

ADITYA BIRLA



HIL/LHD/ENV/MoEF/392

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 Pakhar (35.12 ha) Bauxite Mining project of M/s Hindalco Industries Limited located in Lohardaga, Jharkhand for the period April'22 to September'22.

**Ref:** Environmental Clearance letter no J-11015/137/2006-IA II (M) dated 5<sup>th</sup> April 2007

Sir,

With reference to the above, we are submitting herewith the Compliance status report of EC conditions for **Pakhar (35.12 ha) Bauxite Mining project of M/s Hindalco Industries Limited** located in Lohardaga, Jharkhand for the period April'22 to September'22.

The lease detail is as below.

Lease area (ha)	Production Capacity (MT)	Lease Period
35.12	200000	17.04.1975 to 31.03.2030

Hope you will find the same in order.

Thanking You

Yours Sincerely  
FOR HINDALCO INDUSTRIES LIMITED

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

Enclosure: - As above

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

Name of the Project : Pakhar Bauxite Mine (35.12 ha)  
M/s Hindalco Industries Limited

Environment Clearance No. & date : J-11015/137/2006-IA.II(M), dated 05.04.2007

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	All the conditions stipulated by SPCB in their NOC shall be effectively implemented.	NoC conditions are implemented when mine was operational.  Winning of Bauxite is closed w.e.f 08.06.2009 due to exhaustion of resources & field activity of final Mine closure plan are completed.
2	The environmental clearance is subject to approval of the state land use Department, Government of Jharkhand for diversion of agricultural land for non-agricultural use.	Winning of Bauxite is closed w.e.f 08.06.2009 due to exhaustion of resources & closure activities are under progress.
3.	Environmental clearance is subject to grant of forestry clearance, Necessary forestry clearance under the Forest (Conservation) Act, 1980 for an area of 3.45ha forestland shall be obtained before starting mining operation in that area.	Winning of Bauxite is closed w.e.f 08.06.2009 due to exhaustion of resources & closure activities are under progress.
4	Mining shall not intersect groundwater. The mine working shall be restricted to ground water table. Prior approval of the Ministry of Environment & Forests and Central Ground Water Authority shall be obtained for mining below water table.	Winning of Bauxite is closed w.e.f 08.06.2009 due to exhaustion of resources & closure activities are under progress.
5	The project proponent shall ensure that no natural watercourse shall be obstructed due to any mining operation.	Winning of Bauxite is closed w.e.f 08.06.2009 due to exhaustion of resources & closure activities are under progress.
6	Top soil shall be stacked properly with proper slope with adequate measures and should be used for reclamation and rehabilitation of mined out areas.	Winning of Bauxite is closed w.e.f 08.06.2009 due to exhaustion of resources & closure activities are under progress.
7	The waste generated shall be concurrently backfilled in the mined out area. There shall be no external OB dump. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status should be	Winning of Bauxite is closed w.e.f 08.06.2009 due to exhaustion of resources & closure activities are under progress.  No external dump is in project area.

	submitted to the Ministry of Environment & Forest on six monthly basis.	
8	<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>	Winning of Bauxite is closed w.e.f 08.06.2009 due to exhaustion of resources & closure activities are under progress.
9	Plantation shall be raised in an area of 24.83ha 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.	Already 32.85 ha has been planted in and around the mine/Plateau area.
10	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.	Winning of Bauxite is closed w.e.f 08.06.2009 due to exhaustion of resources & closure activities are under progress.
11	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.	Winning of Bauxite is closed w.e.f 08.06.2009 due to exhaustion of resources & closure activities are under progress.
12	Prior permission from the competent authority should be obtained for drawl of water from the surface water bodies.	Winning of Bauxite is closed w.e.f 08.06.2009 due to exhaustion of resources & closure activities are under progress.

13	Vehicular emissions should be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and transportation of mineral. The vehicles should be covered with a tarpaulin and shall not be overloaded.	Winning of Bauxite is closed w.e.f 08.06.2009 due to exhaustion of resources & closure activities are under progress.
14	Drills should either be operated with dust extractors or should be equipped with water injection system.	Winning of Bauxite is closed w.e.f 08.06.2009 due to exhaustion of resources & closure activities are under progress.
15	Blasting operation should be carried out only during the daytime. Controlled blasting should be practiced. The mitigative measures for control of ground vibration and to arrest fly rocks and boulders should be implemented.	Winning of Bauxite is closed w.e.f 08.06.2009 due to exhaustion of resources & closure activities are under progress.
16	Consent to operate should be obtained from SPCB prior to start of enhanced production from the mine.	Winning of Bauxite is closed w.e.f 08.06.2009 due to exhaustion of resources & closure activities are under progress.
17	Sewage treatment plant should be installed for the colony. ETP should also be provided for workshop and wastewater generated from mining operations.	There is no effluent from mine. Winning of Bauxite is closed w.e.f 08.06.2009 due to exhaustion of resources & closure activities are under progress.
18	The project proponent should take all precautionary measures during mining operation for conservation and protection of endangered fauna such as Indian Python etc. Spotted in the study area. Action plan for conservation of flora and fauna shall be prepared and implemented in consultation with the State Forest and Wildlife Department. Necessary allocation of funds for implementation of the conservation plan shall be made and the funds so allocated shall be included in the project cost. Copy of action plan may be submitted to the Ministry and its Regional Office within 3 months.	Winning of Bauxite is closed w.e.f 08.06.2009 due to exhaustion of resources & closure activities are under progress.
19	A Final Mine Closure plan along with details of Corpus Fund should be submitted to the Ministry of Environment & Forest 5 years in advance of final mine closure for approval.	Final Mine Closure plan (FMCP) approved by IBM. Copy of FMCP approval letter is attached as Annexure 6.

### 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	Winning of Bauxite is closed w.e.f 08.06.2009 due to exhaustion of resources & closure activities are under progress.

2	No change in calendar plan including excavation, quantum of mineral bauxite and waste should be made.	Winning of Bauxite is closed w.e.f 08.06.2009 due to exhaustion of resources & closure activities are under progress. Enclosed as Annexure- 4.
3	Four ambient air quality-monitoring station should be established in the core zone as well as in the buffer zone for RPM, SPM, SO <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.	Winning of Bauxite is closed w.e.f 08.06.2009 due to exhaustion of resources & closure activities are under progress. Pakhar plateau monitoring report is enclosed as Annexure -2.
4	Data on ambient air quality (RPM, SPM, SO <sub>2</sub> , NO <sub>x</sub> ) should be regularly submitted to the Ministry including its Regional office located at Bhubneshwar and the State Pollution Control Board / Central pollution Control Board once in six months.	Winning of Bauxite is closed w.c.f 08.06.2009 due to exhaustion of resources & closure activities are under progress
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.	Winning of Bauxite is closed w.e.f 08.06.2009 due to exhaustion of resources & closure activities are under progress.
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.	Winning of Bauxite is closed w.c.f 08.06.2009 due to exhaustion of resources & closure activities are under progress.
7	Industrial waste water (workshops and waste water 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.	Winning of Bauxite is closed w.e.f 08.06.2009 due to exhaustion of resources & closure activities are under progress.
8	Personnel working in dusty areas should wear protective respiratory devices and they should also provided with adequate training and information on safety and health aspects. 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.	Winning of Bauxite is closed w.c.f 08.06.2009 due to exhaustion of resources & closure activities are under progress.

