit (Industrial Zone)
			Time	$L_{eq}$	
Near Mine Office Gondari Bansrize Mine (584.19ha)	dB(A)	IS 9889: 2020	Day Time	64	75 dB(A) Day Time & 70 dB(A) Night Time
			Night Time	45	
Sample ID: ELES/RNC/2024/AN/6192					



\*\*\*End of Report\*\*\*

*(Signature)*  
**Authorised Signatory**  
**Dr. Deependra Kumar Sinha**  
**Ph. D. Environmental Engg.**  
**Technical Manager**

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### TEST REPORT

Test Report No. : ELES/RNC/2024/5363	Report Release Date : 23.09.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
ULR No. : TC135872400003276F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sampling Date	: 15.09.2024
Address	: Lohandiga, Bhalkhand-833302	Sampling Received Date	: 16.09.2024
		Type of Sample	: Workzone Noise
Mines Status	: Operational	Sampling procedure	: ELES/DOC/SMPL/03
		Sample Drawn By	: ELES Pvt. Ltd.
		Period of Analysis	: 16.09.2024 to 23.09.2024

### METEOROLOGICAL INFORMATION

1. Average Temperature (°C) : 27	2. Barometric Pressure (mmHg) : 742
3. Relative Humidity (%) : 70	4. Weather Condition : Rainy

Location	Unit	Test Protocol	Result		Regulatory Limit (Industrial Zone)
			Time	L <sub>eq</sub>	
Near Kathawapatti Pit – Gardari Bauxite Mine (584.19ha)	dB(A)	IS 4758: 2017			90 dB (A)
Sample ID: ELES/RNC/2024/WN/6197			Day Time	68	



\*\*\*\*End of Report\*\*\*\*

  
 Authorised Signatory:  
 Dr. Deepak Kumar Singha  
 Ph. D. Environmental Engg.  
 Technical Manager

**TEST REPORT**

Test Report No. : ELES/RNC/2024/5370	Report Release Date : 23.09.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
ULR No. : TC135872400003283F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/SW/6204
Address	: Lohardaga, Buxihard-835302	Sampling Date	: 14.09.2024
		Sample Received Date	: 16.09.2024
Mines Status	: Operational	Type of Sample	: Surface Water
		Source of Sample	: Spring Water
		Location of Sample	: Jhapa Jheel, Gardul Bauxite Mine (SRA, 19ha)
Period of Analysis	: 16.09.2024 to 23.09.2024	Sampling Procedure	: ELES/DOC/SAMPL/01
		Sampling Done by	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

Discipline : Chemical			Group : Water	Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 2296-1992 Class C (Island Surface Water)
pH (at 24.8 °C)	-	IS 3025 (Part-11) : 2022	6.86	6.5-8.5
Colour	Hazen	IS 3025 (Part-41) : 2021	4.0	100
Odour	-	IS 3025 (Part-5) : 2018	Unobjectionable	--
Turbidity	NTU	IS 3025 (Part-10) : 2023	1.12	--
Total Dissolved Solids (TDS)	mg/l.	IS 3025 (Part-16) : 2023	196	1500
Total Alkalinity (as CaCO <sub>3</sub> )	mg/l.	IS 3025 (Part-23) : 2023	62.1	--
Total Hardness (as CaCO <sub>3</sub> )	mg/l.	IS 3025 (Part-21) : 2019	74.5	--
Sulphate (as SO <sub>4</sub> )	mg/l.	IS 3025 (Part-24/Sec2) : 2022	9.86	400
Chloride (as Cl)	mg/l.	IS 3025 (Part-32) : 2019	30.6	600
Fluoride (as F)	mg/l.	IS 3025 (Part-60) : 2019	BDL (DL: 0.1)	1.5
Nitrate (as NO <sub>3</sub> )	mg/l.	APIHA 24 <sup>th</sup> Ed.2023, 4500 NO <sub>3</sub> -N, -B	3.59	50

**TEST REPORT**

Test Report No. : ELES/RNC/2024/5370	Report Release Date : 23.09.2024
Work Order No. : 13612312113	Work Order Date : 28.05.2024
ULR No. : TC135N7240001283F	

Discipline : Chemical		Group : Water		Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 2286-1992 Class C (Inland Surface Water)
Free Residual Chlorine (RFC)	mg/L	IS 3025 (Part-26) : 2021	BDL (DL: 0.1)	-
Phenols Compounds (as C <sub>12</sub> H <sub>10</sub> O11)	mg/L	IS 3025 (Part-63/Sec1) : 2022	BDL (DL: 0.001)	0.005
Calcium (as Ca)	mg/L	IS 3025 (Part-40) : 2019	19.8	-
Discipline : Chemical		Group : Residues in Water		
Aluminium (as Al)	mg/L	IS 3025 (Part-55) : 2003/RA2019	BDL (DL: 0.02)	-
Arsenic (as As)	mg/L	IS 3025 (Part 37):2022	BDL (DL: 0.005)	0.2
Boron (as B)	mg/L	IS 3025 (Part-57) : 2001	BDL (DL: 0.2)	-
Cadmium (as Cd)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	BDL (DL: 0.003)	0.01
Total Chromium (as Cr)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	BDL (DL: 0.03)	0.03
Copper (as Cu)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	BDL (DL: 0.03)	1.5
Iron (as Fe)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	0.104	50
Lead (as Pb)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	BDL (DL: 0.01)	0.1
Manganese (as Mn)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	BDL (DL: 0.05)	-
Mercury (as Hg)	mg/L	IS 3025(Part-48) : 1994; RA.2019	BDL (DL: 0.001)	-
Selenium (as Se)	mg/L	IS 3025(Part-56) : 2019	BDL (DL: 0.01)	0.05
Zinc (as Zn)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	BDL (DL: 0.1)	15

**TEST REPORT**

Test Report No. : ELES/RNC/2024/5370	Report Release Date : 23.09.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
ULR No. : TC135872400003285F	

Discipline : Chemical		Group : Residues in Water		Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 2296-1992 Class C (Closed Surface Water)
Cyanide (as CN)	mg/L	APHA 24 <sup>h</sup> Ed.2003, 4500 CN-E	BDL (DL: 0.012)	0.05
Polyaromatic Aromatic Hydrocarbons (PAH)	µg/L	ELES/GC/SOP/04: 2023	BDL (DL: 0.05)	--
<b>Pesticides</b>				
Alachlor	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	--
Atrazine	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	--
Butachlor	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	--
Chlorpyrifos	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	--
Ethion	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	--
Malathion	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	--
Methyl parathion	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.1)	--
Monocrotophos	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	--
Phorate	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	--
Phorate Sulphate	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	--
Dieldrin	µg/L	ELES/GC/SOP/02: 2023	BDL (DL: 0.01)	--





## TEST REPORT

Test Report No.	: ELES/RNC/2024/5370	Report Release Date	: 23.09.2024
Work Order No.	: 13612312112	Work Order Date	: 28.03.2024
ULR No.	: TC125872406903283F		

Pesticides				Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 2246-1992 Class C (Inland Surface Water)
Alpha HCH	µg/L	ELES/GC/SOP/02: 2023	BDL (DL: 0.006)	--
Beta HCH	µg/L	ELES/GC/SOP/02: 2023	BDL (DL: 0.02)	--
Delta HCH	µg/L	ELES/GC/SOP/02: 2023	BDL (DL: 0.02)	--
Gamma HCH (Lindane)	µg/L	ELES/GC/SOP/02: 2023	BDL (DL: 0.02)	--
Endosulfan (alpha, beta and sulphate)	µg/L	ELES/GC/SOP/02: 2023	BDL (DL: 0.05)	--
DDT (o,p and p,p-isomers of DDT) ( DDE and DDD)	µg/L	ELES/GC/SOP/02: 2023	BDL (DL: 0.05)	--
<b>Discipline: Biological</b>		<b>Group: Water</b>		
Total Coliform	CFU/100 mL	IS 15185: 2021	5.31 × 10 <sup>2</sup>	--
<i>Escherichia coli</i>	CFU/100 mL	IS 15185: 2021	53.0	--

Remarks: pH & RTC done at Lab.



