



HIL/LHD/ENV/MoEF/395

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 Orsa (196.36ha) 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-11015/241/2006-IA II (M) dated 17<sup>th</sup> May 2007

Sir,

With reference to the above, we are submitting herewith the Compliance status report of EC conditions for **Orsa (196.36 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
196.36	200000	17.07.1986 to 16.07.2036

Hope you will find the same in order.

Thanking You

Yours Sincerely  
FOR HINDALCO INDUSTRIES LIMITED

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

Enclosure: - As Above

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**Name of the Project** : Orsa Bauxite Mine (196.38 ha)  
M/s Hindalco Industries Limited

**Environment Clearance No. & date** : J-11015/241/2006-IA. II (M), dated 17.05.2007

**Period of compliance Report** : From 1<sup>st</sup> April 2022 to 30<sup>th</sup> September 2022

S No	Conditions	Compliance Status
<b>Specific Conditions</b>		
1	Environmental Clearance is subject to final order of the Hon'ble Supreme Court of India in the matter of Goa foundation Vs Union of India in write petition (civil) no 460 of 2004, as may be applicable to this project	Noted.
2.	Environmental Clearance is subject to obtaining clearance from Wildlife (Protection) Act '1972 from the competent authority.	The Mine is not in operation since 20 April 2018 and this matter is subjudice.
3.	All the conditions stipulated by SPCB in their NOC shall be effectively implemented.	Noted and agreed. The Mine is not in operation since 20 April 2018. Mine was operational for very limited period of 4-5 month. As on date mine is not operational. Post resumption of mining operation compliance to the said conditions will be implemented.
4	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.	The Mine is not in operation since 20 April 2018. Prior to this, Mine was operational for very limited period of 4-5 month.
5	Mining shall not intersect groundwater. The mine working shall be restricted to above ground water table. Prior approval of the Ministry of Environment & Forests and Central Ground Water Authority shall be obtained for mining below water table.	Noted. Mine is not in operation since 20 April 2018. Prior to this, Mine was operational for very limited period of 4-5 month during which also it was above ground water level. Post resumption of mining operation compliance to the said conditions will be implemented. In future also, working zone 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 maintained in future also.

6	The project proponent shall ensure that the mining shall be carried out in small blocks and at a given point of time active mining shall not be more than 2.0 ha.	Noted. The Mine is not in operation since 20 April 2018. Prior to this, Mine was operational for very limited period of 4-5 month.  As on date mine is not operational. Post resumption of mining operation compliance to the said conditions will be implemented.
7.	The project proponent shall ensure that no natural water course shall be obstructed due to any mining operations.	Noted.  The Mine is not in operation since 20 April 2018. Prior to this, Mine was operational for very limited period of 4-5 month and this condition was complied with. As on date mine is not operational. Post resumption of mining operation compliance to the said conditions will be implemented.
8	Topsoil, if any, shall be stacked properly with proper slope with adequate measures and should be used for reclamation and rehabilitation of mined out areas.	Noted.  The Mine is not in operation since 20 April 2018. Prior to this, Mine was operational for very limited period of 4-5 month. As on date, mine is not operational and this condition was complied with. As on date mine is not operational. Post resumption of mining operation compliance to the said conditions will be implemented.
9.	The overburden generated during the initial year shall be kept as temporary dump. Concurrent backfilling starts from the 2 <sup>nd</sup> year onwards and there shall be no external dump at the end of the mine life.	The Mine is not in operation since 20 April 2018. Prior to this, Mine was operational for very limited period of 4-5 month and this condition was complied with. As on date mine is not operational. Post resumption of mining operation compliance to the said conditions will be implemented.
10.	The entire excavated area of 155 ha shall be reclaimed, out of which 131 ha land shall be returned to raiyats for agricultural purpose and in 24 ha plantation shall be raised. 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.	The Mine is not in operation since 20 April 2018. Prior to this, Mine was operational for very limited period of 4-5 month.  Post resumption of mining operation compliance to the said conditions will be implemented.

11	<p>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.</p> <p>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.</p>	<p>The Mine is not in operation since 20 April 2018.</p> <p>Prior to this, Mine was operational for very limited period of 4-5 months.</p> <p>As on date mine is not operational. Post resumption of mining operation compliance to the said conditions will be implemented.</p>
12	<p>Dimension of the retaining wall at the OB benches within the mine to check run-off and siltation should be based on rainfall data.</p>	<p>The Mine is not in operation since 20 April 2018. Prior to this, Mine was operational for very limited period of 4-5 months.</p> <p>As on date mine is not operational. Post resumption of mining operation compliance to the said conditions will be implemented.</p>
13	<p>Plantation shall be raised in an area of 24.0 ha including a green belt of adequate width by planting the native species around the ML area, roads, reclaimed area etc. in consultation with the local DFO / Agriculture Department. The density of the trees should be around 1500 plants per ha.</p>	<p>The Mine is not in operation since 20 April 2018. Total 0.13 ha have been planted till date.</p> <p>Prior to this, Mine was operational for very limited period of 4-5 month.</p> <p>As on date mine is not operational. Post resumption of mining operation compliance to the said conditions will be implemented.</p>
14	<p>The project authority should implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.</p>	<p>The Mine is not in operation since 20 April 2018. Prior to this, Mine was operational for very limited period of 4-5 month.</p> <p>As on date mine is not operational. Post resumption of mining operation compliance to the said conditions will be implemented. It may be noted that, there is no chance to intersect ground water table during mining operation.</p>

15	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 Mine is not in operation since 20 April 2018. Prior to this, Mine was operational for very limited period of 4-5 month. Monitoring of water quality report is enclosed as Annexure-2.
16	Prior permission from the competent authority should be obtained for drawl of water from the surface water bodies.	Noted. As on date, mine is not operational
17	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.	The Mine is not in operation since 20 April 2018. Mine was operational for very limited period of 4-5 month and this condition was complied with. Post resumption of mining operation compliance to the said conditions will be implemented.
18	Drills should either be operated with dust extractors or should be equipped with water injection system.	The Mine is not in operation since 20 April 2018. Prior to this, Mine was operational for very limited period of 4-5 month and this condition was complied with as on date mine is not operational. Post resumption of mining operation compliance to the said conditions will be implemented.
19	Blasting operation should be carried out only during the daytime. Controlled blasting should be practiced. The mitigative measures for control of ground vibration and to arrest fly rocks and boulders should be implemented.	The Mine is not in operation since 20 April 2018. Prior to this, Mine was operational for very limited period of 4-5 month and this condition was complied with as on date mine is not operational. Post resumption of mining operation compliance to the said conditions will be implemented.
20	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. As on date, mine is not operational.
21	Sewage treatment plant should be installed for the colony. ETP should also be provided for workshop and wastewater generated from mining operations.	Noted. As on date, mine is not operational.
22	The project proponent should take all precautionary measures during mining operation for conservation and protection of endangered fauna such as Leopard, Indian Wolf, Indian elephant, Indian small civet, Indian Python, etc. Spotted in the study area. Action plan for conservation of flora and fauna shall be prepared	The Mine is not in operation since 20 April 2018. Prior to this, Mine was operational for very limited period of 4-5 month. Wildlife conservation plan has already been approved by PCCF, Ranchi. However, a fresh wildlife conservation plan has already been submitted to PCCF, Ranchi for its