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.	Winning of Bauxite is closed w.e.f 08.06.2009 due to exhaustion of resources & closure activities are under progress. We have Environment Management Cell for our Pakhar Group of Mines. The same is looking after Environment issues of this Mine, attached 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 authorities and the date of start of land development work.	This was an operational mine hence, provision of financial closure not applicable.
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.	Statement of actual expenses for environmental protection measure is enclosed as Annexure-5.
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 however Winning of Bauxite is closed w.e.f. 08.06.2009 due to exhaustion of resources & closure activities are under progress.
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, Bhubaneshwar, Central Pollution Control Board and State Pollution Control Board.	Duly submitted.
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	Complied. Copies of the advertisement made in the local newspapers, have already been submitted to the Regional Office during our six-monthly report bearing letter no HIL/GMO(M)/ENV/142dated 23.05.2007.

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.	
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**Signature**

**Pakhar Bauxite Mines (109.507 Ha)**



**Plantation at Reclaimed area**



**New Plantation**



**Rainwater Harvesting Pond**



**Pakhar Bauxite Mines (109.507 Ha)**



**Photographs of Oil and Grease Trap**



**Photographs of covered truck**



# ENVIRONMENTAL LABORATORIES &

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

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

CIN: U74999JH2018PTC011125

## TEST REPORT

Test Report No. : ELES/RNC/2022/0940A	Report Release Date : 12.05.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1053A
Address	: Lohardaga, Jharkhand-835302	Location	: Near Mine Quarry No-K7 Pakhar (109.507 ha) Bauxite Mine
Plant Status	: Operational	Sampling Date	: 25/04/2022 to 26/04/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 28	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 69	4	Weather Condition	: Clear
5	Longitude	: 84°36'43.86"E	6	Latitude	: 23°33'29.12"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	65
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	37
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)	12.1
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)	0.024
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)	2.9

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**ENGINEERING SERVICES PVT. LTD.**

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Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	3.1
Benzo (a) Pyrene*	$\text{ng}/\text{m}^3$	USEPA 8270 C to -13A	01(Annual)	0.28

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"**



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## TEST REPORT

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

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1053B
Address	: Lohardaga, Jharkhand-835302	Location	: Near Mine Quarry No-K9 Pakhar (109.507 ha) Bauxite Mine
Plant Status	: Operational	Sampling Date	: 25/04/2022 to 26/04/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 28	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 69	4	Weather Condition	: Clear
5	Longitude	: 84°37'7.83"E	6	Latitude	: 23°33'30.72"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	68
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	40
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	6.1
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	11.6
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)	0.034
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)	3.6

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Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	3.6
Benzo (a) Pyrene*	$\text{ng}/\text{m}^3$	USEPA 8270 C to -13A	01(Annual)	0.32

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

Authorized Signatory

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

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



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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)	5.3
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	9.3
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)	0.021
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

Page 1 of 2

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**"Save Environment, Save Future"**



## ENVIRONMENTAL LABORATORIES &

ENGINEERING SERVICES PVT. LTD.

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

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No.	: ELES/RNC/2022/0940C	Report Release Date	: 12.05.2022
Work Order No.	: M&M/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)	0.35

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

Authorized Signatory

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

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

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

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

## TEST REPORT

Test Report No. : ELES/RNC/2022/0940D	Report Release Date : 12.05.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1053D
Address	: Lohardaga, Jharkhand-835302	Location	: Pakhar Loading Area Pakhar (109.507 ha) Bauxite Mine
Plant Status	: Operational	Sampling Date	: 25/04/2022 to 26/04/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 28	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 69	4	Weather Condition	: Clear
5	Longitude	: 84°36'53.77"E	6	Latitude	: 23°33'15.01"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	71
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	38
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	6.9
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	9.3
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)	0.032
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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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA  
HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D1Z4

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

CIN: U74999JH2018PTC011125

## TEST REPORT

Test Report No. : ELES/RNC/2022/0940D	Report Release Date : 12.05.2022
Work Order No. : M&M/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)	0.29

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

Authorized Signatory

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

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

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

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

**Pakhar (109.507) Bauxite Mine-Environmental Monitoring Report**

**May 2022**



## CONTENT

Minerals & Minerals : Pakhar (109.507)		Environmental Monitoring Report	May2022
<b>Pakhar (109.507)</b>			
<b>AMBIENT AIR QUALITY- CORE ZONE</b>			
1	Near Mine Quarry No-K7		
2	Near Mine Quarry No-K9		
3	Near Mine Quarry No-K10		
4	Pakhar Loading Area		
<b>AMBIENT AIR QUALITY- BUFFER ZONE</b>			
1	Near Bunglapart Village		
2	Yatri Shed (Near K-10)		
3	Near Utkarmit Rajkiya Prathmik Vidyalaya Bunglapart Village		
4	Near Utkarmit Rajkiya Prathmik Vidyalaya Dumrapart Village		
<b>AMBIENT NOISE</b>			
<b>WORKZONE/SPOT NOISE</b>			
<b>WORKSHOP EFFLUENT</b>			
<b>DRINKING WATER ANALYSIS</b>			





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

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

## TEST REPORT

Test Report No. : ELES/RNC/2022/1349A	Report Release Date : 14.06.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1357A
Address	: Lohardaga, Jharkhand-835302	Location	: Near Mine Quarry No-K7 Pakhar (109.507 ha) Bauxite Mine
Plant Status	: Operational	Sampling Date	: 10/05/2022 to 11/05/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

## METEOROLOGICAL INFORMATION

1	Average Temperature (°C) : 29	2	Barometric Pressure (mmHg) : 742
3	Relative Humidity (%) : 69	4	Weather Condition : Clear
5	Longitude : 84°36'43.86"E	6	Latitude : 23°33'29.12"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	61
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)	6.8
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	10.5
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)	0.021
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)	3.1

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ENGINEERING SERVICES PVT. LTD.

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

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No.	: ELES/RNC/2022/1349A	Report Release Date	: 14.06.2022
Work Order No.	: M&M/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.