\*\*\*\*End of Report\*\*\*\*

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

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## TEST REPORT

Test Report No. : ELES/RNC/2024/0370	Report Release Date : 23.09.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	Hindalco Industries Limited	Sample Ref. No.	ELES/RNC/2024/SW/0204
Address	: Lohardiaga, Backhard-835302	Sampling Date	: 14.09.2024
		Sample Received Date	: 16.09.2024
		Type of Sample	: Surface Water
Mines Status	: Operational	Source of Sample	: Spring Water
		Location of Sample	: Jhapa Jhari, Gurdari Baurata Mine (584.15ha)
Period of Analysis	: 16.09.2024 to 23.09.2024	Sampling Procedure	: ELES/DOC/SMPL/01
		Sampling Done By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

Discipline : Chemical		Group : Water		Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 2296-1992 Class C (Inland Surface Water)
Turbidity	-	APHA 24 <sup>th</sup> Ed.2023, 2160C	N/A	-
Anionic Surfactants (as MBAS)	mg/L	APHA 24 <sup>th</sup> Ed.2023, 5540-C	BDL (DL: 0.025)	1.0
Mineral Oil*	mg/L	IS 3025 (Part-39):2021 (Class B Infrared Spectroscopic Method)	BDL (DL: 0.01)	-

Remarks: L. (\*) Parameters are outsourced to other Lab.



\*\*\*\*End of Report\*\*\*\*

  
 Authorized Signatory  
 Dr. Desendra Kumar Sinha  
 Ph. D. Environmental Engg.  
 Technical Manager

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**TEST REPORT**

Test Report No. : ELES/RNC/2024/5368	Report Release Date : 23.09.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
ULR No. : TC135872400003281F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindaleo Industries Limited	Sample Ref. No.	: ELES/RNC/2024/NW/6202
Address	: Lohardaga, Jharkhand-835700	Sampling Date	: 14.09.2024
		Sample Received Date	: 16.09.2024
Mines Status	: Operational	Type of Sample	: Surface Water
		Source of Sample	: Up Stream
Period of Analysis	: 16.09.2024 to 23.09.2024	Location of Sample	: Dhandhari Nadi, Guntari Bauxite Mine (584.19ha)
		Sampling Procedure	: ELES/DOC/SMP/01
		Sampling Done By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

Discipline : Chemical		Group : Water		Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 2296-1992 Class C (Inland Surface Water)
pH (at 24.8 °C)	-	IS 3025 (Part-11) : 2022	6.83	6.5-8.5
Colour	Hazen	IS 3025 (Part-4) : 2021	58.0	300
Odour	-	IS 3025 (Part-5) : 2018	Unobjectionable	-
Turbidity	NTU	IS 3025 (Part-10) : 2022	38.2	-
Total Dissolved Solids (TDS)	mg/l.	IS 3025 (Part-16) : 2022	270	1500
Total Alkalinity (as CaCO <sub>3</sub> )	mg/l.	IS 3025 (Part-23) : 2022	91.0	-
Total Hardness (as CaCO <sub>3</sub> )	mg/l.	IS 3025 (Part-21) : 2019	109	-
Sulphate (as SO <sub>4</sub> )	mg/l.	IS 3025 (Part-24-Sec1) : 2022	15.8	400
Chloride (as Cl)	mg/l.	IS 3025 (Part-32) : 2019	47.8	600
Fluoride (as F)	mg/l.	IS 3025 (Part-60) : 2019	0.226	1.5
Nitrate (as NO <sub>3</sub> )	mg/l.	APHA 24 <sup>th</sup> Ed. 2022, 4500 NO <sub>3</sub> -B	3.48	50

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**TEST REPORT**

Test Report No. : ELES/RNC/2024/5368	Report Release Date : 23.09.2024
Work Order No. : 13612312113	Work Order Date : 28.05.2024
ULR No. : TC13587240003281F	

Discipline : Chemical		Group : Water		Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 2286-1992 Class C (Potable Surface Water)
Free Residual Chlorine (RFC)	mg/L	IS 3025 (Part-26) : 2021	BDL (DL: 0.1)	—
Phenols Compounds (in C <sub>2</sub> H <sub>5</sub> OH)	mg/L	IS 3025 (Part-43:Sec) : 2022	BDL (DL: 0.001)	0.005
Calcium (as Ca)	mg/L	IS 3025 (Part-40) : 2019	29.0	—
Discipline : Chemical		Group : Residues in Water		
Aluminum (as Al)	mg/L	IS 3025 (Part-55) : 2005:RA2019	BDL (DL: 0.02)	—
Arsenic (as As)	mg/L	IS 3025 (Part 37):2022	BDL (DL: 0.005)	0.2
Boron (as B)	mg/L	IS 3025 (Part-57) : 2021	BDL (DL: 0.2)	—
Cadmium (as Cd)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	BDL (DL: 0.003)	0.01
Total Chromium (as Cr)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	BDL (DL: 0.03)	0.05
Copper (as Cu)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	BDL (DL: 0.03)	1.5
Iron (as Fe)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	0.338	50
Lead (as Pb)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	BDL (DL: 0.01)	0.1
Manganese (as Mn)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	BDL (DL: 0.05)	—
Mercury (as Hg)	mg/L	IS 3025(Part-48) : 1994; RA:2019	BDL (DL: 0.001)	—
Selenium (as Se)	mg/L	IS 3025(Part-56) : 2019	BDL (DL: 0.01)	0.05
Zinc (as Zn)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	BDL (DL: 0.1)	15

**TEST REPORT**

Test Report No. : ELES/RNC/2024/5368	Report Release Date : 23.09.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
ULR No. : TC135872400003281F	

Discipline : Chemical		Group : Residues in Water		Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 2296-1992 Class C (Inlet Surface Water)
Cyanide (as CN)	mg/l	APHA 24 <sup>th</sup> Ed.2023, 4500 CN-E	BDL (DL: 0.012)	0.05
Polyaryclic Aromatic Hydrocarbons (PAH)	µg/l	ELES/GC/SOP/04: 2023	BDL (DL: 0.05)	—
<b>Pesticides</b>				
Alachlor	µg/l	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	—
Atrazine	µg/l	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	—
Butochlor	µg/l	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	—
Chlorpyrifos	µg/l	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	—
Ethion	µg/l	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	—
Malathion	µg/l	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	—
Methyl parathion	µg/l	ELES/GC/SOP/01: 2023	BDL (DL: 0.1)	—
Monocrotophos	µg/l	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	—
Phorate	µg/l	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	—
Phosmie Sulphate	µg/l	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	—
Dieldrin	µg/l	ELES/GC/SOP/02: 2023	BDL (DL: 0.01)	—



**TEST REPORT**

Test Report No. : ELES/RNC/2024/5368	Report Release Date : 23.09.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
ULR No. : TC13587240003281F	

Pesticides				Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 2256-1992 Class C (Inland Surface Water)
Alpha HCH	µg/L	ELES/GC/SOP/02-2023	BDL (DL: 0.005)	--
Beta HCH	µg/L	ELES/GC/SOP/02-2023	BDL (DL: 0.02)	--
Delta HCH	µg/L	ELES/GC/SOP/02-2023	BDL (DL: 0.02)	--
Gamma HCH (Lindane)	µg/L	ELES/GC/SOP/02-2023	BDL (DL: 0.02)	--
Endosulfan (alpha, beta and sulfate)	µg/L	ELES/GC/SOP/02-2023	BDL (DL: 0.05)	--
DDT (o,p and p,p-isomers of DDT) ( DDE and DDD)	µg/L	ELES/GC/SOP/02-2023	BDL (DL: 0.05)	--
<b>Discipline: Biological</b>		<b>Group: Water</b>		
Total Coliform	CFU/100 mL	IS 15185: 2021	4.36*10 <sup>7</sup>	--
Escherichia coli	CFU/100 mL	IS 15185: 2021	22.0	--

Remarks: pH & BPC done at Lab.



\*\*\*\*End of Report\*\*\*\*

**Dr. Deependra Kumar Sinha**  
 Ph. D. Environmental Engg.  
 Technical Manager





# ENVIRONMENTAL LABORATORIES &

ENGINEERING SERVICES PVT. LTD.

