



HIL/LHD/ENV/MoEF/394

Date: 25.11.2022

To,
The Additional Principal Chief Conservator of Forest (C)
Ministry of Environment, Forests and Climate Changes
Regional Office (ECZ), Ranchi-834002.

Sub: Compliance Report of EC conditions for Gurdari (584.19 ha) Bauxite Mining project of M/s Hindalco Industries Limited located in Gumla, Jharkhand for the period April'22 to September'22.

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

Sir,

With reference to the above, we are submitting herewith the Compliance status report of EC conditions for **Gurdari (584.19 ha) Bauxite Mining project of M/s Hindalco Industries Limited** located in Gumla, Jharkhand for the period April'22 to September'22.

The lease detail is as below.

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

Hope you will find the same in order.

Thanking You

Yours Sincerely
FOR HINDALCO INDUSTRIES LIMITED

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

Enclosure: - As Above

CC: ro.ranchi-mef@gov.in, mef@ori.nic.in, mef@nic.in, mef.or@nic.in, mccb.cpcb@nic.in, zokolkatta.cpcb@nic.in, ranchijspcb@gmail.com, roranchi47@gmail.com

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

Environment Clearance No & date : J-11015/136/2006-IA.II (M), dated 7.2.2007

Period of compliance Report : From 1st April 2022 to 30th September 2022

S No	Conditions	Compliance Status
Specific Conditions		
1	All the conditions stipulated by SPCB in their NOC shall be effectively implemented.	Implementations of stipulated conditions in NOC are fulfilled post which consent to operate has been granted by SPCB from time to time. The existing consent to operate is valid up to 31.03.2024. Productions of bauxite are within limits specified in consent to operate.
2	The environmental clearance is subject to approval of the state land use Department, Government of Jharkhand for diversion of agricultural land for non-agricultural use.	Land acquisition is being done with permission of competent authority of State Government i.e. concerned Deputy Commissioner (D.C.) under CNT Act. The land lease agreement is being done with raiyat (Landowner) for 20 years with permission of State Govt with provision of returning the land as per norms set by D.C. The compensation and facilities are being provided as per norms set in agreement. Thus, land acquisition has the approval of State Government.
3	The exploration shall be completed within 2.5 years and thereafter the proponent shall come up with a firm proposal for mining, based on the estimated reserves. The reclamation plan, post mine land use and progressive greenbelt development plan shall also be prepared and submitted with the revised proposal.	Mining is in progress. Required exploration is already done. Reserve and resource estimated on basis of explored bore holes in area. Revised reclamation plan, post mine land use, green belt development plan submitted and approved by the IBM. Review of Mining Plan along with progressive mine closure plan (current mining scheme/mining plan) is valid up to 31.03.2024.
4	Mining shall not intersect groundwater. The mine working shall be restricted to ground water table. Prior approval of the Ministry of Environment & Forests and Central Ground Water Authority shall be obtained for mining	Shallow depth mining is being carried out up to maximum depth of 20.00 mts. Hence there will be no intersecting of the ground water table due to mining activities. In future also, working zone

	below water table.	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.
5	Topsoil shall be stacked properly with proper slope with adequate measures and should be used for reclamation and rehabilitation of mined out areas.	Topsoil is being stacked temporally properly with proper slope as and when required. Sequential backfilling and reclamation of mined out area are being exercised for which topsoil is being spread on backfilled area for reclamation of area.
6	The waste generated shall be concurrently backfilled in the mined-out area. There shall be no external OB dump. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status should be submitted to the Ministry of Environment & Forest on six-month basis.	Overburden and waste rock are being used for back filling. Data pertaining to backfilling is enclosed as Annexure 4 Monitoring and management of rehabilitated areas is being done through effective supervision. No external dump exists as on date.
7	Catch drains and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from mine working. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains should be regularly desilted particularly after monsoon and maintained properly. Garland drain (size, gradient and length) shall be constructed for mine pit and sump capacity should be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper setting of silt material. Sedimentation pits should be constructed at the corners of the garland drains and desilted at regular intervals.	No run-off is generated from mining activities. However, to collect & manage rainwater during monsoon, part of mined out area is used as 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.
8	Plantation shall be raised in an area of 78.44 ha including a green belt of adequate width by planting the native species around the ML area, roads, reclaimed area etc. in consultation with the local DFO / Agriculture Department. The density of the trees should be around 1500 plants	Progressive plantation is being carried out on regular basis with progress of mining activity in order to create a green belt of adequate width around the ML area. During FY 2022-23, total 7970 nos.

	per ha.	saplings were planted on reclaimed area. Total 18.99 ha areas have been planted till date. In addition to this agricultural activity is going on reclaimed land as per the consent from the landowners. Rest to be complied during project period.
9	The project authority should implement suitable conservation measures to augment ground water resources in area in consultation with Regional Director, Central Ground Water Board.	Suitable conservation measures to augment ground water have been taken as directed in NOC granted by CGWB e.g., Constructing water harvesting pond etc.
10	Regular monitoring of ground water level and quality should be carried out by establishing a network of existing wells and constructing new piezometers during the mining operation. The monitoring should be carried out four times in a year – pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January) and the data thus collected may be sent regularly to MOEF, Central Ground water Authority and Regional Director Central Ground Water Board.	The mining operation is not intersecting ground water table. We are not using ground water for any mining purpose. Piezometer has been installed for monitoring of ground water level. Water quality and water level report are attached herewith as Annexure 1 .
11	Prior permission from the competent authority should be obtained for drawl of water from the surface water bodies.	Rainwater harvested during rainy season is being used for sprinkling on haul roads and raising plantation. We are not using any water from natural streams/ ground water for mining. We have already obtained NOC for extraction of ground water from CGWB
12	Water monitoring both for quality and quantity shall be carried out at four locations namely one spring and three streams. Six monthly report should be submitted to the Ministry of Environment and Forest and its Regional Office located at Bhubneshwar.	Spring and Stream water are being monitored. Analysis report is attached as Annexure 2 . Now Regional office is at Ranchi.
13	Vehicular emissions should be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and transportation of mineral. The vehicles should be covered with a tarpaulin and shall not be overloaded.	To keep vehicular emissions in control, company vehicles are periodically checked and repaired. The vehicles are being covered with tarpaulin while transportation of mineral.
14	Drills should either be operated with dust extractors or should be equipped with water injection system.	Wet drilling is in practice.
15	Blasting operation should be carried out only during the daytime. Controlled blasting should be practiced. The mitigative measures for control	Blasting time is fixed during Lunch Time i.e. 1.00 PM-2.00 PM. We have control blasting permission. Controlled

	of ground vibration and to arrest fly rocks and boulders should be implemented.	blasting method is in practice. Ground vibration study has been conducted by IIT, Kharagpur. Efforts and mitigative measures are being taken to mitigate impact of blasting.
16	Consent to operate should be obtained from SPCB prior to start of enhanced production from the mine.	There is no proposal for enhancement of production.
17	Sewage treatment plant should be installed for the colony. ETP should also be provided for workshop and wastewater generated from mining operations.	There is an Effluent treatment mechanism (Oil-grease trap) are available, the used oil in workshop being collected and stored in earmarked area and is being disposed through authorized vendor. The sewage water from domestic uses is being collected through individual Septic Tank and Soak Pits.
18	The project proponent should take all precautionary measures during mining operation for conservation and protection of endangered fauna such as Indian Python, <i>Presbytis phayrei</i> , <i>Melurus ursinus</i> etc. Spotted in the study area. Action plan for conservation of flora and fauna shall be prepared and implemented in consultation with the State Forest and Wildlife Department. Necessary allocation of funds for implementation of the conservation plan shall be made and the funds so allocated shall be included in the project cost. Copy of action plan may be submitted to the Ministry and its Regional Office within 3 months.	We have prepared Wildlife Conservation Plan in consultation with State Forest Department and also obtained approval letter from Principal Chief Conservator of Forest, Wildlife & Chief Wildlife Warden, Jharkhand for conservation and protection of flora and fauna in the core and buffer zone for Gurdari Bauxite Mines. Approval letter (Memo No 1862, dated 02.12.2021) has been submitted to your good office on 21.02.2022.
19	A Final Mine Closure plan along with details of Corpus Fund should be submitted to the Ministry of Environment & Forest 5 years in advance of final mine closure for approval.	Progressive mine closure plan along with mining scheme has been approved by IBM. Final Mine Closure plan (part) has been approved by IBM. Final Mine closure plan for balance area will be prepared in due time as per applicable guideline and timelines mentioned in MCDR/IBM guideline who are competent authority to approve the same. Based on the present resource estimate, and peak rated production capacity mentioned in EC, Mining operation is being carried out.

General Conditions:

S No	Conditions	Compliance Status
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1	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forest.	Noted.
2	No change in the calendar plan including excavation, quantum of mineral bauxite and waste should be made.	Calendar plan including excavation, quantum of mineral bauxite and waste is being done as per IBM approved mining scheme / mining plan. Report is attached as Annexure 4 .
3	Four ambient air quality-monitoring station should be established in the core zone as well as in the buffer zone for RPM, SPM, SO ₂ , NO _x monitoring. Location of the stations should be decided based on the metrological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board.	We have already established four ambient air quality monitoring stations in core zone as well as buffer zone. Monitoring is being carried out and reported to concern authorities. Report is attached as Annexure 2 .
4	Data on ambient air quality (RPM, SPM, SO ₂ , NO _x) should be regularly submitted to the Ministry including its Regional office located at Bhubneshwar and the State Pollution Control Board / Central pollution Control Board once in six months.	Being done. Monitoring Reports for reporting period is enclosed in Annexure-2 . Now Regional office is at Ranchi.
5	Fugitive dust emission from all the sources should be controlled regularly. Water spraying arrangements on haul roads, loading and unloading and at transfer points should be provided and properly maintained.	Three nos. of water tanker have been provided for sprinkling of water on haul roads and active mining areas to arrest fugitive dust. Water spraying at loading, unloading, etc is also being done properly.
6	Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operation of HEMM, etc. should be provided with ear plug / muffs.	Noise monitoring is being done regularly. Workers engaged in operation of HEMMs, etc have also been provided with PPEs such as ear plug and earmuffs. Monitoring of noise level is being conducted at various locations of the work zone area. Report is attached as Annexure 2
7	Industrial wastewater (workshops and wastewater from the mine) Should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19 th May, 1993 and 31 st December, 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.	There is no effluent discharge from Mine. We are not discharging any wastewater outside mine lease area. Oil and grease trap has installed at workshop in mine lease area.