Authorized Signatory

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

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

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**ENGINEERING SERVICES PVT. LTD.**

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

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

## TEST REPORT

Test Report No. : ELES/RNC/2022/1349B	Report Release Date : 14.06.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1357B
Address	: Lohardaga, Jharkhand-835302	Location	: Near Mine Quarry No-K9 Pakhar (109.507 ha) Bauxite Mine
Plant Status	: Operational	Sampling Date	: 10/05/2022 to 11/05/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

## METEOROLOGICAL INFORMATION

1	Average Temperature (°C) : 29	2	Barometric Pressure (mmHg) : 742
3	Relative Humidity (%) : 69	4	Weather Condition : Clear
5	Longitude : 84°37'7.83"E	6	Latitude : 23°33'30.72"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	73
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	36
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	6.6
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	10.5
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)	0.042
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)	3.4

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## ENVIRONMENTAL LABORATORIES &

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

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No. : ELES/RNC/2022/1349B	Report Release Date : 14.06.2022
Work Order No. : M&M/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)	3.2
Benzo (a) Pyrene*	$\text{ng}/\text{m}^3$	USEPA 8270 C to -13A	01(Annual)	0.44

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  
HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D124

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

## TEST REPORT

Test Report No. : ELES/RNC/2022/1349C	Report Release Date : 14.06.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1357C
Address	: Lohardaga, Jharkhand-835302	Location	: Near Mine Quarry No-K10 Pakhar (109.507 ha) Bauxite Mine
Plant Status	: Operational	Sampling Date	: 10/05/2022 to 11/05/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

## METEOROLOGICAL INFORMATION

1	Average Temperature (°C) : 29	2	Barometric Pressure (mmHg) : 742
3	Relative Humidity (%) : 69	4	Weather Condition : Clear
5	Longitude : 84°37'21.94"E	6	Latitude : 23°33'14.59"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	66
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	31
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	5.6
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	12.2
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)	0.016
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)	3.0

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

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No. : ELES/RNC/2022/1349C	Report Release Date : 14.06.2022
Work Order No. : M&M/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)	0.26

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

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

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HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D124

ENGINEERING SERVICES PVT. LTD.

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

## TEST REPORT

Test Report No. : ELES/RNC/2022/1349D	Report Release Date : 14.06.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1357D
Address	: Lohardaga, Jharkhand-835302	Location	: Pakhar Loading Area Pakhar (109.507 ha) Bauxite Mine
Plant Status	: Operational	Sampling Date	: 10/05/2022 to 11/05/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 29	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 69	4	Weather Condition	: Clear
5	Longitude	: 84°36'53.77"E	6	Latitude	: 23°33'15.01"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	66
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	40
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	5.8
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	10.6
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)	0.029
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)	2.7

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HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D124

ENGINEERING SERVICES PVT. LTD.

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No. : ELES/RNC/2022/1349D	Report Release Date : 14.06.2022
Work Order No. : M&M/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)	2.6
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\*\*\*\*

Authorized Signatory  
**SANDIP BERA**  
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HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE97130124

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

CIN: U74999JH2018PTC011123

## TEST REPORT

Test Report No.	: ELES/RNC/2022/1348E	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/1356E
Address	: Lohardaga, Jharkhand-835302	Location	: Near Bunglapart Village Pakhar Bauxite Mine
Plant Status	: Operational	Sampling Date	: 09/05/2022 to 10/05/2022
		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 (%)	: 67	4	Weather Condition	: Clear
5	Longitude	: 84°35'36.40"E	6	Latitude	: 23°33'6.92"N

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)	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)	0.003
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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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA  
HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D1Z4

ENGINEERING SERVICES PVT. LTD.

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No.	: ELES/RNC/2022/1348E	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.

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HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D124

ENGINEERING SERVICES PVT. LTD.

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

CIN: U74999JH2018PTC011125

## TEST REPORT

Test Report No.	: ELES/RNC/2022/1348F	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/1356F
Address	: Lohardaga, Jharkhand-835302	Location	: Yatri Shed (Near K-10) Pakhar Bauxite Mine
Plant Status	: Operational	Sampling Date	: 09/05/2022 to 10/05/2022
		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 (%)	: 67	4	Weather Condition	: Clear
5	Longitude	: 84°37'29.76"E	6	Latitude	: 23°33'12.96"N

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)	26
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)	8.3
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)	0.024
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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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA  
MATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D1Z4

ENGINEERING SERVICES PVT. LTD.

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No.	: ELES/RNC/2022/1348F	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)	2.6
Benzo (a) Pyrene*	$\text{ng}/\text{m}^3$	USEPA 8270 C to -13A	01(Annual)	0.27

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

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

  
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HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D124

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

## TEST REPORT

Test Report No.	: ELES/RNC/2022/1348G	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/1356G
Address	: Lohardaga, Jharkhand-835302	Location	: Near Utkarmit Rajkiya Prathmik Vidyalaya Bunglapart Village
Plant Status	: Operational	Sampling Date	: 09/05/2022 to 10/05/2022
		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 (%)	: 67	4	Weather Condition	: Clear
5	Longitude	: 84°36'4.75"E	6	Latitude	: 23°32'40.97"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	36
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)	6.6
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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CIN: U74999MH2018PTC011123

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA  
HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE97130124

ENGINEERING SERVICES PVT. LTD.

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No.	: ELES/RNC/2022/1348G	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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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA  
HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D124

ENGINEERING SERVICES PVT. LTD.

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

CIN: U74999JH2018PTC011125

### TEST REPORT

Test Report No.	: ELES/RNC/2022/1348H	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/1356H
Address	: Lohardaga, Jharkhand-835302	Location	: Near Utkarmit Rajkiya Prathmik Vidyalaya Dumrapart Village
Plant Status	: Operational	Sampling Date	: 09/05/2022 to 10/05/2022
		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 (%)	: 67	4	Weather Condition	: Clear
5	Longitude	: 84°37'29.39"E	6	Latitude	: 23°33'39.63"N

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)	6.7
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)	2.2

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

ENGINEERING SERVICES PVT. LTD.

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No. : ELES/RNC/2022/1348H	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.

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

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

CIN: U74999JH2018PTC011125

## TEST REPORT

Test Report No. : ELES/RNC/2022/1355T	Report Release Date : 14.06.2022
Order No. : M&M/LHD/FY22-23/001	Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Date	: 11.05.2022
Address	: Lohardaga, Jharkhand-835302	Type of Sample	: Ambient Noise
Plant Status	: Operational	Sampling procedure	: ELES/DOC/SMPL/03
		Sample Drawn By	: ELES Pvt. Ltd.

Location	Unit	Test Protocol	Result		Regulatory Limit (Industrial Zone)
Near Office – Pakhar Bauxite Mines (109.507 ha)	dB(A)	IS 9989:1981, RA 2020	Time	L <sub>eq</sub>	75 dB(A) Day Time & 70 dB(A) Night Time
			Day Time	69	
			Night Time	52	
Sample ID: ELES/RNC/2022/AN/1363T					

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA  
HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D1Z4

ENGINEERING SERVICES PVT. LTD.

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No. : ELES/RNC/2022/1356S	Report Release Date : 14.06.2022
Order No. : M&M/LHD/FY22-23/001	Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sampling Date	: 11.05.2022
Address	: Lohardaga, Jharkhand-835302	Type of Sample	: Workzone Noise
Plant Status	: Operational	Sampling procedure	: ELES/DOC/SMPL/03
		Sample Drawn By	: ELES Pvt. Ltd.