PLOT NO-30, MANSAKOVAR ENCLAVE, TUPUDANA  
MATA, RANCHI-834003 (JHARKHAND)  
GIT NO- 30AAGE07130101

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## TEST REPORT

Test Report No. : ELES/RNC/2024/SJ68	Report Release Date : 23.09.2024
Work Order No. : L3612312113	Work Order Date : 28.03.2024

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref No.	: ELES/RNC/2024/SW/6202
Address	: Loharlaga, Bharkhad-835302	Sampling Date	: 14.09.2024
		Sample Received Date	: 16.09.2024
		Type of Sample	: Surface Water
		Source of Sample	: Up Stream
Mining Status	: Operational	Locations of Sample	: Dhandhari Naik, Gardari Hauzite Mine (S&L 191a)
		Sampling Procedure	: ELES/DOC/SMP/01
Period of Analysis	: 10.09.2024 to 21.09.2024	Sampling Done By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

Discipline : Chemical		Group : Water		Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 2296-1992 Class C (Inland Surface Water)
Taste	-	APIA 24 <sup>th</sup> Ed.2023, 2160C	N/A	--
Amionic Surfactants (as MBAS)	mg/L	APIA 24 <sup>th</sup> Ed.2023, 5540-C	HDL (DL: 0.025)	1.0
Mineral Oil*	mg/L	IS 3025 (Part-39) 2021 (Class B Infrared Spectroscopic Method)	HDL (DL: 0.01)	--

Remarks: 1, (\*) Parameters are outsourced to other Lab.



\*\*\*\*End of Report\*\*\*\*

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

Page 1 of 1

The Document stated as Test Report, is issued by the Laboratory under General Terms and Conditions, only on Laboratory letter head as pre-approved format. The results shown in this Test Report refer to values only in the parameters listed by the Laboratory only. The information stated on this Test Report reflects the findings done by the Laboratory at the time of investigation only and within the limits of client's instructions. The Laboratory is responsible for all the information or data provided on the report, except the information which is provided by the client. The Report cannot be reproduced in any form and any part of the report is not to be used or copied, without prior written approval of the Laboratory. The Report in full or in part shall not be published, advertised, used for any legal actions unless prior permission has been obtained from the Management of the Laboratory. Attention is drawn to the Extension of liability, compensation and arbitration clause. Any complaint or observation or dissatisfaction of the content or appearance of the Test Report is accepted and efficient may be processed in the follow manner of the law. All the samples are retained for 30days from the date of submission of the Test Report. The samples from Regulatory Bodies are to be retained as specified. Any type of Observations or Complaints regarding the Reports shall be done within 30days from the Date of Test Report release/forwarded. After the time period stated before, no complaints will be accepted. The entire Test schedule mentioned as Test Report is a 24hours format. Abbreviation used: N/A (Not Applicable), HDL (Below Detection Level), LDC (Lower Detection Limit)

**TEST REPORT**

Test Report No. : ELES/RNC/2024/5369	Report Release Date : 23.09.2024
Work Order No. : I3612312113	Work Order Date : 28.05.2024
ULR No. : TC135872 00003282F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/SW/8203
Address	: Lohardaga, Jharkhand-835302	Sampling Date	: 14.09.2024
		Sample Received Date	: 16.09.2024
		Type of Sample	: Surface Water
Mining Status	: Operational	Source of Sample	: Down Stream
		Location of Sample	: Dhanbari Nadi, Guntari Bauxite Mine (584.19ha)
Period of Analysis	: 16.09.2024 to 23.09.2024	Sampling Procedure	: ELES/DOC/SMP/01
		Sampling Done By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

Discipline : Chemical		Group : Water		Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 2296-1992 Class C (Inland Surface Water)
pH (at 24.8 °C)	-	IS 3025 (Part-11): 2012	6.62	6.5-8.5
Colour	Hazen	IS 3025 (Part-4): 2021	46.0	500
Odour	-	IS 3025 (Part-5): 2018	Unobjectionable	-
Turbidity	NTU	IS 3025 (Part-10): 2023	30.1	-
Total Dissolved Solids (TDS)	mg/L	IS 3025 (Part-16): 2023	520	1500
Total Alkalinity (as CaCO <sub>3</sub> )	mg/L	IS 3025 (Part-23): 2023	102	--
Total Hardness (as CaCO <sub>3</sub> )	mg/L	IS 3025 (Part-21): 2019	135	--
Sulphate (as SO <sub>4</sub> )	mg/L	IS 3025 (Part-24/Sec1): 2022	12.9	400
Chloride (as Cl)	mg/L	IS 3025 (Part-32): 2019	60.3	600
Fluoride (as F)	mg/L	IS 3025 (Part-60): 2019	0.250	1.5
Nitrate (as NO <sub>3</sub> )	mg/l	APHA 24 <sup>th</sup> Ed. 2023, 4500 NO <sub>3</sub> -B	4.08	50

**TEST REPORT**

Test Report No. : ELES/RNC/2024/5369	Report Release Date : 23.09.2024
Work Order No. : 1361231213	Work Order Date : 28.03.2024
ULR No. : TC13587240003282F	

Discipline : Chemical		Group : Water		Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 2296-1992 Class C (Inlet Surface Water)
Free Residual Chlorine (RPC)	mg/L	IS 3025 (Part-26) : 2021	BDL (DL: 0.1)	–
Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OCl)	mg/L	IS 3025 (Part-43/Sec1) : 2022	BDL (DL: 0.001)	0.005
Calcium (as Ca)	mg/L	IS 3025 (Part-40) : 2019	36.0	–

Discipline : Chemical		Group : Residues in Water		
Parameter	Unit	Test Protocol	Result	Tolerance Limits
Aluminium (as Al)	mg/L	IS 3025 (Part-55) : 2003:RA2019	BDL (DL: 0.02)	–
Arsenic (as As)	mg/L	IS 3025 (Part 27):2022	BDL (DL: 0.005)	0.2
Boron (as B)	mg/L	IS 3025 (Part-57) : 2021	BDL (DL: 0.2)	–
Cadmium (as Cd)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	BDL (DL: 0.002)	0.01
Total Chromium (as Cr)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	BDL (DL: 0.02)	0.05
Copper (as Cu)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	BDL (DL: 0.02)	1.5
Iron (as Fe)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	0.533	50
Lead (as Pb)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	BDL (DL: 0.01)	0.1
Manganese (as Mn)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	BDL (DL: 0.05)	–
Mercury (as Hg)	mg/L	IS 3025(Part-48) : 1994; RA2019	BDL (DL: 0.001)	–
Selenium (as Se)	mg/L	IS 3025(Part-56) : 2019	BDL (DL: 0.01)	0.05
Zinc (as Zn)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	BDL (DL: 0.1)	15

**TEST REPORT**

Test Report No. : ELES/RNC/2024/5349	Report Release Date : 23.09.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
ULR No. : TC135872400003282F	

Discipline : Chemical		Group : Residues in Water	Tolerance Limits
Parameter	Unit	Test Protocol	Result as per IS 2296-1992 Class C (Inland Surface Water)
Cyanide (as CN)	mg/L	APHA 24 <sup>th</sup> Ed.2023, 4500 CN-E	BDL (DL: 0.012)
Polynuclear Aromatic Hydrocarbons (PAH)	µg/L	ELES/GC/SOP/04: 2023	BDL (DL: 0.05)
<b>Pesticides</b>			
Alachlor	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)
Azinax	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)
Butachlor	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)
Chlorpyrifos	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)
Ethion	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)
Malathion	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)
Methyl parathion	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.1)
Monocrotophos	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)
Phorate	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)
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)



**TEST REPORT**

Test Report No. : ELES/RNC/20245569	Report Release Date : 23.09.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
CLR No. : TCL35872400003282F	

Pesticides				Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 2296-1992 Class C Ground Surface Water
Alpha HCH	µg/l.	ELES/GC/SOP/02: 2023	BDL (DL: 0.006)	--
Beta HCH	µg/l.	ELES/GC/SOP/02: 2023	BDL (DL: 0.02)	--
Delta HCH	µg/l.	ELES/GC/SOP/02: 2023	BDL (DL: 0.02)	--
Gamma HCH (Lindane)	µg/l.	ELES/GC/SOP/02: 2023	BDL (DL: 0.02)	--
Endosulfan (alpha, beta and sulphate)	µg/l.	ELES/GC/SOP/02: 2023	BDL (DL: 0.05)	--
DDT (o,p and p,p-isomers of DDT) (DDE and DDD)	µg/l.	ELES/GC/SOP/02: 2023	BDL (DL: 0.05)	--
<b>Discipline: Biological</b>		<b>Group: Water</b>		
Total Coliforms	CFU/100 mL	IS 15185: 2021	1.95*10 <sup>7</sup>	--
Escherichia coli	CFU/100 mL	IS 15185: 2021	BDL (DL: 1.0)	--

Remarks: pH &amp; RFC done at Lab.