8	<p>Personnel working in dusty areas should wear protective respiratory devices and they should also provided with adequate training and information on safety and health aspects.</p> <p>Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.</p>	<p>Complied. Use of Personal Protective Equipment (PPE) by individuals is being ensured. All mine workers are being regularly and periodically sent to our own hospital for health checkup/ Occupational Health check up for any contraction of diseases due to exposure in dusty and noisy areas.</p> <p>Training on safety, health and environmental aspects of mining is being regularly imparted through VT training centre and also through various other training programmes conducted by the State Government, recognized agencies, etc.</p>
9	<p>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.</p>	<p>Separate Environmental Management Cell (EMC) has been constituted and is functioning effectively.</p> <p>Copy is enclosed as Annexure 3.</p>
10	<p>The project authorities should inform to the Regional Office located at Bhubneshwar regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.</p>	<p>This is an operating mine and hence provision related to financial closure is not applicable.</p> <p>Now Regional office is at Ranchi</p>
11	<p>The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry and its Regional Office located at Bhubneshwar.</p>	<p>Statement of actual expenses for the month April'22 to September'22 for environmental protection measure is enclosed as Annexure5.</p> <p>Now Regional office is at Ranchi.</p>
12	<p>The Regional Office of this Ministry located at Bhubneshwar 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.</p>	<p>Agreed.</p>
13	<p>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.</p>	<p>Complied. Copy submitted to regional office.</p>
14	<p>State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Center and Collector's office / Tehsildar's Office for 30 days.</p>	<p>Displayed.</p>

15	The project authorities should advertise at least in two local newspapers widely circulated, one of which locality concerned, within 7days of the issue of the clearancce letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment and Forests at http://envfor.nic.in and a copy of the same should be forwarded to the Regional Office of this Ministry located Bhubneshwar.	Complied. Copies, of the advertisement made in the local newspapers, have already been submitted to the Regional Office Vide letter no HIL/GMO(M)/ENV/140 Dated 23.04.2007. Now Regional office is at Ranchi
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Signature

Gurdari Bauxite Mines
Hindalco Industries Limited



RECLAIMED LAND



PADDY CULTIVATION ON RECLAIMED LAND



PLANTATION



PLANTATION OF LAST YAER



PLANTATION AT RECLAIMED AREA



RAINWATER HARVESTING POND



WATER SPRINKLING ON HAUL ROAD



HEALTH CAMP



TARPULIN COVER OF BAUXITE TRUCKS

Annexure 1		
Piezometer reading - Gurdari Mines		
S No	Month	Depth (meter)
1	Apr-22	32.1
2	May-22	32.33
3	Jun-22	32.78
4	Jul-22	32.8
5	Aug-22	32.92
6	Sep-22	32.25



CIN: U74999JH2018PTC011125

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TEST REPORT

Test Report No.	: ELES/RNC/2022/0935I	Report Release Date	: 12.05.2022
Work Order No.	: HIL/LHD/FY22-23/001	Work Order Date	: 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1048I
Address	: Lohardaga, Jharkhand-835203	Location	: Entrance Gate / Near Mine Office Gurdari Bauxite Mine
Plant Status	: Operational	Sampling Date	: 19/04/2022 to 20/04/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 29	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 66	4	Weather Condition	: Clear
5	Longitude	: 84°14'43.25"N	6	Latitude	: 23°19'0.21"E

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	60
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	27
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.6
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.019
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	2.2

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TEST REPORT

Test Report No. : ELES/RNC/2022/0935I	Report Release Date : 12.05.2022
Work Order No. : HIL/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	<0.20

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

Authorized Signatory
SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

****End of Report****

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CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1048J
Address	: Lohardaga, Jharkhand-835203	Location	: Near Kathuwapani Pit-23 Gurdari Bauxite Mine
Plant Status	: Operational	Sampling Date	: 19/04/2022 to 20/04/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 29	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 66	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	66
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	30
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	6.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	9.4
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.021
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	2.2

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Work Order No. : HIL/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	0.27

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

****End of Report****

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TEST REPORT

Test Report No. : ELES/RNC/2022/0935K	Report Release Date : 12.05.2022
Work Order No. : HIL/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1048K
Address	: Lohardaga, Jharkhand-835203	Location	: Near Mine Weigh Bridge Gurdari Bauxite Mine
Plant Status	: Operational	Sampling Date	: 19/04/2022 to 20/04/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 29	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 66	4	Weather Condition	: Clear
5	Longitude	: 84°14'40.25"N	6	Latitude	: 23°19'9.21"E

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	62
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	32
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	6.2
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.5
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.021
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	2.3

Page 1 of 2

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TEST REPORT

Test Report No.	: ELES/RNC/2022/0935K	Report Release Date	: 12.05.2022
Work Order No.	: HIL/LHD/FY22-23/001	Work Order Date	: 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	0.24

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

Authorized Signatory
SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

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Page 2 of 2

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CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2022/0935L	Report Release Date : 12.05.2022
Work Order No. : HIL/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1048L
Address	: Lohardaga, Jharkhand-835203	Location	: Near Ambakana Pit / NKCP Camp; Gurdari Bauxite Mine
Plant Status	: Operational	Sampling Date	: 19/04/2022 to 20/04/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C) : 29	2	Barometric Pressure (mmHg) : 741
3	Relative Humidity (%) : 66	4	Weather Condition : Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	63
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	28
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	7.1
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	10.0
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.016
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	2.5

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TEST REPORT

Test Report No. : ELES/RNC/2022/0935L	Report Release Date : 12.05.2022
Work Order No. : HIL/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	0.29

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

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TEST REPORT

Test Report No.	: ELES/RNC/2022/0935E	Report Release Date	: 12.05.2022
Work Order No.	: HIL/LHD/FY22-23/001	Work Order Date	: 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1048E
Address	: Lohardaga, Jharkhand-835203	Location	: Near Pakri Gada Village
Plant Status	: Operational	Sampling Date	: 19/04/2022 to 20/04/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C)	: 29	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 66	4	Weather Condition	: Clear
5	Longitude	: 84°14'52.25"N	6	Latitude	: 23°17'41.21"E

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	60
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	26
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.8
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.014
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No.	: ELES/RNC/2022/0935E	Report Release Date	: 12.05.2022
Work Order No.	: HIL/LHD/FY22-23/001	Work Order Date	: 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	2.3
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	0.24

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

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TEST REPORT

Test Report No.	: ELES/RNC/2022/0935F	Report Release Date	: 12.05.2022
Work Order No.	: HIL/LHD/FY22-23/001	Work Order Date	: 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1048F
Address	: Lohardaga, Jharkhand-835203	Location	: Near Pol Pol Village
Plant Status	: Operational	Sampling Date	: 19/04/2022 to 20/04/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 29	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 66	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	53
Particulate Matter (PM2.5)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 24): 2019	60 (24hrs)	25
Sulphur Di-Oxide (SO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	5.3
Ozone (O ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m^3	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-22): 2004	1 (24hrs)	0.008
Nickel (Ni)	ng/m^3	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m^3	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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CIN: U74999JH2018PTC011225

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TEST REPORT

Test Report No.	: ELES/RNC/2022/0935F	Report Release Date	: 12.05.2022
Work Order No.	: HIL/LHD/FY22-23/001	Work Order Date	: 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	0.21

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

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****End of Report****

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TEST REPORT

Test Report No.	: ELES/RNC/2022/0935G	Report Release Date	: 12.05.2022
Work Order No.	: HIL/LHD/FY22-23/001	Work Order Date	: 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1048G
Address	: Lohardaga, Jharkhand-835203	Location	: Near Dipa Kujam Village
Plant Status	: Operational	Sampling Date	: 18/04/2022 to 19/04/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 30	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 71	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	53
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	19
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	6.5
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.008
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No.	: ELES/RNC/2022/0935G	Report Release Date	: 12.05.2022
Work Order No.	: HIL/LHD/FY22-23/001	Work Order Date	: 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	<0.20

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

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****End of Report****

SANDIP BERA
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Website : www.elespl.co.in**TEST REPORT**

Test Report No.	: ELES/RNC/2022/0935H	Report Release Date	: 12.05.2022
Work Order No.	: HIL/LHD/FY22-23/001	Work Order Date	: 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1048H
Address	: Lohardaga, Jharkhand-835203	Location	: Near Shakhupani Village
Plant Status	: Operational	Sampling Date	: 20/04/2022 to 21/04/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 31	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 70	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	50
Particulate Matter (PM2.5)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 24): 2019	60 (24hrs)	22
Sulphur Di-Oxide (SO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.3
Ozone (O ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m^3	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-22): 2004	1 (24hrs)	0.004
Nickel (Ni)	ng/m^3	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m^3	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No. : ELES/RNC/2022/0935H	Report Release Date : 12.05.2022
Work Order No. : HIL/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	2.8
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	<0.20

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

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

Gurdari Bauxite Mine-Environmental Monitoring Report

May 2022



CONTENT

Hindalco Industries : Gurdari Bauxite Mine		Environmental Monitoring Report	May2022
Gurdari Bauxite Mine			
AMBIENT AIR QUALITY- CORE ZONE			
1	Entrance Gate / Near Mine Office		
2	Near Kathuwapani Pit-23		
3	Near Mine Weigh Bridge		
4	Near Ambakana Pit / NKCPL Camp		
AMBIENT AIR QUALITY- BUFFER ZONE			
1	Near Pakri Gada Village		
2	Near Pol Pol Village		
3	Near Shakhuapani Village		
4	Near Dipa Kujam Village		
AMBIENT NOISE			
WORKZONE/SPOT NOISE			
WORKSHOP EFFLUENT			
DRINKING WATER ANALYSIS			





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TEST REPORT

Test Report No. : ELES/RNC/2022/13511	Report Release Date : 14.06.2022
Work Order No. : HIL/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/13591
Address	: Lohardaga, Jharkhand-835302	Location	: Entrance Gate / Near Mine Office Gurdari Bauxite Mine
Plant Status	: Operational	Sampling Date	: 16/05/2022 to 17/05/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C) : 29	2	Barometric Pressure (mmHg) : 741
3	Relative Humidity (%) : 71	4	Weather Condition : Clear
5	Longitude : 84°14'43.25"N	6	Latitude : 23°19'0.21"E

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	52
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	22
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	6.6
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.008
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No. : ELES/RNC/2022/13511	Report Release Date : 14.06.2022
Work Order No. : HIL/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	<0.20

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

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TEST REPORT

Test Report No. : ELES/RNC/2022/1351J	Report Release Date : 14.06.2022
Work Order No. : HIL/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1359J
Address	: Lohardaga, Jharkhand-835302	Location	: Near Kathuwapani Pit-23 Gurdari Bauxite Mine
Plant Status	: Operational	Sampling Date	: 16/05/2022 to 17/05/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C) : 29	2	Barometric Pressure (mmHg) : 741
3	Relative Humidity (%) : 71	4	Weather Condition : Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	65
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	32
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	5.6
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.5
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.014
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No. : ELES/RNC/2022/1351J	Report Release Date : 14.06.2022
Work Order No. : HIL/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	0.27

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

****End of Report****


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TEST REPORT

Test Report No. : ELES/RNC/2022/1351G	Report Release Date : 14.06.2022
Work Order No. : HIL/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1359G
Address	: Lohardaga, Jharkhand-835302	Location	: Near Dipa Kujam Village
Plant Status	: Operational	Sampling Date	: 17/05/2022 to 18/05/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C) : 27	2	Barometric Pressure (mmHg) : 741
3	Relative Humidity (%) : 69	4	Weather Condition : Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	43
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	20
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.4
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	<0.002
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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CIN: U74999JH2018PTC011125

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TEST REPORT

Test Report No. : ELES/RNC/2022/1351G	Report Release Date : 14.06.2022
Work Order No. : HIL/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	<0.20

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

Authorized Signatory

SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

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TEST REPORT

Test Report No. : ELES/RNC/2022/1351H	Report Release Date : 14.06.2022
Work Order No. : HIL/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1359H
Address	: Lohardaga, Jharkhand-835302	Location	: Near Shakhupani Village
Plant Status	: Operational	Sampling Date	: 16/05/2022 to 17/05/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C) : 28	2	Barometric Pressure (mmHg) : 741
3	Relative Humidity (%) : 69	4	Weather Condition : Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	46
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part-24): 2019	60 (24hrs)	15
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	6.8
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part-25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	<0.002
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No. : ELES/RNC/2022/1351H	Report Release Date : 14.06.2022
Work Order No. : HIL/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	0.22

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

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TEST REPORT

Test Report No. : ELES/RNC/2022/1351K	Report Release Date : 14.06.2022
Work Order No. : HIL/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1359K
Address	: Lohardaga, Jharkhand-835302	Location	: Near Mine Weigh Bridge Gurdari Bauxite Mine
Plant Status	: Operational	Sampling Date	: 16/05/2022 to 17/05/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 29	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 71	4	Weather Condition	: Clear
5	Longitude	: 84°14'40.25"N	6	Latitude	: 23°19'9.21"E

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	55
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	22
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	5.2
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	9.7
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.009
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	2.7

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TEST REPORT

Test Report No.	: ELES/RNC/2022/1351K	Report Release Date	: 14.06.2022
Work Order No.	: HIL/LHD/FY22-23/001	Work Order Date	: 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	0.24

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

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TEST REPORT

Test Report No. : ELES/RNC/2022/1351L	Report Release Date : 14.06.2022
Work Order No. : HIL/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1359L
Address	: Lohardaga, Jharkhand-835302	Location	: Near Ambakana Pit / NKCP Camp; Gurdari Bauxite Mine
Plant Status	: Operational	Sampling Date	: 16/05/2022 to 17/05/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C) : 29	2	Barometric Pressure (mmHg) : 741
3	Relative Humidity (%) : 71	4	Weather Condition : Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	59
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	23
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	6.5
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.6
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.018
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No. : ELES/RNC/2022/1351L	Report Release Date : 14.06.2022
Work Order No. : HIL/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	0.22

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

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TEST REPORT

Test Report No. : ELES/RNC/2022/1355H	Report Release Date : 14.06.2022
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CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Date	: 17.05.2022
Address	: Lohardaga, Jharkhand-835203	Type of Sample	: Ambient Noise
Plant Status	: Operational	Sampling procedure	: ELES/DOC/SMPL/03
		Sample Drawn By	: ELES Pvt. Ltd.