Location	Unit	Test Protocol	Result		Regulatory Limit (Industrial Zone)
			Time	L <sub>eq</sub>	
Loading Point Near Dumper – Pakhar Bauxite Mines (109.507 ha.)	dB(A)	IS 9989:1981, RA 2020	Time	L <sub>eq</sub>	75 dB(A) Day Time
			Day Time	71	
Sample ID: ELES/RNC/2022/AN/1364S					

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

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

CIN: U74999JH2018PTC011125

## TEST REPORT

Test Report No. : ELES/RNC/2022/1359S	Report Release Date : 14/06/2022
Order No. : M&M/LHD/FY22-23/001	Order Date : 01/04/2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/DW/1367S
Address	: Lohardaga, Jharkhand-835302	Location	: Drinking Water Pakhar Bauxite Mines (109.507 ha)
Plant Status	: Operational	Sampling Date	: 11/05/2022
		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	0.12	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	175	500
Monochloramines	mg/L	APHA 23rd Edition 2017, 4500 CI-G	<1.0	4
Dichloramines	mg/L	APHA 23rd Edition 2017, 4500 CI-G	<1.0	4
Total Hardness (as CaCO <sub>3</sub> )	mg/L	APHA 23rd Edition 2017, 2340 C	39.8	200
Total Alkalinity (as CaCO <sub>3</sub> )	mg/L	IS 3025 (Part-23):1986	40.2	200
Chloride (as Cl)	mg/L	IS 3025 (Part-32): 1988: RA 2014	6.8	250

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**ENGINEERING SERVICES PVT. LTD.**

PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA  
HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAEE9713D124

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

CIN: U74999JH2018PTC011125

## TEST REPORT

Test Report No.	: ELES/RNC/2022/1359S	Report Release Date	: 14/06/2022
Order No.	: M&M/LHD/FY22-23/001	Order Date	: 01/04/2022

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	2.5	200
Nitrate (as NO <sub>3</sub> )	mg/L	IS 3025 (Part-34): 1988	1.98	45
Fluoride (as F)	mg/L	APHA 23rd Edition 2017,4500-F--D	0.1187	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	11.6	75
Magnesium (as Mg)	mg/L	IS 3025 (Part-46):1994	2.6	30
Iron (as Fe)	mg/L	APHA 23rd Edition, 3111 B&C	0.169	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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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA  
HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D124

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

## TEST REPORT

Test Report No. : ELES/RNC/2022/1359S	Report Release Date : 14/06/2022
Order No. : M&M/LHD/FY22-23/001	Order Date : 01/04/2022

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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# ENVIRONMENTAL LABORATORIES &

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

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

CIN: U74999JH2018PTC011125

## TEST REPORT

Test Report No. : ELES/RNC/2022/1359S	Report Release Date : 14/06/2022
Order No. : M&M/LHD/FY22-23/001	Order Date : 01/04/2022

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.

Authorized Signatory

**SANDIP BERA**

SENIOR MANAGER

**ELES PVT. LTD.**

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

Page 4 of 4

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

**Pakhar (109.507) Bauxite Mine-Environmental Monitoring Report**

**June 2022**



## CONTENT

Minerals & Minerals : Pakhar (109.507) Bauxite Mine Environmental Monitoring Report		June2022
Pakhar (109.507) Bauxite Mine		
	<b>AMBIENT AIR QUALITY- CORE ZONE</b>	
1	Near Mine Quarry No-K7	
2	Near Mine Quarry No-K9	
3	Near Mine Quarry No-K10	
4	Pakhar Loading Area	
	<b>AMBIENT AIR QUALITY- BUFFER ZONE</b>	
1	Near Bunglapart Village	
2	Yatri Shed (Near K-10)	
3	Near Utkarmit Rajkiya Prathmik Vidyalaya Bunglapart Village	
4	Near Utkarmit Rajkiya Prathmik Vidyalaya Dumrapart Village	
	<b>SPRING WATER</b>	





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

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

## TEST REPORT

Test Report No. : ELES/RNC/2022/16111	Report Release Date : 15.07.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1792A
Address	: Lohardaga, Jharkhand-835302	Location	: Near Mine Quarry No-K7 Pakhar (109.507 ha) Bauxite Mine
Plant Status	: Operational	Sampling Date	: 10/06/2022 to 11/06/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

## METEOROLOGICAL INFORMATION

1	Average Temperature (°C) : 29	2	Barometric Pressure (mmHg) : 742
3	Relative Humidity (%) : 70	4	Weather Condition : Clear
5	Longitude : 84°36'43.86"E	6	Latitude : 23°33'29.12"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	70
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	36
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	6.1
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.6
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)	0.027
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)	3.6

Page 1 of 2

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## ENVIRONMENTAL LABORATORIES &

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

ENGINEERING SERVICES PVT. LTD.

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No. : ELES/RNC/2022/16111	Report Release Date : 15.07.2022
Work Order No. : M&M/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)	0.22

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

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

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

Page 2 of 2

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDAMA  
HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D1Z4

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

CIN: U74999JH2018PTC011125

## TEST REPORT

Test Report No. : ELES/RNC/2022/1611J	Report Release Date : 15.07.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1792B
Address	: Lohardaga, Jharkhand-835302	Location	: Near Mine Quarry No-K9 Pakhar (109.507 ha) Bauxite Mine
Plant Status	: Operational	Sampling Date	: 10/06/2022 to 11/06/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

## METEOROLOGICAL INFORMATION

1	Average Temperature (°C) : 29	2	Barometric Pressure (mmHg) : 742
3	Relative Humidity (%) : 70	4	Weather Condition : Clear
5	Longitude : 84°37'7.83"E	6	Latitude : 23°33'30.72"N

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)	42
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	6.3
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)	0.036
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)	2.6

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

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

## TEST REPORT

Test Report No. : ELES/RNC/2022/1611J	Report Release Date : 15.07.2022
Work Order No. : M&M/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)	3.7
Benzo (a) Pyrene*	$\text{ng}/\text{m}^3$	USEPA 8270 C to -13A	01(Annual)	0.34

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

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

CIN: U74999/JH018PTC011125

## TEST REPORT

Test Report No. : ELES/RNC/2022/1611K	Report Release Date : 15.07.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1792C
Address	: Lohardaga, Jharkhand-835302	Location	: Near Mine Quarry No-K10 Pakhar (109.507 ha) Bauxite Mine
Plant Status	: Operational	Sampling Date	: 10/06/2022 to 11/06/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

## METEOROLOGICAL INFORMATION

1	Average Temperature (°C) : 29	2	Barometric Pressure (mmHg) : 742
3	Relative Humidity (%) : 70	4	Weather Condition : Clear
5	Longitude : 84°37'21.94"E	6	Latitude : 23°33'14.59"N

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)	<5.0
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	6.7
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)	0.018
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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## ENVIRONMENTAL LABORATORIES &

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

ENGINEERING SERVICES PVT. LTD.

