

HIL/LHD/ENV/MoEF/715

Date: 23.05.2024

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 Kujam-II Bauxite Mining project of M/s Hindalco Industries Limited located in Dist- Gumla, Jharkhand for the period October'23 to March'24.

Ref: Environmental Clearance letter no J-11015/297/2011M (M) dated 21st July 2015.

Sir,

With reference to the above, we are submitting herewith the Compliance status report of EC conditions for **Kujam-II (157.38 ha)** Bauxite Mining project of **M/s Hindalco Industries Limited** located in Gumla, Jharkhand for the period October'23 to March'24.

The lease details are as below.

Lease area (ha)	Production Capacity (MT)	Lease Period
157.38	300000	24.03.2006 to 23.03.2056

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

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Corporate ID No.: L27020MH1958PLC011238

Name of the Project : **Kujam II Bauxite Mine (157.38 ha)**
M/s Hindalco Industries Ltd

Environment Clearance No & date : **J-11015/297/2011-IA. II (M) dated 21.07.2015.**

Period of compliance Report : **From 1st October 2023 to 31st March 2024**

A. Specific Conditions

Condition 1- Implementation of all the conditions as specified in earlier EC vide no. J-11015/242/2005-1A.II (M), dated 14.08.2006 and shall be complied by M/s Hindalco Industries Limited.

Reply to Condition 1 – Already Implemented. Certified compliance reports duly submitted to MoEF&CC, New Delhi by its Regional Office, Ranchi.

Condition 2- Environmental clearance is granted subject to final outcome of Hon'ble Supreme Court of India, Hon'ble High Court of Jharkhand and any other Court of Law, if any, as may be applicable to this project.

Reply to Condition 2- Noted.

Condition 3- The environmental clearance is valid for 13 years as the life of mine is 13 years.

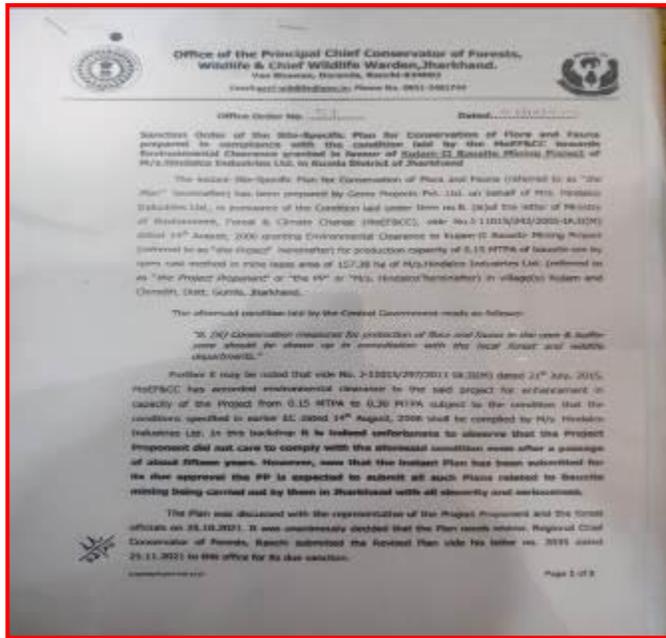
Reply to Condition 3- Noted. This may be extended subject to the enhancement of reserves in due course of mining, in line with the applicable EIA notification.

Condition 4- Environmental clearance is subject to obtaining clearance, if any, under the Wildlife (Protection) Act, 1972 from the competent authority, as may be applicable to this project.

Reply to Condition 4- We understand this is not applicable to this project. The Mine is located outside an eco-sensitive zone.

However, we have prepared Site-Specific Wildlife Conservation Plan (WLCP) in consultation with State Forest Department and also obtained approval letter from Principal Chief Conservator of Forest, Wildlife & Chief Wildlife Warden, Jharkhand via Office Order No. 51 dated 03.12.2021 for conservation and protection of flora and fauna in the core and buffer zone for Kujam II 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 5- The Project Proponent shall obtain Consent to Operate from the State Pollution Control Board, Jharkhand and effectively implement all the conditions stipulated therein.

Reply to Condition 5 - We have obtained Consent to Operate (CTO) from the State Pollution Control Board, Jharkhand, and its stipulated conditions have been implemented effectively. Our existing Consent to Operate (CTO) is valid till 31.12.2025.

Condition 6- No mining activities will be allowed in forest area for which the Forest Clearance is not available.

Reply to Condition 6- Noted. There is no forest area involved within the lease. Therefore, there is no need for forest clearance.

Condition 7- Project Proponent has to conduct a study from an Institution of Repute on the impact of Bauxite dust on crop productivity for agricultural land located around mines and mitigation measures to be implemented by Project Proponent to reduce the impact.

Reply to Condition 7- Study conducted and report prepared. It may be noted that agriculture activity is being carried out in nearby areas and no adverse effect of mining operation is noticed. Mitigation measures suggested in the study report are being implemented.

Condition 8- Project Proponent has to implement the Recommendation by the Institute for Crops most suited in this environment and training to the farmers to switch over to new cropping system which will sustain nutrient loading.

Reply to Condition 8- Study conducted and report prepared. It may be noted that agriculture activity is being carried out in nearby areas and no adverse effect of mining operation is noticed. Mitigation measures suggested in the study report are being implemented.

Condition 9- Implementation of the Recommendations of National Institute of Miners Health for ensuring good occupational environment for mine workers.

Reply to Condition 9- As per recommendations, occupational health surveillance is being conducted periodically by specialized doctors and nurses. Regular training is being conducted on occupational health and work safety environments.

Condition 10- Use of mechanical devices with total mechanization and reducing use of explosives.

Reply to Condition 10- We are using rock breakers as mechanical devices to minimize the use of explosives. Soft strata are being completely excavated without use of any explosives. We are using Nonel for blasting and ensuring the optimal use of explosives. Additionally, we are exploring the use of eccentric rippers for excavating hard strata to further reduce the use of explosives.

Condition 11- Concurrent reclamation of mined out areas.

Reply to Condition 11- Concurrent back filling and reclamation are being carried out in mined out areas.



Concurrent reclamation

Condition 12- Use of an effective sprinkler system to suppress fugitive dust on haul road and other transport roads and comprehensive study for slope stabilization of mine benches and OB dumps in one year.

Reply to Condition 12- Effective water sprinkling is being done to suppress fugitive dust on haul road and other transport roads by mobile water tanker. The Mining Plan has already been approved by IBM, Ranchi and safety measures like benches height and slope are being maintained as per the guidelines issued by DGMS. Currently, there is no OB dump present in the mine lease area.



Mobile Water sprinkler.

Condition 13- Implementation of Action Plan on the issues raised during the Public Hearing. The proponent shall complete all the tasks as per the action plan submitted with the budgetary provisions during the public hearing held on 11.07.2013. The issues raised during Public Hearing were discussed during the Meeting, which inter-alia, included, local employment, regular water spraying to prevent pollution and socio-economic development i.e. water facilities, medical and education etc. As per the villagers' requirements, it was informed by the Proponent that they would prefer to take care of local employment, assistance in medical, drinking water and education facilities etc. These have been incorporated in the action plan with budgetary provisions.

Reply to Condition 13- Noted. The issues raised during the Public Hearing dated 11.07.2013 are being implemented as per the budgetary provisions.

Condition 14- Implementation of Recommendation of Compliance Report by Regional Office of Ministry of Environment, Forest and Climate Change.

Reply to Condition 14- Recommendations of Compliance Report by Regional Office, Ranchi are being implemented.

Condition 15- Washing of all transport vehicles should be done inside the mining lease.

Reply to Condition 15- Being complied. Washing Ramp with Oil & Grease Trap system has been made for Washing of all transport vehicles within mining lease.



Washing Ramp with Oil and Grease Trap

Condition 16- A comprehensive ore evacuation plan for all existing mines of the Project Proponent in the area may be made by streamlining transport of ore based on proper study.

Reply to Condition 16- Ore evacuation plan has been prepared, and the transport of ore has been streamlined based on study. The SOP for transport is framed and in place.

Condition 17- Regular and periodical medical examination of the workers engaged in the project shall be carried out and records maintained; also, Occupational health check-ups for workers having some ailments like BP, diabetes, habitual smokers, etc. shall be undertaken once in six months and necessary remedial/preventive measures taken accordingly.

Reply to Condition 17- Regular and periodical medical examination of the workers engaged in the project is being carried out and records are being maintained by Medical Officer. Occupational health surveillance is being conducted periodically by specialized doctors and nurses.

Condition 18- Implementation of Environment Management Policy of the Company w.r.t, judicious use of Mineral resources for growth & development synchronizing mining & environment with prosperity.

Reply to Condition 18- Environment Management Policy of the Company w.r.t, judicious use of Mineral resources for growth & development synchronizing mining & environment with prosperity is being implemented.

Mining is being carried out in a scientific and eco-friendly manner as per the Mining Plan.

Condition 19- Specific programmes be initiated especially covering education, health care, livelihood generation, infrastructure development & promotion of sports & culture for SC/ST population; Regular monitoring of ground water table to be carried out, as also the depth of water available in the network of existing wells, by constructing new piezometers as required.

Reply to Condition 19- All these aspects are covered under CSR activities, which are being carried out in and around the area. Regular monitoring the ground water table is being carried out through installation of piezometer. The copy of the same report is attached herewith as **Annexure-1**.



Piezometer installed at mines.

Condition 20- Effective safeguard measures, such as regular water sprinkling, shall be carried out in critical areas prone to air pollution and having high levels of PM10 and PM2.5 such as haul roads, loading and unloading points and transfer points. It shall be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.

Reply to Condition 20- Effective safeguard measures, such as regular water sprinkling is being carried out in critical areas such as haul roads, loading and unloading points and transfer points.

Regular Ambient Air Quality (AAQ) monitoring is being carried out by NABL accredited Laboratory and all parameters are found within the norms prescribed by the Central Pollution Control Board. Monitoring report of AAQ is attached herewith as **Annexure-2**. Photographs of Water Tanker is attached herewith below.



Water Tanker used for dust suppression.

Condition 21- Pre-placement medical examination and periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly. Occupational health and safety measures for workers who are having some ailments like BP, diabetes, or are habitual smokers, should have health check-up once in six months.

Reply to Condition 21- Pre-placement medical examination and periodical medical examination of the workers engaged in the project are being carried out and records maintained as per statute.

Condition 22- Stratified layer system of plantation to be adopted in consultation with the State Govt., which would effectively mitigate the additional dust, sound and vibration.

Reply to Condition 22- 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 7474 nos. of saplings have been planted during FY 2023-24 within this lease. A total of 10.14 ha areas have been planted till date. In addition to these agricultural activities (bio plantation) is going on reclaimed land as per the consent from landowners.

The Green belt development programme is in progress with the progress of mining activities.



Plantation and agriculture on reclaimed area and greenbelt area of Kujam II Mines

Condition 23- The project proponent shall obtain necessary prior permission of the competent authorities for drawl of requisite quantity of surface water and ground water for the project.

Reply to Condition 23- Rainwater harvested during rainy season is being used for sprinkling on haul roads and raising plantation. No natural water resource/ground water is being used for mining purposes.

However, No Objection Certificate (NOC) for ground water abstraction has been obtained for drinking purposes only from CGWB/CGWA. The Photograph of Rainwater pond and Ground Water NOC are attached below.



Rainwater Harvesting Pond with fencing.



भारत सरकार
जल शक्ति मंत्रालय
जल संवर्धन, नदी विकास
और गंगा संरक्षण विभाग
केन्द्रीय जल प्राधिकरण
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:	Kujam II Bauxite Mine (157.38 Ha)						
Project Address:	Kujam II Bauxite Mine, Vill - Kujam And Chirodih, Dist - Gumla						
Village:	Kujam	Block:	Bishunpur				
District:	Gumla	State:	Jharkhand				
Pin Code:							
Communication Address:	Kujam II Bauxite Mine, Vill - Kujam And Chirodih, Dist - Gumla, Bishunpur, Gumla, Jharkhand - 835302						
Address of CGWB Regional Office :	Central Ground Water Board Mid Eastern Region, 6th & 7th Floor, Lok Naysk Jai Prakash Bhawan, Fraser Road Dak Banglow, Patna, Bihar - 800011						

1. NOC No.:	CGWA/NOC/MIN/REN/1/2022/7275			3. Category:	Safe		
2. Application No.:	21-4/496/JH/MIN/2019			5. NOC Type:	Renewal		
4. Project Status:	Existing Ground Water			7. Valid up to:	17/09/2024		
6. Valid from:	18/09/2022						
8. Ground Water Abstraction Permitted:	Fresh Water		Saline Water		Dewatering		Total
	m ³ /day	m ³ /year	m ³ /day	m ³ /year	m ³ /day	m ³ /year	m ³ /day m ³ /year
	9.50	3467.50					

9. Details of ground water abstraction /Dewatering structures

Abstraction Structure*	Total Existing No.:1						Total Proposed No.:0					
	DW	DCB	BW	TW	MP	MPu	DW	DCB	BW	TW	MP	MPu
	0	0	1	0	0	0	0	0	0	0	0	0

*DW- Dug Well; DCB-Dug-cum-Bore Well; BW-Bore Well; TW-Tube Well; MP-Mine Pit;MPu-Mine Pumps

10. Ground Water Abstraction/Restoration Charges paid (Rs.):	4892.50
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(Compliance Conditions given overleaf)
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NOC for Ground water

Condition 24- The mining operations shall be restricted to above ground water table, and it should not intersect groundwater table. In case of working below ground water table, prior approval of the Ministry of Environment, Forest and Climate Change and Central Ground Water Authority shall be obtained, for which a detailed hydro-geological study shall be carried out.

Reply to Condition 24- Noted. 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.

However, we are regularly monitoring the ground water table through installation of piezometer. The copy of the same report is attached herewith as **Annexure-1**.

As the water table is not intersecting during mining operation, the detailed hydro-geological study is not applicable for this mine.

Condition 25- The pollution due to transportation load on the environment will be effectively controlled & water sprinkling will also be done regularly. Vehicles with PUC only will be allowed to ply. The mineral transportation shall be carried out through covered trucks only and the vehicles carrying the mineral shall not be overloaded. Project should obtain 'PUC' certificate from all the vehicles from authorized pollution testing Centre.

Reply to Condition 25- Regular water sprinkling is being carried out along haul roads, loading and unloading points and transfer points to suppress the dust pollution. All measures are being taken to control vehicular emission. Regular maintenance of vehicles is undertaken to minimize vehicular emission. Vehicles with valid PUC certificates are allowed to transport the mineral. All vehicles are covered with tarpaulins, and non-overloading guidelines are being followed during transportation of mineral.



Tarpaulin covered Truck



PUC Certificate



Water Sprinkling for dust suppression.

Condition 26- There shall be planning, developing and implementing facility of rainwater harvesting measures on long term basis in consultation with Regional Director, Central Groundwater Board, and implementation of conservation measures to augment ground water resources in the area in consultation with Central Ground Water Board.

Reply to Condition 26- 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.

Condition 27- Regular monitoring of ground water table to be carried out at the upstream and depth of water available in the dug well is to be measured. Monitoring to be done by establishing a network of existing wells and constructing new piezometers.

Reply to Condition 27- Regular monitoring the ground water table is being carried out through installation of piezometer. The copy of the same report is attached herewith as **Annexure-1**.

Condition 28- Monitoring of Ambient Air Quality to be carried out based on the Notification 2009, as amended from time to time by the Central Pollution Control Board.

Reply to Condition 28- 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 29- The project proponent shall ensure that no natural water course and/or water resources shall be obstructed due to any mining operations.

Reply to Condition 29- As shallow depth mining is being carried out, there is no intersection of the groundwater table during the mining operation at present and in the future. No natural watercourse and/or water resource is being and will be obstructed due to mining operations.

Condition 30- The topsoil, if any, shall temporarily be stored at earmarked site(s) only and it should not be kept unutilized for long. The topsoil shall be used for land reclamation and plantation. The over burden (OB) generated during the mining operations shall be stacked at earmarked dump site(s) only and it should not be kept active for a long period of time. The maximum height of the dumps shall not exceed 8m and width 20 m and overall slope of the dumps shall be maintained to 45°. The OB dumps should be scientifically vegetated with suitable native species to prevent erosion and surface run off. In critical areas, use of geo textiles shall be undertaken for stabilization of the dump. The entire excavated area shall be backfilled and afforested. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment, Forest and Climate Change and its Regional Office located at Ranchi on six monthly basis.

Reply to Condition 30- 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. Currently, there is no OB dump present in the mine lease area.

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**. Compliance status is being submitted to MoEF&CC on six monthly basis.

Condition 31- Catch drains and siltation ponds of appropriate size shall be constructed around the mine working, mineral and OB dumps to prevent run off of water and flow of sediments directly into the river and other water bodies. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains shall be regularly de silted particularly after monsoon and maintained properly. The drains, settling tanks and check dams of appropriate size, gradient and length shall be constructed both around the mine pit and over burden dumps to prevent run off of water and flow of sediments directly into the river and other water bodies 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 settling of sit material. Sedimentation pits shall be constructed at the corners of the garland drains and de silted at regular intervals.

Reply to Condition 31- 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. Sump of adequate capacity is being provided and maintained as required. Currently, there is no OB dump present in the mine lease area.



Garland drains around mine pit to prevent runoff.



Check drain and Siltation pit around mine pit to prevent runoff.

Condition 32- Dimension of the retaining wall at the toe of over burden dumps and OB benches within the mine to check run-off and siltation shall be based on the rain fall data.

Reply to Condition 32- There is no external dump within the mine lease area as on date. However, 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.

Condition 33- Effective safeguard measures such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of PM10 and PM2.5 such as haul road, loading and unloading point and transfer points. It shall be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard. Regular monitoring of the flow rate of the springs and perennial nallahs flowing in and around the mine lease shall be carried out and records maintained.

Reply to Condition 33- Regular water sprinkling is being carried out in critical areas prone to air pollution such as haul road, loading and unloading point and transfer points. Regular Ambient Air Quality (AAQ) monitoring is being carried out by NABL accredited Laboratory and all parameters found within the norms prescribed by the Central Pollution Control Board. Regular monitoring of surface water (springs/perennial nallahs) is being conducted.

Monitoring report of AAQ and water quality are attached herewith as **Annexure-2**

Condition 34- Blasting operation shall be carried out only during the daytime. Controlled blasting shall be practiced. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented. Drills shall either be operated with dust extractors or equipped with a water injection system.

Reply to Condition 34- 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. Wet Drilling practice is adopted at our mines.



Wet Drilling

Condition 35- Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, Mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.

Reply to Condition 35- Local laborers are employed who reside nearby villages. However, Safe Drinking water, mobile health care facilities etc. are being provided in nearby villages under CSR programmes. Necessary infrastructures and facilities for office staff are in place at Netarhat plateau.

Condition 36- A Final Mine Closure Plan along with details of Corpus Fund shall be submitted to the Ministry of Environment, Forest and Climate Change. 5 years in advance of final mine closure for approval.

Reply to Condition 36- A Final Mine Closure Plan along with details of corpus fund will be submitted to the Ministry of Environment, Forest and Climate Change in appropriate time for approval 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 and Climate Change.

Reply to Condition 1- Noted.

Condition 2- No change in the calendar plan including excavation, quantum of bauxite ore 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 plan and in scientific manner. Data pertaining to excavation, quantum of mineral bauxite etc. are mentioned in report attached as **Annexure 4**

Condition 3- The critical parameters such as PM10 (size less than 10 micrometer), PM2.5 (size less than 2.5 micrometer), NO in the ambient air within the impact zone, peak particle velocity at 300m distance or within the nearest habitation, whichever is closer shall be monitored periodically. Further, quality of discharged water shall also be monitored [TDS, DO, PH and Total Suspended Solids (TSS)}. The monitored data shall be uploaded on the website of the company as well as displayed on a display board at the project site at a suitable location near the main gate of the Company in public domain. The circular No. J-20012/1/2006-IA.II (M) dated 27.05.2009 issued by Ministry of Environment, Forest and Climate Change, which is available on the website of the Ministry www.envfor.nic.in shall also be referred in this regard for its compliance.