Location	Unit	Test Protocol	Result		Regulatory Limit (Industrial Zone)
			Time	L _{eq}	
Near Mine Office Gurdari Bauxite Mines	dB(A)	IS 9989:1981, RA 2020	Day Time	66	75 dB(A) Day Time & 70 dB(A) Night Time
			Night Time	50	
Sample ID: ELES/RNC/2022/AN/1363H					

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TEST REPORT

Test Report No. : ELES/RNC/2022/1356H	Report Release Date : 14.06.2022
---------------------------------------	----------------------------------

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sampling Date	: 17.05.2022
Address	: Lohardaga, Jharkhand-835302	Type of Sample	: Workzone Noise
Plant Status	: Operational	Sampling procedure	: ELES/DOC/SMPL/03
		Sample Drawn By	: ELES Pvt. Ltd.

Location	Unit	Test Protocol	Result		Regulatory Limit (Industrial Zone)
			Time	L _{eq}	
Poclain at Haralagda Pit - Gurdari (584.19 ha.) Bauxite Mines	dB(A)	IS 9989:1981, RA 2020	Day Time	70	75 dB(A) Day Time
Sample ID: ELES/RNC/2022/AN/1364H					

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TEST REPORT

Test Report No. : ELES/RNC/2022/1357D	Report Release Date : 14/06/2022
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CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/EF/1365D
Address	: Lohardaga, Jharkhand-835302	Location	: Work Shop Effluent - Gurdari Bauxite Mines
Plant Status	: Operational	Sampling Date	: 17/05/2022
		Type of Sample	: Effluent Water
		Sampling Procedure	: ELES/DOC/SMPL/01
		Sample Condition	: Sealed & Preserved

Parameter	Unit	Test Protocol	Result	CPCB Regulatory Limits EPR,1986: Schedule VI (Inland Surface Water)
pH	-	APHA 23rd Edition 2017,4500-H+-B	8.0	5.5-9.0
Total Suspended Solids (TSS)	mg/L	IS 3025 (Part-17):2022	75	100
Temperature	°C	IS 3025 (Part-9):1984; RA 2017	28.8	Shall not exceed 5°C above the receiving Water Temperature
Total Dissolved Solids (TDS)	mg/L	IS 3025 (Part-16):1984	1475	--
Chemical Oxygen Demand (COD)	mg/L	IS 3025 (Part-58): 2006; RA 2017	42	250
Biochemical Oxygen Demand (BOD)	mg/L	IS 3025 (Part-44): 1993; RA 2019	10	30
Oil & Grease	mg/L	APHA 23 rd Ed.2017,5520B	2.1	10
Calcium (as Ca)	mg/L	APHA 23rd Edition 2017, 3500 B	16	--
Iron (as Fe)	mg/L	APHA 23rd Edition, 3111 B&C	2.02	3
Aluminum (as Al)	mg/L	APHA 23rd Edition, 3125 B	1.91	--

****End of Report****

Page 1 of 2



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TEST REPORT

Test Report No. : ELES/RNC/2022/1359H	Report Release Date : 14/06/2022
---------------------------------------	----------------------------------

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/DW/1367H
Address	: Lohardaga, Jharkhand-835302	Location	: Drinking Water Gurdari Bauxite Mines
Plant Status	: Operational	Sampling Date	: 17/05/2022
		Type of Sample	: Drinking Water
		Sampling Procedure	: ELES/DOC/SMPL/01
		Sample Condition	: Sealed & Preserved

Parameter	Unit	Test Protocol	Result	Regulatory Limit
				as per IS:10500:2012 Acceptable Limit
pH	-	APHA 23rd Edition 2017,4500-H+-B	7.1	6.5-8.5
Color	Hazen	IS 3025 (Part-04): 1983	<1.0	5
Odour	-	IS 3025 (Part-05): 1983	Agreeable	Agreeable
Taste	-	IS 3025 (Part-07): 1984	Agreeable	Agreeable
Turbidity	NTU	APHA 23rd Edition 2017,2130 B	0.2	1
Free Residual Chlorine	mg/L	IS 3025 (Part-26): 1986	<0.1	0.2
Total Dissolved Solids (TDS)	mg/L	IS 3025 (Part-16):1984	193	500
Monochloramines	mg/L	APHA 23rd Edition 2017, 4500 Cl-G	<1.0	4
Dichloramines	mg/L	APHA 23rd Edition 2017, 4500 Cl-G	<1.0	4
Total Hardness (as CaCO ₃)	mg/L	APHA 23rd Edition 2017, 2340 C	44.6	200
Total Alkalinity (as CaCO ₃)	mg/L	IS 3025 (Part-23):1986	34.2	200
Chloride (as Cl)	mg/L	IS 3025 (Part-32): 1988: RA 2014	6.4	250

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Test Report No. : ELES/RNC/2022/1359H Report Release Date : 14/06/2022

Parameter	Unit	Test Protocol	Result	Regulatory Limit
				as per IS:10500:2012 Acceptable Limit
Sulphate (as SO ₄)	mg/L	IS 3025 (Part-24):1986	7.7	200
Nitrate (as NO ₃)	mg/L	IS 3025 (Part-34): 1988	2.33	45
Fluoride (as F)	mg/L	APHA 23rd Edition 2017,4500-F--D	0.1971	1
Ammoniacal Nitrogen (as NH ₃ -N)	mg/L	APHA 23rd Edition 2017, 4500 Norg-C	<0.1	0.5
Cyanide (as CN)	mg/L	IS 3025 (Part-27): 1986	<0.0125	0.05
Phenolic Compounds (as C ₆ H ₅ OH)	mg/L	IS 3025 (Part-43): 1992	<0.00002	0.001
Sulphide (as S)	mg/L	IS 3025 (Part-29): 1986	<0.04	0.05
Boron (as B)	mg/L	APHA 23rd Edition, 3125 B	<0.2	0.5
Calcium (as Ca)	mg/L	APHA 23rd Edition 2017, 3500 B	14.2	75
Magnesium (as Mg)	mg/L	IS 3025 (Part-46):1994	2.2	30
Iron (as Fe)	mg/L	APHA 23rd Edition, 3111 B&C	0.210	1
Manganese (as Mn)	mg/L	APHA 23rd Edition, 3111 B&C	<0.05	0.1
Aluminum (as Al)	mg/L	APHA 23rd Edition, 3125 B	<0.02	0.03
Cadmium (as Cd)	mg/L	APHA 23rd Edition, 3111 B&C	<0.003	0.003
Total Chromium (as Cr)	mg/L	APHA 23rd Edition, 3111 B&C	<0.03	0.05
Copper (as Cu)	mg/L	APHA 23rd Edition, 3111 B&C	<0.03	0.05
Lead (as Pb)	mg/L	APHA 23rd Edition, 3111 B&C	<0.01	0.01
Zinc (as Zn)	mg/L	APHA 23rd Edition, 3111 B&C	<0.1	5

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CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2022/1359H	Report Release Date : 14/06/2022
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Parameter	Unit	Test Protocol	Result	Regulatory Limit
				as per IS:10500:2012 Acceptable Limit
Arsenic (as As)	mg/L	APHA 23rd Edition, 3111 B&C	<0.005	0.01
Selenium (as Se)	mg/L	APHA 23rd Edition, 3125 B	<0.01	0.01
Mercury (as Hg)	mg/L	IS 3025 (Part-48): 2000	<0.001	0.001
Nickel (as Ni)	mg/L	APHA 23rd Edition, 3111 B&C	<0.01	0.02
Mineral Oil*	mg/L	IS 3025 (Part-39): 1991	<0.01	0.5
Anionic Detergents (as MBAS)*	mg/L	Annex K of IS 13428:2005	<0.05	0.2
Polynuclear Aromatic Hydrocarbons (PAHs)*	mg/L	SO-IN-MUL-TE-023	<0.00005	0.0001
Polychlorinated Biphenyls (PCBs)*	mg/L	SO-IN-MUL-TE-022	<0.00005	0.0005
Total Coliforms	MPN/100ml	IS 15185:2016	Not Detected	Should Not Detected
Escheria Coli	MPN/100ml	IS 15185:2016	Not Detected	Should Not Detected
Pesticides				
Alachlor*	µg/L	SO-IN-MUL-TE-020	<0.01	20
Atrazine*	µg/L	SO-IN-MUL-TE-020	<0.01	2
Aldrin/ Dieldrin*	µg/L	SO-IN-MUL-TE-020	<0.01	0.03
Alpha HCH*	µg/L	SO-IN-MUL-TE-020	<0.01	0.01
Beta HCH*	µg/L	SO-IN-MUL-TE-020	<0.01	0.04
Butachlor*	µg/L	SO-IN-MUL-TE-020	<0.01	125

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TEST REPORT

Test Report No. : ELES/RNC/2022/1359H Report Release Date : 14/06/2022

Parameter	Unit	Test Protocol	Result	Regulatory Limit
				as per IS:10500:2012 Acceptable Limit
Chlorpyrifos*	µg/L	SO-IN-MUL-TE-020	<0.01	30
Delta HCH*	µg/L	SO-IN-MUL-TE-020	<0.01	0.04
2,4- Dichlorophenoxyacetic acid*	µg/L	SO-IN-MUL-TE-020	<0.01	30
DDT (o, p and p, p – Isomers of DDT)*	µg/L	SO-IN-MUL-TE-020	<0.01	1
Endosulfan (alpha, beta, and sulphate)*	µg/L	SO-IN-MUL-TE-020	<0.01	0.4
Ethion*	µg/L	SO-IN-MUL-TE-020	<0.01	3
Gamma — HCH (Lindane)*	µg/L	SO-IN-MUL-TE-020	<0.01	2
Isoproturon*	µg/L	SO-IN-MUL-TE-020	<0.01	9
Malathion*	µg/L	SO-IN-MUL-TE-020	<0.01	190
Methyl parathion*	µg/L	SO-IN-MUL-TE-020	<0.01	0.3
Monocrotophos*	µg/L	SO-IN-MUL-TE-020	<0.01	1
Phorate*	µg/L	SO-IN-MUL-TE-020	<0.01	2
DDE (o, p and p, p – Isomers of DDE)*	µg/L	SO-IN-MUL-TE-020	<0.01	1
DDD (o, p and p, p – Isomers of DDD)*	µg/L	SO-IN-MUL-TE-020	<0.01	1

Remarks: (*) All the parameters are outsourced to other Lab.