\*\*\*\*End of Report\*\*\*\*

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



# ENVIRONMENTAL LABORATORIES &

ENGINEERING SERVICES PVT. LTD.

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## TEST REPORT

Test Report No. : ELES/RNC/2024/5369	Report Release Date : 23.09.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/SW/6203
Address	: Lohrdaga, Barkhad-R35302	Sampling Date	: 14.09.2024
		Sample Received Date	: 16.09.2024
		Type of Sample	: Surface Water
		Source of Sample	: Down Stream
Mines Status	: Operational	Location of Sample	: Dhandhari Nodi, Gerdari Bauxite Mine (584.19ha)
Period of Analysis	: 16.09.2024 to 21.09.2024	Sampling Procedure	: ELES-DOC/SAMPL/01
		Sampling Done By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

Discipline : Chemical		Group : Water		Terminance Limits
Parameter	Unit	Test Protocol	Result	as per IS 2296-1992 Class C (Inland Surface Water)
Turbidity	-	APHA 24 <sup>h</sup> Fil.2023, 2160C	N/A	—
Anionic Surfactants (as MBAS)	mg/L	APHA 36 <sup>h</sup> Fil.2023, 5540-C	BDL (DL: 0.025)	1.0
Mineral Oil*	mg/L	IS 3021 (Part-39):2021 (Class C Inland Spectroscopic Method)	BDL (DL: 0.01)	—

Remarks: L (\*) Parameters are outsourced to other Lab.



\*\*\*\*End of Report\*\*\*\*

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

**TEST REPORT**

Test Report No. : ELES/RNC/2024/5366	Report Release Date : 23.09.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
ULR No. : YC1J5872408003279F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/SW/6200
Address	: Loharlaga, Jharkhand-835302	Sampling Date	: 13.09.2024
		Sample Received Date	: 16.09.2024
		Type of Sample	: Surface Water
Mines Status	: Operational	Source of Sample	: Up Stream
		Location of Sample	: Koyal River, Gardul Bauxite Mine (384.19ha)
		Sampling Procedure	: ELES/DOC/SMP/01
Period of Analysis	: 16.09.2024 to 23.09.2024	Sampling Done By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

Discipline : Chemical		Group : Water		Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 2296-1992 Class C (Inlet Surface Water)
pH (at 24.8 °C)	-	IS 3025 (Part-11) : 2022	6.74	6.5-8.3
Colour	Hazen	IS 3025 (Part-4) : 2021	32.0	300
Odour	-	IS 3025 (Part-5) : 2018	Unobjectionable	-
Turbidity	NTU	IS 3025 (Part-10) : 2023	22.0	-
Total Dissolved Solids (TDS)	mg/L	IS 3025 (Part-16) : 2023	318	1500
Total Alkalinity (as CaCO <sub>3</sub> )	mg/L	IS 3025 (Part-23) : 2023	99.9	-
Total Hardness (as CaCO <sub>3</sub> )	mg/L	IS 3025 (Part-21) : 2019	135	-
Sulphate (as SO <sub>4</sub> )	mg/L	IS 3025 (Part-24/Sec1) : 2022	14.8	400
Chloride (as Cl)	mg/L	IS 3025 (Part-32) : 2019	58.3	600
Fluoride (as F)	mg/L	IS 3025 (Part-60) : 2019	0.196	1.5
Nitrate (as NO <sub>3</sub> )	mg/L	AP51A 24 <sup>th</sup> Ed.2023, 4500 NO <sub>3</sub> -B	4.38	50

**TEST REPORT**

Test Report No. : EL/ES/RNC/2024/5366	Report Release Date : 23.09.2024
Work Order No. : 13642312113	Work Order Date : 28.03.2024
ULR No. : TC13587240003279F	

Discipline : Chemical		Group : Water		Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 2296-1992 Class C (Inland Surface Water)
Free Residual Chlorine (RFC)	mg/L	IS 3025 (Part-26): 2021	BDL (DL: 0.1)	--
Phenols Compounds (m C <sub>6</sub> H <sub>5</sub> OH)	mg/L	IS 3025 (Part-43/Sec1): 2022	BDL (DL: 0.001)	0.005
Calcium (as Ca)	mg/L	IS 3025 (Part-40): 2019	33.9	--
Discipline : Chemical		Group : Residues in Water		
Aluminum (as Al)	mg/L	IS 3025 (Part-55): 2001-RA2019	BDL (DL: 0.02)	--
Arsenic (as As)	mg/L	IS 3025 (Part 37):2022	BDL (DL: 0.005)	0.2
Boron (as B)	mg/L	IS 3025 (Part-57): 2021	BDL (DL: 0.2)	--
Cadmium (as Cd)	mg/L	APHA 24 <sup>th</sup> Ed 2023: 3111B	BDL (DL: 0.005)	0.01
Total Chromium (as Cr)	mg/L	APHA 24 <sup>th</sup> Ed 2023: 3111B	BDL (DL: 0.05)	0.05
Copper (as Cu)	mg/L	APHA 24 <sup>th</sup> Ed 2023: 3111B	BDL (DL: 0.03)	1.5
Iron (as Fe)	mg/L	APHA 24 <sup>th</sup> Ed 2023: 3111B	0.178	50
Lead (as Pb)	mg/L	APHA 24 <sup>th</sup> Ed 2023: 3111B	BDL (DL: 0.01)	0.1
Manganese (as Mn)	mg/L	APHA 24 <sup>th</sup> Ed 2023: 3111B	BDL (DL: 0.05)	--
Mercury (as Hg)	mg/L	IS 3025(Part-48): 1994; RA2019	BDL (DL: 0.001)	--
Selenium (as Se)	mg/L	IS 3025(Part-56): 2019	BDL (DL: 0.01)	0.05
Zinc (as Zn)	mg/L	APHA 24 <sup>th</sup> Ed 2023: 3111B	BDL (DL: 0.1)	15



**TEST REPORT**

Test Report No. : ELES/RNC/2024/5366	Report Release Date : 23.09.2024
Work Order No. : 1361231213	Work Order Date : 28.03.2024
ULR No. : TC135872400003279F	

Discipline : Chemical		Group : Residues in Water		Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 2286-1992 Class C (Inlet Surface Water)
Cyanide (as CN)	mg/L	APHA 24 <sup>th</sup> Ed.2023, 4500 CN-E	BDL (DL: 0.012)	0.05
Polynuclear Aromatic Hydrocarbons (PAH)	µg/L	ELES/GC/SOP/04: 2023	BDL (DL: 0.05)	--
<b>Pesticides</b>				
Alachlor	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	--
Atrazine	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	--
Butachlor	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	--
Chlorpyrifos	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	--
Ethion	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	--
Malathion	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	--
Methyl parathion	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.1)	--
Monocrotophos	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	--
Phorate	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	--
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)	--

**TEST REPORT**

Test Report No.	: ELES/RNC/2024/5346	Report Release Date	: 23.09.2024
Work Order No.	: 13612312113	Work Order Date	: 28.03.2024
ULR No.	: TC13587240003279F		

Pesticides				Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 2296-1992 Class C (Inlet Surface Water)
Alpha HCH	µg/L	ELES/GC/SOP/02: 2023	BDL (DL: 0.06)	—
Beta HCH	µg/L	ELES/GC/SOP/02: 2023	BDL (DL: 0.02)	—
Delta HCH	µg/L	ELES/GC/SOP/02: 2023	BDL (DL: 0.02)	—
Gamma HCH (Lindane)	µg/L	ELES/GC/SOP/02: 2023	BDL (DL: 0.02)	—
Endosulfan (alpha, beta and sulphate)	µg/L	ELES/GC/SOP/02: 2023	BDL (DL: 0.05)	—
DDT (o,p and p,p-isomers of DDT) ( DDE and DDD)	µg/L	ELES/GC/SOP/02: 2023	BDL (DL: 0.05)	—
<b>Discipline: Biological</b>		<b>Group: Water</b>		
Total Coliform	CFU/100 mL	IS 13185: 2021	5.95 × 10 <sup>2</sup>	—
<i>Escherichia coli</i>	CFU/100 mL	IS 15185: 2021	BDL (DL: 1.0)	—

Remarks: pH &amp; BEC done at Lab.