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No. : ELES/RNC/2022/1611K	Report Release Date : 15.07.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	2.8
Benzo (a) Pyrene*	$\text{ng}/\text{m}^3$	USEPA 8270 C to -13A	01(Annual)	0.21

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

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

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

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**ENGINEERING SERVICES PVT. LTD.**

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

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

## TEST REPORT

Test Report No.	: ELES/RNC/2022/1611L	Report Release Date	: 15.07.2022
Work Order No.	: M&M/LHD/FY22-23/001	Work Order Date	: 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1792D
Address	: Lohardaga, Jharkhand-835302	Location	: Pakhar Loading Area Pakhar (109.507 ha) Bauxite Mine
Plant Status	: Operational	Sampling Date	: 10/06/2022 to 11/06/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

## METEOROLOGICAL INFORMATION

1	Average Temperature (°C)	: 29	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 70	4	Weather Condition	: Clear
5	Longitude	: 84°36'53.77"E	6	Latitude	: 23°33'15.01"N

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)	34
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	7.3
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.1
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)	2.6

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

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

## TEST REPORT

Test Report No.	: ELES/RNC/2022/1611L	Report Release Date	: 15.07.2022
Work Order No.	: M&M/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)	2.4
Benzo (a) Pyrene*	$\text{ng}/\text{m}^3$	USEPA 8270 C to -13A	01(Annual)	0.31

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

Authorized Signatory

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

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

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

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No. : ELES/RNC/2022/1611E	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/1791E
Address	: Lohardaga, Jharkhand-835203	Location	: Near Bunglapart Village Pakhar Bauxite Mine
Plant Status	: Operational	Sampling Date	: 09/06/2022 to 10/06/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 29	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 68	4	Weather Condition	: Clear
5	Longitude	: 84°35'36.40"E	6	Latitude	: 23°33'6.92"N

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)	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)	5.6
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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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA  
HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D124

ENGINEERING SERVICES PVT. LTD.

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No. : ELES/RNC/2022/1611E	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\*\*\*\*

  
SANDIP BERA  
SENIOR MANAGER  
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HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D124

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

## TEST REPORT

Test Report No. : ELES/RNC/2022/1611F	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/1791F
Address	: Lohardaga, Jharkhand-835203	Location	: Yatri Shed (Near K-10) Pakhar Bauxite Mine
Plant Status	: Operational	Sampling Date	: 09/06/2022 to 10/06/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

## METEOROLOGICAL INFORMATION

1	Average Temperature (°C) : 29	2	Barometric Pressure (mmHg) : 741
3	Relative Humidity (%) : 68	4	Weather Condition : Clear
5	Longitude : 84°37'29.76"E	6	Latitude : 23°33'12.96"N

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)	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)	0.023
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)	2.7

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA  
HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D1Z4

ENGINEERING SERVICES PVT. LTD.

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No. : ELES/RNC/2022/1611F	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)	2.2
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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HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D1Z4

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

CIN: U74999JH2018PTC031125

## TEST REPORT

Test Report No. : ELES/RNC/2022/1611G	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/1791G
Address	: Lohardaga, Jharkhand-835203	Location	: Near Utkarmit Rajkiya Prathmik Vidyalaya Bunglapart Village
Plant Status	: Operational	Sampling Date	: 09/06/2022 to 10/06/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 29	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 68	4	Weather Condition	: Clear
5	Longitude	: 84°36'4.75"E	6	Latitude	: 23°32'40.97"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	33
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)	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)	0.003
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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HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D124

ENGINEERING SERVICES PVT. LTD.

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

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

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	<2.0
Benzo (a) Pyrene*	$\text{ng}/\text{m}^3$	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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CIN: U74999JH2018PTC012125

# ENVIRONMENTAL LABORATORIES &

PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA  
HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D1Z4

ENGINEERING SERVICES PVT. LTD.

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

## TEST REPORT

Test Report No. : ELES/RNC/2022/1611H	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/1791H
Address	: Lohardaga, Jharkhand-835203	Location	: Near Utkarmit Rajkiya Prathmik Vidyalaya Dumrapart Village
Plant Status	: Operational	Sampling Date	: 09/06/2022 to 10/06/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 29	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 68	4	Weather Condition	: Clear
5	Longitude	: 84°37'29.39"E	6	Latitude	: 23°33'39.63"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	30
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)	5.3
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

Page 1 of 2

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

ENGINEERING SERVICES PVT. LTD.

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No. : ELES/RNC/2022/1611H	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.

Page 2 of 2

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HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D124

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

## TEST REPORT

Test Report No. : ELES/RNC/2022/1629H	Report Release Date : 15/07/2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/SW/1800H
Address	: Lohardaga, Jharkhand-835302	Location	: Spring Water - Pakhar (109.507 ha) Bauxite Mines
Plant Status	: Operational	Sampling Date	: 11/06/2022
		Type of Sample	: Surface Water
		Sampling Procedure	: ELES/DOC/SMPL/01
		Sample Condition	: Sealed & Preserved

Parameter	Unit	Test Protocol	Result	As per CPCB & IS2296:1982 (Class-C)
				Tolerance Limit
pH	-	APHA 23rd Edition 2017,4500-H+-B	7.4	6.5-8.5
Color	Hazen	IS 3025 (Part-04): 1983	5	300
Odour	-	IS 3025 (Part-05): 1983	Unobjectionable	Unobjectionable
Turbidity	NTU	APHA 23rd Edition 2017,2130 B	0.28	--
Free Residual Chlorine	mg/L	IS 3025 (Part-26): 1986	<0.1	--
Total Dissolved Solids (TDS)	mg/L	IS 3025 (Part-16):1984	1007	1500
Total Hardness (as CaCO <sub>3</sub> )	mg/L	APHA 23rd Edition 2017, 2340 C	260	--
Total Alkalinity (as CaCO <sub>3</sub> )	mg/L	IS 3025 (Part-23):1986	245	--
Chloride (as Cl)	mg/L	IS 3025 (Part-32): 1988: RA 2014	83.8	600
Sulphate (as SO <sub>4</sub> )	mg/L	IS 3025 (Part-24):1986	42.7	400
Fluoride (as F)	mg/L	APHA 23rd Edition 2017,4500-F-D	0.1028	1.5
Cyanide (as CN)	mg/L	IS 3025 (Part-27): 1986	<0.0125	0.05

### Page 1 of 2

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HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D124

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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## TEST REPORT

Test Report No. : ELES/RNC/2022/1629H	Report Release Date : 15/07/2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Result	As per CPCB & IS2296:1982 (Class-C)
				Tolerance Limit
Boron (as B)	mg/L	APHA 23rd Edition, 3125 B	<0.2	--
Calcium (as Ca)	mg/L	APHA 23rd Edition 2017, 3500 B	69.4	--
Magnesium (as Mg)	mg/L	IS 3025 (Part-46):1994	21.0	--
Iron (as Fe)	mg/L	APHA 23rd Edition, 3111 B&C	0.588	50
Manganese (as Mn)	mg/L	APHA 23rd Edition, 3111 B&C	<0.05	--
Cadmium (as Cd)	mg/L	APHA 23rd Edition, 3111 B&C	<0.003	0.01
Total Chromium (as Cr)	mg/L	APHA 23rd Edition, 3111 B&C	<0.03	0.05
Copper (as Cu)	mg/L	APHA 23rd Edition, 3111 B&C	<0.03	1.5
Lead (as Pb)	mg/L	APHA 23rd Edition, 3111 B&C	<0.01	0.1
Zinc (as Zn)	mg/L	APHA 23rd Edition, 3111 B&C	0.257	15
Arsenic (as As)	mg/L	APHA 23rd Edition, 3111 B&C	<0.005	0.2
Selenium (as Se)	mg/L	APHA 23rd Edition, 3125 B	<0.01	0.05
Mercury (as Hg)	mg/L	IS 3025 (Part-48): 2000	<0.001	--
Dissolved Oxygen (DO)	mg/L	IS 3025 (Part-38) : 2014	7.4	4.0 (Minimum)