	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.	approval.
23	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.	<p>The Mine is not in operation since 20 April 2018. Prior to this, Mine was operational for very limited period of 4-5 month and this condition was complied with as on date mine is not operational.</p> <p>FMCP for entire lease will be prepared &amp; submitted in due time as per applicable guideline and timelines mentioned in MCDR/IBM guideline who are competent authority to approve the same.</p> <p>Based on the present resource estimate, and peak rated production capacity, mining operation will be done.</p>

#### GENERAL CONDITIONS

S No	Conditions	Compliance Status
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.	The Mine is not in operation since 20 April 2018. Prior to this, Mine was operational for very limited period of 4-5 month and this condition was complied with. As on date mine is not operational. Post resumption of mining operation compliance to the said conditions will be implemented.
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 <sub>2</sub> , NO <sub>X</sub> monitoring. Location of the stations should be decided based on the metrological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board.	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 <sub>2</sub> , and NO <sub>x</sub> ) should be regularly submitted to the Ministry including its regional office located at Bhubneshwar and the State Pollution Control Board / Central pollution Control Board once in six months.	Monitoring Reports is attached as Annexure- 2.
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.	The Mine is not in operation since 20 April 2018. Prior to this, Mine was operational for very limited period of 4-5 month and this condition was complied with. As on date mine is not operational. Post resumption of mining operation compliance to the said conditions will be implemented.
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.	The Mine is not in operation since 20 April 2018. Prior to this, Mine was operational for very limited period of 4-5 month and this condition was complied with.  As on date mine is not operational. Post resumption of mining operation compliance to the said conditions will be implemented.
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 <sup>th</sup> May, 1993 and 31 <sup>st</sup> December, 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.	There was no generation of wastewater from the mine as of now. The compliance to this condition will be adhered to as applicable. As on date, mine is not operational.
8	Personnel working in dusty areas should wear protective respiratory devices and they should also provide with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.	The Mine is not in operation since 20 April 2018. Prior to this, Mine was operational for very limited period of 4-5 month and this condition was complied with.  As on date mine is not operational. Post resumption of mining operation compliance to the said conditions will be implemented.
9	A separate environmental management cell with suitable qualified personnel should be set-up under the control of a Senior Executive, who will report directly to the Head of the Organization.	A suitable environmental management cell has been developed with qualified personnel. Copy is enclosed as Annexure- 3.
10	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	Provisions related to financial closure not applicable.  Now Regional office is at Ranchi.

	authorities and the date of start of land development work.	
11	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.	Cost of Environmental protection measures is attached as Annexure-5. Now Regional office is at Ranchi.
12	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.	Agreed. Now Regional office is at Ranchi.
13	The project proponent shall submit six monthly report on the status of the implementation of the stipulated environmental safeguards to the Ministry of Environment and Forests its Regional Office, Bhubneshwar CPCB and State Pollution Control Board.	Duly submitted. Now Regional office is at Ranchi
14	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.	Complied.
15	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.	Displayed.
16	The project authorities should advertise at least in two local newspapers widely circulated, one of which locality concerned, within 7days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment and Forests at <a href="http://envfor.nic.in">http://envfor.nic.in</a> and a copy of the same should be forwarded to the Regional Office of this Ministry located Bhubneshwar.	Already done and copies submitted.

  
Signature





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## TEST REPORT

Test Report No. : ELES/RNC/2022/0941G	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/1054G
Address	: Lohardaga, Jharkhand-835203	Location	: Orsa Village/Near Mine Area Orsapat Bauxite Mine
Plant Status	: Non Operational	Sampling Date	: 28/04/2022 to 29/04/2022
		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 (%) : 66	4	Weather Condition : Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	69
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	32
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	5.7
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.7
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2004	1 (24hrs)	0.012
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01:2021	6 (Annual)	2.5

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## TEST REPORT

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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)	2.9
Benzo (a) Pyrene*	$\text{ng}/\text{m}^3$	USEPA 8270 C to -13A	01(Annual)	0.23

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

Authorized Signatory

SANDIP BERA  
SENIOR MANAGER  
ELES PVT. LTD.

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

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"Save Environment, Save Future"



CIN: U74999JH2018PTC011125

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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/1054H
Address	: Lohardaga, Jharkhand-835203	Location	: Orsa Village/Southern Part of Orsa Lease; Orsapat Bauxite Mine
Plant Status	: Non Operational	Sampling Date	: 28/04/2022 to 29/04/2022
		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 (%)	: 66	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	53
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	23
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.5
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2004	1 (24hrs)	0.015
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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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*	$\text{ng}/\text{m}^3$	USEPA 8270 C to -13A	01(Annual)	<0.20

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

Authorized Signatory

**SANDIP BERA**  
SENIOR MANAGER  
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\*\*\*\*End of Report\*\*\*\*

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# ENVIRONMENTAL LABORATORIES &

PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA  
HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D124

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## TEST REPORT

Test Report No. : ELES/RNC/2022/09411	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/1054I
Address	: Lohardaga, Jharkhand-835203	Location	: Orsa Village -Near New Mine Office/Near Weigh Bridge; Orsapat Bauxite Mine
Plant Status	: Non Operational	Sampling Date	: 28/04/2022 to 29/04/2022
		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 (%)	: 66	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	67
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	28
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	5.4
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	9.1
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2004	1 (24hrs)	0.023
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01:2021	6 (Annual)	2.4

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CIN: U74999/JH2018PTC011125

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### TEST REPORT

Test Report No. : ELES/RNC/2022/0941I	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*	$\text{ng}/\text{m}^3$	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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## TEST REPORT

Test Report No. : ELES/RNC/2022/0941J	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/1054J
Address	: Lohardaga, Jharkhand-835203	Location	: Orsa Village/Northern Part of Orsa Lease; Orsapat Bauxite Mine
Plant Status	: Non Operational	Sampling Date	: 28/04/2022 to 29/04/2022
		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 (%) : 66	4	Weather Condition : Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	59
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part-24): 2019	60 (24hrs)	26
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.2
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2004	1 (24hrs)	0.007
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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Test Report No. : ELES/RNC/2022/0941J	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*	$\text{ng}/\text{m}^3$	USEPA 8270 C to -13A	01(Annual)	0.23