\*\*\*\*End of Report\*\*\*\*

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



# ENVIRONMENTAL LABORATORIES &

ENGINEERING SERVICES PVT. LTD.

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## TEST REPORT

Test Report No. : ELES/RNC/2024/5366	Report Release Date : 23.09.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/SW/6200
Address	: Lohardaga, Jharkhand-835302	Sampling Date	: 15.09.2024
		Sample Received Date	: 16.09.2024
Mines Status	: Operational	Type of Sample	: Surface Water
		Source of Sample	: Up Stream
Period of Analysis	: 16.09.2024 to 23.09.2024	Location of Sample	: Koyal River, Gardari Bauxite Mine (584.79ha)
		Sampling Procedure	: ELES-DOC/SMP/01
		Sampling Date By	: ELES-Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

Discipline : Chemical		Group : Water		Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 3296-1992 Class C (Inland Surface Water)
Taste	-	APHA 24 <sup>th</sup> Ed.2023, 2160C	N/A	-
Anionic Surfactants (as MBAS)	mg/L	APHA 24 <sup>th</sup> Ed.2023, 5540.C	<b>NDL</b> (DL: 0.025)	1.0
Mineral CO <sup>3+</sup>	mg/L	IS 3025 (Part-39) 2021 (Class B Infrared Spectroscopic Method)	<b>NDL</b> (DL: 0.01)	-

Remarks: 1. (\*) Parameters are outsourced to other Lab.



\*\*\*\*End of Report\*\*\*\*

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

Page 1 of 1

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**TEST REPORT**

Test Report No. : ELES/RNC/2024/5367	Report Release Date : 23.09.2024
Work Order No. : 13612112113	Work Order Date : 28.03.2024
ULR No. : TC135872000032808	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/SW/6201
Address	: Lohanaga, Bharkhad-835302	Sampling Date	: 15.09.2024
		Sample Received Date	: 16.09.2024
		Type of Sample	: Surface Water
Mines Status	: Operational	Source of Sample	: Down Stream
		Location of Sample	: Koyal River, Gantari Bauchi Mine (584.19ha)
Period of Analysis	: 16.09.2024 to 23.09.2024	Sampling Procedure	: ELES/DOC/SMPLO1
		Sampling Done By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

Discipline : Chemical		Group : Water		Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 2296-1992 Class C (Inlet Surface Water)
pH (at 24.8 °C)	-	IS 3025 (Part-11) : 2022	6.90	6.5-8.5
Colour	Hazen	IS 3025 (Part-4) : 2021	40.0	100
Odour	-	IS 3025 (Part-5) : 2018	Unobjectionable	-
Turbidity	NTU	IS 3025 (Part-10) : 2023	28.0	--
Total Dissolved Solids (TDS)	mg/L	IS 3025 (Part-16) : 2023	296	1500
Total Alkalinity (as CaCO <sub>3</sub> )	mg/L	IS 3025 (Part-23) : 2023	88.2	--
Total Hardness (as CaCO <sub>3</sub> )	mg/L	IS 3025 (Part-21) : 2019	141	--
Sulphate (as SO <sub>4</sub> )	mg/L	IS 3025 (Part-24/Sec1) : 2022	16.3	400
Chloride (as Cl)	mg/L	IS 3025 (Part-32) : 2019	44.0	600
Fluoride (as F)	mg/L	IS 3025 (Part-60) : 2019	0.264	1.5
Nitrate (as NO <sub>3</sub> )	mg/L	APHA 24 <sup>th</sup> Ed.2023, 4500 NO <sub>3</sub> -B	3.95	50



**TEST REPORT**

Test Report No. : ELES/RNC/2024/5367	Report Release Date : 23.09.2024
Work Order No. : 13612312113	Work Order Date : 28.05.2024
ULR No. : TC13587240003280F	

Discipline : Chemical		Group : Water		Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 2286-1992 Class C (Below Surface Water)
Free Residual Chlorine (RFC)	mg/L	IS 3025 (Part-26) : 2021	BDL (DL: 0.1)	-
Phenols Compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/L	IS 3025 (Part-43-Section) : 2022	BDL (DL: 0.001)	0.005
Calcium (as Ca)	mg/L	IS 3025 (Part-40) : 2019	37.6	-
Discipline : Chemical		Group : Residues in Water		
Aluminium (as Al)	mg/L	IS 3025 (Part-55) : 2002:RA2019	BDL (DL: 0.02)	-
Arsenic (as As)	mg/L	IS 3025 (Part 37):2022	BDL (DL: 0.005)	0.2
Boron (as B)	mg/L	IS 3025 (Part-57) : 2021	BDL (DL: 0.2)	-
Cadmium (as Cd)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	BDL (DL: 0.003)	0.01
Total Chromium (as Cr)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	BDL (DL: 0.03)	0.05
Copper (as Cu)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	BDL (DL: 0.03)	1.5
Iron (as Fe)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	0.248	50
Lead (as Pb)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	BDL (DL: 0.01)	0.1
Manganese (as Mn)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	BDL (DL: 0.05)	-
Mercury (as Hg)	mg/L	IS 3025(Part-48) : 1994: RA2019	BDL (DL: 0.001)	-
Selenium (as Se)	mg/L	IS 3025(Part-56) : 2019	BDL (DL: 0.01)	0.03
Zinc (as Zn)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	BDL (DL: 0.1)	15

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**TEST REPORT**

Test Report No. : ELES/RNC/2024/5367	Report Release Date : 23.09.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
ULR No. : TCI13587240003298F	

Discipline : Chemical		Group : Residues in Water		Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 2296-1992 Class C (Inland Surface Water)
Cyanide (as CN)	mg/l	APHA 24 <sup>th</sup> Ed. 2023, 4500 CN-E	BDL (DL: 0.012)	0.05
Polynuclear Aromatic Hydrocarbons (PAH)	µg/l	ELES/GC/SOP/04: 2023	BDL (DL: 0.05)	--
<b>Pesticides</b>				
Alachlor	µg/l	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	--
Atrazine	µg/l	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	--
Butachlor	µg/l	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	--
Chlorpyrifos	µg/l	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	--
Ethion	µg/l	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	--
Malathion	µg/l	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	--
Methyl parathion	µg/l	ELES/GC/SOP/01: 2023	BDL (DL: 0.1)	--
Monocrotophos	µg/l	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	--
Phorate	µg/l	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	--
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)	--



## TEST REPORT

Test Report No. : ELES/RNC/2024/5367	Report Release Date : 23.09.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
ULR No. : TCL35872400003280F	

Pesticides				Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 2296-1992 Class C (Inland Surface Water)
Alpha HCH	µg/L	ELES/GC/SOP/02-2023	BDL (DL: 0.006)	--
Beta HCH	µg/L	ELES/GC/SOP/02-2023	BDL (DL: 0.02)	--
Delta HCH	µg/L	ELES/GC/SOP/02-2023	BDL (DL: 0.02)	--
Gamma HCH (Lindane)	µg/L	ELES/GC/SOP/02-2023	BDL (DL: 0.02)	--
Endosulfan (alpha, beta and sulphate)	µg/L	ELES/GC/SOP/02-2023	BDL (DL: 0.05)	--
DDT (p,p and o,p-isomers of DDT) ( DDE and DDD)	µg/L	ELES/GC/SOP/02-2023	BDL (DL: 0.05)	--
Discipline: Biological		Group: Water		
Total Coliform	CFU/100 mL	IS 15185: 2021	3.09*10 <sup>7</sup>	--
<i>Escherichia coli</i>	CFU/100 mL	IS 15185: 2021	BDL (DL: 1.0)	--

Remarks: pH & BPC done at Lab.



\*\*\*\*End of Report\*\*\*\*

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

Page 4 of 4

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# ENVIRONMENTAL LABORATORIES &

ENGINEERING SERVICES PVT. LTD.