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

Gurdari Bauxite Mine-Environmental Monitoring Report

June 2022



CONTENT

Hindalco Industries : Gurdari Bauxite Mine		Environmental Monitoring Report	June2022
Gurdari Bauxite Mine			
AMBIENT AIR QUALITY- CORE ZONE			
1	Entrance Gate / Near Mine Office		
2	Near Kathuwapani Pit-23		
3	Near Mine Weigh Bridge		
4	Near Ambakana Pit / NKCPL Camp		
AMBIENT AIR QUALITY- BUFFER ZONE			
1	Near Pakri Gada Village		
2	Near Pol Pol Village		
3	Near Shakhuapani Village		
4	Near Dipa Kujam Village		
SPRING WATER			
STREAM WATER			
1	Tangradh Nala (Upstream)		
2	Tangradh Nala (Downstream)		
3	Koel River (Upstream)		
4	Koel River (Downstream)		





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TEST REPORT

Test Report No. : ELES/RNC/2022/16091	Report Release Date : 15.07.2022
Work Order No. : HIL/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/17931
Address	: Lohardaga, Jharkhand-835302	Location	: Entrance Gate / Near Mine Office Gurdari Bauxite Mine
Plant Status	: Operational	Sampling Date	: 14/06/2022 to 15/06/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C) : 26	2	Barometric Pressure (mmHg) : 741
3	Relative Humidity (%) : 68	4	Weather Condition : Clear
5	Longitude : 84°14'43.25"N	6	Latitude : 23°19'0.21"E

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	49
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	24
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.4
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.006
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No. : ELES/RNC/2022/1609I	Report Release Date : 15.07.2022
Work Order No. : HIL/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	<0.20

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

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CIN: U74999JH2018PTC011125

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TEST REPORT

Test Report No. : ELES/RNC/2022/1609J	Report Release Date : 15.07.2022
Work Order No. : HIL/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1793J
Address	: Lohardaga, Jharkhand-835302	Location	: Near Kathuwapani Pit-23 Gurdari Bauxite Mine
Plant Status	: Operational	Sampling Date	: 14/06/2022 to 15/06/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 26	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 68	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	53
Particulate Matter (PM2.5)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 24): 2019	60 (24hrs)	21
Sulphur Di-Oxide (SO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	5.1
Nitrogen Di-Oxide (NO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	6.6
Ozone (O ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m^3	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-22): 2004	1 (24hrs)	0.011
Nickel (Ni)	ng/m^3	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m^3	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No. : ELES/RNC/2022/1609J	Report Release Date : 15.07.2022
Work Order No. : HIL/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	0.22

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

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SENIOR MANAGER
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TEST REPORT

Test Report No. : ELES/RNC/2022/1609K	Report Release Date : 15.07.2022
Work Order No. : HIL/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1793K
Address	: Lohardaga, Jharkhand-835302	Location	: Near Mine Weigh Bridge Gurdari Bauxite Mine
Plant Status	: Operational	Sampling Date	: 14/06/2022 to 15/06/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION			
1	Average Temperature (°C)	: 26	2 Barometric Pressure (mmHg) : 741
3	Relative Humidity (%)	: 68	4 Weather Condition : Clear
5	Longitude	: 84°14'40.25"N	6 Latitude : 23°19'9.21"E

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	57
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	19
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.9
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.008
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No. : ELES/RNC/2022/1609K	Report Release Date : 15.07.2022
Work Order No. : HIL/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	<0.20

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

****End of Report****

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TEST REPORT

Test Report No. : ELES/RNC/2022/1609L	Report Release Date : 15.07.2022
Work Order No. : HIL/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1793L
Address	: Lohardaga, Jharkhand-835302	Location	: Near Ambakana Pit / NKCP Camp; Gurdari Bauxite Mine
Plant Status	: Operational	Sampling Date	: 14/06/2022 to 15/06/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 26	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 68	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	52
Particulate Matter (PM2.5)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 24): 2019	60 (24hrs)	21
Sulphur Di-Oxide (SO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	6.7
Nitrogen Di-Oxide (NO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.5
Ozone (O ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m^3	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-22): 2004	1 (24hrs)	0.008
Nickel (Ni)	ng/m^3	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m^3	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No. : ELES/RNC/2022/1609L	Report Release Date : 15.07.2022
Work Order No. : HIL/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	0.27

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

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CIN: U74999JH2018PTC011125

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TEST REPORT

Test Report No. : ELES/RNC/2022/1609E	Report Release Date : 15.07.2022
Work Order No. : HIL/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1793E
Address	: Lohardaga, Jharkhand-835302	Location	: Near Pakri Gada Village
Plant Status	: Operational	Sampling Date	: 14/06/2022 to 15/06/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 26	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 68	4	Weather Condition	: Clear
5	Longitude	: 84°14'52.25"N	6	Latitude	: 23°17'41.21"E

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	47
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	23
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.2
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.006
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No. : ELES/RNC/2022/1609E	Report Release Date : 15.07.2022
Work Order No. : HIL/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	0.22

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

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CIN: U74999JH2015PTC011125

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TEST REPORT

Test Report No. : ELES/RNC/2022/1609F	Report Release Date : 15.07.2022
Work Order No. : HIL/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1793F
Address	: Lohardaga, Jharkhand-835302	Location	: Near Pol Pol Village
Plant Status	: Operational	Sampling Date	: 14/06/2022 to 15/06/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 26	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 68	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	41
Particulate Matter (PM2.5)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 24): 2019	60 (24hrs)	23
Sulphur Di-Oxide (SO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.1
Ozone (O ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m^3	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-22): 2004	1 (24hrs)	0.007
Nickel (Ni)	ng/m^3	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m^3	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No.	: ELES/RNC/2022/1609F	Report Release Date	: 15.07.2022
Work Order No.	: HIL/LHD/FY22-23/001	Work Order Date	: 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	<0.20

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

****End of Report****


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Website : www.elespl.co.in

CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No.	: ELES/RNC/2022/1609G	Report Release Date	: 15.07.2022
Work Order No.	: HIL/LHD/FY22-23/001	Work Order Date	: 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1793G
Address	: Lohardaga, Jharkhand-835302	Location	: Near Dipa Kujam Village
Plant Status	: Operational	Sampling Date	: 13/06/2022 to 14/06/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 26	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 71	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	49
Particulate Matter (PM2.5)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 24): 2019	60 (24hrs)	26
Sulphur Di-Oxide (SO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.2
Ozone (O ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m^3	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-22): 2004	1 (24hrs)	<0.002
Nickel (Ni)	ng/m^3	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m^3	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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CIN: U74999/JH2018PTC021125

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TEST REPORT

Test Report No.	: ELES/RNC/2022/1609G	Report Release Date	: 15.07.2022
Work Order No.	: HIL/LHD/FY22-23/001	Work Order Date	: 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	<0.20

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

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TEST REPORT

Test Report No. : ELES/RNC/2022/1609H	Report Release Date : 15.07.2022
Work Order No. : HIL/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1793H
Address	: Lohardaga, Jharkhand-835302	Location	: Near Shakhupani Village
Plant Status	: Operational	Sampling Date	: 14/06/2022 to 15/06/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C) : 26	2	Barometric Pressure (mmHg) : 741
3	Relative Humidity (%) : 68	4	Weather Condition : Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	45
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	23
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	9.0
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	<0.002
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No. : ELES/RNC/2022/1609H	Report Release Date : 15.07.2022
Work Order No. : HIL/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	<0.20

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

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TEST REPORT

Test Report No. : ELES/RNC/2022/1629D	Report Release Date : 15/07/2022
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CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/SW/1800D
Address	: Lohardaga, Jharkhand-835302	Location	: Spring Water - Gurdari Bauxite Mines
Plant Status	: Operational	Sampling Date	: 15/06/2022
		Type of Sample	: Surface Water
		Sampling Procedure	: ELES/DOC/SMPL/01
		Sample Condition	: Sealed & Preserved

Parameter	Unit	Test Protocol	Result	As per CPCB & IS2296:1982 (Class-C)
				Tolerance Limit
pH	-	APHA 23rd Edition 2017,4500-H+-B	7.1	6.5-8.5
Color	Hazen	IS 3025 (Part-04): 1983	4	300
Odour	-	IS 3025 (Part-05): 1983	Unobjectionable	Unobjectionable
Turbidity	NTU	APHA 23rd Edition 2017,2130 B	0.41	--
Free Residual Chlorine	mg/L	IS 3025 (Part-26): 1986	<0.1	--
Total Dissolved Solids (TDS)	mg/L	IS 3025 (Part-16):1984	941	1500
Total Hardness (as CaCO ₃)	mg/L	APHA 23rd Edition 2017, 2340 C	342	--
Total Alkalinity (as CaCO ₃)	mg/L	IS 3025 (Part-23):1986	230	--
Chloride (as Cl)	mg/L	IS 3025 (Part-32): 1988: RA 2014	31.2	600
Sulphate (as SO ₄)	mg/L	IS 3025 (Part-24):1986	59.1	400
Fluoride (as F)	mg/L	APHA 23rd Edition 2017,4500-F-D	0.1421	1.5
Cyanide (as CN)	mg/L	IS 3025 (Part-27): 1986	<0.0125	0.05

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TEST REPORT

Test Report No. : ELES/RNC/2022/1629D Report Release Date : 15/07/2022

Parameter	Unit	Test Protocol	Result	As per CPCB & IS2296:1982 (Class-C)
				Tolerance Limit
Boron (as B)	mg/L	APHA 23rd Edition, 3125 B	<0.2	--
Calcium (as Ca)	mg/L	APHA 23rd Edition 2017, 3500 B	90.6	--
Magnesium (as Mg)	mg/L	IS 3025 (Part-46):1994	28.1	--
Iron (as Fe)	mg/L	APHA 23rd Edition, 3111 B&C	0.769	50
Manganese (as Mn)	mg/L	APHA 23rd Edition, 3111 B&C	<0.05	--
Cadmium (as Cd)	mg/L	APHA 23rd Edition, 3111 B&C	<0.003	0.01
Total Chromium (as Cr)	mg/L	APHA 23rd Edition, 3111 B&C	<0.03	0.05
Copper (as Cu)	mg/L	APHA 23rd Edition, 3111 B&C	<0.03	1.5
Lead (as Pb)	mg/L	APHA 23rd Edition, 3111 B&C	<0.01	0.1
Zinc (as Zn)	mg/L	APHA 23rd Edition, 3111 B&C	0.218	15
Arsenic (as As)	mg/L	APHA 23rd Edition, 3111 B&C	<0.005	0.2
Selenium (as Se)	mg/L	APHA 23rd Edition, 3125 B	<0.01	0.05
Mercury (as Hg)	mg/L	IS 3025 (Part-48): 2000	<0.001	--
Dissolved Oxygen (DO)	mg/L	IS 3025 (Part-38) : 2014	7.4	4.0 (Minimum)

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TEST REPORT

Test Report No. : ELES/RNC/2022/1628E	Report Release Date : 15/07/2022
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CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/SW/1799E
Address	: Lohardaga, Jharkhand-835302	Location	: Tangradh Nala (Upstream) Gurdari Bauxite Mines
Plant Status	: Operational	Sampling Date	: 15/06/2022
		Type of Sample	: Surface Water (Stream Water)
		Sampling Procedure	: ELES/DOC/SMPL/01
		Sample Condition	: Sealed & Preserved