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

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

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

**Pakhar (109.507) Bauxite Mine-Environmental Monitoring Report**

**July 2022**



## CONTENT

Minerals & Minerals : Pakhar (109.507) Bauxite Mine July2022		Environmental Monitoring Report
<b>Pakhar (109.507) Bauxite Mine</b>		
<b>AMBIENT AIR QUALITY- CORE ZONE</b>		
1	Near Mine Quarry No-K7	
2	Near Mine Quarry No-K9	
3	Near Mine Quarry No-K10	
4	Pakhar Loading Area	
<b>AMBIENT AIR QUALITY- BUFFER ZONE</b>		
1	Near Bunglapart Village	
2	Yatri Shed (Near K-10)	
3	Near Utkarmit Rajkiya Prathmik Vidyalaya Bunglapart Village	
4	Near Utkarmit Rajkiya Prathmik Vidyalaya Dumrapart Village	





# ENVIRONMENTAL LABORATORIES &

PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA  
HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE97130124

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

## TEST REPORT

Test Report No.	: ELES/RNC/2022/17671	Report Release Date	: 18.08.2022
Work Order No.	: M&M/LHD/FY22-23/001	Work Order Date	: 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/51991
Address	: Lohardaga, Jharkhand-835302	Location	: Near Mine Quarry No-K7 Pakhar (109.507 ha) Bauxite Mine
Plant Status	: Operational	Sampling Date	: 22/07/2022 to 23/07/2022
		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)	: 742
3	Relative Humidity (%)	: 68	4	Weather Condition	: Clear
5	Longitude	: 84°36'43.86"E	6	Latitude	: 23°33'29.12"N

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)	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)	10.6
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)	0.012
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)	2.3

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

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No.	: ELES/RNC/2022/1767I	Report Release Date	: 18.08.2022
Work Order No.	: M&M/LHD/FY22-23/001	Work Order Date	: 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 11): 2004	05(Annual)	2.3
Benzo (a) Pyrene*	$\text{ng}/\text{m}^3$	IS 5182 (Part- 12): 2006	01(Annual)	<0.20

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

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

*Authorized Signatory*  
**Dr. Deependra Kumar Sinha**  
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)  
GST NO:- 20AAECE9713D124

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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## TEST REPORT

Test Report No.	: ELES/RNC/2022/1767J	Report Release Date	: 18.08.2022
Work Order No.	: M&M/LHD/FY22-23/001	Work Order Date	: 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/5199J
Address	: Lohardaga, Jharkhand-835302	Location	: Near Mine Quarry No-K9 Pakhar (109.507 ha) Bauxite Mine
Plant Status	: Operational	Sampling Date	: 22/07/2022 to 23/07/2022
		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)	: 742
3	Relative Humidity (%)	: 68	4	Weather Condition	: Clear
5	Longitude	: 84°37'7.83"E	6	Latitude	: 23°33'30.72"N

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)	25
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)	9.5
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)	0.016
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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## ENVIRONMENTAL LABORATORIES &

PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA  
HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D1Z4

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No. : ELES/RNC/2022/1767J	Report Release Date : 18.08.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 11): 2004	05(Annual)	2.3
Benzo (a) Pyrene*	$\text{ng}/\text{m}^3$	IS 5182 (Part- 12): 2006	01(Annual)	0.32

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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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA  
HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D1Z4

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

## TEST REPORT

Test Report No.	: ELES/RNC/2022/1767K	Report Release Date	: 18.08.2022
Work Order No.	: M&M/LHD/FY22-23/001	Work Order Date	: 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/5199K
Address	: Lohardaga, Jharkhand-835302	Location	: Near Mine Quarry No-K10 Pakhar (109.507 ha) Bauxite Mine
Plant Status	: Operational	Sampling Date	: 22/07/2022 to 23/07/2022
		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)	: 742
3	Relative Humidity (%)	: 68	4	Weather Condition	: Clear
5	Longitude	: 84°37'21.94"E	6	Latitude	: 23°33'14.59"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	51
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)	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)	0.012
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: U74999/JH2018PTC011125

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA  
HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D1Z4

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No. : ELES/RNC/2022/1767K	Report Release Date : 18.08.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 11): 2004	05(Annual)	<2.0
Benzo (a) Pyrene*	$\text{ng}/\text{m}^3$	IS 5182 (Part- 12): 2006	01(Annual)	0.24

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

Authorized Signatory

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

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

Page 2 of 2

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA  
HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D1Z4

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

## TEST REPORT

Test Report No. : ELES/RNC/2022/1767L	Report Release Date : 18.08.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/5199L
Address	: Lohardaga, Jharkhand-835302	Location	: Pakhar Loading Area Pakhar (109.507 ha) Bauxite Mine
Plant Status	: Operational	Sampling Date	: 22/07/2022 to 23/07/2022
		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)	: 742
3	Relative Humidity (%)	: 68	4	Weather Condition	: Clear
5	Longitude	: 84°36'53.77"E	6	Latitude	: 23°33'15.01"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	50
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)	5.3
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.6
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)	0.011
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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## ENVIRONMENTAL LABORATORIES &

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

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No. : ELES/RNC/2022/1767L	Report Release Date : 18.08.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 11): 2004	05(Annual)	2.4
Benzo (a) Pyrene*	$\text{ng}/\text{m}^3$	IS 5182 (Part- 12): 2006	01(Annual)	0.24

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

*Authorized Signatory*

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

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

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ENGINEERING SERVICES PVT. LTD.

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

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

## TEST REPORT

Test Report No. : ELES/RNC/2022/1767E	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/5199E
Address	: Lohardaga, Jharkhand-835203	Location	: Near Bunglapart Village Pakhar Bauxite Mine
Plant Status	: Operational	Sampling Date	: 21/07/2022 to 22/07/2022
		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 (%)	: 70	4	Weather Condition	: Clear
5	Longitude	: 84°35'36.40"E	6	Latitude	: 23°33'6.92"N

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)	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)	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)	0.003
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





CIN: U74999JH2018PTC011125

## ENVIRONMENTAL LABORATORIES &

PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA  
HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE97130124

ENGINEERING SERVICES PVT. LTD.

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No.	: ELES/RNC/2022/1767E	Report Release Date	: 18.08.2022
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Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 11): 2004	05(Annual)	<2.0
Benzo (a) Pyrene*	$\text{ng}/\text{m}^3$	IS 5182 (Part- 12): 2006	01(Annual)	<0.20

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

Authorized Signatory

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

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PLOT NO-30, MAHSAROVAR ENCLAVE, TUPUDANA  
HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D124**ENGINEERING SERVICES PVT. LTD.**Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

## TEST REPORT

Test Report No.	: ELES/RNC/2022/1767F	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/5199F
Address	: Lohardaga, Jharkhand-835203	Location	: Yatri Shed (Near K-10) Pakhar Bauxite Mine
Plant Status	: Operational	Sampling Date	: 21/07/2022 to 22/07/2022
		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 (%)	: 70	4	Weather Condition	: Clear
5	Longitude	: 84°37'29.76"E	6	Latitude	: 23°33'12.96"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	50
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)	5.3
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	6.7
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)	0.019
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

### Page 1 of 2

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CIN: U74999JH2018PTC011125

## ENVIRONMENTAL LABORATORIES &

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

ENGINEERING SERVICES PVT. LTD.