Reply to Condition 3- Monitoring of AAQ and water quality is being done. Monitored data is being uploaded on the website of the company as well as displayed on a display board at the project site at a suitable location near the main gate of the Company in public domain.

Monitoring reports are attached as **Annexure 2**.

Condition 4- Four ambient air quality-monitoring stations should be established in the core zone as well as buffer zone for PM10, PM2.5, SO2 & NOx monitoring. Location of the stations should be decided based on the ecologically sensitive targets and the frequency of monitoring should be undertaken in consultation with the State Pollution Control Board. Data on ambient air quality should be regularly submitted to the Ministry including its Regional Office located at Ranchi and the State Pollution Control Board/Central Pollution Control Board once in six month.

Reply to Condition 4- 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 5- Fugitive dust emissions from all the sources should be controlled regularly. Water spraying arrangement on haul roads, loading and unloading and at transfer points should be provided and properly maintained.

Reply to Condition 5- Mobile water tanker with sprinkling facility has been provided along the haul roads, loading, unloading & at transfer points to suppress the dust generation.



Water Tanker used for dust suppression.

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

Reply to Condition 6- Measures are being taken for control of noise levels below 85 dB (A) in the work environment. Workers engaged in operation of HEMM, etc. has been provided with ear plug / muffs. The noise level monitoring is being conducted at a regular interval. The noise level is within the prescribed norms. Report is attached as **Annexure 2**.

Condition 7- Regular monitoring of water quality upstream and downstream of water bodies shall be carried out and record of monitoring data should be maintained and submitted to the Ministry of Environment, Forest and Climate Change, its Regional Office, Ranchi, Central Ground water Authority, Regional Director, Central Ground water Board, State Pollution Control Board and Central Pollution Board.

Reply to Condition 7- Regular monitoring of Water quality upstream and downstream of water bodies are being carried and reported to reported to the concerned authorities. Monitoring report is attached as **Annexure- 2**.

Condition 8- Regular monitoring of ground water level and quality shall be carried out in constructing new piezometers during the mining operation. The monitoring shall 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 Ministry of Environment, Forest and Climate Change and its Regional Office, Ranchi, Central Ground Water Authority and Regional Director, Central Ground Water Board.

Reply to Condition 8- 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 ground 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**.

Condition 9- Industrial wastewater (workshop and wastewater from the mine) should be properly collected and treated so as to conform to the standards prescribed under GSR 422 (E) dated 19m May, 1993 and 31' December 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.

Reply to Condition 9- 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 attached below.



Washing Ramp with Oil and Grease Trap

Condition 10- Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects.

Reply to Condition 10- 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.

Condition 11- 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 11- 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 12- The funds earmarked for environmental protection measures should be kept in a separate account and should not be diverted for other purposes. Year-wise expenditure should be reported to the Ministry and its Regional Office located at Ranchi.

Reply to Condition 12- 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**.

Condition 13- The project authorities should inform the Regional Office located at Ranchi 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 13- This is an operative mine hence provision related to financial closure is not applicable.

Condition 14- The Regional Office of this Ministry located at Ranchi 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 14- Noted & Agreed.

Condition 15- The project proponent shall submit six monthly reports on the status of the implementation of the stipulated environmental safeguards to the Ministry of Environment, Forest and Climate Change, its Regional Office, Ranchi, Central Pollution Control Board and State Pollution Control Board.

Reply to Condition 15- Six-monthly reports on the implementation status of the stipulated environmental safeguards, as per EC conditions, are being submitted regularly.

Condition 16- The project proponent shall submit six monthly report on the status of the implementation of the stipulated environmental safeguards to the Ministry of Environment, Forest and Climate Change, its Regional Office, Ranchi, Central Pollution Control Board and State Pollution Control Board.

Reply to Condition 16- Six-monthly reports on the implementation status of the stipulated environmental safeguards, as per EC conditions, are being submitted to the MoEF&CC, CPCB and JSPCB, Ranchi.

Condition 17- 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 17- Complied. A copy of clearance letter has already been submitted.

Condition 18- State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and Collector's office/ Tehsildar's Office for 30 days.

Reply to Condition 18- Noted. The EC Letter has been submitted to JSPCB for display of same at its Regional office and other government offices.

Condition 19- The project authorities should advertise at least in two local newspapers widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7 days 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, Forest and Climate Change at <http://envfor.nic.in> and a copy of the same should be forwarded to the Regional Office of this Ministry located Ranchi

Reply to Condition 19- Noted and complied. The information on grant of the EC has been published in two local newspapers (Hindustan and Dainik Jagran) on 27.07.2015. The copy of the advertisement has already been submitted to the Regional Office of the MoEF&CC.

Annexure 1

Piezometer Reading - Kujam -II Bauxite Mine		
S No	Month	Depth (meter)
1	Oct-23	32.94
2	Nov-23	33.29
3	Dec-23	33.75
4	Jan-24	34.12
5	Feb-24	34.88
6	Mar-24	35.52

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

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

Kujam II Bauxite Mine-Environmental Monitoring Report



October 2023



CONTENT

Hindalco Industries : Kujam-II Bauxite Mine		Environmental Monitoring Report	October 2023
Kujam-II Bauxite Mine			
AMBIENT AIR QUALITY- CORE ZONE			
1	Kujam-II Weigh Bridge		
2	Nawatoli Quarry		
3	Quarry 195		
4	Bhattipat		
AMBIENT AIR QUALITY- BUFFER ZONE			
1	Near Pakri Gada Village		
2	Near Pol Pol Village		
3	Near Shakhuapani Village		
4	Near Dipa Kujam Village		





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CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2023/4381	Report Release Date : 22.11.2023
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/3812
Address	: Lohardaga, Jharkhand-835302	Location	: Kujam-II Weigh Bridge Kujam-II Bauxite Mine (157.38ha)
		Sampling Date	: 08.10.2023 to 09.10.2023
Mines Status	: Operational	Sample Received Date	: 17.10.2023
Period of Analysis	: 17.10.2023 to 23.10.2023	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Drawn By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 25	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 59	4	Weather Condition	: Clear
5	Longitude	: 84°17'30.39"E	6	Latitude	: 23°18'50.59"N

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	55	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	31	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	6.8	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	24.5	80 (24hrs)
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004; RA2019	0.007	1 (24hrs)
Nickel (Ni)	ng/m ³	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01	<2.0	06 (Annual)



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TEST REPORT

Test Report No. : ELES/RNC/2023/4381	Report Release Date : 22.11.2023
Work Order No. : 13612310218	Work Order Date : 21.04.2023

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C ₆ H ₆)*	µg/m ³	IS 5182 (Part-11)2006;RA2017	<1.0	05(Annual)
Benzo-(a)-Pyrene*	ng/m ³	IS 5182 (Part-12)2004;RA2019	<0.5	01(Annual)

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



****End of Report****

Authorised Signatory

Dr. Deependra Kumar Sinha
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ELES Pvt. Ltd. Technical Manager



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TEST REPORT

Test Report No. : ELES/RNC/2023/4382	Report Release Date : 22.11.2023
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/3813
Address	: Lohardaga, Jharkhand-835302	Location	: Nawatoli Quarry Kujam-II Bauxite Mine (157.38ha)
		Sampling Date	: 08.10.2023 to 09.10.2023
Mines Status	: Operational	Sample Received Date	: 17.10.2023
Period of Analysis	: 17.10.2023 to 23.10.2023	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Drawn By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 25	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 59	4	Weather Condition	: Clear
5	Longitude	: 84°17'38.67"E	6	Latitude	: 23°18'20.87"N

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	51	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	30	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	6.5	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	20.8	80 (24hrs)
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004; RA2019	0.009	1 (24hrs)
Nickel (Ni)	ng/m ³	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01	<2.0	06 (Annual)

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CIN: U74999JH2018PTC011125

TEST REPORT

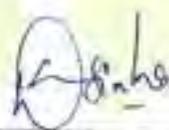
Test Report No. : ELES/RNC/2023/4382	Report Release Date : 22.11.2023
Work Order No. : 13612310218	Work Order Date : 21.04.2023

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C ₆ H ₆)*	µg/m ³	IS 5182 (Part-11)2006;RA2017	<1.0	05(Annual)
Benzo-(a)-Pyrene*	ng/m ³	IS 5182 (Part-12)2004;RA2019	<0.5	01(Annual)

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



****End of Report****


Authorised Signatory
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ELES Pvt. Ltd. Technical Manager



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TEST REPORT

Test Report No. : ELES/RNC/2023/4383	Report Release Date : 22.11.2023
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/3814
Address	: Lohardaga, Jharkhand-835302	Location	: Quarry- 195 Kujam-II Bauxite Mine (157.38ha)
		Sampling Date	: 08.10.2023 to 09.10.2023
Mines Status	: Operational	Sample Received Date	: 17.10.2023
Period of Analysis	: 17.10.2023 to 23.10.2023	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Drawn By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 25	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 59	4	Weather Condition	: Clear
5	Longitude	: 84°17'30.27"E	6	Latitude	: 23°18'56.89"N

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	47	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	23	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	5.8	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	16.5	80 (24hrs)
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9); 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004; RA2019	<0.002	1 (24hrs)
Nickel (Ni)	ng/m ³	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01	<2.0	06 (Annual)

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TEST REPORT

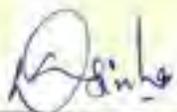
Test Report No. : ELES/RNC/2023/4383	Report Release Date : 22.11.2023
Work Order No. : 13612310218	Work Order Date : 21.04.2023

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C ₆ H ₆)*	µg/m ³	IS 5182 (Part-11)2006;RA2017	<1.0	05(Annual)
Benzo-(a)-Pyrene*	ng/m ³	IS 5182 (Part-12)2004;RA2019	<0.5	01(Annual)

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



****End of Report****


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ELES Pvt. Ltd. Technical Manager



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TEST REPORT

Test Report No. : ELES/RNC/2023/4384	Report Release Date : 22.11.2023
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/3815
Address	: Lohardaga, Jharkhand-835302	Location	: Bhattipat Kujam-II Bauxite Mine (157.38ha)
		Sampling Date	: 08.10.2023 to 09.10.2023
Mines Status	: Operational	Sample Received Date	: 17.10.2023
Period of Analysis	: 17.10.2023 to 23.10.2023	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Drawn By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 25	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 59	4	Weather Condition	: Clear
5	Longitude	: 84°17'54.25"E	6	Latitude	: 23°18'34.89"N

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	51	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	30	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	6.5	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	20.3	80 (24hrs)
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004; RA2019	0.008	1 (24hrs)
Nickel (Ni)	ng/m ³	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01	<2.0	06 (Annual)

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TEST REPORT

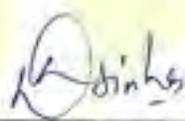
Test Report No. : ELES/RNC/2023/4384	Report Release Date : 22.11.2023
Work Order No. : 13612310218	Work Order Date : 21.04.2023

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C ₆ H ₆)*	µg/m ³	IS 5182 (Part-11)2006;RA2017	<1.0	05(Annual)
Benzo-(a)-Pyrene*	ng/m ³	IS 5182 (Part-12)2004;RA2019	<0.5	01(Annual)

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



****End of Report****


Authorised Signatory
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TEST REPORT

Test Report No. : ELES/RNC/2023/4369	Report Release Date : 22.11.2023
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/3800
Address	: Lohardaga, Jharkhand-835302	Location	: Near Pakri Gada Village
		Sampling Date	: 05.10.2023 to 06.10.2023
Mines Status	: Operational	Sample Received Date	: 17.10.2023
Period of Analysis	: 17.10.2023 to 23.10.2023	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Drawn By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 25	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 58	4	Weather Condition	: Clear
5	Longitude	: 84°14'52.25"N	6	Latitude	: 23°17'41.21"E

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	54	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	31	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	6.4	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	23.8	80 (24hrs)
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004; RA2019	<0.002	1 (24hrs)
Nickel (Ni)	ng/m ³	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01	<2.0	06 (Annual)

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CIN: U74302WZ028PFC01125

ENVIRONMENTAL LABORATORIES &

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TEST REPORT

Test Report No. : ELES/RNC/2023/4369	Report Release Date : 22.11.2023
Work Order No. : 13612310218	Work Order Date : 21.04.2023

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C ₆ H ₆)*	µg/m ³	IS 5182 (Part-11)2006;RA2017	<1.0	05(Annual)
Benzo-(a)-Pyrene*	ng/m ³	IS 5182 (Part-12)2004;RA2019	<0.5	01(Annual)

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



****End of Report****

Authorised Signatory

Dr. Deependra Kumar Singh
Ph. D. Environmental Engg.
IIT Roorkee, U.S.S. Pvt. Ltd. Technical Manager.

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TEST REPORT

Test Report No. : ELES/RNC/2023/4370	Report Release Date : 22.11.2023
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/3801
Address	: Lohardaga, Jharkhand-835302	Location	: Near Pol Pol Village
		Sampling Date	: 05.10.2023 to 06.10.2023
Mines Status	: Operational	Sample Received Date	: 17.10.2023
Period of Analysis	: 17.10.2023 to 23.10.2023	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Drawn By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 25	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 58	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): 2006; RA2022	49	100 (24hrs)
Particulate Matter (PM2.5)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-24): 2019	29	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-2): 2001; RA2022	6.2	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-6): 2006; RA2022	19.1	80 (24hrs)
Ozone (O ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m^3	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)
Lead (Pb)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-22): 2004; RA2019	<0.002	1 (24hrs)
Nickel (Ni)	ng/m^3	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m^3	ELES/AIR/SOP/01	<2.0	06 (Annual)

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CIN: U74399JH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2023/4370	Report Release Date : 22.11.2023
Work Order No. : 13612310218	Work Order Date : 21.04.2023

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C ₆ H ₆)*	µg/m ³	IS 5182 (Part-11)2006;RA2017	<1.0	05(Annual)
Benzo-(a)-Pyrene*	ng/m ³	IS 5182 (Part-12)2004;RA2019	<0.5	01(Annual)

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



****End of Report****



Authorised Signatory
 Mr. Deependra Kumar Sinha
 Ph.D. Environmental Engg
 B.E.P.H. Ltd. Technical Manager

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ENVIRONMENTAL LABORATORIES &

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CIN: U71901JH01217C011123

TEST REPORT

Test Report No. : ELES/RNC/2023/4371	Report Release Date : 22.11.2023
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/3802
Address	: Lohardaga, Jharkhand-835302	Location	: Near Shakhupani Village
		Sampling Date	: 06.10.2023 to 07.10.2023
Mines Status	: Operational	Sample Received Date	: 17.10.2023
Period of Analysis	: 17.10.2023 to 23.10.2023	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Drawn By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 25	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 58	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): 2006; RA2022	49	100 (24hrs)
Particulate Matter (PM2.5)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-24): 2019	22	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-2): 2001; RA2022	5.9	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-6): 2006; RA2022	22.7	80 (24hrs)
Ozone (O ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m^3	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)
Lead (Pb)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-22): 2004; RA2019	0.008	1 (24hrs)
Nickel (Ni)	ng/m^3	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m^3	ELES/AIR/SOP/01	<2.0	06 (Annual)

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ON: U71999MH1034PTC011125

ENVIRONMENTAL LABORATORIES &

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TEST REPORT

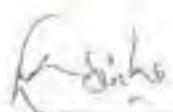
Test Report No. : ELES/RNC/2023/4371	Report Release Date : 22.11.2023
Work Order No. : 13612310218	Work Order Date : 21.04.2023

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C ₆ H ₆)*	µg/m ³	IS 5182 (Part-11)2006;RA2017	<1.0	05(Annual)
Benzo-(a)-Pyrene*	ng/m ³	IS 5182 (Part-12)2004;RA2019	<0.5	01(Annual)

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



****End of Report****


Authorised Signatory
Dr. Dabjendra Kumar Singh
Ph.D. Environmental Engg.
BURS Pvt. Ltd. Technical Manager

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ENV-17-125297110124

TEST REPORT

Test Report No. : ELES/RNC/2023/4372	Report Release Date : 22.11.2023
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/3803
Address	: Lohardaga, Jharkhand-835302	Location	: Near Dipa Kujam Village
		Sampling Date	: 06.10.2023 to 07.10.2023
Mines Status	: Operational	Sample Received Date	: 17.10.2023
Period of Analysis	: 17.10.2023 to 23.10.2023	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Drawn By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 25	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 58	4	Weather Condition	: Clear

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	48	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	24	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	<5.0	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	17.3	80 (24hrs)
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004; RA2019	<0.002	1 (24hrs)
Nickel (Ni)	ng/m ³	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01	<2.0	06 (Annual)

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CIN: U72902JH2014PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2023/4372	Report Release Date : 22.11.2023
Work Order No. : 13612310218	Work Order Date : 21.04.2023

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C ₆ H ₆)*	µg/m ³	IS 5182 (Part-11)2006;RA2017	<1.0	05(Annual)
Benzo-(a)-Pyrene*	ng/m ³	IS 5182 (Part-12)2004;RA2019	<0.5	01(Annual)

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



****End of Report****


Authorized Signatory
Dr. Deependra Kumar Jaiswal
Ph.D. Professional Engg
3653 Pw. 1st Technical Manager

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

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

Kujam II Bauxite Mine-Environmental Monitoring Report

November- 2023



CONTENT

Hindalco Industries : Kujam-II Bauxite Mine		Environmental Monitoring Report		November- 2023	
Kujam-II Bauxite Mine					
AMBIENT AIR QUALITY- CORE ZONE					
1	Kujam-II Weigh Bridge				
2	Nawatoli Quarry				
3	Quarry 195				
4	Bhattipat				
AMBIENT AIR QUALITY- BUFFER ZONE					
1	Near Pakri Gada Village				
2	Near Pol Pol Village				
3	Near Shakhuapani Village				
4	Near Dipa Kujam Village				
DRINKING WATER					





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TC-8833

TEST REPORT

Test Report No. : ELES/RNC/2023/4724	Report Release Date : 21.12.2023
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/4127
Address	: Lohardaga, Jharkhand-835302	Location	: Kujam-II Weigh Bridge Kujam-II Bauxite Mine (157.38ha)
		Sampling Date	: 06.11.2023 to 07.11.2023
Mines Status	: Operational	Sample Received Date	: 16.11.2023
Period of Analysis	: 16.11.2023 to 22.11.2023	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Drawn By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 21	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 53	4	Weather Condition	: Clear
5	Longitude	: 84°17'30.39"E	6	Latitude	: 23°18'50.59"N

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	61	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	34	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	7.5	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	22.8	80 (24hrs)
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004; RA2019	0.011	1 (24hrs)
Nickel (Ni)	ng/m ³	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01	<2.0	06 (Annual)



****End of Report****

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

Page 1 of 1

The Document stated as Test Report is issued by the Laboratory under General Terms and Conditions, only for the purpose of information. 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, advertise, used for any legal actions unless prior permission has been secured from the Management of the Laboratory. Attention is drawn to the limitation of liability, compensation and jurisdiction issues. Any unauthorized alteration & falsification of the content or appearance of the Test Report is unlawful and offenders may be prosecuted to the fullest extent of the law. All the samples are retained for 30days 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 15days from the Date of Test Report released/issued. After the time period stated before, no complaints will be accepted. The entire Time schedule mentioned in Test Report is in 24hours format. Abbreviation used: N/A (Not Applicable), BDL (Below Detection Limit), LDL (Lower Detection Limit)

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ENVIRONMENTAL LABORATORIES &

ENGINEERING SERVICES PVT. LTD.

PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA
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GST NO:- 20AAECE9713D124

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

CIN: U74999JH2018PTC01125

TEST REPORT

Test Report No. : ELES/RNC/2023/4724	Report Release Date : 21.12.2023
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/4127
Address	: Lohardaga, Jharkhand-835302	Location	: Kujam-II Weigh Bridge Kujam-II Bauxite Mine (157.38ha)
		Sampling Date	: 06.11.2023 to 07.11.2023
Mines Status	: Operational	Sample Received Date	: 16.11.2023
Period of Analysis	: 16.11.2023 to 22.11.2023	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Drawn By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

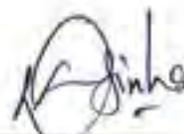
METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 21	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 53	4	Weather Condition	: Clear
5	Longitude	: 84°17'30.39"E	6	Latitude	: 23°18'50.59"N

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C ₆ H ₆)*	µg/m ³	IS 5182 (Part-11)2006;RA2017	<1.0	05(Annual)
Benzo-(a)-Pyrene*	ng/m ³	IS 5182 (Part-12)2004;RA2019	<0.5	01(Annual)

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



****End of Report****


 Authorised Signatory
Dr. Deependra Kumar Sinha
 Ph. D Environmental Engg.
 ELES Pvt. Ltd. Technical Manan



ENVIRONMENTAL LABORATORIES &

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TC-8839

TEST REPORT

Test Report No.	: ELES/RNC/2023/4725	Report Release Date	: 21.12.2023
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/4128
Address	: Lohardaga, Jharkhand-835302	Location	: Nawatoli Quarry Kujam-II Bauxite Mine (157.38ha)
		Sampling Date	: 06.11.2023 to 07.11.2023
Mines Status	: Operational	Sample Received Date	: 16.11.2023
Period of Analysis	: 16.11.2023 to 22.11.2023	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Drawn By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 21	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 53	4	Weather Condition	: Clear
5	Longitude	: 84°17'38.67"E	6	Latitude	: 23°18'20.87"N

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	58	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part-24): 2019	32	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	6.9	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	22.2	80 (24hrs)
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part-25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004; RA2019	0.013	1 (24hrs)
Nickel (Ni)	ng/m ³	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01	<2.0	06 (Annual)



****End of Report****

Dr. Deependra Kumar Sinha
Authorised Signatory
Dr. Deependra Kumar Sinha
 Pr. D Environmental Engg.
 ELES Pvt. Ltd. Technical Manager

Page 1 of 1

The Document stated as Test Report, is issued by the Laboratory under General Terms and Conditions, only the Company letter head is to be approved format. The results shown in the Test Report refer 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, advertise, used for any legal actions unless prior permission has been secured from the Management of the Laboratory. Attention is drawn to the limitation of liability, compensation and jurisdiction issues: Any unauthorized alteration & falsification of the content or appearance of the Test Report is unlawful and offenders may be prosecuted to the fullest extent of the law. All the samples are retained for 30days 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 15days from the Date of Test Report released/issued. After the time period stated before, no complaints will be accepted. The entire Time schedule mentioned in Test Report is in 24hours format. Abbreviation used: N/A (Not Applicable); BDL (Below Detection Limit); LDN. (Lower Detection Limit)

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ENVIRONMENTAL LABORATORIES &

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Website: www.elespl.co.in

CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2023/4725	Report Release Date : 21.12.2023
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/4128
Address	: Lohardaga, Jharkhand-835302	Location	: Nawatoli Quarry Kujam-II Bauxite Mine (157.38ha)
		Sampling Date	: 06.11.2023 to 07.11.2023
Mines Status	: Operational	Sample Received Date	: 16.11.2023
Period of Analysis	: 16.11.2023 to 22.11.2023	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Drawn By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

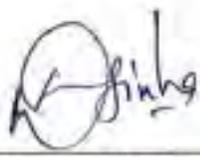
1	Average Temperature (°C)	: 21	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 53	4	Weather Condition	: Clear
5	Longitude	: 84°17'38.67"E	6	Latitude	: 23°18'20.87"N

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzené (C ₆ H ₆)*	µg/m ³	IS 5182 (Part-11)2006;RA2017	<1.0	05(Annual)
Benzo-(a)-Pyrene*	ng/m ³	IS 5182 (Part-12)2004;RA2019	<0.5	01(Annual)

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



****End of Report****


Authorized Signatory
Dr. Deependra Kumar Sinha
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ELES Pvt. Ltd. Technical Manag^r



ENVIRONMENTAL LABORATORIES &

PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA
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CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2023/4726	Report Release Date : 21.12.2023
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/4129
Address	: Lohardaga, Jharkhand-835302	Location	: Quarry- 195 Kujam-II Bauxite Mine (157.38ha)
		Sampling Date	: 06.11.2023 to 07.11.2023
Mines Status	: Operational	Sample Received Date	: 16.11.2023
Period of Analysis	: 16.11.2023 to 22.11.2023	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Drawn By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C)	: 21	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 53	4	Weather Condition	: Clear
5	Longitude	: 84°17'30.27"E	6	Latitude	: 23°18'56.89"N

Discipline : Chemical

Group : Atmospheric Pollution

Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	53	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part-24): 2019	27	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	6.4	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	19.1	80 (24hrs)
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part-25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004; RA2019	<0.002	1 (24hrs)
Nickel (Ni)	ng/m ³	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01	<2.0	06 (Annual)



****End of Report****

Dr. Deependra Kumar Sinha
Authorized Signatory
Dr. Deependra Kumar Sinha
P.T. D Environmental Engg.
ELES Pvt. Ltd. Technical Manager

Page 1 of 1

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ENVIRONMENTAL LABORATORIES &

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CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2023/4726	Report Release Date : 21.12.2023
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/4129
Address	: Lohardaga, Jharkhand-835302	Location	: Quarry- 195 Kujam-II Bauxite Mine (157.38ha)
		Sampling Date	: 06.11.2023 to 07.11.2023
Mines Status	: Operational	Sample Received Date	: 16.11.2023
Period of Analysis	: 16.11.2023 to 22.11.2023	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Drawn By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

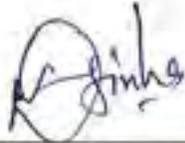
METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 21	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 53	4	Weather Condition	: Clear
5	Longitude	: 84°17'30.27"E	6	Latitude	: 23°18'56.89"N

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C ₆ H ₆)*	µg/m ³	IS 5182 (Part-11)2006;RA2017	<1.0	05(Annual)
Benzo-(a)-Pyrene*	ng/m ³	IS 5182 (Part-12)2004;RA2019	<0.5	01(Annual)

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



****End of Report****


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



ENVIRONMENTAL LABORATORIES &

ENGINEERING SERVICES PVT. LTD.

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

CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No.	: ELES/RNC/2023/4727	Report Release Date	: 21.12.2023
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/4130
Address	: Lohardaga, Jharkhand-835302	Location	: Bhattipat Kujam-II Bauxite Mine (157.38ha)
		Sampling Date	: 06.11.2023 to 07.11.2023
Mines Status	: Operational	Sample Received Date	: 16.11.2023
Period of Analysis	: 16.11.2023 to 22.11.2023	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Drawn By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

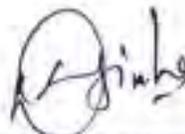
1	Average Temperature (°C)	: 21	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 53	4	Weather Condition	: Clear
5	Longitude	: 84°17'54.25"E	6	Latitude	: 23°18'34.89"N

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C ₆ H ₆)*	µg/m ³	IS 5182 (Part-11)2006;RA2017	<1.0	05(Annual)
Benzo-(a)-Pyrene*	ng/m ³	IS 5182 (Part-12)2004;RA2019	<0.5	01(Annual)

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



****End of Report****


 Authorised Signatory
 Dr. Deependra Kumar Sinha
 Ph. D Environmental Engg.
 ELES Pvt. Ltd. Technical Manar

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ENVIRONMENTAL LABORATORIES &

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CIN: U74909JH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2023/4712	Report Release Date : 21.12.2023
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/4115
Address	: Lohardaga, Jharkhand-835302	Location	: Near Pakri Gada Village
		Sampling Date	: 05.11.2023 to 06.11.2023
Mines Status	: Operational	Sample Received Date	: 16.11.2023
Period of Analysis	: 16.11.2023 to 22.11.2023	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Drawn By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 21	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 53	4	Weather Condition	: Clear
5	Longitude	: 84°14'52.25"N	6	Latitude	: 23°17'41.21"E

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	59	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part-24): 2019	34	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	7.1	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	24.3	80 (24hrs)
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part-25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004; RA2019	<0.002	1 (24hrs)
Nickel (Ni)	ng/m ³	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01	<2.0	06 (Annual)



****End of Report****

Dr. Deependra Kumar Sinha
Authorised Signatory
Dr. Deependra Kumar Sinha

Page 1 of 1

Ph. D Environmental Engg.

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"Save Environment, Save Future"



CIN: U74999JH2018PTC011125

ENVIRONMENTAL LABORATORIES &

ENGINEERING SERVICES PVT. LTD.

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Website : www.elespl.co.in

TEST REPORT

Test Report No. : ELES/RNC/2023/4712	Report Release Date : 21.12.2023
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/4115
Address	: Lohardaga, Jharkhand-835302	Location	: Near Pakri Gada Village
		Sampling Date	: 05.11.2023 to 06.11.2023
Mines Status	: Operational	Sample Received Date	: 16.11.2023
Period of Analysis	: 16.11.2023 to 22.11.2023	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Drawn By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 21	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 53	4	Weather Condition	: Clear
5	Longitude	: 84°14'52.25"N	6	Latitude	: 23°17'41.21"E

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C ₆ H ₆)*	µg/m ³	IS 5182 (Part-11)2006;RA2017	<1.0	05(Annual)
Benzo-(a)-Pyrene*	ng/m ³	IS 5182 (Part-12)2004;RA2019	<0.5	01(Annual)

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



****End of Report****


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



ENVIRONMENTAL LABORATORIES &

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CIN: U74999JH2018PTC012125

TEST REPORT

Test Report No. : ELES/RNC/2023/4713	Report Release Date : 21.12.2023
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/4116
Address	: Lohardaga, Jharkhand-835302	Location	: Near Pol Pol Village
		Sampling Date	: 05.11.2023 to 06.11.2023
Mines Status	: Operational	Sample Received Date	: 16.11.2023
Period of Analysis	: 16.11.2023 to 22.11.2023	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Drawn By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 21	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 53	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): 2006; RA2022	54	100 (24hrs)
Particulate Matter (PM2.5)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 24): 2019	27	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-2): 2001; RA2022	6.8	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-6): 2006; RA2022	22.5	80 (24hrs)
Ozone (O ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m^3	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)
Lead (Pb)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-22): 2004; RA2019	<0.002	1 (24hrs)
Nickel (Ni)	ng/m^3	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m^3	ELES/AIR/SOP/01	<2.0	06 (Annual)



****End of Report****

Authorized Signatory
Dr. Deependra Kumar Sinha
P.T.D Environmental Engg.
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CIN: U71999MH2019PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2023/4713	Report Release Date : 21.12.2023
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/4116
Address	: Lohardaga, Jharkhand-835302	Location	: Near Pol Pol Village
		Sampling Date	: 05.11.2023 to 06.11.2023
Mines Status	: Operational	Sample Received Date	: 16.11.2023
Period of Analysis	: 16.11.2023 to 22.11.2023	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Drawn By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 21	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 53	4	Weather Condition	: Clear

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C ₆ H ₆)*	µg/m ³	IS 5182 (Part-11)2006;RA2017	<1.0	05(Annual)
Benzo-(a)-Pyrene*	ng/m ³	IS 5182 (Part-12)2004;RA2019	<0.5	01(Annual)

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



****End of Report****


Authorized Signatory
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TEST REPORT

Test Report No. : ELES/RNC/2023/4714	Report Release Date : 21.12.2023
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/4117
Address	: Lohardaga, Jharkhand-835302	Location	: Near Shakhuapani Village
		Sampling Date	: 06.11.2023 to 07.11.2023
Mines Status	: Operational	Sample Received Date	: 16.11.2023
Period of Analysis	: 16.11.2023 to 22.11.2023	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Drawn By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C)	: 21	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 53	4	Weather Condition	: Clear

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	55	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	26	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	6.4	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	24.1	80 (24hrs)
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004; RA2019	0.005	1 (24hrs)
Nickel (Ni)	ng/m ³	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01	<2.0	06 (Annual)



****End of Report****


Authorised Signatory
Dr. Deependra Kumar Sinha
 P.D. Environmental Engg.

Page 1 of 1

ELES Pvt. Ltd. Technical Manager

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CIN: U74999RJ2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2023/4714	Report Release Date : 21.12.2023
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/4117
Address	: Lohardaga, Jharkhand-835302	Location	: Near Shakhupani Village
		Sampling Date	: 06.11.2023 to 07.11.2023
Mines Status	: Operational	Sample Received Date	: 16.11.2023
Period of Analysis	: 16.11.2023 to 22.11.2023	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Drawn By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 21	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 53	4	Weather Condition	: Clear

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C ₆ H ₆)*	µg/m ³	IS 5182 (Part-11)2006;RA2017	<1.0	05(Annual)
Benzo-(a)-Pyrene*	ng/m ³	IS 5182 (Part-12)2004;RA2019	<0.5	01(Annual)

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



End of Report

Authorised Signatory

Dr. Deependra Kumar Sinha
Ph. D Environmental Engg.
ELES Pvt. Ltd. Technical Manag^{er}

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CIN: U74399JH2018PTC011223

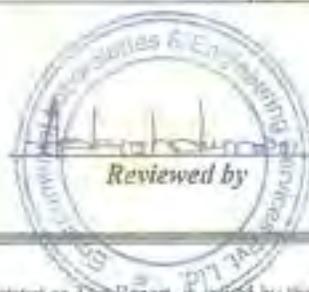
TEST REPORT

Test Report No. : ELES/RNC/2023/4715	Report Release Date : 21.12.2023
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/4118
Address	: Lohardaga, Jharkhand-835302	Location	: Near Dipa Kujam Village
		Sampling Date	: 06.11.2023 to 07.11.2023
Mines Status	: Operational	Sample Received Date	: 16.11.2023
Period of Analysis	: 16.11.2023 to 22.11.2023	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Drawn By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 21	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 53	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): 2006; RA2022	54	100 (24hrs)
Particulate Matter (PM2.5)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 24): 2019	29	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-2): 2001; RA2022	6.4	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-6): 2006; RA2022	19.7	80 (24hrs)
Ozone (O ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m^3	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)
Lead (Pb)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-22): 2004; RA2019	<0.002	1 (24hrs)
Nickel (Ni)	ng/m^3	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m^3	ELES/AIR/SOP/01	<2.0	06 (Annual)



****End of Report****

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

Page 1 of 1

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CIN: U74999JH2018PTC011125

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TEST REPORT

Test Report No. : ELES/RNC/2023/4715	Report Release Date : 21.12.2023
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/4118
Address	: Lohardaga, Jharkhand-835302	Location	: Near Dipa Kujam Village
		Sampling Date	: 06.11.2023 to 07.11.2023
Mines Status	: Operational	Sample Received Date	: 16.11.2023
Period of Analysis	: 16.11.2023 to 22.11.2023	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Drawn By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C) : 21	2	Barometric Pressure (mmHg) : 742
3	Relative Humidity (%) : 53	4	Weather Condition : Clear

Discipline : Chemical

Group : Atmospheric Pollution

Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C ₆ H ₆)*	µg/m ³	IS 5182 (Part-11)2006;RA2017	<1.0	05(Annual)
Benzo-(a)-Pyrene*	ng/m ³	IS 5182 (Part-12)2004;RA2019	<0.5	01(Annual)

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



****End of Report****

Authorized Signatory:
Dr. Deependra Kumar Sinha
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ELES Pvt. Ltd. Technical Manager

Page 1 of 1

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TEST REPORT

Test Report No. : ELES/RAN/2023/3118	Report Release Date : 21.12.2023
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RAN/2023/DW/3005
Address	: Lohardaga, Jharkhand-835302	Sampling Date	: 06.11.2023
		Sample Received Date	: 16.11.2023
Mines Status	: Operational	Type of Sample	: Drinking Water
Period of Analysis	: 16.11.2023 to 05.12.2023	Source/Location of Sample	: Kujam II- Bauxite Mines (157.38 ha)
		Sampling Procedure	: ELES/DOC/SMPL/01
		Sample Collected 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 24.7°C)	-	APHA 23 rd Ed.2017, 4500-H ⁺	6.70	6.5-8.5	No Relaxation
Turbidity	NTU	APHA 23 rd Ed.2017, 2130 B	0.38	1.0	5.0
Taste	-	APHA 23 rd Ed.2017, 2160 C	Agreeable	Agreeable	Agreeable
Odour	-	IS 3025 (Part-5) :2018	Agreeable	Agreeable	Agreeable
Colour	Hazen	APHA 23 rd Ed.2017, 2120B&D	1.0	5	15
Total Dissolved Solids (TDS)	mg/L	APHA 23 rd Ed.2017, 2540B,C&D	112	500	2000
Chloride (as Cl)	mg/L	APHA 23 rd Ed.2017, 4500 Cl B	24.8	250	1000
Fluoride (as F)	mg/L	APHA 23 rd Ed.2017, 4500 F-D	BDL (DL: 0.1)	1.0	1.5
Total Alkalinity (as CaCO ₃)	mg/L	APHA 23 rd Ed.2017, 2320 B	50.4	200	600
Total Hardness (as CaCO ₃)	mg/L	APHA 23 rd Ed.2017, 2340 C	58.6	200	600
Sulphate (as SO ₄)	mg/L	APHA 23 rd Ed.2017, 4500 SO ₄ ⁻² -E	7.66	200	400
Nitrate (as NO ₃)	mg/L	APHA 23 rd Ed.2017, 4500 NO ₃ -B	BDL (DL: 0.5)	45	No Relaxation
Phenolic Compound (as C ₆ H ₅ OH)	mg/L	IS 3025 (Part-43):1992;RA2019	BDL (DL: 0.0005)	0.001	0.002

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TEST REPORT

Test Report No. : ELES/RAN/2023/3118	Report Release Date : 21.12.2023
Work Order No. : 13612310218	Work Order Date : 21.04.2023

Discipline : Chemical		Group : Water		Regulatory Limit as per IS10500:2012	
Parameter	Unit	Test Protocol	Result	Acceptable Limit	Permissible Limit
Cyanide (as CN)	mg/L	APHA 23 rd Ed.2017, 4500 CN-E	BDL (DL: 0.012)	0.05	No Relaxation
Residual Free Chlorine (RFC)	mg/L	IS 3025 (Part-26):2021	BDL (DL: 0.1)	0.02	1.0
Calcium (as Ca)	mg/L	APHA 23 rd Ed.2017, 3500 Ca B	16.2	75	200
Discipline : Chemical		Group : Residues in Water			
Aluminum (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-57): 2005; RA2021	BDL (DL: 0.2)	0.5	1.0
Cadmium (as Cd)	mg/L	APHA 23 rd Ed.2017, 3111B	BDL (DL: 0.003)	0.003	No Relaxation
Total Chromium (as Cr)	mg/L	APHA 23 rd Ed.2017, 3111B	BDL (DL: 0.03)	0.05	No Relaxation
Copper (as Cu)	mg/L	APHA 23 rd Ed.2017, 3111B	BDL (DL: 0.03)	0.05	1.5
Iron (as Fe)	mg/L	APHA 23 rd Ed.2017, 3111B	0.376	1.0	1.0
Lead (as Pb)	mg/L	APHA 23 rd Ed.2017, 3111B	BDL (DL: 0.01)	0.01	No Relaxation
Manganese (as Mn)	mg/L	APHA 23 rd Ed.2017, 3111B	BDL (DL: 0.05)	0.1	0.3
Mercury (as Hg)	mg/L	IS 3025 (Part-48): 1994; RA2019	BDL (DL: 0.001)	0.001	No Relaxation
Selenium (as Se)	mg/L	IS 3025 (Part-56): 2003; RA2019	BDL (DL: 0.01)	0.01	No Relaxation
Zinc (as Zn)	mg/L	APHA 23 rd Ed.2017, 3111B	BDL (DL: 0.1)	5	15

Remarks: L pH & RFC done at Lab.