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## TEST REPORT

Test Report No. : ELES/RNC/2024/5367	Report Release Date : 23.09.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	Hindako Industries Limited	Sample Ref. No.	ELES/RNC/2024/SW/6201
Address	Lohardaga, Birkhand-835302	Sampling Date	15.09.2024
		Sample Received Date	16.09.2024
		Type of Sample	Surface Water
Miner Status	Operational	Source of Sample	Down Stream
Period of Analysis	16.09.2024 to 23.09.2024	Location of Sample	Koyal River, Gunderi Bauxite Mine (584.19ha)
		Sampling Procedure	ELES/DOC/SMP/01
		Sampling Done By	ELES Pvt. Ltd.
		Sample Condition	Sealed & Preserved

Discipline : Chemical		Group : Water		Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 3296-3992 Class C (Infused Surface Water)
Taste	-	APHA 24 <sup>th</sup> Ed.2021, 2160C	N/A	-
Aromatic Nofactants (as MBAS)	mg/L	APHA 24 <sup>th</sup> Ed.2021, 5540-C	BDL (DL: 0.025)	1.0
Mineral Oil*	mg/L	IS 3025 (Part-3):2021 (Class 6 Infrared Spectroscopic Method)	BDL (DL: 0.01)	-

Remarks: 1. (\*) Parameters are outsourced to other Lab.



\*\*\*\*End of Report\*\*\*\*

Authorized Signatory  
Dr. Dheendra Kumar Sinha  
Ph. D. Environmental Engg.  
Technical Manager

Page 1 of 1

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**TEST REPORT**

Test Report No.	: ELES/RNC/2024/5364	Report Release Date	: 23.09.2024
Work Order No.	: 13612312113	Work Order Date	: 28.03.2024
ULR No.	: TC135872400003277F		

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hinalta Industries Limited	Sample Ref. No.	: ELES/RNC/2024/SW/6198
Address	: Lohardaga, Jharkhand-835302	Sampling Date	: 14.09.2024
		Sample Received Date	: 16.09.2024
Mine Status	: Operational	Type of Sample	: Surface Water
		Source of Sample	: Up Stream
Period of Analysis	: 14.09.2024 to 23.09.2024	Location of Sample	: Sankh Nadi, Gardari Bansole Mine (S84.19ha)
		Sampling Procedure	: ELES/DOC/SMP/01
		Sampling Done By	: ELES Pvt. Ltd.
		Sample Conditions	: Sealed & Preserved

Discipline : Chemical		Group : Water		Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 1296-1992 Class C (Inlet Surface Water)
pH (at 24.8 °C)	-	IS 3025 (Part-11) : 2022	6.68	6.5-8.5
Colour	Hazen	IS 3025 (Part-4) : 2021	28	300
Odour	-	IS 3025 (Part-5) : 2018	Unobjectionable	-
Turbidity	NTU	IS 3025 (Part-10) : 2022	18.6	-
Total Dissolved Solids (TDS)	mg/L	IS 3025 (Part-16) : 2022	348	1500
Total Alkalinity (as CaCO <sub>3</sub> )	mg/L	IS 3025 (Part-23) : 2022	118	-
Total Hardness (as CaCO <sub>3</sub> )	mg/L	IS 3025 (Part-21) : 2019	128	-
Sulphate (as SO <sub>4</sub> )	mg/L	IS 3025 (Part-24/Sec1) : 2022	20.8	400
Chloride (as Cl)	mg/L	IS 3025 (Part-32) : 2019	28.2	600
Fluoride (as F)	mg/L	IS 3025 (Part-60) : 2019	0.168	1.5
Nitrate (as NO <sub>3</sub> )	mg/L	APHA 24 <sup>th</sup> Ed 2023, 4500 NO <sub>3</sub> -B	2.90	50

**TEST REPORT**

Test Report No. : ELES/RNC/2024/5364	Report Release Date : 23.09.2024
Work Order No. : 13612312113	Work Order Date : 28.05.2024
ULR No. : TC13587240003277F	

Discipline : Chemical		Group : Water		Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 2296-1992 Class C (Inlet Surface Water)
Free Residual Chlorine (RFC)	mg/L	IS 3025 (Part-26) : 2021	BDL (DL: 0.1)	-
Phenols Compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/L	IS 3025 (Part-43/Sec1) : 2022	BDL (DL: 0.001)	0.005
Calcium (as Ca)	mg/L	IS 3025 (Part-40) : 2019	23.2	-

Discipline : Chemical		Group : Residues in Water		Tolerance Limits
Aluminum (as Al)	mg/L	IS 3025 (Part-55) : 2005/RA2019	BDL (DL: 0.02)	-
Arsenic (as As)	mg/L	IS 3025 (Part 27):2022	BDL (DL: 0.005)	0.2
Boron (as B)	mg/L	IS 3025 (Part-57) : 2021	BDL (DL: 0.2)	-
Cadmium (as Cd)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	BDL (DL: 0.003)	0.01
Total Chromium (as Cr)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	BDL (DL: 0.03)	0.05
Copper (as Cu)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	BDL (DL: 0.03)	1.5
Iron (as Fe)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	0.127	30
Lead (as Pb)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	BDL (DL: 0.01)	0.1
Manganese (as Mn)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	BDL (DL: 0.05)	-
Mercury (as Hg)	mg/L	IS 3025(Part-48) : 1994; RA2019	BDL (DL: 0.001)	-
Selenium (as Se)	mg/L	IS 3025(Part-58) : 2019	BDL (DL: 0.01)	0.05
Zinc (as Zn)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	BDL (DL: 0.1)	10



### TEST REPORT

Test Report No. : ELES/RNC/2024/5364	Report Release Date : 23.09.2024
Work Order No. : 1361231213	Work Order Date : 28.03.2024
ULR No. : TCU15872400003277F	

Discipline : Chemical		Group : Residues in Water		Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 2294-1992 Class C (Inland Surface Water)
Cyanide (as CN)	mg/L	APHA 24 <sup>th</sup> Ed.2023, 4500 CN-E	BDL (DL: 0.012)	0.05
Polynuclear Aromatic Hydrocarbons (PAH)	µg/L	ELES/GC/SOP/04: 2023	BDL (DL: 0.05)	-
<b>Pesticides</b>				
Alachlor	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	--
Atrazine	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	--
Bacchlor	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	--
Chlorpyrifos	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	--
Ethion	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	-
Malathion	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	-
Methyl parathion	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.1)	-
Monocrotophos	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	-
Phosce	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	-
Phorize Sulphoxe	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	-
Dieldrin	µg/L	ELES/GC/SOP/02: 2023	BDL (DL: 0.01)	-

**TEST REPORT**

Test Report No. : ELES/RNC/2024/5364	Report Release Date : 25.03.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
ULR No. : TC12587240003277T	

Pesticides				Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 2286-1992 Class C (Inland Surface Water)
Alpha HCH	µg/L	ELES/GC/SOP/02: 2023	BDL (DL: 0.006)	—
Beta HCH	µg/L	ELES/GC/SOP/02: 2023	BDL (DL: 0.02)	—
Delta HCH	µg/L	ELES/GC/SOP/02: 2023	BDL (DL: 0.02)	—
Gamma HCH (Lindane)	µg/L	ELES/GC/SOP/02: 2023	BDL (DL: 0.02)	—
Endosulfan (alpha, beta and sulphate)	µg/L	ELES/GC/SOP/02: 2023	BDL (DL: 0.05)	—
DDT (o,p and p,p-isomers of DDT) + DDE and DDD	µg/L	ELES/GC/SOP/02: 2023	BDL (DL: 0.05)	—
Discipline: Biological		Group: Water		
Total Coliform	CFU/100 mL	IS 15185: 2021	1.90*10 <sup>7</sup>	—
<i>Escherichia coli</i>	CFU/100 mL	IS 15185: 2021	4.27*10 <sup>7</sup>	—

Remarks: pH &amp; BPC done at Lab.



\*\*\*\*End of Report\*\*\*\*

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





# ENVIRONMENTAL LABORATORIES &

ENGINEERING SERVICES PVT. LTD.