Parameter	Unit	Test Protocol	Result	As per CPCB & IS2296:1982 (Class-C)
				Tolerance Limit
pH	-	APHA 23rd Edition 2017,4500-H+-B	6.9	6.5-8.5
Color	Hazen	IS 3025 (Part-04): 1983	10	300
Odour	-	IS 3025 (Part-05): 1983	Unobjectionable	Unobjectionable
Turbidity	NTU	APHA 23rd Edition 2017,2130 B	0.28	--
Free Residual Chlorine	mg/L	IS 3025 (Part-26): 1986	<0.1	--
Total Dissolved Solids (TDS)	mg/L	IS 3025 (Part-16):1984	1252	1500
Total Hardness (as CaCO ₃)	mg/L	APHA 23rd Edition 2017, 2340 C	351	--
Total Alkalinity (as CaCO ₃)	mg/L	IS 3025 (Part-23):1986	213	--
Chloride (as Cl)	mg/L	IS 3025 (Part-32): 1988; RA 2014	74.2	600
Sulphate (as SO ₄)	mg/L	IS 3025 (Part-24):1986	41.3	400
Fluoride (as F)	mg/L	APHA 23rd Edition 2017,4500-F-D	0.1293	1.5
Cyanide (as CN)	mg/L	IS 3025 (Part-27): 1986	<0.0125	0.05



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TEST REPORT

Test Report No. : ELES/RNC/2022/1628E Report Release Date : 15/07/2022

Parameter	Unit	Test Protocol	Result	As per CPCB & IS2296:1982 (Class-C)
				Tolerance Limit
Boron (as B)	mg/L	APHA 23rd Edition, 3125 B	0.266	--
Calcium (as Ca)	mg/L	APHA 23rd Edition 2017, 3500 B	94.7	--
Magnesium (as Mg)	mg/L	IS 3025 (Part-46):1994	27.8	--
Iron (as Fe)	mg/L	APHA 23rd Edition, 3111 B&C	0.701	50
Manganese (as Mn)	mg/L	APHA 23rd Edition, 3111 B&C	<0.05	--
Cadmium (as Cd)	mg/L	APHA 23rd Edition, 3111 B&C	<0.003	0.01
Total Chromium (as Cr)	mg/L	APHA 23rd Edition, 3111 B&C	<0.03	0.05
Copper (as Cu)	mg/L	APHA 23rd Edition, 3111 B&C	<0.03	1.5
Lead (as Pb)	mg/L	APHA 23rd Edition, 3111 B&C	<0.01	0.1
Zinc (as Zn)	mg/L	APHA 23rd Edition, 3111 B&C	0.292	15
Arsenic (as As)	mg/L	APHA 23rd Edition, 3111 B&C	<0.005	0.2
Selenium (as Se)	mg/L	APHA 23rd Edition, 3125 B	<0.01	0.05
Mercury (as Hg)	mg/L	IS 3025 (Part-48): 2000	<0.001	--
Dissolved Oxygen (DO)	mg/L	IS 3025 (Part-38) : 2014	7.2	4.0 (Minimum)

****End of Report****

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TEST REPORT

Test Report No. : ELES/RNC/2022/1628F	Report Release Date : 15/07/2022
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CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/SW/1799F
Address	: Lohardaga, Jharkhand-835302	Location	: Tangradh Nala (Downstream) Gurdari Bauxite Mines
Plant Status	: Operational	Sampling Date	: 15/06/2022
		Type of Sample	: Surface Water (Stream Water)
		Sampling Procedure	: ELES/DOC/SMPL/01
		Sample Condition	: Sealed & Preserved

Parameter	Unit	Test Protocol	Result	As per CPCB & IS2296:1982 (Class-C)
				Tolerance Limit
pH	-	APHA 23rd Edition 2017,4500-H+-B	7.1	6.5-8.5
Color	Hazen	IS 3025 (Part-04): 1983	7	300
Odour	-	IS 3025 (Part-05): 1983	Unobjectionable	Unobjectionable
Turbidity	NTU	APHA 23rd Edition 2017,2130 B	0.31	--
Free Residual Chlorine	mg/L	IS 3025 (Part-26): 1986	<0.1	--
Total Dissolved Solids (TDS)	mg/L	IS 3025 (Part-16):1984	1367	1500
Total Hardness (as CaCO ₃)	mg/L	APHA 23rd Edition 2017, 2340 C	369	--
Total Alkalinity (as CaCO ₃)	mg/L	IS 3025 (Part-23):1986	241	--
Chloride (as Cl)	mg/L	IS 3025 (Part-32): 1988: RA 2014	76.6	600
Sulphate (as SO ₄)	mg/L	IS 3025 (Part-24):1986	39.7	400
Fluoride (as F)	mg/L	APHA 23rd Edition 2017,4500-F-D	0.1402	1.5
Cyanide (as CN)	mg/L	IS 3025 (Part-27): 1986	<0.0125	0.05

Page 1 of 2

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TEST REPORT

Test Report No. : ELES/RNC/2022/1628F Report Release Date : 15/07/2022

Parameter	Unit	Test Protocol	Result	As per CPCB & IS2296:1982 (Class-C)
				Tolerance Limit
Boron (as B)	mg/L	APHA 23rd Edition, 3125 B	0.284	--
Calcium (as Ca)	mg/L	APHA 23rd Edition 2017, 3500 B	99.4	--
Magnesium (as Mg)	mg/L	IS 3025 (Part-46):1994	29.4	--
Iron (as Fe)	mg/L	APHA 23rd Edition, 3111 B&C	0.715	50
Manganese (as Mn)	mg/L	APHA 23rd Edition, 3111 B&C	<0.05	--
Cadmium (as Cd)	mg/L	APHA 23rd Edition, 3111 B&C	<0.003	0.01
Total Chromium (as Cr)	mg/L	APHA 23rd Edition, 3111 B&C	<0.03	0.05
Copper (as Cu)	mg/L	APHA 23rd Edition, 3111 B&C	<0.03	1.5
Lead (as Pb)	mg/L	APHA 23rd Edition, 3111 B&C	<0.01	0.1
Zinc (as Zn)	mg/L	APHA 23rd Edition, 3111 B&C	0.357	15
Arsenic (as As)	mg/L	APHA 23rd Edition, 3111 B&C	<0.005	0.2
Selenium (as Se)	mg/L	APHA 23rd Edition, 3125 B	<0.01	0.05
Mercury (as Hg)	mg/L	IS 3025 (Part-48): 2000	<0.001	--
Dissolved Oxygen (DO)	mg/L	IS 3025 (Part-38) : 2014	7.2	4.0 (Minimum)

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TEST REPORT

Test Report No. : ELES/RNC/2022/1628G	Report Release Date : 15/07/2022
---------------------------------------	----------------------------------

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/SW/1799G
Address	: Lohardaga, Jharkhand-835302	Location	: Koel River (Upstream) Gurdari Bauxite Mines
Plant Status	: Operational	Sampling Date	: 15/06/2022
		Type of Sample	: Surface Water (Stream Water)
		Sampling Procedure	: ELES/DOC/SMPL/01
		Sample Condition	: Sealed & Preserved

Parameter	Unit	Test Protocol	Result	As per CPCB & IS2296:1982 (Class-C)
				Tolerance Limit
pH	-	APHA 23rd Edition 2017,4500-H+-B	7.7	6.5-8.5
Color	Hazen	IS 3025 (Part-04): 1983	9	300
Odour	-	IS 3025 (Part-05): 1983	Unobjectionable	Unobjectionable
Turbidity	NTU	APHA 23rd Edition 2017,2130 B	0.29	--
Free Residual Chlorine	mg/L	IS 3025 (Part-26): 1986	<0.1	--
Total Dissolved Solids (TDS)	mg/L	IS 3025 (Part-16):1984	1379	1500
Total Hardness (as CaCO ₃)	mg/L	APHA 23rd Edition 2017, 2340 C	348	--
Total Alkalinity (as CaCO ₃)	mg/L	IS 3025 (Part-23):1986	255	--
Chloride (as Cl)	mg/L	IS 3025 (Part-32): 1988: RA 2014	61.4	600
Sulphate (as SO ₄)	mg/L	IS 3025 (Part-24):1986	32.3	400
Fluoride (as F)	mg/L	APHA 23rd Edition 2017,4500-F-D	0.1267	1.5
Cyanide (as CN)	mg/L	IS 3025 (Part-27): 1986	<0.0125	0.05

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TEST REPORT

Test Report No. : ELES/RNC/2022/1628G Report Release Date : 15/07/2022

Parameter	Unit	Test Protocol	Result	As per CPCB & IS2296:1982 (Class-C)
				Tolerance Limit
Boron (as B)	mg/L	APHA 23rd Edition, 3125 B	0.321	--
Calcium (as Ca)	mg/L	APHA 23rd Edition 2017, 3500 B	101	--
Magnesium (as Mg)	mg/L	IS 3025 (Part-46):1994	30.8	--
Iron (as Fe)	mg/L	APHA 23rd Edition, 3111 B&C	0.619	50
Manganese (as Mn)	mg/L	APHA 23rd Edition, 3111 B&C	<0.05	--
Cadmium (as Cd)	mg/L	APHA 23rd Edition, 3111 B&C	<0.003	0.01
Total Chromium (as Cr)	mg/L	APHA 23rd Edition, 3111 B&C	<0.03	0.05
Copper (as Cu)	mg/L	APHA 23rd Edition, 3111 B&C	<0.03	1.5
Lead (as Pb)	mg/L	APHA 23rd Edition, 3111 B&C	<0.01	0.1
Zinc (as Zn)	mg/L	APHA 23rd Edition, 3111 B&C	0.251	15
Arsenic (as As)	mg/L	APHA 23rd Edition, 3111 B&C	<0.005	0.2
Selenium (as Se)	mg/L	APHA 23rd Edition, 3125 B	<0.01	0.05
Mercury (as Hg)	mg/L	IS 3025 (Part-48): 2000	<0.001	--
Dissolved Oxygen (DO)	mg/L	IS 3025 (Part-38) : 2014	7.3	4.0 (Minimum)

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CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2022/1628H	Report Release Date : 15/07/2022
---------------------------------------	----------------------------------

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/SW/1799H
Address	: Lohardaga, Jharkhand-835302	Location	: Koel River (Downstream) Gurdari Bauxite Mines
Plant Status	: Operational	Sampling Date	: 15/06/2022
		Type of Sample	: Surface Water (Stream Water)
		Sampling Procedure	: ELES/DOC/SMPL/01
		Sample Condition	: Sealed & Preserved

Parameter	Unit	Test Protocol	Result	As per CPCB & IS2296:1982 (Class-C)
				Tolerance Limit
pH	-	APHA 23rd Edition 2017,4500-H+-B	7.9	6.5-8.5
Color	Hazen	IS 3025 (Part-04): 1983	12	300
Odour	-	IS 3025 (Part-05): 1983	Unobjectionable	Unobjectionable
Turbidity	NTU	APHA 23rd Edition 2017,2130 B	0.27	--
Free Residual Chlorine	mg/L	IS 3025 (Part-26): 1986	<0.1	--
Total Dissolved Solids (TDS)	mg/L	IS 3025 (Part-16):1984	1480	1500
Total Hardness (as CaCO ₃)	mg/L	APHA 23rd Edition 2017, 2340 C	342	--
Total Alkalinity (as CaCO ₃)	mg/L	IS 3025 (Part-23):1986	267	--
Chloride (as Cl)	mg/L	IS 3025 (Part-32): 1988; RA 2014	54.8	600
Sulphate (as SO ₄)	mg/L	IS 3025 (Part-24):1986	55.8	400
Fluoride (as F)	mg/L	APHA 23rd Edition 2017,4500-F-D	0.1325	1.5
Cyanide (as CN)	mg/L	IS 3025 (Part-27): 1986	<0.0125	0.05