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

Authorized Signatory

**SANDIP BERA**  
SENIOR MANAGER  
ELES PVT. LTD.

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

**Orsapat Bauxite Mine-Environmental Monitoring Report**

**May 2022**



## CONTENT

Hindalco Industries : Orsapat Bauxite Mine		Environmental Monitoring Report	May2022
<b>Orsapat Bauxite Mine</b>			
<b>AMBIENT AIR QUALITY- CORE ZONE</b>			
1	Orsa Village/Near Mine Area		
2	Orsa Village/Southern Part of Orsa Lease		
3	Orsa Village/Near New Mine office/Near Wegh Bridge		
4	Orsa Village/Nortern Part of Orsa Lease		
<b>AMBIENT AIR QUALITY- BUFFER ZONE</b>			
1	Kudag Village/ Near Hindalco Campus		
2	Jaljali Village/Near Shiv Temple Sabag Road		
3	Amtahi Village/Near Tailoring Centre		
4	Ambakona Village		
<b>AMBIENT NOISE</b>			
<b>WORKZONE/SPOT NOISE</b>			
<b>WORKSHOP EFFLUENT</b>			
<b>DRINKING WATER ANALYSIS</b>			





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CIN: U74999JH2018PTC011125

## TEST REPORT

Test Report No.	: ELES/RNC/2022/1354G	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/1362G
Address	: Lohardaga, Jharkhand-835302	Location	: Orsa Village/Near Mine Area Orsapat Bauxite Mine
Plant Status	: Non Operational	Sampling Date	: 24/05/2022 to 25/05/2022
		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 (%)	: 66	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	62
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	24
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.0
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2004	1 (24hrs)	0.015
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01:2021	6 (Annual)	2.4

Page 1 of 2

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## TEST REPORT

Test Report No. : ELES/RNC/2022/1354G	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)	2.2
Benzo (a) Pyrene*	$\text{ng}/\text{m}^3$	USEPA 8270 C to -13A	01(Annual)	0.30

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

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

Authorized Signatory

**SANDIP BERA**  
**SENIOR MANAGER**  
**ELES PVT. LTD.**

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CIN: U74999JH018PTC011125

## TEST REPORT

Test Report No.	: ELES/RNC/2022/1354H	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/1362H
Address	: Lohardaga, Jharkhand-835302	Location	: Orsa Village/Southern Part of Orsa Lease; Orsapat Bauxite Mine
Plant Status	: Non Operational	Sampling Date	: 24/05/2022 to 25/05/2022
		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 (%)	: 66	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	55
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	27
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.8
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2004	1 (24hrs)	0.012
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01:2021	6 (Annual)	2.2

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CIN: U74999JH2018PTC011125

## TEST REPORT

Test Report No. : ELES/RNC/2022/1354H	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*	$\text{ng}/\text{m}^3$	USEPA 8270 C to -13A	01(Annual)	0.26

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

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

  
Authorized Signatory  
**SANDIP BERA**  
SENIOR MANAGER  
ELES PVT. LTD.

Page 2 of 2

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# ENVIRONMENTAL LABORATORIES &

PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA  
HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D124

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CIN: U74999JH2018PTC011125

## TEST REPORT

Test Report No. : ELES/RNC/2022/1354I	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/1362I
Address	: Lohardaga, Jharkhand-835302	Location	: Orsa Village -Near New Mine Office/Near Weigh Bridge; Orsapat Bauxite Mine
Plant Status	: Non Operational	Sampling Date	: 24/05/2022 to 25/05/2022
		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 (%) : 66	4	Weather Condition : Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	52
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	30
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	5.3
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.2
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2004	1 (24hrs)	0.022
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

Page 1 of 2

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### TEST REPORT

Test Report No. : ELES/RNC/2022/1354I	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)	2.5
Benzo (a) Pyrene*	$\text{ng}/\text{m}^3$	USEPA 8270 C to -13A	01(Annual)	0.24

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

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

Authorized Signatory

**SANDIP BERA**  
SENIOR MANAGER  
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CIN: U74999JH2018PTC011125

## TEST REPORT

Test Report No.	: ELES/RNC/2022/1354J	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/1362J
Address	: Lohardaga, Jharkhand-835302	Location	: Orsa Village/Northern Part of Orsa Lease; Orsapat Bauxite Mine
Plant Status	: Non Operational	Sampling Date	: 24/05/2022 to 25/05/2022
		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 (%)	: 66	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	49
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	22
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.7
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2004	1 (24hrs)	0.007
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m <sup>3</sup>	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/2022/1354J	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*	$\text{ng}/\text{m}^3$	USEPA 8270 C to -13A	01(Annual)	0.21

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

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**SANDIP BERA**  
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CIN: U74999JH2018PT0011325

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Phone no : 0651-2290103

Website : [www.elespl.co.in](http://www.elespl.co.in)**TEST REPORT**

Test Report No.	: ELES/RNC/2022/1354E	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/1362E
Address	: Lohardaga, Jharkhand-835302	Location	: Kudag Vill/ Near Hindalco Campus
Plant Status	: Non Operational	Sampling Date	: 23/05/2022 to 24/05/2022
		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 (%)	: 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)	52
Particulate Matter (PM2.5)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 24): 2019	60 (24hrs)	25
Sulphur Di-Oxide (SO <sub>2</sub> )	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO <sub>2</sub> )	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	6.9
Ozone (O <sub>3</sub> )	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	$\text{mg}/\text{m}^3$	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)	$\text{ng}/\text{m}^3$	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	$\text{ng}/\text{m}^3$	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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### TEST REPORT

Test Report No. : ELES/RNC/2022/1354E	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*	$\text{ng}/\text{m}^3$	USEPA 8270 C to -13A	01(Annual)	0.23

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

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

  
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## TEST REPORT

Test Report No.	: ELES/RNC/2022/1354F	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/1362F
Address	: Lohardaga, Jharkhand-835302	Location	: Jaljali Village/Near Shiv Temple Sabag Road.
Plant Status	: Non Operational	Sampling Date	: 23/05/2022 to 24/05/2022
		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 (%)	: 66	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	52
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	26
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	6.0
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.0
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2004	1 (24hrs)	0.003
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m <sup>3</sup>	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/2022/1354F	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*	$\text{ng}/\text{m}^3$	USEPA 8270 C to -13A	01(Annual)	<0.20

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

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

  
Authorized Signatory  
**SANDIP BERA**  
SENIOR MANAGER  
ELES PVT. LTD.