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## TEST REPORT

Test Report No. : ELES/RNC/2024/5364	Report Release Date : 23.09.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name :	Hirdalco Industries Limited	Sample Ref. No. :	ELES/RNC/2024/SW0198
Address :	Luhardaga, Jharkhand-835302	Sampling Date :	14.09.2024
		Sample Received Date :	16.09.2024
		Type of Sample :	Surface Water
Mines Status :	Operational	Source of Sample :	Up Stream
		Location of Sample :	Sarkh Nadi, Gurdari Buzoir Mine (584.19ha)
Period of Analysis :	16.09.2024 to 23.09.2024	Sampling Procedure :	ELES/DOC/SMPLE/01
		Sampling Done By :	ELES Pvt. Ltd.
		Sample Condition :	Sealed & Preserved

Discipline : Chemical		Group : Water		Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 2296-1992 Class C (Inland Surface Water)
Taste	-	APHA 26 <sup>o</sup> Ed.2023, 2160C	N/A	-
Anionic Surfactants (as MBAS)	mg/l	APHA 24 <sup>o</sup> Ed.2023, 5346-C	BDL (DL: 0.025)	1.0
Mineral Oil*	mg/L	IS 3025 (Part-39)2021 (*Color & Infrared Spectroscopic Method)	BDL (DL: 0.01)	-

Remarks: 1. (\*) Parameters are outsourced to other Lab.



\*\*\*\*End of Report\*\*\*\*

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

**TEST REPORT**

Test Report No. : EL/ES/RNC/2024/5365	Report Release Date : 23.09.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
U.R.No. : TC.13587240003278F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindako Industries Limited	Sample Ref. No.	: EL/ES/RNC/2024/SW/6199
Address	: Lebardaga, Jharkhand-833502	Sampling Date	: 14.09.2024
		Sample Received Date	: 16.09.2024
		Type of Sample	: Surface Water
Mines Status	: Operational	Source of Sample	: Down Stream
		Location of Sample	: Sankh Nadi, Gardari Bauxite Mine (384.19ha)
Period of Analysis	: 16.09.2024 to 23.09.2024	Sampling Procedure	: EL/ES/DOC/SMP/01
		Sampling Done by	: EL/ES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

Discipline : Chemical		Group : Water		Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 2296-1992 Class C (Inlet Surface Water)
pH (at 24.8 °C)	-	IS 3025 (Part-11) : 2012	6.78	6.5-8.5
Colour	Hazen	IS 3028 (Part-4) : 2021	22	500
Odour	-	IS 3025 (Part-5) : 2018	Unobjectionable	-
Turbidity	NTU	IS 3025 (Part-10) : 2023	12.0	-
Total Dissolved Solids (TDS)	mg/L	IS 3025 (Part-16) : 2023	308	1500
Total Alkalinity (as CaCO <sub>3</sub> )	mg/L	IS 3025 (Part-23) : 2023	115	-
Total Hardness (as CaCO <sub>3</sub> )	mg/L	IS 3025 (Part-21) : 2019	118	-
Sulphate (as SO <sub>4</sub> )	mg/L	IS 3025 (Part-24/Sec 1) : 2023	18.2	400
Chloride (as Cl)	mg/L	IS 3025 (Part-32) : 2019	40.2	600
Fluoride (as F)	mg/L	IS 3025 (Part-60) : 2019	0.238	1.5
Nitrate (as NO <sub>3</sub> )	mg/L	APHA 24 <sup>01</sup> Ed.2023, 4500 NO <sub>3</sub> -B	3.62	50

**TEST REPORT**

Test Report No. : ELES/RNC/2024/5365	Report Release Date : 23.09.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
UIR No. : TC135872400003278F	

Discipline : Chemical		Group : Water		Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 2286-1992 Class C (Intake Surface Water)
Free Residual Chlorine (RFC)	mg/L	IS 3025 (Part-26) : 2021	BDL (DL: 0.1)	—
Phenols-Compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/L	IS 3025 (Part-43/Sec1) : 2022	BDL (DL: 0.001)	0.005
Calcium (as Ca)	mg/L	IS 3025 (Part-40) : 2019	32.8	—
Discipline : Chemical		Group : Residues in Water		
Aluminum (as Al)	mg/L	IS 3025 (Part-55) : 2003/RA2019	BDL (DL: 0.02)	—
Arsenic (as As)	mg/L	IS 3025 (Part-37):2022	BDL (DL: 0.005)	0.2
Boron (as B)	mg/L	IS 3025 (Part-57) : 2021	BDL (DL: 0.2)	—
Calcium (as Ca)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	BDL (DL: 0.003)	0.01
Total Chromium (as Cr)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	BDL (DL: 0.03)	0.05
Copper (as Cu)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	BDL (DL: 0.03)	1.5
Iron (as Fe)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	0.139	50
Lead (as Pb)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	BDL (DL: 0.01)	0.1
Manganese (as Mn)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	BDL (DL: 0.05)	—
Mercury (as Hg)	mg/L	IS 3025(Part-48) : 1994; 8.A.2019	BDL (DL: 0.001)	—
Selenium (as Se)	mg/L	IS 3025(Part-56) : 2019	BDL (DL: 0.01)	0.05
Zinc (as Zn)	mg/L	APHA 24 <sup>th</sup> Ed.2023; 3111B	BDL (DL: 0.1)	15

**TEST REPORT**

Test Report No. : ELES/RNC/2024/5365	Report Release Date : 23.09.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
ILR No. : TC135872400003278F	

Discipline : Chemical		Group : Residues in Water		Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 2296-1992 Class C (limited Surface Water)
Cyanide (as CN)	mg/L	APHA 24 <sup>th</sup> Ed 2023, 4506 CN-E	BDL (DL: 0.012)	0.05
Polynuclear Aromatic Hydrocarbons (PAH)	µg/L	ELES/GC/SOP/04: 2023	BDL (DL: 0.05)	—
<b>Pesticides</b>				
Alachlor	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	—
Atrazine	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	—
Butachlor	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	—
Chlorpyrifos	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	—
Ethion	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	—
Malathion	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	—
Methyl parathion	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.1)	—
Monocrotophos	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	—
Phorate	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	—
Phorate Sulphate	µg/L	ELES/GC/SOP/01: 2023	BDL (DL: 0.5)	—
Dieldrin	µg/L	ELES/GC/SOP/02: 2023	BDL (DL: 0.01)	—



**TEST REPORT**

Test Report No. : ELES/RNC/2024/5365	Report Release Date : 23.09.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024
ULR No. : TC135872408003278E	

Pesticides				Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 2299-1992 Class C (Inlet Surface Water)
Alpha HCH	µg/L	ELES/GC/SOP/02: 2023	BDL (DL: 0.006)	--
Beta HCH	µg/L	ELES/GC/SOP/02: 2023	BDL (DL: 0.02)	--
Delta HCH	µg/L	ELES/GC/SOP/02: 2023	BDL (DL: 0.02)	--
Gamma HCH (Lindane)	µg/L	ELES/GC/SOP/02: 2023	BDL (DL: 0.02)	--
Endosulfan (alpha, beta and sulphate)	µg/L	ELES/GC/SOP/02: 2023	BDL (DL: 0.05)	--
DDT (o,p and p,p-isomers of DDT) ( DDE and DDD)	µg/L	ELES/GC/SOP/02: 2023	BDL (DL: 0.05)	--
<b>Discipline: Biological</b>		<b>Group: Water</b>		
Total Coliform	CFU/100 mL	IS 15185: 2021	8.50*10 <sup>2</sup>	--
<i>Escherichia coli</i>	CFU/100 mL	IS 15185: 2021	BDL (DL: 1.0)	--

Remarks: pH &amp; B.C. done at Lab.



\*\*\*\*End of Report\*\*\*\*

*(Signature)*  
**Authorized Signatory**  
**Dr. Deependra Kumar Sinha**  
**Ph. D. Environmental Engg.**  
**Technical Manager**



# ENVIRONMENTAL LABORATORIES &

ENGINEERING SERVICES PVT. LTD.