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CIN: U74999MH2018PTC011125

TEST REPORT

Test Report No. : ELES/RAN/2023/3118	Report Release Date : 21.12.2023
Work Order No. : 13612310218	Work Order Date : 21.04.2023

Discipline : Chemical		Group : Water		
Parameter	Unit	Test Protocol	Result	Regulatory Limit as per IS 10500:2012
Pesticides				
Alachlor*	µg/L	APHA	BDL (DL: 1.0)	20
Atrazine*	µg/L	APHA	BDL (DL: 1.0)	2
Aldrin/Dieldrin*	µg/L	APHA	BDL (DL: 0.01)	0.03
Alpha HCH*	µg/L	APHA	BDL (DL: 0.001)	0.01
Beta HCH*	µg/L	APHA	BDL (DL: 0.01)	0.04
Butachlor*	µg/L	APHA	BDL (DL: 10)	125
Chlorpyrifos*	µg/L	APHA	BDL (DL: 10)	30
Delta HCH*	µg/L	APHA	BDL (DL: 0.01)	0.04
2,4 dichlorophenoxyacetic acid*	µg/L	APHA	BDL (DL: 10)	30
DDT(o,p and p,p-isomers of DDT,DDE and DDD)*	µg/L	APHA	BDL (DL: 0.5)	1
Endosulfan (alpha, beta, and sulphate)*	µg/L	APHA	BDL (DL: 0.1)	0.4
Ethion*	µg/L	APHA	BDL (DL: 0.5)	3
Gamma HCH (Lindane)*	µg/L	APHA	BDL (DL: 0.5)	2
Isoproturon*	µg/L	APHA	BDL (DL: 0.5)	9

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CIN: U74999JH2018PTC011125

TEST REPORT

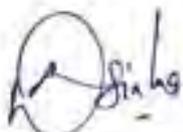
Test Report No. : ELES/RAN/2023/3118	Report Release Date : 21.12.2023
Work Order No. : 13612310218	Work Order Date : 21.04.2023

Discipline : Biological		Group : Water		Regulatory Limit as per IS 10500:2012	
Parameter	Unit	Test Protocol	Result	Acceptable Limit	Permissible Limit
Total Coliform	Per 100 mL	IS 15185:2016; RA 2021	Not Detected	Shall not be detected	
Escherichia Coli (E. Coli)	Per 100 mL	IS 15185:2016; RA 2021	Not Detected		
Discipline : Chemical		Group : Water		Regulatory Limit as per IS 10500:2012	
Parameter	Unit	Test Protocol	Result	Acceptable Limit	Permissible Limit
Anionic Surfactants (as MBAS)*	mg/L	IS 3025 Part 68	BDL (DL: 0.1)	0.2	1.0
Mineral Oil*	mg/L	CL-6, IS: 3025 (P-39)	BDL (DL: 0.1)	1.0	No relaxation
Polynuclear Aromatic Hydrocarbons (PAH)*	mg/L	APHA 23 rd Edition	BDL (DL: 0.0001)	0.0001	No relaxation
Polychlorinated Biphenyls (PCB)*	mg/L	APHA 23 rd Edition	BDL (DL: 0.0005)	0.0005	No relaxation

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



****End of Report****


Authorized Signatory
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**ENVIRONMENTAL LABORATORIES & ENGINEERING
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Plot No.30, Mansarovar Enclave, Tupudana,Hatia,Ranchi-834003,
Jharkhand.

Kujam II Bauxite Mine-Environmental Monitoring Report

December 2023



CONTENT

Hindalco Industries : Kujam-II Bauxite Mine		Environmental Monitoring Report	December 2023
Kujam-II Bauxite Mine			
AMBIENT AIR QUALITY- CORE ZONE			
1	Kujam-II Weigh Bridge		
2	Nawatoli Quarry		
3	Quarry 195		
4	Bhattipat		
AMBIENT AIR QUALITY- BUFFER ZONE			
1	Near Pakri Gada Village		
2	Near Pol Pol Village		
3	Near Shakhuapani Village		
4	Near Dipa Kujam Village		





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CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2024/0167	Report Release Date : 15.01.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023
ULR No. : TC883924000000150F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/4490
Address	: Lohardaga, Jharkhand-835302	Location	: Kujam-II Weigh Bridge Kujam-II Bauxite Mine (157.38ha)
		Sampling Date	: 07.12.2023 to 08.12.2023
Mines Status	: Operational	Sample Received Date	: 16.12.2023
Period of Analysis	: 16.12.2023 to 28.12.2023	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)	: 19	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 48	4	Weather Condition	: Clear
5	Longitude	: 84°17'30.39"E	6	Latitude	: 23°18'50.59"N

Discipline : Chemical

Group : Atmospheric Pollution

Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	68	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	39	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	8.1	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	24.5	80 (24hrs)
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004; RA2019	0.015	1 (24hrs)
Nickel (Ni)	ng/m ³	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01	<2.0	06 (Annual)



****End of Report****

Dr. Deependra Kumar Sinha
Authorized Signatory
Dr. Deependra Kumar Sinha

Page 1 of 1

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CIN: U74999JK2013PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2024/0167	Report Release Date : 15.01.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/4490
Address	: Lohardaga, Jharkhand-835302	Location	: Kujam-II Weigh Bridge Kujam-II Bauxite Mine (157.38ha)
		Sampling Date	: 07.12.2023 to 08.12.2023
Minies Status	: Operational	Sample Received Date	: 16.12.2023
Period of Analysis	: 16.12.2023 to 28.12.2023	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sampling Done By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

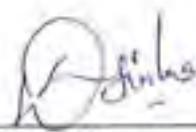
METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 19	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 48	4	Weather Condition	: Clear
5	Longitude	: 84°17'30.39"E	6	Latitude	: 23°18'50.59"N

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C ₆ H ₆)*	µg/m ³	IS 5182 (Part-11)2006;RA2017	<1.0	05(Annual)
Benzo-(a)-Pyrene*	ng/m ³	IS 5182 (Part-12)2004;RA2019	<0.5	01(Annual)

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



****End of Report****


Authorized Signatory
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CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2024/0168	Report Release Date : 15.01.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023
ULR No. : TC883924000000151F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/4491
Address	: Lohardaga, Jharkhand-835302	Location	: Nawatoli Quarry Kujam-II Bauxite Mine (157.38ha)
		Sampling Date	: 07.12.2023 to 08.12.2023
Mines Status	: Operational	Sample Received Date	: 16.12.2023
Period of Analysis	: 16.12.2023 to 28.12.2023	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)	: 19	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 48	4	Weather Condition	: Clear
5	Longitude	: 84°17'38.67"E	6	Latitude	: 23°18'20.87"N

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	62	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part-24): 2019	35	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	7.4	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	24.3	80 (24hrs)
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part-25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004; RA2019	0.017	1 (24hrs)
Nickel (Ni)	ng/m ³	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01	<2.0	06 (Annual)



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(Signature)
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TEST REPORT

Test Report No. : ELES/RNC/2024/0168	Report Release Date : 15.01.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/4491
Address	: Lohardaga, Jharkhand-835302	Location	: Nawatoli Quarry Kujam-II Bauxite Mine (157.38ha)
		Sampling Date	: 07.12.2023 to 08.12.2023
Mines Status	: Operational	Sample Received Date	: 16.12.2023
Period of Analysis	: 16.12.2023 to 28.12.2023	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)	: 19	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 48	4	Weather Condition	: Clear
5	Longitude	: 84°17'38.67"E	6	Latitude	: 23°18'20.87"N

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C ₆ H ₆)*	µg/m ³	IS 5182 (Part-11)2006;RA2017	<1.0	05(Annual)
Benzo-(a)-Pyrene*	ng/m ³	IS 5182 (Part-12)2004;RA2019	<0.5	01(Annual)

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



****End of Report****


Authorised Signatory
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ELES Pvt. Ltd. Technical Manager



ENVIRONMENTAL LABORATORIES &

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CIN: U74999JH2018PTC011125

TC-8839

TEST REPORT

Test Report No. : ELES/RNC/2024/0169	Report Release Date : 15.01.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023
ULR No. : TC883924000000152F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/4492
Address	: Lohardaga, Jharkhand-835302	Location	: Quarry- 195 Kujam-II Bauxite Mine (157.38ha)
		Sampling Date	: 07.12.2023 to 08.12.2023
Mines Status	: Operational	Sample Received Date	: 16.12.2023
Period of Analysis	: 16.12.2023 to 28.12.2023	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)	: 19	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 48	4	Weather Condition	: Clear
5	Longitude	: 84°17'30.27"E	6	Latitude	: 23°18'56.89"N

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	57	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	30	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	6.9	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	20.5	80 (24hrs)
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004; RA2019	0.007	1 (24hrs)
Nickel (Ni)	ng/m ³	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01	<2.0	06 (Annual)



****End of Report****

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ELES Pvt. Ltd. Technical Manager

Page 1 of 1

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ENVIRONMENTAL LABORATORIES &

PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA
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GST NO:- 20AAECE9713D1Z4

ENGINEERING SERVICES PVT. LTD.

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Phone no.: 0651-2290103

Website: www.elespl.co.in

CIN: U74999JH2018PTC011225

TEST REPORT

Test Report No. : ELES/RNC/2024/0169	Report Release Date : 15.01.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/4492
Address	: Lohardaga, Jharkhand-835302	Location	: Quarry- 195 Kujam-II Bauxite Mine (157.38ha)
		Sampling Date	: 07.12.2023 to 08.12.2023
Mines Status	: Operational	Sample Received Date	: 16.12.2023
Period of Analysis	: 16.12.2023 to 28.12.2023	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sampling Done By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

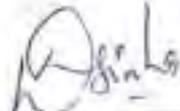
METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 19	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 48	4	Weather Condition	: Clear
5	Longitude	: 84°17'30.27"E	6	Latitude	: 23°18'56.89"N

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C ₆ H ₆)*	µg/m ³	IS 5182 (Part-11)2006;RA2017	<1.0	05(Annual)
Benzo-(a)-Pyrene*	ng/m ³	IS 5182 (Part-12)2004;RA2019	<0.5	01(Annual)

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



****End of Report****


Authorised Signatory
Dr. Deependra Kumar Sinha
 Pr. D Environmental Engg.
 ELES Pvt. Ltd. Technical Manager

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CIN: L74999JH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2024/0170	Report Release Date : 15.01.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023
ULR No. : TC883924000000153F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/4493
Address	: Lohardaga, Jharkhand-835302	Location	: Bhattipat Kujam-II Bauxite Mine (157.38ha)
		Sampling Date	: 07.12.2023 to 08.12.2023
Mines Status	: Operational	Sample Received Date	: 16.12.2023
Period of Analysis	: 16.12.2023 to 28.12.2023	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)	: 19	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 48	4	Weather Condition	: Clear
5	Longitude	: 84°17'54.25"E	6	Latitude	: 23°18'34.89"N

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	57	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	28	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	7.8	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	22.3	80 (24hrs)
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004; RA2019	0.008	1 (24hrs)
Nickel (Ni)	ng/m ³	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01	<2.0	06 (Annual)



****End of Report****

[Signature]
Dr. Deependra Kumar Sinha
Ph. D Environmental Engg.

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TEST REPORT

Test Report No. : ELES/RNC/2024/0170	Report Release Date : 15.01.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/4493
Address	: Lohardaga, Jharkhand-835302	Location	: Bhattipat Kujam-II Bauxite Mine (157.38ha)
Mines Status	: Operational	Sampling Date	: 07.12.2023 to 08.12.2023
Period of Analysis	: 16.12.2023 to 28.12.2023	Sample Received Date	: 16.12.2023
		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)	: 19	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 48	4	Weather Condition	: Clear
5	Longitude	: 84°17'54.25"E	6	Latitude	: 23°18'34.89"N

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C ₆ H ₆)*	µg/m ³	IS 5182 (Part-11)2006;RA2017	<1.0	05(Annual)
Benzo-(a)-Pyrene*	ng/m ³	IS 5182 (Part-12)2004;RA2019	<0.5	01(Annual)

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



****End of Report****


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



ENVIRONMENTAL LABORATORIES &

PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA
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ON: U78998MH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2024/0179	Report Release Date : 15.01.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023
ULR No. : TC883924000000162F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/4502
Address	: Lohardaga, Jharkhand-835302	Location	: Near Pakri Gada Village
		Sampling Date	: 09.12.2023 to 10.12.2023
Mines Status	: Operational	Sample Received Date	: 16.12.2023
Period of Analysis	: 16.12.2023 to 28.12.2023	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)	: 18	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 48	4	Weather Condition	: Clear
5	Longitude	: 84°14'52.25"N	6	Latitude	: 23°17'41.21"E

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	55	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	30	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	6.9	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	22.5	80 (24hrs)
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004; RA2019	<0.002	1 (24hrs)
Nickel (Ni)	ng/m ³	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01	<2.0	06 (Annual)



Reviewed by

****End of Report****

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

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ELES Pvt. Ltd. Technical Manager

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"Save Environment, Save Future"



CIN: U74999JH2018PTC011125

ENVIRONMENTAL LABORATORIES &

ENGINEERING SERVICES PVT. LTD.PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA
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Phone no.: 0651-2250103
Website : www.elespl.co.in

TEST REPORT

Test Report No. : ELES/RNC/2024/0179	Report Release Date : 15.01.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/4502
Address	: Lohardaga, Jharkhand-835302	Location	: Near Pakri Gada Village
		Sampling Date	: 09.12.2023 to 10.12.2023
Mines Status	: Operational	Sample Received Date	: 16.12.2023
Period of Analysis	: 16.12.2023 to 28.12.2023	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)	: 18	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 48	4	Weather Condition	: Clear
5	Longitude	: 84°14'52.25"N	6	Latitude	: 23°17'41.21"E

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C ₆ H ₆)*	µg/m ³	IS 5182 (Part-11)2006;RA2017	<1.0	05(Annual)
Benzo-(a)-Pyrene*	ng/m ³	IS 5182 (Part-12)2004;RA2019	<0.5	01(Annual)

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



****End of Report****

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

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ENVIRONMENTAL LABORATORIES &

PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA
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CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2024/0180	Report Release Date : 15.01.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023
ULR No. : TC883924000000163F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/4503
Address	: Lohardaga, Jharkhand-835302	Location	: Near Pol Pol Village
		Sampling Date	: 09.12.2023 to 10.12.2023
Mines Status	: Operational	Sample Received Date	: 16.12.2023
Period of Analysis	: 16.12.2023 to 28.12.2023	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)	: 18	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 48	4	Weather Condition	: Clear

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	55	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	29	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	7.3	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	24.1	80 (24hrs)
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004; RA2019	<0.002	1 (24hrs)
Nickel (Ni)	ng/m ³	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01	<2.0	06 (Annual)



****End of Report****

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

Page 1 of 1

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CIN: U74999JH2018PT0011125

ENVIRONMENTAL LABORATORIES &

PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA
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TEST REPORT

Test Report No. : ELES/RNC/2024/0180	Report Release Date : 15.01.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/4503
Address	: Lohardaga, Jharkhand-835302	Location	: Near Pol Pol Village
		Sampling Date	: 09.12.2023 to 10.12.2023
Mines Status	: Operational	Sample Received Date	: 16.12.2023
Period of Analysis	: 16.12.2023 to 28.12.2023	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sampling Done By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

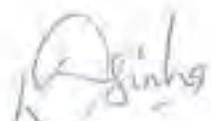
METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 18	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 48	4	Weather Condition	: Clear

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C ₆ H ₆) [*]	µg/m ³	IS 5182 (Part-11)2006;RA2017	<1.0	05(Annual)
Benzo-(a)-Pyrene [*]	ng/m ³	IS 5182 (Part-12)2004;RA2019	<0.5	01(Annual)

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



****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
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CIN: U74999JH2018FTC011125

TEST REPORT

Test Report No. : ELES/RNC/2024/0181	Report Release Date : 15.01.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023
ULR No. : TC883924000000164F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/4504
Address	: Lohardaga, Jharkhand-835302	Location	: Near Shakhuaipani Village
		Sampling Date	: 09.12.2023 to 10.12.2023
Mines Status	: Operational	Sample Received Date	: 16.12.2023
Period of Analysis	: 16.12.2023 to 28.12.2023	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) : 18	2	Barometric Pressure (mmHg) : 742
3	Relative Humidity (%) : 48	4	Weather Condition : Clear

Discipline : Chemical

Group : Atmospheric Pollution

Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	58	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	31	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	7.1	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	26.3	80 (24hrs)
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004; RA2019	0.009	1 (24hrs)
Nickel (Ni)	ng/m ³	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01	<2.0	06 (Annual)



****End of Report****

Dr. Deependra Kumar Sinha
Authorised Signatory
Dr. Deependra Kumar Sinha
 Ph. D Environmental Engg
 ELES Pvt. Ltd. Techno Park, Ranchi

Page 1 of 1

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 relates 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, advertise, used for any legal actions unless prior permission has been secured from the Management of the Laboratory. Attention is drawn to the limitation of liability, compensation and jurisdiction issues. Any unauthorized alteration & falsification of the content or appearance of the Test Report is unlawful and offenders may be prosecuted to the fullest extent of the law. All the samples are retained for 30days 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 15days from the Date of Test Report released/issued. After the time period stated before, no complaints will be accepted. The entire Time schedule mentioned in Test Report is in 24hours format. Abbreviation used: N/A (Not Applicable), BDL (Below Detection Limit), LDL (Lower Detection Limit).

"Save Environment, Save Future"



CIN: U74999JH2018PTC011125

ENVIRONMENTAL LABORATORIES &

ENGINEERING SERVICES PVT. LTD.PLOT NO-50, MANSAROVAR ENCLAVE, TUPUDANA
HATIA, RANCHI-834003 (JHARKHAND)
GST NO:- 20AAECE9713D1Z4Email: info@elespl.co.in , eles.ranchi@gmail.com
Phone no.: 0651-2290103
Website : www.elespl.co.in

TEST REPORT

Test Report No. : ELES/RNC/2024/0181	Report Release Date : 15.01.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/4504
Address	: Lohardaga, Jharkhand-835302	Location	: Near Shakhupani Village
		Sampling Date	: 09.12.2023 to 10.12.2023
Mines Status	: Operational	Sample Received Date	: 16.12.2023
Period of Analysis	: 16.12.2023 to 28.12.2023	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)	: 18	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 48	4	Weather Condition	: Clear

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C ₆ H ₆)*	µg/m ³	IS 5182 (Part-11)2006;RA2017	<1.0	05(Annual)
Benzo-(a)-Pyrene*	ng/m ³	IS 5182 (Part-12)2004;RA2019	<0.5	01(Annual)

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



****End of Report****

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

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA
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Website: www.elespl.co.in



CIN: U74999JH2016PTC011125

TEST REPORT

Test Report No.	: ELES/RNC/2024/0182	Report Release Date	: 15.01.2024
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023
ULR No.	: TC883924000000165F		

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/4505
Address	: Lohardaga, Jharkhand-835302	Location	: Near Dipa Kujam Village
		Sampling Date	: 09.12.2023 to 10.12.2023
Mines Status	: Operational	Sample Received Date	: 16.12.2023
Period of Analysis	: 16.12.2023 to 28.12.2023	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)	: 18	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 48	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): 2006; RA2022	58	100 (24hrs)
Particulate Matter (PM2.5)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 24): 2019	32	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-2): 2001; RA2022	6.9	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-6): 2006; RA2022	22.1	80 (24hrs)
Ozone (O ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m^3	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)
Lead (Pb)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-22): 2004; RA2019	0.008	1 (24hrs)
Nickel (Ni)	ng/m^3	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m^3	ELES/AIR/SOP/01	<2.0	06 (Annual)



Reviewed by

****End of Report****

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

ELES Pvt. Ltd. Technical Manager

Page 1 of 1

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CIN: U71999JH2018PTC011125

ENVIRONMENTAL LABORATORIES &**ENGINEERING SERVICES PVT. LTD.**PLOT NO-50, MANSARDVAR ENCLAVE, TUPUDANA
HATIA, RANCHI-834003 (JHARKHAND)
GST NO:- 20AAEEC9713D124Email: info@elespl.co.in, eles.ranchi@gmail.com
Phone no.: 0631-2290103
Website : www.elespl.co.in**TEST REPORT**

Test Report No. : ELES/RNC/2024/0182	Report Release Date : 15.01.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/4505
Address	: Lohardaga, Jharkhand-835302	Location	: Near Dipa Kujam Village
		Sampling Date	: 09.12.2023 to 10.12.2023
Mines Status	: Operational	Sample Received Date	: 16.12.2023
Period of Analysis	: 16.12.2023 to 28.12.2023	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)	: 18	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 48	4	Weather Condition	: Clear

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C ₆ H ₆)*	µg/m ³	IS 5182 (Part-11)2006;RA2017	<1.0	05(Annual)
Benzo-(a)-Pyrene*	ng/m ³	IS 5182 (Part-12)2004;RA2019	<0.5	01(Annual)

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



****End of Report****

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

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

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

Kujam II Bauxite Mine-Environmental Monitoring Report



January 2024



CONTENT

Hindalco Industries : Kujam-II Bauxite Mine		Environmental Monitoring Report		January 2024	
Kujam-II Bauxite Mine					
AMBIENT AIR QUALITY- CORE ZONE					
1	Kujam-II Weigh Bridge				
2	Nawatoli Quarry				
3	Quarry 195				
4	Bhattipat				
AMBIENT AIR QUALITY- BUFFER ZONE					
1	Near Pakri Gada Village				
2	Near Pol Pol Village				
3	Near Shakhuapani Village				
4	Near Dipa Kujam Village				
Surface Water					
Soil					





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CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2024/0489	Report Release Date : 05.02.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023
ULR No. : TC883924000000460F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/0180
Address	: Lohardaga, Jharkhand-835302	Location	: Kujam-II Weigh Bridge Kujam-II Bauxite Mine (157.38ha)
		Sampling Date	: 11.01.2024 to 12.01.2024
Mines Status	: Operational	Sample Received Date	: 15.01.2024
Period of Analysis	: 15.01.2024 to 25.01.2024	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)	: 19	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 45	4	Weather Condition	: Clear
5	Longitude	: 84°17'30.39"E	6	Latitude	: 23°18'50.59"N

Discipline : Chemical

Group : Atmospheric Pollution

Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	74	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part-24): 2019	43	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	9.5	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	26.7	80 (24hrs)
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part-25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004; RA2019	0.008	1 (24hrs)
Nickel (Ni)	ng/m ³	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01	<2.0	06 (Annual)



****End of Report****

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

Page 1 of 1

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"Save Environment, Save Future"



ENVIRONMENTAL LABORATORIES &

ENGINEERING SERVICES PVT. LTD.

PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA
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Phone no.: 0651-2290103
Website : www.elespl.co.in

TEST REPORT

Test Report No. : ELES/RNC/2024/0489	Report Release Date : 05.02.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/0180
Address	: Lohardaga, Jharkhand-835302	Location	: Kujam-II Weigh Bridge Kujam-II Bauxite Mine (157.38ha)
		Sampling Date	: 11.01.2024 to 12.01.2024
Mines Status	: Operational	Sample Received Date	: 15.01.2024
Period of Analysis	: 15.01.2024 to 25.01.2024	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)	: 19	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 45	4	Weather Condition	: Clear
5	Longitude	: 84°17'30.39"E	6	Latitude	: 23°18'50.59"N

Discipline : Chemical

Group : Atmospheric Pollution

Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C ₆ H ₆)*	µg/m ³	IS 5182 (Part-11): 2006; RA2022	<1.0	05(Annual)
Benzo-(a)-Pyrene*	ng/m ³	IS 5182 (Part-12): 2004; RA2019	<0.5	01(Annual)

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



****End of Report****

Authorized Signatory

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



ENVIRONMENTAL LABORATORIES &

PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA
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CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2024/0490	Report Release Date : 05.02.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023
ULR No. : TC883924000000461F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/0181
Address	: Lohardaga, Jharkhand-835302	Location	: Nawatoli Quarry Kujam-II Bauxite Mine (157.38ha)
Mines Status	: Operational	Sampling Date	: 11.01.2024 to 12.01.2024
Period of Analysis	: 15.01.2024 to 25.01.2024	Sample Received Date	: 15.01.2024
		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)	: 19	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 45	4	Weather Condition	: Clear
5	Longitude	: 84°17'38.67"E	6	Latitude	: 23°18'20.87"N

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	65	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part-24): 2019	38	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	8.1	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	26.5	80 (24hrs)
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part-25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004; RA2019	0.019	1 (24hrs)
Nickel (Ni)	ng/m ³	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01	<2.0	06 (Annual)



****End of Report****

Dr. Deependra Kumar Sinha
Authorized Signatory
Dr. Deependra Kumar Sinha

Page 1 of 1

Ph. D Environmental Engg
ELES Pvt. Ltd. Technical Manager

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ENVIRONMENTAL LABORATORIES &

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CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2024/0490	Report Release Date : 05.02.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/0181
Address	: Lohardaga, Jharkhand-835302	Location	: Nawatoli Quarry Kujam-II Bauxite Mine (157.38ha)
Mines Status	: Operational	Sampling Date	: 11.01.2024 to 12.01.2024
Period of Analysis	: 15.01.2024 to 25.01.2024	Sample Received Date	: 15.01.2024
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sampling Done By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

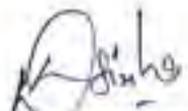
METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 19	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 45	4	Weather Condition	: Clear
5	Longitude	: 84°17'38.67"E	6	Latitude	: 23°18'20.87"N

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C ₆ H ₆)*	µg/m ³	IS 5182 (Part-11): 2006; RA2022	<1.0	05(Annual)
Benzo-(a)-Pyrene*	ng/m ³	IS 5182 (Part-12): 2004; RA2019	<0.5	01(Annual)

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



****End of Report****


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

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TC-8039

TEST REPORT

Test Report No.	: ELES/RNC/2024/0491	Report Release Date	: 05.02.2024
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023
ULR No.	: TC883924000000462F		

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/0182
Address	: Lohardaga, Jharkhand-835302	Location	: Quarry- 195 Kujam-II Bauxite Mine (157.38ha)
		Sampling Date	: 11.01.2024 to 12.01.2024
Mines Status	: Operational	Sample Received Date	: 15.01.2024
Period of Analysis	: 15.01.2024 to 25.01.2024	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)	: 19	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 45	4	Weather Condition	: Clear
5	Longitude	: 84°17'30.27"E	6	Latitude	: 23°18'56.89"N

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	61	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	33	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	7.4	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	22.1	80 (24hrs)
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004; RA2019	0.009	1 (24hrs)
Nickel (Ni)	ng/m ³	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01	<2.0	06 (Annual)



****End of Report****

Authorized Signatory
Dr. Deependra Kumar Sinha

Ph. D Environmental Engg.
ELES Pvt. Ltd. Technical Manager

Page 1 of 1

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CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2024/0491	Report Release Date : 05.02.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/0182
Address	: Lohardaga, Jharkhand-835302	Location	: Quarry- 195 Kujam-II Bauxite Mine (157.38ha)
		Sampling Date	: 11.01.2024 to 12.01.2024
Mines Status	: Operational	Sample Received Date	: 15.01.2024
Period of Analysis	: 15.01.2024 to 25.01.2024	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sampling Done By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

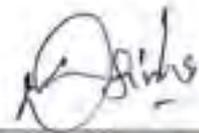
METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 19	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 45	4	Weather Condition	: Clear
5	Longitude	: 84°17'30.27"E	6	Latitude	: 23°18'56.89"N

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C ₆ H ₆)*	µg/m ³	IS 5182 (Part-11): 2006; RA2022	<1.0	05(Annual)
Benzo-(a)-Pyrene*	ng/m ³	IS 5182 (Part-12): 2004; RA2019	<0.5	01(Annual)

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



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Authorized Signatory
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ELES Pvt. Ltd. Technical Manager

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CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No.	: ELES/RNC/2024/0492	Report Release Date	: 05.02.2024
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023
ULR No.	: TC883924000000463F		

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/0183
Address	: Lohardaga, Jharkhand-835302	Location	: Bhattipat Kujam-II Bauxite Mine (157.38ha)
		Sampling Date	: 11.01.2024 to 12.01.2024
Mines Status	: Operational	Sample Received Date	: 15.01.2024
Period of Analysis	: 15.01.2024 to 25.01.2024	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)	: 19	2 Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 45	4 Weather Condition	: Clear
5	Longitude	: 84°17'54.25"E	6 Latitude	: 23°18'34.89"N

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	64	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	38	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	8.5	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	25.6	80 (24hrs)
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004; RA2019	0.013	1 (24hrs)
Nickel (Ni)	ng/m ³	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01	<2.0	06 (Annual)



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Authorized Signatory
Dr. Deependra Kumar Sinha

P.T.D Environmental Engg.

ELES Pvt. Ltd. Technical Manager

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TEST REPORT

Test Report No. : ELES/RNC/2024/0492	Report Release Date : 05.02.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/0183
Address	: Lohardaga, Jharkhand-835302	Location	: Bhattipat Kujam-II Bauxite Mine (157.38ha)
		Sampling Date	: 11.01.2024 to 12.01.2024
Mines Status	: Operational	Sample Received Date	: 15.01.2024
Period of Analysis	: 15.01.2024 to 25.01.2024	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)	: 19	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 48	4	Weather Condition	: Clear
5	Longitude	: 84°17'54.25"E	6	Latitude	: 23°18'34.89"N

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C ₆ H ₆)*	µg/m ³	IS 5182 (Part-11): 2006; RA2022	<1.0	05(Annual)
Benzo-(a)-Pyrene*	ng/m ³	IS 5182 (Part-12): 2004; RA2019	<0.5	01(Annual)

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



****End of Report****

Authorised Signatory
Dr. Deependra Kumar Sinha
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ELES Pvt. Ltd. Technical Manager

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TEST REPORT

Test Report No. : ELES/RNC/2024/0481	Report Release Date : 05.02.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023
ULR No. : TC883924000000452F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/0172
Address	: Lohardaga, Jharkhand-835302	Location	: Near Pakri Gada Village
		Sampling Date	: 09.01.2024 to 10.01.2024
Mines Status	: Operational	Sample Received Date	: 15.01.2024
Period of Analysis	: 15.01.2024 to 25.01.2024	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)	: 18	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 45	4	Weather Condition	: Clear
5	Longitude	: 84°14'52.25"N	6	Latitude	: 23°17'41.21"E

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	60	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	35	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	8.2	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	25.8	80 (24hrs)
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004; RA2019	<0.002	1 (24hrs)
Nickel (Ni)	ng/m ³	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01	<2.0	06 (Annual)



****End of Report****

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Dr. Deependra Kumar Sinha
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CIN: U74999JH2018PTC011125

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TEST REPORT

Test Report No. : ELES/RNC/2024/0481	Report Release Date : 05.02.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/0172
Address	: Lohardaga, Jharkhand-835302	Location	: Near Pakri Gada Village
		Sampling Date	: 09.01.2024 to 10.01.2024
Mines Status	: Operational	Sample Received Date	: 15.01.2024
Period of Analysis	: 15.01.2024 to 25.01.2024	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)	: 18	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 45	4	Weather Condition	: Clear
5	Longitude	: 84°14'52.25"N	6	Latitude	: 23°17'41.21"E

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C ₆ H ₆)*	µg/m ³	IS 5182 (Part-11): 2006; RA2022	<1.0	05(Annual)
Benzo-(a)-Pyrene*	ng/m ³	IS 5182 (Part-12): 2004; RA2019	<0.5	01(Annual)

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



****End of Report****

Authorized Signatory

Dr. Deependra Kumar Sinha
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CIN: U74801JH3018PTC013223

TEST REPORT

Test Report No.	: ELES/RNC/2024/0482	Report Release Date	: 05.02.2024
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023
ULR No.	: TC883924000000453F		

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/0173
Address	: Lohardaga, Jharkhand-835302	Location	: Near Pol Pol Village
		Sampling Date	: 09.01.2024 to 10.01.2024
Mines Status	: Operational	Sample Received Date	: 15.01.2024
Period of Analysis	: 15.01.2024 to 25.01.2024	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)	: 18	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 45	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): 2006; RA2022	59	100 (24hrs)
Particulate Matter (PM2.5)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 24): 2019	33	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-2): 2001; RA2022	8.8	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-6): 2006; RA2022	26.7	80 (24hrs)
Ozone (O ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m^3	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)
Lead (Pb)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-22): 2004; RA2019	<0.002	1 (24hrs)
Nickel (Ni)	ng/m^3	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m^3	ELES/AIR/SOP/01	<2.0	06 (Annual)



****End of Report****

Authorized Signatory

Dr. Deependra Kumar Sinha
Ph. D Environmental Engg

ELES Pvt. Ltd. Technical Director

Page 1 of 1

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DIR-17/HR/2018/PT/011113

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TEST REPORT

Test Report No. : ELES/RNC/2024/0482	Report Release Date : 05.02.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/0173
Address	: Lohardaga, Jharkhand-835302.	Location	: Near Pol Pol Village
		Sampling Date	: 09.01.2024 to 10.01.2024
Mines Status	: Operational	Sample Received Date	: 15.01.2024
Period of Analysis	: 15.01.2024 to 25.01.2024	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)	: 18	2 Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 45	4 Weather Condition	: Clear

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C ₆ H ₆)*	µg/m ³	IS 5182 (Part-11): 2006; RA2022	<1.0	05(Annual)
Benzo-(a)-Pyrene*	ng/m ³	IS 5182 (Part-12): 2004; RA2019	<0.5	01(Annual)

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



****End of Report****


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

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REG. U74999/JH2018PTC011225

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TC-HEM

TEST REPORT

Test Report No. : ELES/RNC/2024/0483	Report Release Date : 05.02.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023
ULR No. : TC883924000000454F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/0174
Address	: Lohardaga, Jharkhand-835302	Location	: Near Shakhuapani Village
		Sampling Date	: 09.01.2024 to 10.01.2024
Mines Status	: Operational	Sample Received Date	: 15.01.2024
Period of Analysis	: 15.01.2024 to 25.01.2024	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) : 18	2	Barometric Pressure (mmHg) : 742
3	Relative Humidity (%) : 45	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): 2006; RA2022	62	100 (24hrs)
Particulate Matter (PM2.5)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 24): 2019	35	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-2): 2001; RA2022	7.9	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-6): 2006; RA2022	28.1	80 (24hrs)
Ozone (O ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m^3	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)
Lead (Pb)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-22): 2004; RA2019	0.012	1 (24hrs)
Nickel (Ni)	ng/m^3	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m^3	ELES/AIR/SOP/01	<2.0	06 (Annual)



****End of Report****


Authorised Signatory
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 Pb. D Environmental Engg.

ELES PVT Ltd. Technical Manager

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QIN: U74999HR2019PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2024/0483	Report Release Date : 05.02.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/0174
Address	: Lohardaga, Jharkhand-835302	Location	: Near Shakhuaipani Village
		Sampling Date	: 09.01.2024 to 10.01.2024
Mines Status	: Operational	Sample Received Date	: 15.01.2024
Period of Analysis	: 15.01.2024 to 25.01.2024	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)	: 18	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 45	4	Weather Condition	: Clear

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C ₆ H ₆)*	µg/m ³	IS 5182 (Part-11): 2006; RA2022	<1.0	05(Annual)
Benzo-(a)-Pyrene*	ng/m ³	IS 5182 (Part-12): 2004; RA2019	<0.5	01(Annual)

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



****End of Report****


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

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CIN: U74999/JH018PTC011127

TEST REPORT

Test Report No.	: ELES/RNC/2024/0484	Report Release Date	: 05.02.2024
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023
ULR No.	: TC883924000000455F		

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/0175
Address	: Lohardaga, Jharkhand-835302	Location	: Near Dipa Kujam Village
		Sampling Date	: 09.01.2024 to 10.01.2024
Mines Status	: Operational	Sample Received Date	: 15.01.2024
Period of Analysis	: 15.01.2024 to 25.01.2024	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)	: 18	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 45	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): 2006; RA2022	61	100 (24hrs)
Particulate Matter (PM2.5)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 24): 2019	34	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-2): 2001; RA2022	7.2	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-6): 2006; RA2022	24.7	80 (24hrs)
Ozone (O ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m^3	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)
Lead (Pb)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-22): 2004; RA2019	0.06	1 (24hrs)
Nickel (Ni)	ng/m^3	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m^3	ELES/AIR/SOP/01	<2.0	06 (Annual)



****End of Report****

Authorized Signatory

Dr. Deependra Kumar Sinha
Ph. D Environmental Engg

Page 1 of 1

ELES Pvt. Ltd. Technical Manager

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CUJ: V74329R0018PTC011123

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TEST REPORT

Test Report No. : ELES/RNC/2024/0484	Report Release Date : 05.02.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/0175
Address	: Lohardaga, Jharkhand-835302	Location	: Near Dipa Kujam Village
		Sampling Date	: 09.01.2024 to 10.01.2024
Mines Status	: Operational	Sample Received Date	: 15.01.2024
Period of Analysis	: 15.01.2024 to 25.01.2024	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)	: 18	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 45	4	Weather Condition	: Clear

Discipline : Chemical		Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C ₆ H ₆)*	µg/m ³	IS 5182 (Part-11): 2006; RA2022	<1.0	05(Annual)
Benzo-(a)-Pyrene*	ng/m ³	IS 5182 (Part-12): 2004; RA2019	<0.5	01(Annual)

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



****End of Report****


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

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CIN: U74999JH2018PTC011125

TC-8838

TEST REPORT

Test Report No. : ELES/RNC/2024/0582	Report Release Date : 06.02.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023
ULR No. : TC883924000000553F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/SW/0617
Address	: Lohardaga, Jharkhand-835302	Sampling Date	: 12.01.2024
		Sample Received Date	: 31.01.2024
Mines Status	: Operational	Type of Sample	: Surface Water
		Source of Sample	: Near Nawatoli, Kujam-II Bauxite Mine (157.38ha)
Period of Analysis	: 31.01.2024 to 05.02.2024	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)
pH (at 24.5 °C)	-	IS 3025 (Part 11) : 2022	6.93	6.5-8.5
Temperature	°C	IS 3025 (Part 9):1984; RA2017	24.5	-
Chemical Oxygen Demand (COD)	-	IS 3025 (Part-58) :2006; RA2017	4.0	-
Biochemical Oxygen Demand (BOD) (@ 20°C for 5 days)	mg/L	APHA 23 rd Ed.2017; 5210B	BDL (DL: 1.0)	3.0
Total Dissolved Solids (TDS)	mg/L	IS 3025 (Part 16):1984; RA2017	98	1500
Total Suspended Solids (TSS)	mg/L	IS 3025 (Part-17):2022	7.8	--
Oil & Grease	mg/L	IS 3025 (Part-39): 2021	BDL (DL: 0.1)	0.1
Calcium (as Ca)	mg/L	IS 3025 (Part-40) :1991, RA2019	6.2	--
Discipline : Chemical		Group : Residues in Water		
Aluminium (Al)	mg/L	IS 3025 (Part-55) :2003; RA2019	BDL (DL: 0.02)	0.03
Iron (as Fe)	mg/L	APHA23 rd Ed 2017; 3111B	0.109	50

Remarks: 1. pH done at Lab.



Reviewed by

****End of Report****

Signature of Dr. Deependra Kumar Sinha
Authorized Signatory
Dr. Deependra Kumar Sinha
P.H. Environmental
ESES Pvt. Ltd. Technical Manager

Page 1 of 1

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TC-8839

TEST REPORT

Test Report No. : ELES/RNC/2024/0597	Report Release Date : 06.02.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023
ULR No. : TC883924000000568F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/SL/0632
Address	: Lohardaga, Jharkhand-835302	Sampling Date	: 12.01.2024
		Sample Received Date	: 31.01.2024
Mines Status	: Operational	Type of Sample	: Soil
Period of Analysis	: 31.01.2024 to 05.02.2024	Location of Sample	: Kujam II- Bauxite Mines Near Quarry Bhattipat
		Sampling Procedure	: ELES/DOC/SMPL/05
		Sampling Done By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed

Discipline : Chemical		Group : Pollution & Environment	
Parameter	Unit	Test Protocol	Result
pH (1:2) at 24.6 °C	-	IS 2720 (Part 26):1987; RA2021	5.16
Conductivity (1:2) at 24.6 °C	µS/cm	IS 14767: 2000; RA2021	176
Total Organic Carbon (TOC)	%	Soil Testing in India: 2011 (Walkley & Black Method)	0.64
Available Phosphorus (as P) (1:10)	kg/ha	Soil Testing in India: 2011	3.32
Potassium (as K)	mg/kg	IS 9497:1980; RA 2020	1950
Available Nitrogen	%	Soil Testing in India: 2011	0.26
Chloride (1:2)	%	ELES/SOIL/SOP/01	0.04
Lead (as Pb)	mg/kg	US EPA 3050 A&B : 1996	BDL (DL: 0.1)
Cadmium (as Cd)	mg/kg	US EPA 3050 A&B : 1996	BDL (DL: 0.1)
Mercury (as Hg)	mg/kg	US EPA 7473 : 2007	BDL (DL: 0.01)
Magnesium (as Mg)	mg/kg	Soil Testing in India: 2011	302

Remarks: 1. pH done at Lab.