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# ENVIRONMENTAL LABORATORIES &

PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA  
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CIN: U74999RJ2018PTC011125

## TEST REPORT

Test Report No.	: ELES/RNC/2022/1354K	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/1362K
Address	: Lohardaga, Jharkhand-835302	Location	: Amtahi Village/Near Tailoring Centre
Plant Status	: Non Operational	Sampling Date	: 24/05/2022 to 25/05/2022
		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 (%)	: 66	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	46
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	18
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	6.9
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2004	1 (24hrs)	0.007
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m <sup>3</sup>	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/2022/1354K	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*	$\text{ng}/\text{m}^3$	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/2022/1354L	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/1362L
Address	: Lohardaga, Jharkhand-835302	Location	: Ambakona Village
Plant Status	: Non Operational	Sampling Date	: 24/05/2022 to 25/05/2022
		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 (%)	: 66	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	49
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	26
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.0
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2004	1 (24hrs)	0.004
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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CIN: U74998JH2018PTC011125

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### TEST REPORT

Test Report No. : ELES/RNC/2022/1354L	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*	$\text{ng}/\text{m}^3$	USEPA 8270 C to -13A	01(Annual)	<0.20

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

Authorized Signatory

**SANDIP BERA**  
SENIOR MANAGER  
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CIN: U74599JH2018PTC011125

## TEST REPORT

Test Report No. : ELES/RNC/2022/1355M	Report Release Date : 14.06.2022
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CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Date	: 25.05.2022
Address	: Lohardaga, Jharkhand-835203	Type of Sample	: Ambient Noise
Plant Status	: Non Operational	Sampling procedure	: ELES/DOC/SMPL/03
		Sample Drawn By	: ELES Pvt. Ltd.

Location	Unit	Test Protocol	Result		Regulatory Limit (Industrial Zone)
Orsa Village – Near Mining Area	dB(A)	IS 9989:1981, RA 2020	Time	$L_{eq}$	75 dB(A) Day Time & 70 dB(A) Night Time
			Day Time	60	
			Night Time	49	
Sample ID: ELES/RNC/2022/AN/1363M					

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### TEST REPORT

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

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sampling Date	: 25.05.2022
Address	: Lohardaga, Jharkhand-835302	Type of Sample	: Workzone Noise
Plant Status	: Non 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 Weigh Bridge – Orsapat Bauxite Mines	dB(A)	IS 9989:1981, RA 2020	Day Time	64	75 dB(A) Day Time
Sample ID: ELES/RNC/2022/AN/1364M					

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

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## TEST REPORT

Test Report No. : ELES/RNC/2022/1359M	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/DW/1367M
Address	: Lohardaga, Jharkhand-835302	Location	: Drinking Water - Orsa Village
Plant Status	: Non Operational	Sampling Date	: 25/05/2022
		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	7.3	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	0.15	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	230	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 <sub>3</sub> )	mg/L	APHA 23rd Edition 2017, 2340 C	84.0	200
Total Alkalinity (as CaCO <sub>3</sub> )	mg/L	IS 3025 (Part-23):1986	62.8	200
Chloride (as Cl)	mg/L	IS 3025 (Part-32): 1988: RA 2014	10.8	250

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## TEST REPORT

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

Parameter	Unit	Test Protocol	Result	Regulatory Limit
				as per IS:10500:2012 Acceptable Limit
Sulphate (as SO <sub>4</sub> )	mg/L	IS 3025 (Part-24):1986	7.3	200
Nitrate (as NO <sub>3</sub> )	mg/L	IS 3025 (Part-34): 1988	2.79	45
Fluoride (as F)	mg/L	APHA 23rd Edition 2017,4500-F--D	0.2012	1
Ammoniacal Nitrogen (as NH <sub>3</sub> -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 <sub>6</sub> H <sub>5</sub> 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	25.2	75
Magnesium (as Mg)	mg/L	IS 3025 (Part-46):1994	5.1	30
Iron (as Fe)	mg/L	APHA 23rd Edition, 3111 B&C	0.491	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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**ENGINEERING SERVICES PVT. LTD.**

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CIN: U74999JH2018PTC011125

## TEST REPORT

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

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
<b>Pesticides</b>				
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/2022/1359M	Report Release Date	: 14/06/2022
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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.

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

  
Authorized Signatory  
**SANDIP BERA**  
SENIOR MANAGER

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Jharkhand.

**Orsapat Bauxite Mine-Environmental Monitoring Report**

**June 2022**



## CONTENT

Hindalco Industries : Orsapat Bauxite Mine		Environmental Monitoring Report	June 2022
<b>Orsapat Bauxite Mine</b>			
<b>AMBIENT AIR QUALITY- CORE ZONE</b>			
1	Orsa Village/Near Mine Area		
2	Orsa Village/Southern Part of Orsa Lease		
3	Orsa Village/Near New Mine office/Near Weigh Bridge		
4	Orsa Village/Northern Part of Orsa Lease		
<b>AMBIENT AIR QUALITY- BUFFER ZONE</b>			
1	Kudag Village/ Near Hindalco Campus		
2	Jaljali Village/Near Shiv Temple Sabag Road		
3	Amtahi Village/Near Tailoring Centre		
4	Ambakona Village		





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## TEST REPORT

Test Report No. : ELES/RNC/2022/1617G	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/1795G
Address	: Lohardaga, Jharkhand-835302	Location	: Orsa Village/Near Mine Area Orsapat Bauxite Mine
Plant Status	: Non Operational	Sampling Date	: 21/06/2022 to 22/06/2022
		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 (%)	: 69	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	56
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	23
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	9.2
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2004	1 (24hrs)	0.003
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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### TEST REPORT

Test Report No. : ELES/RNC/2022/1617G	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)	2.5
Benzo (a) Pyrene*	$\text{ng}/\text{m}^3$	USEPA 8270 C to -13A	01(Annual)	0.22

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

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

  
Authorized Signatory  
**SANDIP BERA**  
SENIOR MANAGER  
ELES PVT. LTD.

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## TEST REPORT

Test Report No. : ELES/RNC/2022/1617H	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/1795H
Address	: Lohardaga, Jharkhand-835302	Location	: Orsa Village/Southern Part of Orsa Lease; Orsapat Bauxite Mine
Plant Status	: Non Operational	Sampling Date	: 21/06/2022 to 22/06/2022
		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 (%)	: 69	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	48
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	26
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.6
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2004	1 (24hrs)	<0.002
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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## TEST REPORT

Test Report No. : ELES/RNC/2022/1617H	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*	$\text{ng}/\text{m}^3$	USEPA 8270 C to -13A	01(Annual)	<0.20

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

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

  
Authorized Signatory  
**SANDIP BERA**  
SENIOR MANAGER  
ELES PVT. LTD.