PLT NO-10, MANSAROVAR ENCLAVE, TIRUPUR  
NAYAL MANCH-834003 (TIRUPUR)  
GST NO- 20ANCC8718029

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Phone no.: 0651-2290103  
Website: [www.elespl.co.in](http://www.elespl.co.in)

## TEST REPORT

Test Report No. : ELES/RNC/2024/5365	Report Release Date : 23.09.2024
Work Order No. : 13612312113	Work Order Date : 28.03.2024

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindcon Industries Limited	Sample Ref. No.	: ELES/RNC/2024/SW/0199
Address	: Lohardaga, Barkhad-835302	Sampling Date	: 14.09.2024
		Sample Received Date	: 16.09.2024
		Type of Sample	: Surface Water
		Source of Sample	: Down Stream
Mines Status	: Operational	Location of Sample	: Sarkh Nadi, Gardari Baucite Mine (584.19ha)
		Sampling Procedure	: ELES/DOC/SMP/01
Period of Analysis	: 16.09.2024 to 23.09.2024	Sampling Done By	: ELES Pvt. Ltd
		Sample Condition	: Sealed & Preserved

Discipline : Chemical		Group : Water		Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 1296-1992 Class C (Deliver Surface Water)
Turbidity	-	APHA 21 <sup>A</sup> Ed.2023, 2160C	N/A	-
Anionic Surfactants (as MBAS)	mg/L	APHA 24 <sup>D</sup> Ed.2023, 5540-C	BDL (DL: 0.025)	1.0
Mitralal Oil*	mg/L	IS 3025 (Part-39):2021 (Close to Infrared Spectroscopy Method)	BDL (DL: 0.01)	-

Remarks: L (\*) Parameters are outsourced to other Lab.

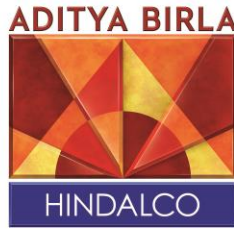


\*\*\*\*End of Report\*\*\*\*

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

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The Discovers stated in Test Report, is made by the Laboratory under General Terms and Conditions only on Company letter head by pre-approved format. The results shown in the Test Report refer to values only to the laboratory done by the Laboratory only. The information stated in the Test Report reflects the findings done by the Laboratory at the time of evaluation only and within the limits of client's instructions. The Laboratory is responsible for all the information or data provided in the report except the information which is provided by the client. The Report cannot be reproduced except in full and any part of the report is not taken out of context, without prior written approval of the Laboratory. The Report in full or in part shall not be published, circulated, used for any legal or any other purpose unless has been received from the Management of the Laboratory. Attention is drawn to the limitation of liability, expressed and implied, and the limitation of the scope of the contract or agreement of the Test Report is unlawful and violative may be prosecuted to the fullest extent of the law. All the samples are retained for 10days from the Date of release of the Test Report. The samples from Regulatory bodies are to be retained as specified. Any type of Observations or Complaints regarding the Reports shall be done within 15days from the Date of Test Report being released. After the time period passed before, no complaints will be accepted. The main Test schedule mentioned in Test Report is in reference to scope. Address: [www.elespl.co.in](http://www.elespl.co.in) GST: 20ANCC8718029, BDL: 0651-2290103, 0651-2290103 (Ranchi)



## **Annexure 3**

Date – 06.11.2024

### **Office Order**

Environmental Cell has been re-constituted at Gurdari Bauxite Mine (Area 584.19 ha) comprising below mentioned team members. The team will ensure compliance with the Environment Act, Regulation & Rule in respect of the said mines of Hindalco Industries Limited.

1. Mr. Vidya Singh (Coordinator)
2. Mr. Krishnendu Das (Geologist)
3. Mr. Ankit Das (Environment Engineer)
4. Mr. Anand Prakash Tiwari (Environment Engineer)

The Undersigned is the in charge of above Environment Management Cell constituted for the purpose of ensuring compliances of environmental act rule and regulation for the above mine.

**Basudev Gangopadhyay**  
**AVP (Planning, Environment & Compliance)**

## Annexure 4

<b>Production, Mined Out, Back Filled and Over Burden removal from April'24 to September'24</b>								
<b>S No</b>	<b>Name of the Mines</b>	<b>Mining lease area (ha)</b>	<b>Production Capacity (MT)*</b>	<b>Lease Period*</b>	<b>Production (MT)</b>	<b>Mined out area (ha)</b>	<b>Back filled area (ha)</b>	<b>Over burden (Cu.M)</b>
1	Bagru Bauxite Mine	75.41	85000	22.01.1974 to 31.03.2030	NIL	NIL	NIL	NIL
2	Bhusar Bauxite Mine	65.31	280000	11.07.1981 to 31.03.2030	82481	0.25	0.57	191521.65
3	Hisri (New) Bauxite Mine	14.55	100000	19.07.1981 to 31.03.2030	63197	0.45	0.35	26905.95
4	Pakhar (8.09) Bauxite Mine	8.09	80000	16.05.1973 to 31.03.2030	NIL	NIL	NIL	NIL
5	Pakhar (35.12) Bauxite Mine	35.12	200000	17.04.1975 to 31.03.2030	NIL	NIL	NIL	NIL
6	Pakhar (115.13) Bauxite Mine	115.13	300000	19.07.1996 to 31.03.2030	96744	4.29	8.89	365249.34
7	Sherangdag-A Bauxite Mine	155.81	260000	16.10.1974 to 31.03.2030	6200	0.23	0.2	10200.00
8	Serangdag-B Bauxite Mine	77.89	100000	04.10.1978 to 31.03.2030	49850	0.96	0.85	104303.82
9	Jalim & Sanai Bauxite Mine	12.14	50000	16.10.1974 to 31.03.2030	12450	0.14	0.12	13050.63
10	Gurdari Bauxite Mine	584.19	325000	23.03.1985 to 22.03.2035	96115	4.69	2.46	185023.98
11	Kujam - I Bauxite Mine	80.87	150000	13.03.2006 to 12.03.2056	7175	0.97	0.43	21377.24
12	Kujam - II Bauxite Mine	157.38	300000	24.03.2006 to 23.03.2056	49120	5.28	3.56	137098.55
13	Amtipani Bauxite Mine	190.95	150000	13.03.2006 to 12.03.2056	87109	2.153	0.987	225462.85



**Annexure 4**

<b>Minerals &amp; Minerals Limited</b>								
14	Pakhar (109.507) Bauxite Mine	109.507	280000	26.07.2008 to 25.07.2058	147714.95	2.06	2.60	160334.49
15	Pakhar (15.58) Bauxite Mine	15.58	60000	28.04.1965 to 31.03.2030	NIL	NIL	NIL	NIL
16	Bimarla Bauxite Mine	134.526	300000	18.07.2009 to 17.07.2059	78750	4.44	7.35	116233.81
17	Amtipani Chirodih Bauxite Mine	130.01	450000	11.01.2017 to 10.01.2067	140900	4.25	1.50	235195.494

\*Static information about the mines included in the above table



**Basudev Gangopadhyay**  
**AVP (Planning, Environment and Compliance)**

## Annexure-5

### **BREAK UP THE COST OF ENVIRONMENTAL MEASURES DURING THE YEAR 2024-25**

The composite cost during the year 2023-24 for environmental protection & pollution control by Jharkhand Mines division of M/s Hindalco Industries Ltd & M/s Minerals & Minerals Ltd for implementation of the suggested measures in EC at our all the operating mines in the state of Jharkhand-namely Bagru (75.41 ha), Hisri New (14.55 ha), Bhusar (65.31 ha), Pakhar (115.13 ha), Pakhars (109.507 ha), Pakhar (15.58 ha), Pakhar (8.09 ha), Pakhar (35.12 ha), Sherangdag (155.81 ha), Serangdag (77.89 ha), Jalim & Sanai (12.14 ha), Bimarla Bauxite Mines (134.526 ha), Gurdari (584.19 ha), Amtipani (190.95 ha), Kujam I (80.87 ha) Kujam II (157.38 ha), and Amtipani Chirodih (130.01 ha) Bauxite Mines.

<b>S No</b>	<b>Description</b>	<b>Budget (in Rupees) FY 2024-25 (From Apr'24 to Sep'24)</b>	<b>Actual (in Rupees) FY 2024-25 (From Apr'24 to Sep'24)</b>
1	Pollution Control & Environment monitoring	61,35,000.00	53,47,442.83
2	Reclamation/ Back filing & Rehabilitation**	5,62,80,000.00	5,60,24,564.93
3	Green belt, Plantation & Water sprinkling arrangement	73,42,000.00	69,41,114.17
4	Rural Development	2,75,00,000.00	2,05,55,592.67

\*\*Part of OB removed cost.



Basudev Gangopadhyay  
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