Abhishek Kumar

Reviewed by

Dr. Deependra Kumar Singh

Authorised Signatory
Dr. Deependra Kumar Singh

****End of Report****

Page 1 of 1

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Website : www.elespl.co.in

CIN: U74999JH2018PTC011125

TEST REPORT

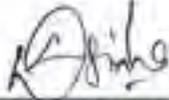
Test Report No. : ELES/RNC/2024/0597	Report Release Date : 06.02.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/SL/0632
Address	: Lohardaga, Jharkhand-835302	Sampling Date	: 12.01.2024
		Sample Received Date	: 31.01.2024
Mines Status	: Operational	Type of Sample	: Soil
Period of Analysis	: 31.01.2024 to 05.02.2024	Location of Sample	: Kujam II- Bauxite Mines Near Quarry Bhattipat
		Sampling Procedure	: ELES/DOC/SMPL/05
		Sampling Done By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed

Discipline: Chemical		Group: Pollution & Environment	
Parameter	Unit	Test Protocol	Result
Arsenic (as As)	mg/kg	IS 3025 (Part 37): 2022	BDL (DL: 0.005)
Selenium (as Se)	mg/kg	IS 3025 (Part-56) :2003; RA 2019	BDL (DL: 0.01)



****End of Report****


Dr. Deekshita
Ph. D Environmental Engg.
ELES Pvt. Ltd. Technical Manager

Page 1 of 1

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

Kujam II Bauxite Mine-Environmental Monitoring Report

February 2024



CONTENT

Hindalco Industries :Kujam-II Bauxite MineEnvironmental Monitoring Report February 2024	
Kujam-II Bauxite Mine	
	AMBIENT AIR QUALITY- CORE ZONE
1	Kujam-II Weigh Bridge
2	Nawatoli Quarry
3	Quarry 195
4	Bhattipat
	AMBIENT AIR QUALITY- BUFFER ZONE
1	Near PakriGada Village
2	Near Pol Pol Village
3	Near Shakhuapani Village
4	Near DipaKujam Village
	Drinking Water
	Ambient Noise
	Workzone Noise





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CIN: U74999JH2018PTC033125

TC-8839

TEST REPORT

Test Report No. : ELES/RNC/2024/1160	Report Release Date : 13.02.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023
ULR No. : TC883924000001096F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/0899
Address	: Lohardaga, Jharkhand-835302	Location	: Kujam-II Weigh Bridge Kujam-II Bauxite Mine (157.38ha)
		Sampling Date	: 06.02.2024 to 07.02.2024
Mines Status	: Operational	Sample Received Date	: 07.02.2024
Period of Analysis	: 07.02.2024 to 13.02.2024	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)	: 23	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 50	4	Weather Condition	: Clear
5	Longitude	: 84°17'30.39"E	6	Latitude	: 23°18'50.59"N

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	79	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	47	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	11.8	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	29.3	80 (24hrs)
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019 (NDIR Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004; RA2019	0.014	1 (24hrs)
Nickel (Ni)	ng/m ³	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01	<2.0	06 (Annual)



****End of Report****

Authorized Signatory
Dr. Deependra Kumar Sinita
Ph. D Environmental Engg.

Page 1 of 1

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CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2024/1160	Report Release Date : 13.02.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/0899
Address	: Lohardaga, Jharkhand-835302	Location	: Kujam-II Weigh Bridge Kujam-II Bauxite Mine (157.38ha)
		Sampling Date	: 06.02.2024 to 07.02.2024
Mines Status	: Operational	Sample Received Date	: 07.02.2024
Period of Analysis	: 07.02.2024 to 13.02.2024	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sampling Done By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

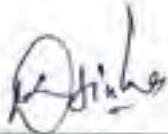
METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 23	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 50	4	Weather Condition	: Clear
5	Longitude	: 84°17'30.39"E	6	Latitude	: 23°18'50.59"N

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C ₆ H ₆)*	µg/m ³	IS 5182 (Part-11): 2006; RA2022	<1.0	05(Annual)
Benzo-(a)-Pyrene*	ng/m ³	IS 5182 (Part-12): 2004; RA2019	<0.5	01(Annual)

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



****End of Report****


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

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TC-8839

TEST REPORT

Test Report No. : ELES/RNC/2024/1161	Report Release Date : 13.02.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023
ULR No. : TC883924000001097F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/0900
Address	: Lohardaga, Jharkhand-835302	Location	: Nawatoli Quarry Kujam-II Bauxite Mine (157.38ha)
		Sampling Date	: 06.02.2024 to 07.02.2024
Mines Status	: Operational	Sample Received Date	: 07.02.2024
Period of Analysis	: 07.02.2024 to 13.02.2024	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)	: 23	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 50	4	Weather Condition	: Clear
5	Longitude	: 84°17'38.67"E	6	Latitude	: 23°18'20.87"N

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	68	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part-24): 2019	34	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	10.3	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	28.8	80 (24hrs)
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part-25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019 (NDIR Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004; RA2019	0.022	1 (24hrs)
Nickel (Ni)	ng/m ³	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01	<2.0	06 (Annual)



Reviewed by

****End of Report****

Authorised Signatory

Dr. Deependra Kumar Sinha

Ph. D Environmental Engg

Page 1 of 1

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CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2024/1161	Report Release Date : 13.02.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/0900
Address	: Lohardaga, Jharkhand-835302	Location	: Nawatoli Quarry Kujam-II Bauxite Mine (157.38ha)
		Sampling Date	: 06.02.2024 to 07.02.2024
Mines Status	: Operational	Sample Received Date	: 07.02.2024
Period of Analysis	: 07.02.2024 to 13.02.2024	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)	: 23	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 50	4	Weather Condition	: Clear
5	Longitude	: 84°17'38.67"E	6	Latitude	: 23°18'20.87"N

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C ₆ H ₆)*	µg/m ³	IS 5182 (Part-11): 2006; RA2022	<1.0	05(Annual)
Benzo-(a)-Pyrene*	ng/m ³	IS 5182 (Part-12): 2004; RA2019	<0.5	01(Annual)

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



Reviewed by

****End of Report****

Authorised Signatory

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



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CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2024/1162	Report Release Date : 13.02.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023
ULR No. : TC883924000001098F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/0901
Address	: Lohardaga, Jharkhand-835302	Location	: Quarry- 195 Kujam-II Bauxite Mine (157.38ha)
		Sampling Date	: 06.02.2024 to 07.02.2024
Mines Status	: Operational	Sample Received Date	: 07.02.2024
Period of Analysis	: 07.02.2024 to 13.02.2024	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)	: 23	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 50	4	Weather Condition	: Clear
5	Longitude	: 84°17'30.27"E	6	Latitude	: 23°18'56.89"N

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	66	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	38	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	9.1	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	24.4	80 (24hrs)
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019 (NDIR Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004; RA2019	0.011	1 (24hrs)
Nickel (Ni)	ng/m ³	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01	<2.0	06 (Annual)



Dr. Deendra Kumar Sinha
Authorized Signatory

****End of Report****

Dr. Deendra Kumar Sinha

Page 1 of 1

Ph. D Environmental Engg.

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CIN: U74999JH2018PTC011125

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Website : www.elespl.co.in

TEST REPORT

Test Report No. : ELES/RNC/2024/1162	Report Release Date : 13.02.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/0901
Address	: Lohardaga, Jharkhand-835302	Location	: Quarry- 195 Kujam-II Bauxite Mine (157.38ha)
		Sampling Date	: 06.02.2024 to 07.02.2024
Mines Status	: Operational	Sample Received Date	: 07.02.2024
Period of Analysis	: 07.02.2024 to 13.02.2024	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sampling Done By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

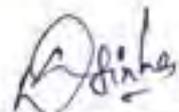
METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 23	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 50	4	Weather Condition	: Clear
5	Longitude	: 84°17'30.27"E	6	Latitude	: 23°18'56.89"N

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C ₆ H ₆)*	µg/m ³	IS 5182 (Part-11): 2006; RA2022	<1.0	05(Annual)
Benzo-(a)-Pyrene*	ng/m ³	IS 5182 (Part-12): 2004; RA2019	<0.5	01(Annual)

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



****End of Report****


Authorized Signatory
Dr. Deependra Kumar Sini
Ph. D Environmental Engg.
ELES Pvt. Ltd, Technical Manag



ENVIRONMENTAL LABORATORIES &

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TEST REPORT

Test Report No. : ELES/RNC/2024/1163	Report Release Date : 13.02.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023
ULR No. : TC883924000001099F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/0902
Address	: Lohardaga, Jharkhand-835302	Location	: Bhattipat Kujam-II Bauxite Mine (157.38ha)
		Sampling Date	: 06.02.2024 to 07.02.2024
Mines Status	: Operational	Sample Received Date	: 07.02.2024
Period of Analysis	: 07.02.2024 to 13.02.2024	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)	: 23	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 50	4	Weather Condition	: Clear
5	Longitude	: 84°17'54.25"E	6	Latitude	: 23°18'34.89"N

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	70	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	41	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	10.3	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	23.2	80 (24hrs)
Ozone (O ₃)	µg/m ²	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019 (NDIR Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004; RA2019	0.01	1 (24hrs)
Nickel (Ni)	ng/m ³	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01	<2.0	06 (Annual)



****End of Report****

Dr. Deependra Kumar Singh
Authorised Signatory
Dr. Deependra Kumar Singh
 Ph. D Environmental Engg.

Page 1 of 1

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CIN: U74999JH2018PTC011125

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TEST REPORT

Test Report No. : ELES/RNC/2024/1163	Report Release Date : 13.02.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/0902
Address	: Lohardaga, Jharkhand-835302	Location	: Bhattipat Kujam-II Bauxite Mine (157.38ha)
		Sampling Date	: 06.02.2024 to 07.02.2024
Mines Status	: Operational	Sample Received Date	: 07.02.2024
Period of Analysis	: 07.02.2024 to 13.02.2024	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)	: 23	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 50	4	Weather Condition	: Clear
5	Longitude	: 84°17'54.25"E	6	Latitude	: 23°18'34.89"N

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C ₆ H ₆)*	µg/m ³	IS 5182 (Part-11): 2006; RA2022	<1.0	05(Annual)
Benzo-(a)-Pyrene*	ng/m ³	IS 5182 (Part-12): 2004; RA2019	<0.5	01(Annual)

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



****End of Report****

Authorised Signatory

Dr. Deependra Kumar Singh

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ELES Pvt. Ltd. Technical Manager



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CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2024/1148	Report Release Date : 13.02.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023
ULR No. : TC883924000001084F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/0887
Address	: Lohardaga, Jharkhand-835302	Location	: Near Pakri Gada Village
		Sampling Date	: 02.02.2024 to 03.02.2024
Mines Status	: Operational	Sample Received Date	: 07.02.2024
Period of Analysis	: 07.02.2024 to 13.02.2024	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)	: 21	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 48	4	Weather Condition	: Clear
5	Longitude	: 84°14'52.25"N	6	Latitude	: 23°17'41.21"E

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	53	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	31	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	7.2	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	22.5	80 (24hrs)
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019 (NDIR Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004; RA2019	<0.002	1 (24hrs)
Nickel (Ni)	ng/m ³	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01	<2.0	06 (Annual)



****End of Report****

Authorized Signatory
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TEST REPORT

Test Report No. : ELES/RNC/2024/1148	Report Release Date : 13.02.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/0887
Address	: Lohardaga, Jharkhand-835302	Location	: Near Pakri Gada Village
		Sampling Date	: 02.02.2024 to 03.02.2024
Mines Status	: Operational	Sample Received Date	: 07.02.2024
Period of Analysis	: 07.02.2024 to 13.02.2024	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)	: 21	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 48	4	Weather Condition	: Clear
5	Longitude	: 84°14'52.25"N	6	Latitude	: 23°17'41.21"E

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C ₆ H ₆)*	µg/m ³	IS 5182 (Part-11): 2006; RA2022	<1.0	05(Annual)
Benzo-(a)-Pyrene*	ng/m ³	IS 5182 (Part-12): 2004; RA2019	<0.5	01(Annual)

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



****End of Report****


Authorised Signatory
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 ELES Pvt. Ltd. Ranchi, Jharkhand

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TC-8888

TEST REPORT

Test Report No. : ELES/RNC/2024/1149	Report Release Date : 13.02.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023
ULR No. : TC883924000001085F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/0888
Address	: Lohardaga, Jharkhand-835302	Location	: Near Pol Pol Village
		Sampling Date	: 02.02.2024 to 03.02.2024
Mines Status	: Operational	Sample Received Date	: 07.02.2024
Period of Analysis	: 07.02.2024 to 13.02.2024	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)	: 21	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 48	4	Weather Condition	: Clear

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	50	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part-24): 2019	29	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	6.9	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	21.2	80 (24hrs)
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part-25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019 (NDIR Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004; RA2019	<0.002	1 (24hrs)
Nickel (Ni)	ng/m ³	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01	<2.0	06 (Annual)



****End of Report****

Authorised Signatory

Dr. Deependra Kumar S. Singh

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CIN: U74599JH2016PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2024/1149	Report Release Date : 13.02.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name. : Hindalco Industries Limited		Sample Ref. No. : ELES/RNC/2024/AA/0888	
Address : Lohardaga, Jharkhand-835302		Location : Near Pol Pol Village	
		Sampling Date : 02.02.2024 to 03.02.2024	
Mines Status : Operational		Sample Received Date : 07.02.2024	
Period of Analysis : 07.02.2024 to 13.02.2024		Type of Sample : Ambient Air	
		Sampling Procedure : ELES/DOC/SMPL/02	
		Sampling Done By : ELES Pvt. Ltd.	
		Sample Condition : Sealed & Preserved	

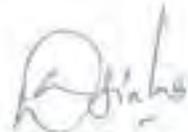
METEOROLOGICAL INFORMATION			
1	Average Temperature (°C) : 21	2	Barometric Pressure (mmHg) : 742
3	Relative Humidity (%) : 48	4	Weather Condition : Clear

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C ₆ H ₆)*	µg/m ³	IS 5182 (Part-11): 2006; RA2022	<1.0	05(Annual)
Benzo-(a)-Pyrene*	ng/m ³	IS 5182 (Part-12): 2004; RA2019	<0.5	01(Annual)

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



****End of Report****


 Authorised Signatory
 Deependra Kumar Singh
 PVT. Environmental Engg.
 & Tech. Lab. Technical Officer

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TEST REPORT

Test Report No. : ELES/RNC/2024/1150	Report Release Date : 13.02.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023
ULR No. : TC883924000001086F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/0889
Address	: Lohardaga, Jharkhand-835302	Location	: Near Shakhupani Village
		Sampling Date	: 02.02.2024 to 03.02.2024
Mines Status	: Operational	Sample Received Date	: 07.02.2024
Period of Analysis	: 07.02.2024 to 13.02.2024	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)	: 21	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 48	4	Weather Condition	: Clear

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	57	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	31	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	6.8	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	22.6	80 (24hrs)
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019 (NDIR Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004; RA2019	0.007	1 (24hrs)
Nickel (Ni)	ng/m ³	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01	<2.0	06 (Annual)



****End of Report****

[Signature]
Authorised Signatory
 Dr. Deependra Kumar Singh
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 ELES Pvt. Ltd. Ranchi, Jharkhand

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CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2024/1150	Report Release Date : 13.02.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/0889
Address	: Lohardaga, Jharkhand-835302	Location	: Near Shakhuapani Village
		Sampling Date	: 02.02.2024 to 03.02.2024
Mines Status	: Operational	Sample Received Date	: 07.02.2024
Period of Analysis	: 07.02.2024 to 13.02.2024	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)	: 21	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 48	4	Weather Condition	: Clear

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C ₆ H ₆)*	µg/m ³	IS 5182 (Part-11): 2006; RA2022	<1.0	05(Annual)
Benzo-(a)-Pyrene*	ng/m ³	IS 5182 (Part-12): 2004; RA2019	<0.5	01(Annual)

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



****End of Report****


Authorised Signatory
 Dr. Deependra Kumar Singh
 B.T. Government Engg.
 ELES Pvt. Ltd. Ranchi, India

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TC-8235

TEST REPORT

Test Report No. : ELES/RNC/2024/1151	Report Release Date : 13.02.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023
ULR No. : TC883924000001087F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/0890
Address	: Lohardaga, Jharkhand-835302	Location	: Near DipaKujam Village
		Sampling Date	: 02.02.2024 to 03.02.2024
Mines Status	: Operational	Sample Received Date	: 07.02.2024
Period of Analysis	: 07.02.2024 to 13.02.2024	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)	: 21	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 48	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): 2006; RA2022	55	100 (24hrs)
Particulate Matter (PM2.5)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-24): 2019	28	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-2): 2001; RA2022	6.2	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-6): 2006; RA2022	17.8	80 (24hrs)
Ozone (O ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m^3	IS 5182 (Part-10): 1999; RA2019 (NDIR Method)	<1.0	2 (8hrs)
Lead (Pb)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-22): 2004; RA2019	0.06	1 (24hrs)
Nickel (Ni)	ng/m^3	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m^3	ELES/AIR/SOP/01	<2.0	06 (Annual)



****End of Report****

[Signature]
Authorised Signatory
Dr. Deependra Kumar Singh
Pa. O Environmental Engg

ELES Pvt. Ltd. Technical Man

Page 1 of 1

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TEST REPORT

Test Report No.	: ELES/RNC/2024/1151	Report Release Date	: 13.02.2024
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/0890
Address	: Lohardaga, Jharkhand-835302	Location	: Near DipaKujam Village
		Sampling Date	: 02.02.2024 to 03.02.2024
Mines Status	: Operational	Sample Received Date	: 07.02.2024
Period of Analysis	: 07.02.2024 to 13.02.2024	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)	: 21	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 48	4	Weather Condition	: Clear

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C ₆ H ₆)*	µg/m ³	IS 5182 (Part-11): 2006; RA2022	<1.0	05(Annual)
Benzo-(a)-Pyrene*	ng/m ³	IS 5182 (Part-12): 2004; RA2019	<0.5	01(Annual)

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



****End of Report****


Authorized Signatory
Anupama Kumari Singh
Ph. D. Environmental Engg.
ELES Pvt. Ltd. Technical Manager



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CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2024/1179	Report Release Date : 13.02.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023
ULR No. : TC883924000001115F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/DW/0918
Address	: Lohardaga, Jharkhand-835302	Sampling Date	: 06.02.2024
		Sample Received Date	: 07.02.2024
Mines Status	: Operational	Type of Sample	: Drinking Water
Period of Analysis	: 07.02.2024 to 13.02.2024	Source/Location of Sample	: Kujam II- Bauxite Mines (157.38ha)
		Sampling Procedure	: ELES/DOC/SMPL/01
		Sample Collected 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 23 rd Ed.2017, 4500-H ⁻	6.62	6.5-8.5	No Relaxation
Turbidity	NTU	APHA 23 rd Ed.2017, 2130 B	0.02	1.0	5.0
Taste	-	APHA 23 rd Ed.2017, 2160 C	Agreeable	Agreeable	Agreeable
Odour	-	IS 3025 (Part-5) :2018	Agreeable	Agreeable	Agreeable
Colour	Hazen	APHA 23 rd Ed.2017, 2120B&D	1.0	5	15
Total Dissolved Solids (TDS)	mg/L	APHA 23 rd Ed.2017, 2540B,C&D	68	500	2000
Chloride (as Cl)	mg/L	APHA 23 rd Ed.2017, 4500 Cl B	9.4	250	1000
Fluoride (as F)	mg/L	APHA 23 rd Ed.2017, 4500 F-D	BDL (DL: 0.1)	1.0	1.5
Total Alkalinity (as CaCO ₃)	mg/L	APHA 23 rd Ed.2017, 2320 B	16.0	200	600
Total Hardness (as CaCO ₃)	mg/L	APHA 23 rd Ed.2017, 2340 C	16.7	200	600
Sulphate (as SO ₄)	mg/L	APHA 23 rd Ed.2017, 4500 SO ₄ ²⁻ -E	BDL (DL: 1.0)	200	400
Nitrate (as NO ₃)	mg/L	APHA 23 rd Ed.2017, 4500 NO ₃ -B	BDL (DL: 0.5)	45	No Relaxation
Phenolic Compound (as C ₆ H ₅ OH)	mg/L	IS 3025 (Part-43):1992;RA2019	BDL (DL: 0.001)	0.001	0.002
Cyanide (as CN)	mg/L	APHA 23 rd Ed.2017, 4500 CN-E	BDL (DL: 0.012)	0.05	No Relaxation