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## TEST REPORT

Test Report No. : ELES/RNC/2022/16171	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/17951
Address	: Lohardaga, Jharkhand-835302	Location	: Orsa Village -Near New Mine Office/Near Weigh Bridge; Orsapat Bauxite Mine
Plant Status	: Non Operational	Sampling Date	: 21/06/2022 to 22/06/2022
		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 (%)	: 69	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	55
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	21
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.4
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2004	1 (24hrs)	0.014
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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### TEST REPORT

Test Report No. : ELES/RNC/2022/1617I	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)	2.5
Benzo (a) Pyrene*	$\text{ng}/\text{m}^3$	USEPA 8270 C to -13A	01(Annual)	0.22

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

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

  
Authorized Signatory  
**SANDIP BERA**  
SENIOR MANAGER  
ELES PVT. LTD.

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CIN: U74999JH2018PTC011125

# ENVIRONMENTAL LABORATORIES &

PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA  
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## TEST REPORT

Test Report No. : ELES/RNC/2022/1617J	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/1795J
Address	: Lohardaga, Jharkhand-835302	Location	: Orsa Village/Northern Part of Orsa Lease; Orsapat Bauxite Mine
Plant Status	: Non Operational	Sampling Date	: 21/06/2022 to 22/06/2022
		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 (%)	: 69	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	47
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	23
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	5.9
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2004	1 (24hrs)	0.004
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01:2021	6 (Annual)	2.3

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### TEST REPORT

Test Report No. : ELES/RNC/2022/1617J	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*	$\text{ng}/\text{m}^3$	USEPA 8270 C to -13A	01(Annual)	<0.20

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

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

  
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**SANDIP BERA**  
SENIOR MANAGER  
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### TEST REPORT

Test Report No. : ELES/RNC/2022/1617E	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/1795E
Address	: Lohardaga, Jharkhand-835302	Location	: Kudag Vill/ Near Hindalco Campus
Plant Status	: Non Operational	Sampling Date	: 20/06/2022 to 21/06/2022
		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)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	45
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	22
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	6.4
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2004	1 (24hrs)	<0.002
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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Test Report No. : ELES/RNC/2022/1617E	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)	2.3
Benzo (a) Pyrene*	$\text{ng}/\text{m}^3$	USEPA 8270 C to -13A	01(Annual)	<0.20

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

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

  
Authorized Signatory  
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### TEST REPORT

Test Report No. : ELES/RNC/2022/1617F	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/1795F
Address	: Lohardaga, Jharkhand-835302	Location	: Jaljali Village/Near Shiv Temple Sabag Road.
Plant Status	: Non Operational	Sampling Date	: 20/06/2022 to 21/06/2022
		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)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	53
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	24
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	6.8
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2004	1 (24hrs)	0.004
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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### TEST REPORT

Test Report No. : ELES/RNC/2022/1617F	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*	$\text{ng}/\text{m}^3$	USEPA 8270 C to -13A	01(Annual)	<0.20

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

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

  
Authorized Signatory  
**SANDIP BERA**  
SENIOR MANAGER  
ELES PVT. LTD.

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## TEST REPORT

Test Report No.	: ELES/RNC/2022/1617K	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/1795K
Address	: Lohardaga, Jharkhand-835302	Location	: Amtahi Village/Near Tailoring Centre
Plant Status	: Non Operational	Sampling Date	: 21/06/2022 to 22/06/2022
		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 (%)	: 69	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	44
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	19
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.8
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2004	1 (24hrs)	0.007
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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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*	$\text{ng}/\text{m}^3$	USEPA 8270 C to -13A	01(Annual)	<0.20

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

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

Authorized Signatory

**SANDIP BERA**  
SENIOR MANAGER  
ELES PVT. LTD

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA  
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## TEST REPORT

Test Report No. : ELES/RNC/2022/1617L	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/1795L
Address	: Lohardaga, Jharkhand-835302	Location	: Ambakona Village
Plant Status	: Non Operational	Sampling Date	: 21/06/2022 to 22/06/2022
		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 (%)	: 69	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)	51
Particulate Matter (PM2.5)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 24): 2019	60 (24hrs)	22
Sulphur Di-Oxide (SO <sub>2</sub> )	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO <sub>2</sub> )	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.6
Ozone (O <sub>3</sub> )	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	$\text{mg}/\text{m}^3$	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)	$\text{ng}/\text{m}^3$	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	$\text{ng}/\text{m}^3$	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

### Page 1 of 2

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### TEST REPORT

Test Report No. : ELES/RNC/2022/1617L	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*	$\text{ng}/\text{m}^3$	USEPA 8270 C to -13A	01(Annual)	<0.20

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

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

  
Authorized Signatory  
**SANDIP BERA**  
SENIOR MANAGER  
ELES PVT. LTD.

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Jharkhand.

**Orsapat Bauxite Mine-Environmental Monitoring Report**

**July 2022**



## CONTENT

Hindalco Industries : Orsapat Bauxite Mine		Environmental Monitoring Report	July 2022
<b>Orsapat Bauxite Mine</b>			
<b>AMBIENT AIR QUALITY- CORE ZONE</b>			
1	Orsa Village/Near Mine Area		
2	Orsa Village/Southern Part of Orsa Lease		
3	Orsa Village/Near New Mine office/Near Wegh Bridge		
4	Orsa Village/Nortern Part of Orsa Lease		
<b>AMBIENT AIR QUALITY- BUFFER ZONE</b>			
1	Kudag Village/ Near Hindalco Campus		
2	Jaljali Village/Near Shiv Temple Sabag Road		
3	Amtahi Village/Near Tailoring Centre		
4	Ambakona Village		





CIN: U74999JH2018PTC011125

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## TEST REPORT

Test Report No. : ELES/RNC/2022/1774G	Report Release Date : 18.08.2022
---------------------------------------	----------------------------------

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/5202G
Address	: Lohardaga, Jharkhand-835302	Location	: Orsa Village/Near Mine Area Orsapat Bauxite Mine (196.36ha)
Plant Status	: Non Operational	Sampling Date	: 15/07/2022 to 16/07/2022
		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 (%)	: 68	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	49
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	24
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.3
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2004	1 (24hrs)	0.004
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01:2021	6 (Annual)	2.2