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No. : ELES/RNC/2022/1767F	Report Release Date : 18.08.2022
---------------------------------------	----------------------------------

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 11): 2004	05(Annual)	2.5
Benzo (a) Pyrene*	$\text{ng}/\text{m}^3$	IS 5182 (Part- 12): 2006	01(Annual)	<0.20

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

Authorized Signatory

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

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

Page 2 of 2

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# ENVIRONMENTAL LABORATORIES &

PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA  
HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D1Z1

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

## TEST REPORT

Test Report No. : ELES/RNC/2022/1767G	Report Release Date : 18.08.2022
---------------------------------------	----------------------------------

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/5199G
Address	: Lohardaga, Jharkhand-835203	Location	: Near Utkarmit Rajkiya Prathmik Vidyalaya Bunglapart Village
Plant Status	: Operational	Sampling Date	: 21/07/2022 to 22/07/2022
		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 (%)	: 70	4	Weather Condition	: Clear
5	Longitude	: 84°36'4.75"E	6	Latitude	: 23°32'40.97"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	30
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)	6.1
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)	0.004
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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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDAMA  
HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D1Z4

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No. : ELES/RNC/2022/1767G	Report Release Date : 18.08.2022
---------------------------------------	----------------------------------

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

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

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

Authorized Signatory

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

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## ENVIRONMENTAL LABORATORIES &

PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA  
HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D1Z4

ENGINEERING SERVICES PVT. LTD.

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No. : ELES/RNC/2022/1767H	Report Release Date : 18.08.2022
---------------------------------------	----------------------------------

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/5199H
Address	: Lohardaga, Jharkhand-835203	Location	: Near Utkarmit Rajkiya Prathmik Vidyalaya Dumrapart Village
Plant Status	: Operational	Sampling Date	: 21/07/2022 to 22/07/2022
		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 (%)	: 70	4	Weather Condition	: Clear
5	Longitude	: 84°37'29.39"E	6	Latitude	: 23°33'39.63"N

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)	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)	6.0
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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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDAMA  
HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D1Z4

ENGINEERING SERVICES PVT. LTD.

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No. : ELES/RNC/2022/1767H	Report Release Date : 18.08.2022
---------------------------------------	----------------------------------

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

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

Authorized Signatory

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

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

**Pakhar (109.507 ha) Bauxite Mine-Environmental Monitoring Report**

**August 2022**





## CONTENT

Minerals & Minerals : Pakhar (109.507 ha) Bauxite Mine August 2022		Environmental Monitoring Report
<b>Pakhar (109.507 ha) Bauxite Mine</b>		
<b>AMBIENT AIR QUALITY- CORE ZONE</b>		
1	Near Mine Quarry No-K7	
2	Near Mine Quarry No-K9	
3	Near Mine Quarry No-K10	
4	Pakhar Loading Area	
<b>AMBIENT AIR QUALITY- BUFFER ZONE</b>		
1	Near Bunglapart Village	
2	Yatri Shed (Near K-10)	
3	Near Utkarmit Rajkiya Prathmik Vidyalaya Bunglapart Village	
4	Near Utkarmit Rajkiya Prathmik Vidyalaya Dumrapart Village	





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

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

## TEST REPORT

Test Report No. : ELES/RNC/2022/1887I	Report Release Date : 16.09.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3004I
Address	: Lohardaga, Jharkhand-835302	Location	: Near Mine Quarry No-K7 Pakhar (109.507 ha) Bauxite Mine
Plant Status	: Operational	Sampling Date	: 09/08/2022 to 10/08/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

## METEOROLOGICAL INFORMATION

1	Average Temperature (°C) : 25	2	Barometric Pressure (mmHg) : 742
3	Relative Humidity (%) : 67	4	Weather Condition : Clear
5	Longitude : 84°36'43.86"E	6	Latitude : 23°33'29.12"N

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)	33
Sulphur Di-Oxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	5.5
Nitrogen Di-Oxide (NO <sub>2</sub> )	µg/m <sup>3</sup>	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.3
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)	0.017
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)	2.6

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CIN: U74999JH2018PTC011125

## ENVIRONMENTAL LABORATORIES &

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

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No. : ELES/RNC/2022/1887I	Report Release Date : 16.09.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 11): 2004	05(Annual)	2.7
Benzo (a) Pyrene*	$\text{ng}/\text{m}^3$	IS 5182 (Part- 12): 2006	01(Annual)	0.24

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

*Authorized Signatory*

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

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

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

CIN: U74999MH2018PTC011125

## TEST REPORT

Test Report No. : ELES/RNC/2022/1887J	Report Release Date : 16.09.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3004J
Address	: Lohardaga, Jharkhand-835302	Location	: Near Mine Quarry No-K9 Pakhar (109.507 ha) Bauxite Mine
Plant Status	: Operational	Sampling Date	: 09/08/2022 to 10/08/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 25	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 67	4	Weather Condition	: Clear
5	Longitude	: 84°37'7.83"E	6	Latitude	: 23°33'30.72"N

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)	30
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)	0.012
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)	2.4

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CIN: U74999JH2018PTC011125

## ENVIRONMENTAL LABORATORIES &

PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA  
HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D1Z4

ENGINEERING SERVICES PVT. LTD.

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No. : ELES/RNC/2022/1887J	Report Release Date : 16.09.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 11): 2004	05(Annual)	2.7
Benzo (a) Pyrene*	$\text{ng}/\text{m}^3$	IS 5182 (Part- 12): 2006	01(Annual)	0.24

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

Authorized Signatory

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

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

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# ENVIRONMENTAL LABORATORIES &

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

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

## TEST REPORT

Test Report No. : ELES/RNC/2022/1887K	Report Release Date : 16.09.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3004K
Address	: Lohardaga, Jharkhand-835302	Location	: Near Mine Quarry No-K10 Pakhar (109.507 ha) Bauxite Mine
Plant Status	: Operational	Sampling Date	: 09/08/2022 to 10/08/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 25	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 67	4	Weather Condition	: Clear
5	Longitude	: 84°37'21.94"E	6	Latitude	: 23°33'14.59"N

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)	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)	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)	0.006
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)	<2.0

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# ENVIRONMENTAL LABORATORIES &

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

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

CIN: U74999JH2018PTC011125

## TEST REPORT

Test Report No. : ELES/RNC/2022/1887K	Report Release Date : 16.09.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 11): 2004	05(Annual)	<2.0
Benzo (a) Pyrene*	$\text{ng}/\text{m}^3$	IS 5182 (Part- 12): 2006	01(Annual)	0.26

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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HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D124

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

## TEST REPORT

Test Report No. : ELES/RNC/2022/1887L	Report Release Date : 16.09.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3004L
Address	: Lohardaga, Jharkhand-835302	Location	: Pakhar Loading Area Pakhar (109.507 ha) Bauxite Mine
Plant Status	: Operational	Sampling Date	: 09/08/2022 to 10/08/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

## METEOROLOGICAL INFORMATION

1	Average Temperature (°C)	: 25	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 67	4	Weather Condition	: Clear
5	Longitude	: 84°36'53.77"E	6	Latitude	: 23°33'15.01"N

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)	29
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)	0.006
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)	<2.0

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CIN: U74999JH2018PTC011125

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA  
HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D1Z4

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No. : ELES/RNC/2022/1887L	Report Release Date : 16.09.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 11): 2004	05(Annual)	2.3
Benzo (a) Pyrene*	$\text{ng}/\text{m}^3$	IS 5182 (Part- 12): 2006	01(Annual)	0.25

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

Authorized Signatory

Dr. Deependra Kumar Sini,

Ph. D. Environmental Engg.