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TEST REPORT

Test Report No. : ELES/RNC/2022/1628H Report Release Date : 15/07/2022

Parameter	Unit	Test Protocol	Result	As per CPCB & IS2296:1982 (Class-C)
				Tolerance Limit
Boron (as B)	mg/L	APHA 23rd Edition, 3125 B	0.294	--
Calcium (as Ca)	mg/L	APHA 23rd Edition 2017, 3500 B	110.2	--
Magnesium (as Mg)	mg/L	IS 3025 (Part-46):1994	33.3	--
Iron (as Fe)	mg/L	APHA 23rd Edition, 3111 B&C	0.729	50
Manganese (as Mn)	mg/L	APHA 23rd Edition, 3111 B&C	<0.05	--
Cadmium (as Cd)	mg/L	APHA 23rd Edition, 3111 B&C	<0.003	0.01
Total Chromium (as Cr)	mg/L	APHA 23rd Edition, 3111 B&C	<0.03	0.05
Copper (as Cu)	mg/L	APHA 23rd Edition, 3111 B&C	<0.03	1.5
Lead (as Pb)	mg/L	APHA 23rd Edition, 3111 B&C	<0.01	0.1
Zinc (as Zn)	mg/L	APHA 23rd Edition, 3111 B&C	0.287	15
Arsenic (as As)	mg/L	APHA 23rd Edition, 3111 B&C	<0.005	0.2
Selenium (as Se)	mg/L	APHA 23rd Edition, 3125 B	<0.01	0.05
Mercury (as Hg)	mg/L	IS 3025 (Part-48): 2000	<0.001	--
Dissolved Oxygen (DO)	mg/L	IS 3025 (Part-38) : 2014	7.4	4.0 (Minimum)

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

Gurdari Bauxite Mine-Environmental Monitoring Report

July 2022



CONTENT

Hindalco Industries : Gurdari Bauxite Mine		Environmental Monitoring Report	July 2022
Gurdari Bauxite Mine			
AMBIENT AIR QUALITY- CORE ZONE			
1	Entrance Gate / Near Mine Office		
2	Near Kathuwapani Pit-23		
3	Near Mine Weigh Bridge		
4	Near Ambakana Pit / NKCPL Camp		
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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TEST REPORT

Test Report No. : ELES/RNC/2022/17691	Report Release Date : 18.08.2022
---------------------------------------	----------------------------------

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/52011
Address	: Lohardaga, Jharkhand-835302	Location	: Entrance Gate / Near Mine Office Gurdari Bauxite Mine (584.19ha)
Plant Status	: Operational	Sampling Date	: 04/07/2022 to 05/07/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION			
1	Average Temperature (°C)	: 26	2 Barometric Pressure (mmHg) : 741
3	Relative Humidity (%)	: 69	4 Weather Condition : Clear
5	Longitude	: 84°14'43.25"N	6 Latitude : 23°19'0.21"E

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	41
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	19
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.2
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.003
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No. : ELES/RNC/2022/17691

Report Release Date : 18.08.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	<0.20

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

Authorized Signatory

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

****End of Report****

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TEST REPORT

Test Report No. : ELES/RNC/2022/1769J	Report Release Date : 18.08.2022
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CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/5201J
Address	: Lohardaga, Jharkhand-835302	Location	: Near Kathuwapani Pit-23 Gurdari Bauxite Mine (584.19ha)
Plant Status	: Operational	Sampling Date	: 04/07/2022 to 05/07/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C) : 26	2	Barometric Pressure (mmHg) : 741
3	Relative Humidity (%) : 69	4	Weather Condition : Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	42
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	24
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	6.8
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.005
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No. : ELES/RNC/2022/1769J Report Release Date : 18.08.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	<0.20

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

Authorized Signatory

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

****End of Report****

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TEST REPORT

Test Report No. : ELES/RNC/2022/1769K	Report Release Date : 18.08.2022
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CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/5201K
Address	: Lohardaga, Jharkhand-835302	Location	: Near Mine Weigh Bridge Gurdari Bauxite Mine (584.19ha)
Plant Status	: Operational	Sampling Date	: 04/07/2022 to 05/07/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C)	: 26	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 69	4	Weather Condition	: Clear
5	Longitude	: 84°14'40.25"N	6	Latitude	: 23°19'9.21"E

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	55
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	26
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	5.8
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	9.6
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.012
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	2.3

Page 1 of 2

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TEST REPORT

Test Report No. : ELES/RNC/2022/1769K Report Release Date : 18.08.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	0.22

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

Authorized Signatory

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

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TEST REPORT

Test Report No. : ELES/RNC/2022/1769L	Report Release Date : 18.08.2022
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CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/5201L
Address	: Lohardaga, Jharkhand-835302	Location	: Near Ambakana Pit / NKCPL Camp; Gurdari Bauxite Mine (584.19ha)
Plant Status	: Operational	Sampling Date	: 04/07/2022 to 05/07/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C) : 26	2	Barometric Pressure (mmHg) : 741
3	Relative Humidity (%) : 69	4	Weather Condition : Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	46
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part-24): 2019	60 (24hrs)	22
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	6.7
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.2
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part-25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.007
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	2.1

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CIN: U74999JH2018PTC011125

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TEST REPORT

Test Report No. : ELES/RNC/2022/1769L

Report Release Date : 18.08.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	0.24

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

Authorized Signatory

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

****End of Report****

Page 2 of 2

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CIN: U74999JH2018PTC011225

TEST REPORT

Test Report No. : ELES/RNC/2022/1769E	Report Release Date : 18.08.2022
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CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/5201E
Address	: Lohardaga, Jharkhand-835302	Location	: Near Pakri Gada Village
Plant Status	: Operational	Sampling Date	: 04/07/2022 to 05/07/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 27	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 72	4	Weather Condition	: Clear
5	Longitude	: 84°14'52.25"N	6	Latitude	: 23°17'41.21"E

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	45
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	27
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	6.6
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.8
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.004
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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CIN: U74999JH2018PTC011125

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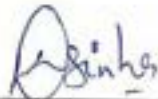
TEST REPORT

Test Report No.	: ELES/RNC/2022/1769E	Report Release Date	: 18.08.2022
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Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 11): 2004	05(Annual)	2.3
Benzo (a) Pyrene*	ng/m^3	IS 5182 (Part- 12): 2006	01(Annual)	<0.20

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

****End of Report****


Authorized Signatory
Dr. Deependra Kumar Sinha
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TEST REPORT

Test Report No. : ELES/RNC/2022/1769F	Report Release Date : 18.08.2022
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CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/5201F
Address	: Lohardaga, Jharkhand-835302	Location	: Near Pol Pol Village
Plant Status	: Operational	Sampling Date	: 04/07/2022 to 05/07/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 27	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 72	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	42
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	25
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.4
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.004
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No. : ELES/RNC/2022/1769F	Report Release Date : 18.08.2022
---------------------------------------	----------------------------------

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 11): 2004	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	IS 5182 (Part- 12): 2006	01(Annual)	<0.20

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

Authorized Signatory

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

****End of Report****

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CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2022/1769G	Report Release Date : 18.08.2022
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CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/5201G
Address	: Lohardaga, Jharkhand-835302	Location	: Near Dipa Kujam Village
Plant Status	: Operational	Sampling Date	: 05/07/2022 to 06/07/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 27	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 70	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	44
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	21
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.8
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.004
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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CIN: U74999JH2018PTC011125

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TEST REPORT

Test Report No. : ELES/RNC/2022/1769G	Report Release Date : 18.08.2022
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Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 11): 2004	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	IS 5182 (Part- 12): 2006	01(Annual)	<0.20

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

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

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TEST REPORT

Test Report No. : ELES/RNC/2022/1769H	Report Release Date : 18.08.2022
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CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/5201H
Address	: Lohardaga, Jharkhand-835302	Location	: Near Shakhupani Village
Plant Status	: Operational	Sampling Date	: 04/07/2022 to 05/07/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 27	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 72	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	46
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	20
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.4
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004; RA2019	1 (24hrs)	0.003
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No. : ELES/RNC/2022/1769H	Report Release Date : 18.08.2022
---------------------------------------	----------------------------------

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 11): 2004	05(Annual)	2.2
Benzo (a) Pyrene*	ng/m^3	IS 5182 (Part- 12): 2006	01(Annual)	<0.20

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

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Authorized Signatory

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

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

Gurdari (584.19ha) Bauxite Mine-Environmental Monitoring Report

August 2022



CONTENT

Hindalco Industries : Gurdari (584.19ha) Bauxite Mine		Environmental Monitoring Report
Gurdari(584.19ha) Bauxite Mine		
AMBIENT AIR QUALITY- CORE ZONE		
1	Entrance Gate / Near Mine Office	
2	Near Kathuwapani Pit-23	
3	Near Mine Weigh Bridge	
4	Near Ambakana Pit / NKCPD Camp	
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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TEST REPORT

Test Report No. : ELES/RNC/2022/1889I	Report Release Date : 16.09.2022
---------------------------------------	----------------------------------

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3187I
Address	: Lohardaga, Jharkhand-835302	Location	: Entrance Gate / Near Mine Office Gurdari Bauxite Mine (584.19ha)
Plant Status	: Operational	Sampling Date	: 16/08/2022 to 17/08/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 25	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 68	4	Weather Condition	: Clear
5	Longitude	: 84°14'43.25"N	6	Latitude	: 23°19'0.21"E

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	44
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	16
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	6.4
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.004
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No. : ELES/RNC/2022/1889I	Report Release Date : 16.09.2022
---------------------------------------	----------------------------------

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	<0.20

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

Authorized Signatory

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

****End of Report****

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TEST REPORT

Test Report No.	: ELES/RNC/2022/1889J	Report Release Date	: 16.09.2022
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CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3187J
Address	: Lohardaga, Jharkhand-835302	Location	: Near Kathuwapani Pit-23 Gurdari Bauxite Mine (584.19ha)
Plant Status	: Operational	Sampling Date	: 16/08/2022 to 17/08/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 25	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 68	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	47
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	18
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.2
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.006
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No. : ELES/RNC/2022/1889J	Report Release Date : 16.09.2022
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Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	<0.20

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

Authorized Signatory

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****End of Report****

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TEST REPORT

Test Report No. : ELES/RNC/2022/1889K	Report Release Date : 16.09.2022
---------------------------------------	----------------------------------

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3187K
Address	: Lohardaga, Jharkhand-835302	Location	: Near Mine Weigh Bridge Gurdari Bauxite Mine (584.19ha)
Plant Status	: Operational	Sampling Date	: 16/08/2022 to 17/08/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 25	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 68	4	Weather Condition	: Clear
5	Longitude	: 84°14'40.25"N	6	Latitude	: 23°19'9.21"E

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	48
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	17
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.5
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.006
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No. : ELES/RNC/2022/1889K	Report Release Date : 16.09.2022
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Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	<0.20

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

Authorized Signatory

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

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TEST REPORT

Test Report No. : ELES/RNC/2022/1889L	Report Release Date : 16.09.2022
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CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3187L
Address	: Lohardaga, Jharkhand-835302	Location	: Near Ambakana Pit / NKCPL Camp; Gurdari Bauxite Mine (584.19ha)
Plant Status	: Operational	Sampling Date	: 16/08/2022 to 17/08/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 25	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 68	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	38
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	13
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.0
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.004
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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CIN: U74999JH2018PTC011125

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TEST REPORT

Test Report No. : ELES/RNC/2022/1889L Report Release Date : 16.09.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	<0.20

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

Authorized Signatory

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

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CIN: U74993JH2018PTC011125

TEST REPORT

Test Report No.	: ELES/RNC/2022/1889H	Report Release Date	: 16.09.2022
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CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3187H
Address	: Lohardaga, Jharkhand-835302	Location	: Near Shakhuapani Village
Plant Status	: Operational	Sampling Date	: 15/08/2022 to 16/08/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 25	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 68	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	40
Particulate Matter (PM2.5)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 24): 2019	60 (24hrs)	22
Sulphur Di-Oxide (SO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.0
Ozone (O ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m^3	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-22): 2004; RA2019	1 (24hrs)	<0.002
Nickel (Ni)	ng/m^3	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m^3	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No. : ELES/RNC/2022/1889H Report Release Date : 16.09.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 11): 2004	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	IS 5182 (Part- 12): 2006	01(Annual)	<0.20