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CIN: U74999JH2018PTC011125

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### TEST REPORT

Test Report No. : ELES/RNC/2022/1774G

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*	$\text{ng}/\text{m}^3$	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/2022/1774H	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/5202H
Address	: Lohardaga, Jharkhand-835302	Location	: Orsa Village/Southern Part of Orsa Lease; Orsapat Bauxite Mine (196.36ha)
Plant Status	: Non Operational	Sampling Date	: 15/07/2022 to 16/07/2022
		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 (%)	: 68	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	41
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	23
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.3
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2004	1 (24hrs)	<0.002
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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CIN: U74999JH2018PTC011125

## TEST REPORT

Test Report No. : ELES/RNC/2022/1774H 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*	$\text{ng}/\text{m}^3$	USEPA 8270 C to -13A	01(Annual)	<0.20

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

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

Authorized Signatory

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

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## TEST REPORT

Test Report No.	: ELES/RNC/2022/1774I	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/5202I
Address	: Lohardaga, Jharkhand-835302	Location	: Orsa Village -Near New Mine Office/Near Weigh Bridge; Orsapat Bauxite Mine (196.36ha)
Plant Status	: Non Operational	Sampling Date	: 15/07/2022 to 16/07/2022
		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 (%)	: 68	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	44
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	27
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	5.3
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.0
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2004	1 (24hrs)	0.006
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01:2021	6 (Annual)	2.2

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## TEST REPORT

Test Report No. : ELES/RNC/2022/1774I 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*	$\text{ng}/\text{m}^3$	USEPA 8270 C to -13A	01(Annual)	<0.20

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

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

Authorized Signatory

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



# ENVIRONMENTAL LABORATORIES &

PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA  
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## TEST REPORT

Test Report No. : ELES/RNC/2022/1774J	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/5202J
Address	: Lohardaga, Jharkhand-835302	Location	: Orsa Village/Northern Part of Orsa Lease; Orsapat Bauxite Mine (196.36ha)
Plant Status	: Non Operational	Sampling Date	: 15/07/2022 to 16/07/2022
		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 (%) : 68	4	Weather Condition : Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	42
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	16
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	6.9
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2004	1 (24hrs)	<0.002
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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## TEST REPORT

Test Report No. : ELES/RNC/2022/1774J	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*	$\text{ng}/\text{m}^3$	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/2022/1774K	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/5202K
Address	: Lohardaga, Jharkhand-835302	Location	: Amtahi Village/ Near Tailoring Centre
Plant Status	: Non Operational	Sampling Date	: 15/07/2022 to 16/07/2022
		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 (%)	: 68	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	37
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	18
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.9
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2004	1 (24hrs)	<0.002
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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### TEST REPORT

Test Report No. : ELES/RNC/2022/1774K 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*	$\text{ng}/\text{m}^3$	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: U74999JH2018PTC011125

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## TEST REPORT

Test Report No. : ELES/RNC/2022/1774L	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/5202L
Address	: Lohardaga, Jharkhand-835302	Location	: Ambakona Village
Plant Status	: Non Operational	Sampling Date	: 15/07/2022 to 16/07/2022
		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 (%)	: 68	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	43
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	18
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.2
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2004	1 (24hrs)	0.004
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m <sup>3</sup>	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/2022/1774L

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*	$\text{ng}/\text{m}^3$	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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## TEST REPORT

Test Report No.	: ELES/RNC/2022/1774E	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/5202E
Address	: Lohardaga, Jharkhand-835302	Location	: Kudag Village / Near Hindalco Campus
Plant Status	: Non Operational	Sampling Date	: 14/07/2022 to 15/07/2022
		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 <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	39
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	23
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.7
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2004	1 (24hrs)	<0.002
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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### TEST REPORT

Test Report No.	: ELES/RNC/2022/1774E	Report Release Date	: 18.08.2022
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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*	$\text{ng}/\text{m}^3$	USEPA 8270 C to -13A	01(Annual)	<0.20

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

Authorized Signatory

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GST NO:- 20AAECE9713D124

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CIN: U74999JH2018PTC011125

## TEST REPORT

Test Report No.	: ELES/RNC/2022/1774F	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/5202F
Address	: Lohardaga, Jharkhand-835302	Location	: Jaljali Village/Near Shiv Temple Sabag Road.
		Sampling Date	: 14/07/2022 to 15/07/2022
Plant Status	: Non Operational	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 <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	44
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	20
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	6.6
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2004	1 (24hrs)	0.005
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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CIN: U74999JH2018PTC012125

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### TEST REPORT

Test Report No.	: ELES/RNC/2022/1774F	Report Release Date	: 18.08.2022
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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*	$\text{ng}/\text{m}^3$	USEPA 8270 C to -13A	01(Annual)	<0.20

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

Authorized Signatory

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

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

Page 2 of 2

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

**Orsapat (196.36ha) Bauxite Mine-Environmental Monitoring Report**

**August 2022**



## CONTENT

Hindalco Industries : Orsapat (196.36ha) Bauxite Mine		Environmental Monitoring Report
August 2022		
Orsapat (196.36ha)Bauxite Mine		
	<b>AMBIENT AIR QUALITY- CORE ZONE</b>	
1	Orsa Village/Near Mine Area	
2	Orsa Village/Southern Part of Orsa Lease	
3	Orsa Village/Near New Mine office/Near Wegh Bridge	
4	Orsa Village/Nortern Part of Orsa Lease	
	<b>AMBIENT AIR QUALITY- BUFFER ZONE</b>	
1	Kudag Village/ Near Hindalco Campus	
2	Jaljali Village/Near Shiv Temple Sabag Road	
3	Amtahi Village/Near Tailoring Centre	
4	Ambakona Village	





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## TEST REPORT

Test Report No. : ELES/RNC/2022/1906G	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/3188G
Address	: Lohardaga, Jharkhand-835302	Location	: Orsa Village/Near Mine Area Orsapat Bauxite Mine (196.36ha)
Plant Status	: Non Operational	Sampling Date	: 24/08/2022 to 25/08/2022
		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 (%) : 67	4	Weather Condition : Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	45
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	20
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.2
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2004	1 (24hrs)	<0.002
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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### TEST REPORT

Test Report No. : ELES/RNC/2022/1906G 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*	$\text{ng}/\text{m}^3$	USEPA 8270 C to -13A	01(Annual)	<0.20

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

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

Authorized Signatory

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

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## TEST REPORT

Test Report No. : ELES/RNC/2022/1906H	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/3188H
Address	: Lohardaga, Jharkhand-835302	Location	: Orsa Village/Southern Part of Orsa Lease; Orsapat Bauxite Mine (196.36ha)
Plant Status	: Non Operational	Sampling Date	: 24/08/2022 to 25/08/2022
		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 (%) : 67	4	Weather Condition : Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	38
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	22
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.4
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2004	1 (24hrs)	<0.002
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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### TEST REPORT