Page 1 of 2

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CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2024/1179	Report Release Date : 13.02.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023
ULR No. : TC883924000001115F	

Discipline : Chemical		Group : Water		Regulatory Limit as per IS10500:2012	
Parameter	Unit	Test Protocol	Result	Acceptable Limit	Permissible Limit
Residual Free Chlorine (RFC)	mg/L	IS 3025 (Part-26):2021	BDL (DL: 0.1)	0.02	1.0
Calcium (as Ca)	mg/L	APHA 23 rd Ed.2017, 3500 Ca B	5.0	75	200
Discipline : Chemical		Group : Residues in Water			
Aluminum (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-57): 2005; RA2021	BDL (DL: 0.2)	0.5	1.0
Cadmium (as Cd)	mg/L	APHA 23 rd Ed.2017, 3111B	BDL (DL: 0.003)	0.003	No Relaxation
Total Chromium (as Cr)	mg/L	APHA 23 rd Ed.2017, 3111B	BDL (DL: 0.03)	0.05	No Relaxation
Copper (as Cu)	mg/L	APHA 23 rd Ed.2017, 3111B	BDL (DL: 0.03)	0.05	1.5
Iron (as Fe)	mg/L	APHA 23 rd Ed.2017, 3111B	0.109	1.0	1.0
Lead (as Pb)	mg/L	APHA 23 rd Ed.2017, 3111B	BDL (DL: 0.01)	0.01	No Relaxation
Manganese (as Mn)	mg/L	APHA 23 rd Ed.2017, 3111B	BDL (DL: 0.05)	0.1	0.3
Mercury (as Hg)	mg/L	IS 3025 (Part-48): 1994; RA2019	BDL (DL: 0.001)	0.001	No Relaxation
Selenium (as Se)	mg/L	IS 3025 (Part-56): 2003; RA2019	BDL (DL: 0.01)	0.01	No Relaxation
Zinc (as Zn)	mg/L	APHA 23 rd Ed.2017, 3111B	BDL (DL: 0.1)	5	15

Remarks: 1. pH & RFL done at Lab.



****End of Report****

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

Page 2 of 2

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CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2024/1179	Report Release Date : 13.02.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/DW/0918
Address	: Lohardaga, Jharkhand-835302	Sampling Date	: 06.02.2024
		Sample Received Date	: 07.02.2024
Mines Status	: Operational	Type of Sample	: Drinking Water
Period of Analysis	: 07.02.2024 to 13.02.2024	Source/Location of Sample	: Kujam II- Bauxite Mines (157.38ha)
		Sampling Procedure	: ELES/DOC/SMPL/01
		Sample Collected By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

Discipline : Biological		Group : Water		Regulatory Limit	
				as per IS 10500:2012	
Parameter	Unit	Test Protocol	Result	Acceptable Limit	Permissible Limit
Total Coliform	Per 100 mL	IS 15185:2016; RA 2021	Not Detected	Shall not be detected	
Escherichia Coli (E. Coli)	Per 100 mL	IS 15185:2016; RA 2021	Not Detected		
Discipline : Chemical		Group : Water		Regulatory Limit	
				as per IS 10500:2012	
Parameter	Unit	Test Protocol	Result	Acceptable Limit	Permissible Limit
Anionic Surfactants (as MBAS)*	mg/L	IS 3025 (Part- 68) : 2019 (RA2023)	BDL (DL: 0.1)	0.2	1.0
Polynuclear Aromatic Hydrocarbons (PAH)*	mg/L	APHA 23 rd Edition: 6440 B	BDL (DL: 0.0001)	0.0001	No Relaxation
Polychlorinated Biphenyls (PCB)*	mg/L	APHA 23 rd Edition: 6431B	BDL (DL: 0.0005)	0.0005	No Relaxation

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CIN: U74999JH2016PTC011125

TEST REPORT

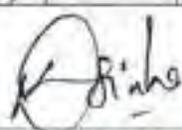
Test Report No. : ELES/RNC/2024/1179	Report Release Date : 13.02.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

Discipline : Chemical		Group : Water		Regulatory Limit as per IS 10500:2012	
Parameter	Unit	Test Protocol	Result	Acceptable Limit	Permissible Limit
Pesticides					
Alachlor*	µg/L	APHA 23 rd Edition 6630 B&C	BDL (DL: 1.0)	20	No Relaxation
Atrazine*	µg/L	APHA 23 rd Edition 6630 B&C	BDL (DL: 1.0)	2.0	No Relaxation
Aldrin/Dieldrin*	µg/L	APHA 23 rd Edition 6630 B&C	BDL (DL: 0.01)	0.03	No Relaxation
Alpha HCH*	µg/L	USEPA 508:1985	BDL (DL: 0.001)	0.01	No Relaxation
Beta HCH*	µg/L	USEPA 508:1985	BDL (DL: 0.01)	0.04	No Relaxation
Butachlor*	µg/L	APHA 23 rd Edition 6630 B&C	BDL (DL: 10)	125	No Relaxation
Chlorpyrifos*	µg/L	USEPA 8141 A	BDL (DL: 10)	30	No Relaxation
Delta HCH*	µg/L	USEPA 508:1985	BDL (DL: 0.01)	0.04	No Relaxation
2,4 dichlorophenoxyacetic acid*	µg/L	APHA 23 rd Edition 6640 B	BDL (DL: 10)	30	No Relaxation
DDT(o,p and p,p-isomers of DDT,DDE and DDD)*	µg/L	APHA 23 rd Edition 6630 B&C	BDL (DL: 0.5)	1.0	No Relaxation
Endosulfan (alpha, beta, and sulphate)*	µg/L	APHA 23 rd Edition 6630 B&C	BDL (DL: 0.1)	0.4	No Relaxation
Ethion*	µg/L	USEPA 1657 A	BDL (DL: 0.5)	3.0	No Relaxation
Gamma HCH (Lindane)*	µg/L	USEPA 508:1985	BDL (DL: 0.5)	2.0	No Relaxation
Isoproturon*	µg/L	USEPA 532:2000	BDL (DL: 0.5)	9.0	No Relaxation

Remarks: 1. Some Parameters are outsourced to other Lab.



****End of Report****


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

Page 2 of 2

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CIN: U74999JH2018PTC011125

TC-8839

TEST REPORT

Test Report No. : ELES/RNC/2024/1169	Report Release Date : 13.02.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023
ULR No. : TC883924000001105F	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sampling Date	: 06.02.2024 to 07.02.2024
Address	: Lohardaga, Jharkhand-835302	Sampling Received Date	: 07.02.2024
		Type of Sample	: Ambient Noise
Mines Status	: Operational	Sampling procedure	: ELES/DOC/SMPL/03
		Sample Drawn By	: ELES Pvt. Ltd.
		Period of Analysis	: 07.02.2024 to 13.02.2024

METEOROLOGICAL INFORMATION

1	Average Temperature (°C) : 23	2	Barometric Pressure (mmHg) : 736
3	Relative Humidity (%) : 50	4	Weather Condition : Clear

Location	Unit	Test Protocol	Result		Regulatory Limit (Industrial Zone)
			Time	L _{eq}	
Near Mine Office Kujam-II Bauxite Mine (157.38ha)	dB(A)	IS 9989:1981, RA 2020	Day Time	64	75 dB(A) Day Time & 70 dB(A) Night Time
			Night Time	42	
Sample ID: ELES/RNC/2024/AN/0908					



****End of Report****


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

Page 1 of 1

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 relates 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, advertise, used for any legal actions unless prior permission has been secured from the Management of the Laboratory. Attention is drawn to the limitation of liability, compensation and jurisdiction issues. Any unauthorized alteration & falsification of the content or appearance of the Test Report is unlawful and offenders may be prosecuted to the fullest extent of the law. All the samples are retained for 30days 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 15days from the Date of Test Report released/issued. After the time period stated before, no complaints will be accepted. The entire Time schedule mentioned in Test Report is in 24hours format. Abbreviation used: N/A (Not Applicable); BDL (Below Detection Limit), L.DL (Lower Detection Limit)

"Save Environment, Save Future"



ENVIRONMENTAL LABORATORIES &

PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA
HATIA, RANCHI-834003 (JHARKHAND)
GST NO:- 20AAECE971301Z4

ENGINEERING SERVICES PVT. LTD.

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



CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No.	: ELES/RNC/2024/1174	Report Release Date	: 13.02.2024
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023
ULR No.	: TC883924000001110F		

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sampling Date	: 06.02.2024
Address	: Lohardaga, Jharkhand-835302	Sampling Received Date	: 07.02.2024
		Type of Sample	: Workzone Noise
Mines Status	: Operational	Sampling procedure	: ELES/DOC/SMPL/03
		Sample Drawn By	: ELES Pvt. Ltd.
		Period of Analysis	: 07.02.2024 to 13.02.2024

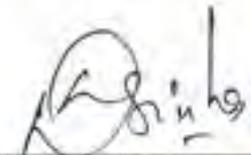
METEOROLOGICAL INFORMATION

1	Average Temperature (°C)	: 23	2	Barometric Pressure (mmHg)	: 736
3	Relative Humidity (%)	: 50	4	Weather Condition	: Clear

Location	Unit	Test Protocol	Result		Regulatory Limit (Industrial Zone)
			Time	L _{eq}	
Compressor at Quarry No.2 – Kujam-II Bauxite Mine (157.38ha)	dB(A)	IS 4758:1968; RA 2017	Day Time	72	90 dB (A)
Sample ID: ELES/RNC/2024/WN/0913					



****End of Report****


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

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 relates 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, advertise, used for any legal actions unless prior permission has been secured from the Management of the Laboratory. Attention is drawn to the limitation of liability, compensation and jurisdiction issues. Any unauthorized alteration & falsification of the content or appearance of the Test Report is unlawful and offenders may be prosecuted to the fullest extent of the law. All the samples are retained for 30days 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 15days from the Date of Test Report released/issued. After the time period stated before, no complaints will be accepted. The entire Time schedule mentioned in Test Report is in 24hours format. Abbreviation used: N/A (Not Applicable) HDL (Below Detection Limit), LDI. (Lower Detection Limit)

ENVIROCHECK

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

Kujam II Bauxite Mine-Environmental Monitoring Report

March 2024

CONTENT

Hindalco Industries : Kujam-II Bauxite Mine Environmental Monitoring Report		March 2024
Kujam-II Bauxite Mine		
AMBIENT AIR QUALITY- CORE ZONE		
1	Kujam-II Weigh Bridge	
2	Nawatoli Quarry	
3	Quarry 195	
4	Bhattipat	
AMBIENT AIR QUALITY- BUFFER ZONE		
1	Near PakriGada Village	
2	Near Pol Pol Village	
3	Near Shakhuapani Village	
4	Near DipaKujam Village	
Stack		
Stream Water		
1	Up Stream (Dhardhari Nadi)	
2	Down Stream (Dhardhari Nadi)	

TEST REPORT

Test Report No. : ELES/RNC/2024/1473	Report Release Date : 10.04.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindaleo Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/1309
Address	: Lohardaga, Jharkhand-835302	Location	: Kujam-II Weigh Bridge Kujam-II Bauxite Mine (157.38ha)
		Sampling Date	: 09.03.2024 to 10.03.2024
Mines Status	: Operational	Sample Received Date	: 12.03.2024
Period of Analysis	: 12.03.2024 to 19.03.2024	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)	: 24	2	Barometric Pressure (mm Hg)	: 734
3	Relative Humidity (%)	: 47	4	Weather Condition	: Clear

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	72	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part-24): 2019	40	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	8.2	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	31.7	80 (24hrs)
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part-25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019 (NDIR Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004; RA2019	0.019	1 (24hrs)
Nickel (Ni)	ng/m ³	IS 5182 (Part-26): 2020	<6.0	20 (Annual)
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01	<2.0	06 (Annual)
Benzene (C ₆ H ₆)	µg/m ³	ELES/GC/SOP/06	<2.5	05 (Annual)
Benzo-(a)-Pyrene	ng/m ³	ELES/GC/SOP/05	<0.5	01 (Annual)

Reviewed by :



(Saswata Burman Roy, Dy. Quality Manager)

****End of Report****



Authorised Signatory :



(Bapan Das, Dy. Technical Manager)

TEST REPORT

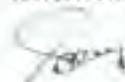
Test Report No. : ELES/RNC/2024/1474	Report Release Date : 10.04.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/1310
Address	: Lohardaga, Jharkhand-835302	Location	: Nawatoli Quarry Kujam-II Bauxite Mine (157.38ha)
		Sampling Date	: 09.03.2024 to 10.03.2024
Mines Status	: Operational	Sample Received Date	: 12.03.2024
Period of Analysis	: 12.03.2024 to 19.03.2024	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)	: 24	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 47	4	Weather Condition	: Clear

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	62	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part-24): 2019	31	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	7.1	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	25.3	80 (24hrs)
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part-25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019 (NDIR Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004; RA2019	0.014	1 (24hrs)
Nickel (Ni)	ng/m ³	IS 5182 (Part-26): 2020	<6.0	20 (Annual)
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01	<2.0	06 (Annual)
Benzene (C ₆ H ₆)	µg/m ³	ELES/GC/SOP/06	<2.5	05 (Annual)
Benzo-(a)-Pyrene	ng/m ³	ELES/GC/SOP/05	<0.5	01 (Annual)

Reviewed by :



(Saswata Burman Roy, Dy. Quality Manager)

****End of Report****



Authorised Signatory :



(Bapan Das, Dy. Technical Manager)



TEST REPORT

Test Report No. : ELES/RNC/2024/1475	Report Release Date : 10.04.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name :	Hindalco Industries Limited	Sample Ref. No. :	ELES/RNC/2024/AA/1311
Address :	Lohardaga, Jharkhand-835302	Location :	Quarry- 195 Kujam-II Bauxite Mine (157.38ha)
Mines Status :	Operational	Sampling Date :	09.03.2024 to 10.03.2024
Period of Analysis :	12.03.2024 to 19.03.2024	Sample Received Date :	12.03.2024
		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)	: 24	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 47	4	Weather Condition	: Clear

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	63	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	31	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	7.7	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	21.8	80 (24hrs)
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019 (NDIR Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004; RA2019	0.009	1 (24hrs)
Nickel (Ni)	ng/m ³	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01	<2.0	06 (Annual)
Benzene (C ₆ H ₆)	µg/m ³	ELES/GC/SOP/06	<2.5	05(Annual)
Benzo-(a)-Pyrene	ng/m ³	ELES/GC/SOP/05	<0.5	01(Annual)

Reviewed by :

(Saswata Burman Roy, Dy. Quality Manager)

****End of Report****



Authorised Signatory :

(Bapan Das, Dy. Technical Manager)

TEST REPORT

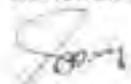
Test Report No. : ELES/RNC/2024/1476	Report Release Date : 10.04.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/1312
Address	: Lohardaga, Jharkhand-835302	Location	: Bhattipat Kujam-II Bauxite Mine (157.38ha)
		Sampling Date	: 09.03.2024 to 10.03.2024
Mines Status	: Operational	Sample Received Date	: 12.03.2024
Period of Analysis	: 12.03.2024 to 19.03.2024	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)	: 24	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 47	4	Weather Condition	: Clear

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	66	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part-24): 2019	35	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	8.1	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	20.8	80 (24hrs)
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part-25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019 (NDIR Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004; RA2019	0.015	1 (24hrs)
Nickel (Ni)	ng/m ³	IS 5182 (Part-26): 2020	<6.0	20 (Annual)
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01	<2.0	06 (Annual)
Benzene (C ₆ H ₆)	µg/m ³	ELES/GC/SOP/06	<2.5	05 (Annual)
Benzo(a)-Pyrene	ng/m ³	ELES/GC/SOP/05	<0.5	01 (Annual)

Reviewed by :



(Saswata Burman Roy, Dy. Quality Manager)

****End of Report****



Authorised Signatory :



(Bapan Das, Dy. Technical Manager)

Page 1 of 1



TEST REPORT

Test Report No. : ELES/RNC/2024/1461	Report Release Date : 10.04.2024
Work Order No. : I3612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name : Hindalco Industries Limited	Address : Lohardaga, Jharkhand-835302	Sample Ref. No. : ELES/RNC/2024/AA/1297	Location : Near Pakri Gada Village
Mines Status : Operational	Period of Analysis : 12.03.2024 to 19.03.2024	Sampling Date : 06.03.2024 to 07.03.2024	Sample Received Date : 12.03.2024
		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) : 22	2	Barometric Pressure (mmHg) : 742
3	Relative Humidity (%) : 49	4	Weather Condition : Clear

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	69	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part-24): 2019	33	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	8.1	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	16.5	80 (24hrs)
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part-25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019 (NDIR Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004; RA2019	0.019	1 (24hrs)
Nickel (Ni)	ng/m ³	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01	<2.0	06 (Annual)
Benzene (C ₆ H ₆)	µg/m ³	ELES/GC/SOP/06	<2.5	05(Annual)
Benzo-(a)-Pyrene	ng/m ³	ELES/GC/SOP/05	<0.5	01(Annual)

Reviewed by :



(Saswata Burman Roy, Dy. Quality Manager)

****End of Report****



Authorised Signatory :



(Bapan Das, Dy. Technical Manager)



TEST REPORT

Test Report No. : ELES/RNC/2024/1462	Report Release Date : 10.04.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/1298
Address	: Lohardaga, Jharkhand-835302	Location	: Near Poi Poi Village
		Sampling Date	: 06.03.2024 to 07.03.2024
Mines Status	: Operational	Sample Received Date	: 12.03.2024
Period of Analysis	: 12.03.2024 to 19.03.2024	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)	: 22	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 49	4	Weather Condition	: Clear

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	63	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	35	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	9.2	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	25.3	80 (24hrs)
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019 (NDIR Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004; RA2019	0.013	1 (24hrs)
Nickel (Ni)	ng/m ³	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01	<2.0	06 (Annual)
Benzene (C ₆ H ₆)	µg/m ³	ELES/GC/SOP/06	<2.5	05(Annual)
Benzo-(a)-Pyrene	ng/m ³	ELES/GC/SOP/05	<0.5	01(Annual)

Reviewed by :

(Saswata Burman Roy, Dy. Quality Manager)

****End of Report****

Authorised Signatory :

(Bapan Das, Dy. Technical Manager)





TEST REPORT

Test Report No. : ELES/RNC/2024/1463	Report Release Date : 10.04.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/1299
Address	: (Lohardaga, Jharkhand-835302)	Location	: Near Shakhupani Village
		Sampling Date	: 06.03.2024 to 07.03.2024
Mines Status	: Operational	Sample Received Date	: 12.03.2024
Period of Analysis	: 12.03.2024 to 19.03.2024	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)	: 22	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 49	4	Weather Condition	: Clear

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	62	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part-24): 2019	30	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	6.5	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	25.2	80 (24hrs)
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part-25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019 (NDIR Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004; RA2019	0.015	1 (24hrs)
Nickel (Ni)	ng/m ³	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01	<2.0	06 (Annual)
Benzene (C ₆ H ₆)	µg/m ³	ELES/GC/SOP/06	<2.5	05(Annual)
Benzo-(a)-Pyrene	ng/m ³	ELES/GC/SOP/05	<0.5	01(Annual)