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

Authorized Signatory

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

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TEST REPORT

Test Report No. : ELES/RNC/2022/1889E	Report Release Date : 16.09.2022
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CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3187E
Address	: Lohardaga, Jharkhand-835302	Location	: Near Pakri Gada Village
Plant Status	: Operational	Sampling Date	: 15/08/2022 to 16/08/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 25	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 68	4	Weather Condition	: Clear
5	Longitude	: 84°14'52.25"N	6	Latitude	: 23°17'41.21"E

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	44
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	20
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.8
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	<0.002
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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CIN: U74599JH2018PTC011125

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TEST REPORT

Test Report No.	: ELES/RNC/2022/1889E	Report Release Date	: 16.09.2022
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Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 11): 2004	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	IS 5182 (Part- 12): 2006	01(Annual)	<0.20

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

Authorized Signatory

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

****End of Report****

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TEST REPORT

Test Report No.	: ELES/RNC/2022/1889F	Report Release Date	: 16.09.2022
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CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3187F
Address	: Lohardaga, Jharkhand-835302	Location	: Near Pol Pol Village
Plant Status	: Operational	Sampling Date	: 15/08/2022 to 16/08/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 25	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 68	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	37
Particulate Matter (PM2.5)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 24): 2019	60 (24hrs)	14
Sulphur Di-Oxide (SO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	6.3
Ozone (O ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m^3	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-22): 2004	1 (24hrs)	<0.002
Nickel (Ni)	ng/m^3	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m^3	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No. : ELES/RNC/2022/1889F Report Release Date : 16.09.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 11): 2004	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	IS 5182 (Part- 12): 2006	01(Annual)	<0.20

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

Authorized Signatory

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

****End of Report****

Page 2 of 2

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TEST REPORT

Test Report No.	: ELES/RNC/2022/1889G	Report Release Date	: 16.09.2022
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CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3187G
Address	: Lohardaga, Jharkhand-835302	Location	: Near Dipa Kujam Village
Plant Status	: Operational	Sampling Date	: 15/08/2022 to 16/08/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 25	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 68	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	39
Particulate Matter (PM2.5)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 24): 2019	60 (24hrs)	15
Sulphur Di-Oxide (SO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.8
Ozone (O ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m^3	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-22): 2004	1 (24hrs)	<0.002
Nickel (Ni)	ng/m^3	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m^3	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No. : ELES/RNC/2022/1889G	Report Release Date : 16.09.2022
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Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 11): 2004	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	IS 5182 (Part- 12): 2006	01(Annual)	<0.20

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

Authorized Signatory

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

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SERVICES PVT.LTD.**

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

Gurdari Bauxite Mine-Environmental Monitoring Report

September 2022



CONTENT

Hindalco Industries : Gurdari Bauxite Mine		Environmental Monitoring Report	September 2022
Gurdari Bauxite Mine			
AMBIENT AIR QUALITY- CORE ZONE			
1	Entrance Gate / Near Mine Office		
2	Near Kathuwapani Pit-23		
3	Near Mine Weigh Bridge		
4	Near Ambakana Pit / NKCPL Camp		
AMBIENT AIR QUALITY- BUFFER ZONE			
1	Near Pakri Gada Village		
2	Near Pol Pol Village		
3	Near Shakhuapani Village		
4	Near Dipa Kujam Village		
WORKSHOP EFFLUENT			
DRINKING WATER ANALYSIS			





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TEST REPORT

Test Report No. : ELES/RNC/2022/2296	Report Release Date : 11.11.2022
--------------------------------------	----------------------------------

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3301
Address	: Lohardaga, Jharkhand-835302	Location	: Entrance Gate / Near Mine Office Gurdari Bauxite Mine (584.19ha)
Plant Status	: Operational	Sampling Date	: 06/09/2022 to 07/09/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 25	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 66	4	Weather Condition	: Clear
5	Longitude	: 84°14'43.25"N	6	Latitude	: 23°19'0.21"E

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	37
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	15
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.0
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	<0.002
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No. : ELES/RNC/2022/2296	Report Release Date : 11.11.2022
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Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	<0.20

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

Authorized Signatory

SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

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TEST REPORT

Test Report No. : ELES/RNC/2022/2297	Report Release Date : 11.11.2022
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CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3302
Address	: Lohardaga, Jharkhand-835302	Location	: Near Kathuwapani Pit-23 Gurdari Bauxite Mine (584.19ha)
		Sampling Date	: 06/09/2022 to 07/09/2022
Plant Status	: Operational	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C) : 25	2	Barometric Pressure (mmHg) : 741
3	Relative Humidity (%) : 66	4	Weather Condition : Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	40
Particulate Matter (PM2.5)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 24): 2019	60 (24hrs)	19
Sulphur Di-Oxide (SO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.7
Ozone (O ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m^3	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-22): 2004	1 (24hrs)	0.005
Nickel (Ni)	ng/m^3	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m^3	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No. : ELES/RNC/2022/2297	Report Release Date : 11.11.2022
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Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	<0.20

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

Authorized Signatory

SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

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TEST REPORT

Test Report No. : ELES/RNC/2022/2298	Report Release Date : 11.11.2022
--------------------------------------	----------------------------------

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3303
Address	: Lohardaga, Jharkhand-835302	Location	: Near Mine Weigh Bridge Gurdari Bauxite Mine (584.19ha)
Plant Status	: Operational	Sampling Date	: 06/09/2022 to 07/09/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C)	: 25	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 66	4	Weather Condition	: Clear
5	Longitude	: 84°14'40.25"N	6	Latitude	: 23°19'9.21"E

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	42
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	15
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.2
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.003
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No. : ELES/RNC/2022/2298	Report Release Date : 11.11.2022
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Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	<0.20

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

Authorized Signatory

SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

****End of Report****



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TEST REPORT

Test Report No. : ELES/RNC/2022/2299	Report Release Date : 11.11.2022
--------------------------------------	----------------------------------

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3304
Address	: Lohardaga, Jharkhand-835302	Location	: Near Ambakana Pit / NKCPL Camp; Gurdari Bauxite Mine (584.19ha)
Plant Status	: Operational	Sampling Date	: 06/09/2022 to 07/09/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C) : 25	2	Barometric Pressure (mmHg) : 741
3	Relative Humidity (%) : 66	4	Weather Condition : Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	36
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	16
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.2
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	<0.002
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No. : ELES/RNC/2022/2299	Report Release Date : 11.11.2022
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Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	<0.20

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

Authorized Signatory

SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

****End of Report****

Page 2 of 2

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TEST REPORT

Test Report No. : ELES/RNC/2022/2354D	Report Release Date : 11.11.2022
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CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/EF/3358D
Address	: Lohardaga, Jharkhand-835302	Location	: Work Shop Effluent - Gurdari Bauxite Mines (584.19 ha)
Plant Status	: Operational	Sampling Date	: 07/09/2022
		Type of Sample	: Effluent Water
		Sampling Procedure	: ELES/DOC/SMPL/01
		Sample Condition	: Sealed & Preserved

Parameter	Unit	Test Protocol	Result	CPCB Regulatory Limits EPR,1986: Schedule VI (Inland Surface Water)
pH	-	APHA 23rd Edition 2017,4500-H+-B	8.2	5.5-9.0
Total Suspended Solids (TSS)	mg/L	IS 3025 (Part-17):2022	53	100
Temperature	°C	IS 3025 (Part-9):1984; RA 2017	25.7	Shall not exceed 5°C above the receiving Water Temperature
Total Dissolved Solids (TDS)	mg/L	IS 3025 (Part-16):1984	1387	--
Chemical Oxygen Demand (COD)	mg/L	IS 3025 (Part-58): 2006; RA 2017	55	250
Biochemical Oxygen Demand (BOD)	mg/L	IS 3025 (Part-44): 1993; RA 2019	12	30
Oil & Grease	mg/L	APHA 23 rd Ed.2017,5520B	1.8	10
Calcium (as Ca)	mg/L	APHA 23rd Edition 2017, 3500 B	20	--
Iron (as Fe)	mg/L	APHA 23rd Edition, 3111 B&C	2.12	3
Aluminum (as Al)	mg/L	APHA 23rd Edition, 3125 B	1.76	--

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Authorized Signatory

SANDIP BERA

SENIOR MANAGER

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TEST REPORT

Test Report No. : ELES/RNC/2022/2353G	Report Release Date : 11.11.2022
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CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/DW/3357G
Address	: Lohardaga, Jharkhand-835302	Location	: Drinking Water Gurdari Bauxite Mines (584.19ha)
Plant Status	: Operational	Sampling Date	: 07/09/2022
		Type of Sample	: Drinking Water
		Sampling Procedure	: ELES/DOC/SMPL/01
		Sample Condition	: Sealed & Preserved

Parameter	Unit	Test Protocol	Result	Regulatory Limit
				as per IS:10500:2012
				Acceptable Limit
pH	-	APHA 23rd Edition 2017,4500-H+-B	7.5	6.5-8.5
Color	Hazen	IS 3025 (Part-04): 1983	<1.0	5
Odour	-	IS 3025 (Part-05): 1983	Agreeable	Agreeable
Taste	-	IS 3025 (Part-07): 1984	Agreeable	Agreeable
Turbidity	NTU	APHA 23rd Edition 2017,2130 B	0.34	1
Free Residual Chlorine	mg/L	IS 3025 (Part-26): 1986	<0.1	0.2
Total Dissolved Solids (TDS)	mg/L	IS 3025 (Part-16):1984	272	500
Monochloramines	mg/L	APHA 23rd Edition 2017, 4500 Cl-G	<1.0	4
Dichloramines	mg/L	APHA 23rd Edition 2017, 4500 Cl-G	<1.0	4
Total Hardness (as CaCO ₃)	mg/L	APHA 23rd Edition 2017, 2340 C	56.8	200
Total Alkalinity (as CaCO ₃)	mg/L	IS 3025 (Part-23):1986	49.5	200
Chloride (as Cl)	mg/L	IS 3025 (Part-32): 1988: RA 2014	10.5	250

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TEST REPORT

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Parameter	Unit	Test Protocol	Result	Regulatory Limit
				as per IS:10500:2012
				Acceptable Limit
Sulphate (as SO ₄)	mg/L	IS 3025 (Part-24):1986	12.2	200
Nitrate (as NO ₃)	mg/L	IS 3025 (Part-34): 1988	3.22	45
Fluoride (as F)	mg/L	APHA 23rd Edition 2017,4500-F--D	0.1561	1
Ammoniacal Nitrogen (as NH ₃ -N)	mg/L	APHA 23rd Edition 2017, 4500 Norg-C	<0.1	0.5
Cyanide (as CN)	mg/L	IS 3025 (Part-27): 1986	<0.0125	0.05
Phenolic Compounds (as C ₆ H ₅ OH)	mg/L	IS 3025 (Part-43): 1992	<0.00002	0.001
Sulphide (as S)	mg/L	IS 3025 (Part-29): 1986	<0.04	0.05
Boron (as B)	mg/L	APHA 23rd Edition, 3125 B	<0.2	0.5
Calcium (as Ca)	mg/L	APHA 23rd Edition 2017, 3500 B	15.5	75
Magnesium (as Mg)	mg/L	IS 3025 (Part-46):1994	4.4	30
Iron (as Fe)	mg/L	APHA 23rd Edition, 3111 B&C	0.227	1
Manganese (as Mn)	mg/L	APHA 23rd Edition, 3111 B&C	<0.05	0.1
Aluminum (as Al)	mg/L	APHA 23rd Edition, 3125 B	<0.02	0.03
Cadmium (as Cd)	mg/L	APHA 23rd Edition, 3111 B&C	<0.003	0.003
Total Chromium (as Cr)	mg/L	APHA 23rd Edition, 3111 B&C	<0.03	0.05
Copper (as Cu)	mg/L	APHA 23rd Edition, 3111 B&C	<0.03	0.05
Lead (as Pb)	mg/L	APHA 23rd Edition, 3111 B&C	<0.01	0.01
Zinc (as Zn)	mg/L	APHA 23rd Edition, 3111 B&C	<0.1	5