Test Report No. : ELES/RNC/2022/1906H

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*	$\text{ng}/\text{m}^3$	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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## TEST REPORT

Test Report No.	: ELES/RNC/2022/19061	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/31881
Address	: Lohardaga, Jharkhand-835302	Location	: Orsa Village -Near New Mine Office/Near Weigh Bridge; Orsapat Bauxite Mine (196.36ha)
Plant Status	: Non Operational	Sampling Date	: 24/08/2022 to 25/08/2022
		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 (%)	: 67	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	46
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	25
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.6
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2004	1 (24hrs)	0.004
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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### TEST REPORT

Test Report No. : ELES/RNC/2022/19061 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*	$\text{ng}/\text{m}^3$	USEPA 8270 C to -13A	01(Annual)	<0.20

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

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

Authorized Signatory

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## TEST REPORT

Test Report No. : ELES/RNC/2022/1906J	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/3188J
Address	: Lohardaga, Jharkhand-835302	Location	: Orsa Village/Northern Part of Orsa Lease; Orsapat Bauxite Mine (196.36ha)
Plant Status	: Non Operational	Sampling Date	: 24/08/2022 to 25/08/2022
		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 (%)	: 67	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	39
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	21
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.7
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2004	1 (24hrs)	<0.002
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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### TEST REPORT

Test Report No. : ELES/RNC/2022/1906J 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*	$\text{ng}/\text{m}^3$	USEPA 8270 C to -13A	01(Annual)	<0.20

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

Authorized Signatory

Jr. 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/2022/1906E	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/3188E
Address	: Lohardaga, Jharkhand-835302	Location	: Kudag Village / Near Hindalco Campus
Plant Status	: Non Operational	Sampling Date	: 22/08/2022 to 23/08/2022
		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 (%)	: 67	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	37
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	17
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.1
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2004	1 (24hrs)	<0.002
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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### TEST REPORT

Test Report No.	: ELES/RNC/2022/1906E	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*	$\text{ng}/\text{m}^3$	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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CIN: U74999JH2018PTC011125

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## TEST REPORT

Test Report No. : ELES/RNC/2022/1906F	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/3188F
Address	: Lohardaga, Jharkhand-835302	Location	: Jaljali Village/Near Shiv Temple Sabag Road.
Plant Status	: Non Operational	Sampling Date	: 22/08/2022 to 23/08/2022
		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 (%) : 67	4	Weather Condition : Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	47
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	18
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	5.2
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.4
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2004	1 (24hrs)	0.007
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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## TEST REPORT

Test Report No. : ELES/RNC/2022/1906F 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*	$\text{ng}/\text{m}^3$	USEPA 8270 C to -13A	01(Annual)	<0.20

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

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

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

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CIN: U74999JH2018PTC011125

## TEST REPORT

Test Report No.	: ELES/RNC/2022/1906K	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/3188K
Address	: Lohardaga, Jharkhand-835302	Location	: Amtahi Village/ Near Tailoring Centre
		Sampling Date	: 24/08/2022 to 25/08/2022
Plant Status	: Non Operational	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 (%)	: 67	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	34
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	15
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	6.9
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2004	1 (24hrs)	<0.002
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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### TEST REPORT

Test Report No.	: ELES/RNC/2022/1906K	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*	$\text{ng}/\text{m}^3$	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: U74999JH2018PTC01123

## TEST REPORT

Test Report No.	: ELES/RNC/2022/1906L	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/3188L
Address	: Lohardaga, Jharkhand-835302	Location	: Ambakona Village
Plant Status	: Non Operational	Sampling Date	: 24/08/2022 to 25/08/2022
		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 (%)	: 67	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	48
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	20
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.5
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2004	1 (24hrs)	0.005
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

### Page 1 of 2

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## ENVIRONMENTAL LABORATORIES &

PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA  
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### TEST REPORT

Test Report No.	: ELES/RNC/2022/1906L	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*	$\text{ng}/\text{m}^3$	USEPA 8270 C to -13A	01(Annual)	<0.20

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

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

*Authorized Signatory*

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

Page 2 of 2

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

**Orsapat Bauxite Mine-Environmental Monitoring Report**

**September 2022**



## CONTENT

Hindalco Industries : Orsapat Bauxite Mine		Environmental Monitoring Report	September 2022
<b>Orsapat Bauxite Mine</b>			
<b>AMBIENT AIR QUALITY- CORE ZONE</b>			
1	Orsa Village/Near Mine Area		
2	Orsa Village/Southern Part of Orsa Lease		
3	Orsa Village/Near New Mine office/Near Weigh Bridge		
4	Orsa Village/Northern Part of Orsa Lease		
<b>AMBIENT AIR QUALITY- BUFFER ZONE</b>			
1	Kudag Village/ Near Hindalco Campus		
2	Jaljali Village/Near Shiv Temple Sabag Road		
3	Amtahi Village/Near Tailoring Centre		
4	Ambakona Village		
<b>DRINKING WATER ANALYSIS</b>			







CIN: U74999JH2018PTC011125

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## TEST REPORT

Test Report No. : ELES/RNC/2022/2314	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/3319
Address	: Lohardaga, Jharkhand-835302	Location	: Orsa Village/Near Mine Area Orsapat Bauxite Mine (196.36ha)
Plant Status	: Non Operational	Sampling Date	: 28/09/2022 to 29/09/2022
		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 (%)	: 64	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	37
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	17
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.3
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2004	1 (24hrs)	<0.002
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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### TEST REPORT

Test Report No.	: ELES/RNC/2022/2314	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*	$\text{ng}/\text{m}^3$	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/2022/2315	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/3320
Address	: Lohardaga, Jharkhand-835302	Location	: Orsa Village/Southern Part of Orsa Lease; Orsapat Bauxite Mine (196.36ha)
Plant Status	: Non Operational	Sampling Date	: 28/09/2022 to 29/09/2022
		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 (%) : 64	4	Weather Condition : Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	32
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	19
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.0
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2004	1 (24hrs)	<0.002
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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### TEST REPORT

Test Report No. : ELES/RNC/2022/2315

Report Release Date : 11.11.2022

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

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

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

Authorized Signatory  
**SANDIP BERA**  
SENIOR MANAGER  
ELES PVT. LTD.