Reviewed by :



(Saswata Burman Roy, Dy. Quality Manager)

****End of Report****



Authorised Signatory :



(Bapan Das, Dy. Technical Manager)



TEST REPORT

Test Report No. : ELES/RNC/2024/1464	Report Release Date : 10.04.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name : Hindalco Industries Limited	Address : Lohardaga, Jharkhand-835302	Sample Ref. No. : ELES/RNC/2024/AA/1300	Location : Near Dipe Kejari Village
Mines Status : Operational	Period of Analysis : 12.03.2024 to 19.03.2024	Sampling Date : 06.03.2024 to 07.03.2024	Sample Received Date : 12.03.2024
		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) : 22	2	Barometric Pressure (mmHg) : 742
3	Relative Humidity (%) : 49	4	Weather Condition : Clear

Discipline: Chemical		Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2022	51	100 (24hrs)
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	39	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2022	6.4	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2006; RA2022	21.5	80 (24hrs)
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019 (NDIR Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004; RA2019	0.007	1 (24hrs)
Nickel (Ni)	ng/m ³	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01	<2.0	06 (Annual)
Benzene (C ₆ H ₆)	µg/m ³	ELES/GC/SOP/06	<2.5	05(Annual)
Benzo-(a)-Pyrene	ng/m ³	ELES/GC/SOP/05	<0.5	01(Annual)

Reviewed by :

(Saswata Burman Roy, Dy. Quality Manager)

****End of Report****

Authorised Signatory :

(Bapan Das, Dy. Technical Manager)



TEST REPORT

Test Report No. : ELES/RNC/2024/1557	Report Release Date : 10.04.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/SM/1400
Address	: Lohardaga, Jharkhand-835302.	Location	: Kujam-II(157.38ha) Bauxite Mine- DG (20 KVA)
		Sampling Date	: 09.03.2024
Mines Status	: Operational	Sample Received Date	: 15.03.2024
Period of Analysis	: 15.03.2024 to 23.03.2024	Type of Sample	: Flue Gas
		Sampling Procedure	: ELES/DOC/SMPL/02(A)
		Sampling Done By	: ELES Pvt. Ltd.
		Sample Condition	: Sealed & Preserved

GENERAL INFORMATION	
1	Particular of the Plant : Bauxite Mines
2	Emission Due to : Burning of HSD
3	Stack Connected to : DG 20 KVA
4	Material of Construction of Stack : MS
5	Stack Height from Ground Level (m) : 3.1
6	Height of Sampling Port from Ground Level (m) : 3.1
7	Inner Diameter of Stack at Sampling Point (m) : 0.06
8	Shape of the Stack : Circular
9	Working Load of the Stack : 20 KVA
10	Pollution Control System : N/A
11	Ladder & Platform : Temporary

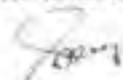
FUEL CHARACTERISTICS DETAILS	
1	Type of Fuel Used : HSD
2	Fuel Consumption : N/A
3	Calorific Value of Fuel (Kcal/Kg) : N/A

TEST REPORT

Test Report No. : ELES/RNC/2024/1557	Report Release Date : 10.04.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

Discipline : Chemical		Group : Atmospheric Pollution	
Parameter	Unit	Test Protocol	Results
Particulate Matter (PM)	mg/Nm ³	IS 11255 (Part-1): 1985; RA2019	36
Sulphur Di-Oxide (SO ₂)	mg/Nm ³	USEPA 6C:2017	24
Oxides of Nitrogen (NO _x)	mg/Nm ³	USEPA 7E :2020	118
Carbon Monoxide (CO)	mg/Nm ³	USEPA 10B :2017	33
Carbon Di- Oxide (CO ₂)	%	IS 13270:1992; RA2019	4.5
Flue Gas Temperature	°C	IS 11255 (Part-3): 2008; RA2018	118
Barometric Pressure	mmHg	IS 11255 (Part-3): 2008; RA2018	739
Velocity of Flue Gas	m/sec	IS 11255 (Part-3): 2008; RA2018	10.56
Quantity of Gas Flow	Nm ³ /hr	IS 11255 (Part-3): 2008; RA2018	79

Reviewed by :



(Saswata Burman Roy, Dy. Quality Manager)

****End of Report****

Authorised Signatory :



(Bapan Das, Dy. Technical Manager)



TEST REPORT

Test Report No. : ELES/RNC/2024/1541	Report Release Date : 10.04.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/SW/1327
Address	: Lohardaga, Jharkhand-835302	Sampling Date	: 09.03.2024
		Sample Received Date	: 12.03.2024
Mines Status	: Operational	Type of Sample	: Surface Water
		Source of Sample	: Down Stream
		Location of Sample	: Dhardhari Nadi, Kujam-II Bauxite Mine (157.38ha)
Period of Analysis	: 12.03.2024 to 29.03.2024	Sampling Procedure	: ELES/DOC/SMPL/01
		Sample Collected 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 24.9°C)	-	IS 3025 (Part 11) : 2022	6.72	6.5-8.5
Colour	Hazen	IS 3025 (Part -4) : 2021	8.0	300
Odour	-	IS 3025 (Part-5) : 2018	Unobjectionable	-
Taste	-	APHA 23 rd Ed.2017, 2160 C	N/A	-
Turbidity	mg/L	IS 3025 (Part-10) :1984;RA2017	5.34	-
Total Dissolved Solids (TDS)	mg/L	IS 3025 (Part 16):1984; RA2017	312	1500
Total Alkalinity (as CaCO ₃)	mg/L	IS 3025 (Part-23) :1986; RA2019	94.2	-
Total Hardness (as CaCO ₃)	mg/L	IS 3025 (Part-21) : 2009; RA2019	130	-
Sulphate (as SO ₄)	mg/L	IS 3025 (Part 24) : 1986; RA2019	24.4	400
Nitrate (as NO ₃)	mg/L	APHA 23 rd Ed.2017, 4500 NO ₃ -B	2.68	50
Chloride (as Cl)	mg/L	IS 3025 (Part-32) :1988; RA2019	45.5	600
Fluoride (as F)	mg/L	IS 3025 (Part-60) :2008; RA2019	0.192	1.5
Cyanide (as CN)	mg/L	APHA 23 rd Ed.2017, 4500 CN-E	BDL (DL: 0.012)	0.05
Phenols Compounds (as C ₆ H ₅ OH)	mg/L	IS 3025 (Part-43) : 1992;RA2019	BDL (DL: 0.001)	0.005

TEST REPORT

Test Report No. : ELES/RNC/2024/1541	Report Release Date : 10.04.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

Discipline: Chemical		Group: Water		Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 2296-1992 Class C (Inland Surface Water)
Calcium (as Ca)	mg/L	IS 3025 (Part-40): 1991; RA2019	34.7	--
Free Residual Chlorine (RFC)	mg/L	IS 3025 (Part-26) :2021	BDL (DL: 0.1)	--
Anionic Surfactants (as MBAS)	mg/L	APHA 24 th Ed.2023, 5540-C	BDL (DL: 0.025)	1.0
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) :2021	BDL (DL: 0.2)	--
Cadmium (as Cd)	mg/L	APHA 23 rd Ed.2017; 3111B	BDL (DL: 0.003)	0.01
Total Chromium (as Cr)	mg/L	APHA 23 rd Ed.2017; 3111B	BDL (DL: 0.03)	--
Copper (as Cu)	mg/L	APHA 23 rd Ed.2017; 3111B	BDL (DL: 0.03)	1.5
Iron (as Fe)	mg/L	APHA 23 rd Ed.2017; 3111B	0.320	50
Lead (as Pb)	mg/L	APHA 23 rd Ed.2017, 3111 B	BDL (DL: 0.01)	0.1
Manganese (as Mn)	mg/L	APHA 23 rd Ed.2017; 3111 B	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) :2003; RA2019	BDL (DL: 0.01)	0.05
Zinc (as Zn)	mg/L	APHA 23 rd Ed.2017, 3111 B	BDL (DL: 0.1)	15
Polynuclear Aromatic Hydrocarbons (PAH)	µg/L	ELES/GC/SOP/04	BDL (DL: 0.05)	--

Remarks: 1. pH & RFC done at Lab.

TEST REPORT

Test Report No. : ELES/RNC/2024/1541	Report Release Date : 10.04.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

Parameter	Unit	Test Protocol	Result	as per IS 2296-1992 Class C (Inland Surface Water)
Pesticides				
Alachlor	µg/L	ELES/GC/SOP/01	BDL (DL: 0.5)	--
Atrazine	µg/L	ELES/GC/SOP/01	BDL (DL: 0.5)	--
Butachlor	µg/L	ELES/GC/SOP/01	BDL (DL: 0.5)	--
Chlorpyrifos	µg/L	ELES/GC/SOP/01	BDL (DL: 0.5)	--
Ethion	µg/L	ELES/GC/SOP/01	BDL (DL: 0.5)	--
Malathion	µg/L	ELES/GC/SOP/01	BDL (DL: 0.5)	--
Methyl parathion	µg/L	ELES/GC/SOP/01	BDL (DL: 0.1)	--
Monocrotophos	µg/L	ELES/GC/SOP/01	BDL (DL: 0.5)	--
Phorate	µg/L	ELES/GC/SOP/01	BDL (DL: 0.5)	--
Phorate Sulphone	µg/L	ELES/GC/SOP/01	BDL (DL: 0.5)	--
Dieldrin	µg/L	ELES/GC/SOP/02	BDL (DL: 0.01)	--
Alpha HCH	µg/L	ELES/GC/SOP/02	BDL (DL: 0.006)	--
Beta HCH	µg/L	ELES/GC/SOP/02	BDL (DL: 0.02)	--
Delta HCH	µg/L	ELES/GC/SOP/02	BDL (DL: 0.02)	--
Gamma HCH (Lindane)	µg/L	ELES/GC/SOP/02	BDL (DL: 0.02)	--
Endosulfan (alpha, beta and sulphate)	µg/L	ELES/GC/SOP/02	BDL (DL: 0.05)	--
DDT(o,p and p,p-isomers of DDT,DDEand DDD)	µg/L	ELES/GC/SOP/02	BDL (DL: 0.05)	--



TEST REPORT

Test Report No. : ELES/RNC/2024/1541	Report Release Date : 10.04.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

Discipline : Biological		Group : Water		Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 2296-1992 Class C (Inland Surface Water)
Total Coliform	CFU/100 mL	IS 15185: 2016, RA2021	2.63×10 ²	5000
Escherichia Coli	CFU/100 mL	IS 15185: 2016; RA2021	1.63×10 ²	--

Reviewed by :

(Saswata Burman Roy, Dy. Quality Manager)

****End of Report****



Authorised Signatory :

(Bapan Das, Dy. Technical Manager)

TEST REPORT

Test Report No. : ELES/RNC/2024/1540	Report Release Date : 10.04.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/SW/1326
Address	: Lohardaga, Jharkhand-835302	Sampling Date	: 09.03.2024
		Sample Received Date	: 12.03.2024
Mines Status	: Operational	Type of Sample	: Surface Water
		Source of Sample	: Up Stream
Period of Analysis	: 12.03.2024 to 29.03.2024	Location of Sample	: Dhardhari Nadi, Kujam-II Bauxite Mine (137.38ha)
		Sampling Procedure	: ELES/DOC/SMPL/01
		Sample Collected 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 24.9 °C)	-	IS 3025 (Part 11) : 2022	6.83	6.5-8.5
Colour	Hazen	IS 3025 (Part -4) : 2021	7.0	300
Odour	-	IS 3025 (Part-5) : 2018	Unobjectionable	--
Taste	-	APHA 23 rd Ed.2017, 2160 C	N/A	--
Turbidity	mg/L	IS 3025 (Part-10) :1984;RA2017	4.57	--
Total Dissolved Solids (TDS)	mg/L	IS 3025 (Part 16):1984; RA2017	307	1500
Total Alkalinity (as CaCO ₃)	mg/L	IS 3025 (Part-23) :1986; RA2019	98.5	--
Total Hardness (as CaCO ₃)	mg/L	IS 3025 (Part-21) : 2009; RA2019	125	--
Sulphate (as SO ₄)	mg/L	IS 3025 (Part 24) : 1986; RA2019	22.5	400
Nitrate (as NO ₃)	mg/L	APHA 23 rd Ed.2017, 4500 NO ₃ -B	2.35	50
Chloride (as Cl)	mg/L	IS 3025 (Part-32) :1988; RA2019	50.4	600
Fluoride (as F)	mg/L	IS 3025 (Part-60) :2008; RA2019	0.192	1.5
Cyanide (as CN)	mg/L	APHA 23 rd Ed.2017, 4500 CN-E	BDL (DL: 0.012)	0.05
Phenols Compounds (as C ₆ H ₅ OH)	mg/L	IS 3025 (Part-43) : 1992;RA2019	BDL (DL: 0.001)	0.005

TEST REPORT

Test Report No. : ELES/RNC/2024/1540	Report Release Date : 10.04.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

Discipline: Chemical		Group: Water		Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 2296-1992 Class C (Inland Surface Water)
Calcium (as Ca)	mg/L	IS 3025 (Part-40): 1991; RA2019	33.3	--
Free Residual Chlorine (RFC)	mg/L	IS 3025 (Part-26): 2021	BDL (DL: 0.1)	--
Anionic Surfactants (as MBAS)	mg/L	APHA 24 th Ed.2023, 5540-C	BDL (DL: 0.025)	1.0
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): 2021	BDL (DL: 0.2)	--
Cadmium (as Cd)	mg/L	APHA 23 rd Ed.2017; 3111B	BDL (DL: 0.003)	0.01
Total Chromium (as Cr)	mg/L	APHA 23 rd Ed.2017; 3111B	BDL (DL: 0.03)	--
Copper (as Cu)	mg/L	APHA 23 rd Ed.2017; 3111B	BDL (DL: 0.03)	1.5
Iron (as Fe)	mg/L	APHA 23 rd Ed.2017; 3111B	0.346	50
Lead (as Pb)	mg/L	APHA 23 rd Ed.2017; 3111 B	BDL (DL: 0.01)	0.1
Manganese (as Mn)	mg/L	APHA 23 rd Ed.2017; 3111 B	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): 2003; RA2019	BDL (DL: 0.01)	0.05
Zinc (as Zn)	mg/L	APHA 23 rd Ed.2017; 3111 B	BDL (DL: 0.1)	15
Polynuclear Aromatic Hydrocarbons (PAH)	µg/L	ELES/GC/SOP/04	BDL (DL: 0.05)	--

Remarks: 1. pH & RFC done at Lab.



TEST REPORT

Test Report No. : ELES/RNC/2024/1540	Report Release Date : 10.04.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

Parameter	Unit	Test Protocol	Result	as per IS 2296-1992 Class C (Inland Surface Water)
Pesticides				
Alachlor	µg/L	ELES/GC/SOP/01	BDL (DL: 0.5)	--
Atrazine	µg/L	ELES/GC/SOP/01	BDL (DL: 0.5)	--
Butachlor	µg/L	ELES/GC/SOP/01	BDL (DL: 0.5)	--
Chlorpyrifos	µg/L	ELES/GC/SOP/01	BDL (DL: 0.5)	--
Ethion	µg/L	ELES/GC/SOP/01	BDL (DL: 0.5)	--
Malathion	µg/L	ELES/GC/SOP/01	BDL (DL: 0.5)	--
Methyl parathion	µg/L	ELES/GC/SOP/01	BDL (DL: 0.1)	--
Monocrotophos	µg/L	ELES/GC/SOP/01	BDL (DL: 0.5)	--
Phorate	µg/L	ELES/GC/SOP/01	BDL (DL: 0.5)	--
Phorate Sulphone	µg/L	ELES/GC/SOP/01	BDL (DL: 0.5)	--
Dieldrin	µg/L	ELES/GC/SOP/02	BDL (DL: 0.01)	--
Alpha HCH	µg/L	ELES/GC/SOP/02	BDL (DL: 0.006)	--
Beta HCH	µg/L	ELES/GC/SOP/02	BDL (DL: 0.02)	--
Delta HCH	µg/L	ELES/GC/SOP/02	BDL (DL: 0.02)	--
Gamma HCH (Lindane)	µg/L	ELES/GC/SOP/02	BDL (DL: 0.02)	--
Endosulfan (alpha, beta and sulphate)	µg/L	ELES/GC/SOP/02	BDL (DL: 0.05)	--
DDT(o,p and p,p-isomers of DDT,DDEand DDD)	µg/L	ELES/GC/SOP/02	BDL (DL: 0.05)	--



TEST REPORT

Test Report No. : ELES/RNC/2024/1540	Report Release Date : 10.04.2024
Work Order No. : 13612310218	Work Order Date : 21.04.2023

Discipline : Biological		Group : Water		Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 2296-1992 Class C (Inland Surface Water)
Total Coliform	CFU/100 mL	IS 15185: 2016, RA2021	3.81×10^3	5000
Escherichia Coli	CFU/100 mL	IS 15185: 2016; RA2021	1.54×10^2	-

Reviewed by :

(Saswata Burman Roy, Dy. Quality Manager)

****End of Report****



Authorised Signatory :

(Bapan Das, Dy. Technical Manager)



Annexure 3

Date – 01.05.2024

Office Order

Environmental Cell has been re-constituted at Kujam II Bauxite Mine (Area 157.38 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. Jitendra Kumar Sahoo (Coordinator)
2. Mr. Mr. Amit Pradhan (Geologist)
3. 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.

A handwritten signature in blue ink, appearing to be "Basudev Gangopadhyay", is written over a light blue circular stamp.

Basudev Gangopadhyay
AVP (Planning, Environment & Compliance)

Annexure 4

Production, Mined Out, Back Filled and Over Burden removal from October'23 to March'24								
S No	Name of the Mines	Mining lease area (ha)	Production Capacity (MT)*	Lease Period*	Production (MT)	Mined out area (ha)	Back filled area (ha)	Over burden (Cu.M)
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	102292	0.68	0.32	68480.59
3	Hisri (New) Bauxite Mine	14.55	100000	19.07.1981 to 31.03.2030	42069	0.8	0.00	39067.98
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	130749.2	2.06	0.56	534025.4
7	Sherangdag-A Bauxite Mine	155.81	260000	16.10.1974 to 31.03.2030	11950	0.81	0.76	55693.68
8	Serangdag-B Bauxite Mine	77.89	100000	04.10.1978 to 31.03.2030	36230	2.81	1.65	116122.92
9	Jalim & Sanai Bauxite Mine	12.14	50000	16.10.1974 to 31.03.2030	16450	0.07	0.06	17533.27
10	Gurdari Bauxite Mine	584.19	325000	23.03.1985 to 22.03.2035	145680	5.91	3.23	201022.508
11	Kujam - I Bauxite Mine	80.87	150000	13.03.2006 to 12.03.2056	5480	0.46	2.91	72661.44
12	Kujam - II Bauxite Mine	157.38	300000	24.03.2006 to 23.03.2056	66000	2.79	9.53	61380.23
13	Amtipani Bauxite Mine	190.95	150000	13.03.2006 to 12.03.2056	48600	1.85	1.15	131087.65

Annexure 4

Minerals & Minerals Limited								
14	Pakhar (109.507) Bauxite Mine	109.507	280000	26.07.2008 to 25.07.2058	142288	1.01	1.12	213450.18
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	67450	3.41	3.29	101973.71
17	Amtipani Chirodih Bauxite Mines	130.01	450000	11.01.2017 to 10.01.2067	123330	8.583	5.67	208720.97

*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 2023-24

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), Pakhar (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.

S No	Description	Budget (in Rupees) FY 2023-24	Actual (in Rupees) FY 2023-24 (From Oct'23 to Mar'24)
1	Pollution Control & Environment monitoring	1,57,41,102.00	73,14,906.01
2	Reclamation/ Back filing & Rehabilitation**	1,36,62,095.00	6,53,29,973.21
3	Green belt, Plantation & Water sprinkling arrangement	67,45,898.00	32,08,288.90
4	Rural Development	6,19,33,534.00	2,08,14,673.36

**Part of OB removed cost.



Basudev Gangopadhyay
AVP (Planning, Environment & Compliance)