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TEST REPORT

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---------------------------------------	----------------------------------

Parameter	Unit	Test Protocol	Result	Regulatory Limit as per IS:10500:2012
				Acceptable Limit
Arsenic (as As)	mg/L	APHA 23rd Edition, 3111 B&C	<0.005	0.01
Selenium (as Se)	mg/L	APHA 23rd Edition, 3125 B	<0.01	0.01
Mercury (as Hg)	mg/L	IS 3025 (Part-48): 2000	<0.001	0.001
Nickel (as Ni)	mg/L	APHA 23rd Edition, 3111 B&C	<0.01	0.02
Mineral Oil*	mg/L	IS 3025 (Part-39): 1991	<0.01	0.5
Anionic Detergents (as MBAS)*	mg/L	Annex K of IS 13428:2005	<0.05	0.2
Polynuclear Aromatic Hydrocarbons (PAHs)*	mg/L	SO-IN-MUL-TE-023	<0.00005	0.0001
Polychlorinated Biphenyls (PCBs)*	mg/L	SO-IN-MUL-TE-022	<0.00005	0.0005
Total Coliforms	MPN/ 100ml	IS 15185:2016	Not Detected	Should Not Detected
Escheria Coli	MPN/ 100ml	IS 15185:2016	Not Detected	Should Not Detected
Pesticides				
Alachlor*	µg/L	SO-IN-MUL-TE-020	<0.01	20
Atrazine*	µg/L	SO-IN-MUL-TE-020	<0.01	2
Aldrin/ Dieldrin*	µg/L	SO-IN-MUL-TE-020	<0.01	0.03
Alpha HCH*	µg/L	SO-IN-MUL-TE-020	<0.01	0.01
Beta HCH*	µg/L	SO-IN-MUL-TE-020	<0.01	0.04
Butachlor*	µg/L	SO-IN-MUL-TE-020	<0.01	125

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TEST REPORT

Test Report No. : ELES/RNC/2022/2353G	Report Release Date : 11.11.2022
---------------------------------------	----------------------------------

Parameter	Unit	Test Protocol	Result	Regulatory Limit
				as per IS:10500:2012 Acceptable Limit
Chlorpyrifos*	µg/L	SO-IN-MUL-TE-020	<0.01	30
Delta HCH*	µg/L	SO-IN-MUL-TE-020	<0.01	0.04
2,4- Dichlorophenoxyacetic acid*	µg/L	SO-IN-MUL-TE-020	<0.01	30
DDT (o, p and p, p – Isomers of DDT)*	µg/L	SO-IN-MUL-TE-020	<0.01	1
Endosulfan (alpha, beta, and sulphate)*	µg/L	SO-IN-MUL-TE-020	<0.01	0.4
Ethion*	µg/L	SO-IN-MUL-TE-020	<0.01	3
Gamma — HCH (Lindane)*	µg/L	SO-IN-MUL-TE-020	<0.01	2
Isoproturon*	µg/L	SO-IN-MUL-TE-020	<0.01	9
Malathion*	µg/L	SO-IN-MUL-TE-020	<0.01	190
Methyl parathion*	µg/L	SO-IN-MUL-TE-020	<0.01	0.3
Monocrotophos*	µg/L	SO-IN-MUL-TE-020	<0.01	1
Phorate*	µg/L	SO-IN-MUL-TE-020	<0.01	2
DDE (o, p and p, p – Isomers of DDE)*	µg/L	SO-IN-MUL-TE-020	<0.01	1
DDD (o, p and p, p – Isomers of DDD)*	µg/L	SO-IN-MUL-TE-020	<0.01	1

Remarks: (*) All the parameters are outsourced to other Lab.

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ELES PVT. LTD.

****End of Report****

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TEST REPORT

Test Report No.	: ELES/RNC/2022/2292	Report Release Date	: 11.11.2022
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CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3297
Address	: Lohardaga, Jharkhand-835302	Location	: Near Pakri Gada Village
		Sampling Date	: 05/09/2022 to 06/09/2022
Plant Status	: Operational	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 25	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 66	4	Weather Condition	: Clear
5	Longitude	: 84°14'52.25"N	6	Latitude	: 23°17'41.21"E

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	36
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	19
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.5
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	<0.002
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No. : ELES/RNC/2022/2292	Report Release Date : 11.11.2022
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Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 11): 2004	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	IS 5182 (Part- 12): 2006	01(Annual)	<0.20

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

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Authorized Signatory
SANDIP BERA
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TEST REPORT

Test Report No.	: ELES/RNC/2022/2293	Report Release Date	: 11.11.2022
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CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3298
Address	: Lohardaga, Jharkhand-835302	Location	: Near Pol Pol Village
		Sampling Date	: 05/09/2022 to 06/09/2022
Plant Status	: Operational	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 25	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 66	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	38
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	17
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	6.2
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	<0.002
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0



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TEST REPORT

Test Report No.	: ELES/RNC/2022/2293	Report Release Date	: 11.11.2022
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Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 11): 2004	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	IS 5182 (Part- 12): 2006	01(Annual)	<0.20

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

Authorized Signatory

SANDIP BERA
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TEST REPORT

Test Report No. : ELES/RNC/2022/2294	Report Release Date : 11.11.2022
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CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3300
Address	: Lohardaga, Jharkhand-835302	Location	: Near Shakhuapani Village
Plant Status	: Operational	Sampling Date	: 05/09/2022 to 06/09/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 24	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 66	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	33
Particulate Matter (PM2.5)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 24): 2019	60 (24hrs)	16
Sulphur Di-Oxide (SO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	6.6
Ozone (O ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m^3	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-22): 2004; RA2019	1 (24hrs)	<0.002
Nickel (Ni)	ng/m^3	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m^3	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No. : ELES/RNC/2022/2294	Report Release Date : 11.11.2022
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Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 11): 2004	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	IS 5182 (Part- 12): 2006	01(Annual)	<0.20

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

Authorized Signatory

SANDIP BERA
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CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No.	: ELES/RNC/2022/2295	Report Release Date	: 11.11.2022
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CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3299
Address	: Lohardaga, Jharkhand-835302	Location	: Near Dipa Kujam Village
Plant Status	: Operational	Sampling Date	: 05/09/2022 to 06/09/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 24	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 65	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	33
Particulate Matter (PM2.5)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 24): 2019	60 (24hrs)	16
Sulphur Di-Oxide (SO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	6.2
Ozone (O ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m^3	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-22): 2004	1 (24hrs)	<0.002
Nickel (Ni)	ng/m^3	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m^3	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No. : ELES/RNC/2022/2295	Report Release Date : 11.11.2022
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Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 11): 2004	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	IS 5182 (Part- 12): 2006	01(Annual)	<0.20

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

Authorized Signatory

SANDIP BERA
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ELES PVT. LTD.

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Annexure 3

Date – 01.09.2022

Office Order

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

1. Mr. Abhinav Mehta (Coordinator)
2. Mr. Krishlendu Das (Member)
3. Ms. Swetapadma Nanda– Environment Engineer
4. Mr. Abhay Kumar – 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 read '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 April'22 to September'22								
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	116176	0.78	0.34	82296.15
3	Hisri (New) Bauxite Mine	14.55	100000	19.07.1981 to 31.03.2030	63046	0.34	0.23	47769.44
4	Kujam - I Bauxite Mine	80.87	150000	13.03.2006 to 12.03.2056	53620	1.74	1.18	39931.13
5	Kujam - II Bauxite Mine	157.38	300000	24.03.2006 to 23.03.2056	147610	4.79	2.56	181309.80
6	Amtipani Bauxite Mine	190.95	150000	13.03.2006 to 12.03.2056	96500	2.12	2.050	126569.80
7	Gurdari Bauxite Mine	584.19	325000	23.03.1985 to 22.03.2035	114070	3.65	2.68	292766.10
8	Shrengdag A Bauxite Mine	155.81	260000	16.10.1974 to 31.03.2030	53600	1.2	0.9	40876.3
9	Shrengdag B Bauxite Mine	140.07	100000	04.10.1978 to 31.03.2030	45750	0.8157	0.6184	44264.72
10	Jalim & Sanai Bauxite Mine	12.14	50000	16.10.1974 to 31.03.2030	25000	0.2413	0.2	8656.24
11	Orsapat Bauxite Mine	196.36	200000	17.07.1986	NIL	NIL	NIL	NIL

Annexure 4

				to 16.07.2036				
12	Chiro Kukud bauxite Mine	152.57	100000	29.01.1985 to 28.01.2035	NIL	NIL	NIL	NIL
13	Pakhar (8.09)	8.09	80000	16.05.1973 to 31.03.2030	NIL	NIL	NIL	NIL
14	Pakhar (35.12)	35.12	200000	17.04.1975 to 31.03.2030	NIL	NIL	NIL	NIL
15	Pakhar (115.13)	115.13	300000	19.07.1996 to 31.03.2030	87500	1.52	0.57	242684.08
Minerals & Minerals Limited								
16	Pakhar (15.58)	15.58	60000	28.04.1965 to 31.03.2030	NIL	NIL	NIL	NIL
17	Pakhar (109.507)	109.507	280000	26.07.2008 to 25.07.2058	129700	0.29	0.00	26032.12
18	Bimarla Bauxite Mine	134.526	300000	18.07.2009 to 17.07.2059	54050	1.34	0.60	118183.21
19	Amtipani Chirodih Bauxite Mine (130.01 ha)	130.01	450000	11.01.2017 to 10.01.2067	NIL	NIL	NIL	NIL

*Static information about the mines included in the above table


Basudev Gangopadhyay
 AVP (Planning, Environment & Compliance)

Annexure-5

BREAK UP THE COST OF ENVIRONMENTAL MEASURES DURING THE YEAR 2022-23

The composite cost during the year 2022-23 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 Pakhar (115.13 ha), Pakhar (15.58 ha), Pakhar (109.507 ha), Pakhar (8.09 ha), Pakhar (35.12 ha), Serengdag (140.06 ha), Serengdag (155.81 ha), Jalim & Sanai (12.14 ha), Gurdari (584.19 ha), Amtipani (190.95 ha), Kujam I (80.97 ha) Kujam II (157.38 ha), Bagru (75.41 ha), Hisri New (14.55 ha), Chiro kukud (152.57 ha), Orsa pat (196.36 ha), Bhusar (65.31 ha), Bimarla Bauxite Mines (134.52 ha) and Amtipani Chirodih (130.01 ha) Bauxite Mine.

S No	Description	Budget (in Rupees) FY 2022-23	Actual (in Rupees) FY 2022-23 (From April'22 to September'22)
1	Pollution Control & Environment monitoring	49,75,923.00	33,83,623.92
2	Reclamation/ Back filing & Rehabilitation**	5,83,65,000.00	5,07,53,126.66
3	Green belt, Plantation & Water sprinkling arrangement	48,76,825.00	45,85,322.59
4	Rural Development	3,10,21,250.00	2,39,91,751.19

**Part of OB removed cost.

for
Basudev Gangopadhyay
AVP (Planning, Environment & Compliance)