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## TEST REPORT

Test Report No. : ELES/RNC/2022/2316	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/3321
Address	: Lohardaga, Jharkhand-835302	Location	: Orsa Village -Near New Mine Office/Near Weigh Bridge; Orsapat Bauxite Mine (196.36ha)
Plant Status	: Non Operational	Sampling Date	: 28/09/2022 to 29/09/2022
		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 (%)	: 64	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	41
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	20
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.2
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2004	1 (24hrs)	<0.002
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0



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### TEST REPORT

Test Report No. : ELES/RNC/2022/2316	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*	$\text{ng}/\text{m}^3$	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/2022/2317	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/3322
Address	: Lohardaga, Jharkhand-835302	Location	: Orsa Village/Northern Part of Orsa Lease; Orsapat Bauxite Mine (196.36ha)
Plant Status	: Non Operational	Sampling Date	: 28/09/2022 to 29/09/2022
		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 (%) : 64	4	Weather Condition : Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	37
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	16
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.0
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2004	1 (24hrs)	<0.002
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

### Page 1 of 2

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### TEST REPORT

Test Report No. : ELES/RNC/2022/2317	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*	$\text{ng}/\text{m}^3$	USEPA 8270 C to -13A	01(Annual)	<0.20

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

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

Authorized Signatory  
**SANDIP BERA**  
SENIOR MANAGER  
ELES PVT. LTD.

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### TEST REPORT

Test Report No. : ELES/RNC/2022/2312	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/3317
Address	: Lohardaga, Jharkhand-835302	Location	: Kudag Village / Near Hindalco Campus
Plant Status	: Non Operational	Sampling Date	: 26/09/2022 to 27/09/2022
		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 (%)	: 64	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)	32
Particulate Matter (PM2.5)	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 24): 2019	60 (24hrs)	19
Sulphur Di-Oxide (SO <sub>2</sub> )	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO <sub>2</sub> )	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.8
Ozone (O <sub>3</sub> )	$\mu\text{g}/\text{m}^3$	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	$\text{mg}/\text{m}^3$	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)	$\text{ng}/\text{m}^3$	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	$\text{ng}/\text{m}^3$	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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### TEST REPORT

Test Report No. : ELES/RNC/2022/2312	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*	$\text{ng}/\text{m}^3$	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/2022/2313	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/3318
Address	: Lohardaga, Jharkhand-835302	Location	: Jaljali Village/Near Shiv Temple Sabag Road.
Plant Status	: Non Operational	Sampling Date	: 26/09/2022 to 27/09/2022
		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 (%)	: 64	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	40
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	15
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.8
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2004	1 (24hrs)	<0.002
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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### TEST REPORT

Test Report No. : ELES/RNC/2022/2313	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*	$\text{ng}/\text{m}^3$	USEPA 8270 C to -13A	01(Annual)	<0.20

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

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

Authorized Signatory  
**SANDIP BERA**  
SENIOR MANAGER  
ELES PVT. LTD.

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## TEST REPORT

Test Report No. : ELES/RNC/2022/2318	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/3323
Address	: Lohardaga, Jharkhand-835302	Location	: Amtahi Village/ Near Tailoring Centre
Plant Status	: Non Operational	Sampling Date	: 28/09/2022 to 29/09/2022
		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 (%)	: 64	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	32
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	13
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.4
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2004	1 (24hrs)	<0.002
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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### TEST REPORT

Test Report No. : ELES/RNC/2022/2318	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*	$\text{ng}/\text{m}^3$	USEPA 8270 C to -13A	01(Annual)	<0.20

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

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

Authorized Signatory  
**SANDIP BERA**  
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## TEST REPORT

Test Report No. : ELES/RNC/2022/2319	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/3324
Address	: Lohardaga, Jharkhand-835302	Location	: Ambakona Village
Plant Status	: Non Operational	Sampling Date	: 28/09/2022 to 29/09/2022
		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 (%)	: 64	4	Weather Condition	: Clear

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	43
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	17
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	9.2
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH <sub>3</sub> )	µg/m <sup>3</sup>	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m <sup>3</sup>	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m <sup>3</sup>	IS 5182 (Part-22): 2004	1 (24hrs)	<0.002
Nickel (Ni)	ng/m <sup>3</sup>	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m <sup>3</sup>	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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## TEST REPORT

Test Report No. : ELES/RNC/2022/2319	Report Release Date : 11.11.2022
--------------------------------------	----------------------------------

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

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

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

Authorized Signatory

**SANDIP BERA**  
**SENIOR MANAGER**  
**ELES PVT. LTD.**

Page 2 of 2

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CIN: U74999JH2018PTC011125

## TEST REPORT

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

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/DW/3357L
Address	: Lohardaga, Jharkhand-835302	Location	: Drinking Water - Orsa Village Orsapat Bauxite Mines (196.36 ha)
		Sampling Date	: 29/09/2022
Plant Status	: Non Operational	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	7.3	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	0.12	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	301	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 <sub>3</sub> )	mg/L	APHA 23rd Edition 2017, 2340 C	71.2	200
Total Alkalinity (as CaCO <sub>3</sub> )	mg/L	IS 3025 (Part-23):1986	60.5	200
Chloride (as Cl)	mg/L	IS 3025 (Part-32): 1988: RA 2014	9.6	250

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CIN: U74999JH2018PTC011125

## TEST REPORT

Test Report No. : ELES/RNC/2022/2353L	Report Release Date : 11.11.2022
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Parameter	Unit	Test Protocol	Result	Regulatory Limit
				as per IS:10500:2012
				Acceptable Limit
Sulphate (as SO <sub>4</sub> )	mg/L	IS 3025 (Part-24):1986	12.2	200
Nitrate (as NO <sub>3</sub> )	mg/L	IS 3025 (Part-34): 1988	3.46	45
Fluoride (as F)	mg/L	APHA 23rd Edition 2017,4500-F--D	0.1856	1
Ammoniacal Nitrogen (as NH <sub>3</sub> -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 <sub>6</sub> H <sub>5</sub> 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	19.8	75
Magnesium (as Mg)	mg/L	IS 3025 (Part-46):1994	5.3	30
Iron (as Fe)	mg/L	APHA 23rd Edition, 3111 B&C	0.356	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

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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
<b>Pesticides</b>				
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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CIN: U74999/JH2018PTC011125

## TEST REPORT

Test Report No. : ELES/RNC/2022/2353L	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.

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

Authorized Signatory  
**SANDIP BERA**  
SENIOR MANAGER

**ELES PVT. LTD.**

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**"Save Environment, Save Future"**



Annexure 3

Date – 01.09.2022

### Office Order

Environmental Cell has been re-constituted at Orsa Bauxite Mine (Area 196.36 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. Vijay Chauhan (Coordinator)
2. Mr. Praveen Pradhan -Geologist
3. 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.

**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
<b>Minerals &amp; Minerals Limited</b>								
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

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