ELES Pvt. Ltd. Technical Manager

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HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D124

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

## TEST REPORT

Test Report No. : ELES/RNC/2022/1887E	Report Release Date : 16.09.2022
---------------------------------------	----------------------------------

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3004E
Address	: Lohardaga, Jharkhand-835203	Location	: Near Bunglapart Village Pakhar Bauxite Mine
Plant Status	: Operational	Sampling Date	: 08/08/2022 to 09/08/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION			
1	Average Temperature (°C)	: 25	2 Barometric Pressure (mmHg) : 741
3	Relative Humidity (%)	: 67	4 Weather Condition : Clear
5	Longitude	: 84°35'36.40"E	6 Latitude : 23°33'6.92"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	33
Particulate Matter (PM2.5)	µg/m <sup>3</sup>	IS 5182 (Part- 24): 2019	60 (24hrs)	14
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)	5.4
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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## ENVIRONMENTAL LABORATORIES &

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

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No. : ELES/RNC/2022/1887E	Report Release Date : 16.09.2022
---------------------------------------	----------------------------------

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

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

*Authorized Signatory*

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

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

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

## TEST REPORT

Test Report No. : ELES/RNC/2022/1887F	Report Release Date : 16.09.2022
---------------------------------------	----------------------------------

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3004F
Address	: Lohardaga, Jharkhand-835203	Location	: Yatri Shed (Near K-10) Pakhar Bauxite Mine
Plant Status	: Operational	Sampling Date	: 08/08/2022 to 09/08/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 25	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 67	4	Weather Condition	: Clear
5	Longitude	: 84°37'29.76"E	6	Latitude	: 23°33'12.96"N

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)	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)	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)	0.008
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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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA  
HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D124

ENGINEERING SERVICES PVT. LTD.

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No. : ELES/RNC/2022/1887F	Report Release Date : 16.09.2022
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Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 11): 2004	05(Annual)	2.2
Benzo (a) Pyrene*	$\text{ng}/\text{m}^3$	IS 5182 (Part- 12): 2006	01(Annual)	<0.20

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

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

Authorized Signatory

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

Page 2 of 2

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HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D124

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

## TEST REPORT

Test Report No. : ELES/RNC/2022/1887G	Report Release Date : 16.09.2022
---------------------------------------	----------------------------------

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3004G
Address	: Lohardaga, Jharkhand-835203	Location	: Near Utkarmit Rajkiya Prathmik Vidyalaya Bunglapart Village
Plant Status	: Operational	Sampling Date	: 08/08/2022 to 09/08/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION			
1	Average Temperature (°C)	: 25	2 Barometric Pressure (mmHg) : 741
3	Relative Humidity (%)	: 67	4 Weather Condition : Clear
5	Longitude	: 84°36'4.75"E	6 Latitude : 23°32'40.97"N

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)	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)	6.5
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)	<0.002
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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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA  
HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D124

ENGINEERING SERVICES PVT. LTD.

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No. : ELES/RNC/2022/1887G Report Release Date : 16.09.2022

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

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

Authorized Signatory

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

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

Page 2 of 2

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HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D124

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

## TEST REPORT

Test Report No. : ELES/RNC/2022/1887H	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/3004H
Address	: Lohardaga, Jharkhand-835203	Location	: Near Utkarmit Rajkiya Prathmik Vidyalaya Dumrapart Village
Plant Status	: Operational	Sampling Date	: 08/08/2022 to 09/08/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 25	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 67	4	Weather Condition	: Clear
5	Longitude	: 84°37'29.39"E	6	Latitude	: 23°33'39.63"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	36
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)	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)	0.005
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: U74999/JH2018PTC011125

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HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE97130124

ENGINEERING SERVICES PVT. LTD.

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No.	: ELES/RNC/2022/1887H	Report Release Date	: 16.09.2022
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Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 11): 2004	05(Annual)	<2.0
Benzo (a) Pyrene*	$\text{ng}/\text{m}^3$	IS 5182 (Part- 12): 2006	01(Annual)	<0.20

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

Authorized Signatory

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

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

Page 2 of 2

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

**Pakhar (109.507) Bauxite Mine-Environmental Monitoring Report**

**September 2022**



## CONTENT

Minerals & Minerals : Pakhar (109.507)	Environmental Monitoring Report	September 2022
<b>Pakhar (109.507)</b>		
<b>AMBIENT AIR QUALITY- CORE ZONE</b>		
1	Near Mine Quarry No-K7	
2	Near Mine Quarry No-K9	
3	Near Mine Quarry No-K10	
4	Pakhar Loading Area	
<b>AMBIENT AIR QUALITY- BUFFER ZONE</b>		
1	Near Bunglapart Village	
2	Yatri Shed (Near K-10)	
3	Near Utkarmit Rajkiya Prathmik Vidyalaya Bunglapart Village	
4	Near Utkarmit Rajkiya Prathmik Vidyalaya Dumrapart Village	
<b>DRINKING WATER ANALYSIS</b>		





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HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D124

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

## TEST REPORT

Test Report No. : ELES/RNC/2022/2340	Report Release Date : 11.11.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3345
Address	: Lohardaga, Jharkhand-835302	Location	: Near Mine Quarry No-K7 Pakhar (109.507 ha) Bauxite Mine
		Sampling Date	: 13/09/2022 to 14/09/2022
Plant Status	: Operational	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 24	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 65	4	Weather Condition	: Clear
5	Longitude	: 84°36'43.86"E	6	Latitude	: 23°33'29.12"N

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)	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)	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)	0.015
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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CIN: U74999JH2018PTC011125

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

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No. : ELES/RNC/2022/2340	Report Release Date : 11.11.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 11): 2004	05(Annual)	2.2
Benzo (a) Pyrene*	$\text{ng}/\text{m}^3$	IS 5182 (Part- 12): 2006	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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HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D124

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

CIN: U74999JH2018PTC011125

## TEST REPORT

Test Report No. : ELES/RNC/2022/2341	Report Release Date : 11.11.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3346
Address	: Lohardaga, Jharkhand-835302	Location	: Near Mine Quarry No-K9 Pakhar (109.507 ha) Bauxite Mine
		Sampling Date	: 13/09/2022 to 14/09/2022
Plant Status	: Operational	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 24	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 65	4	Weather Condition	: Clear
5	Longitude	: 84°37'7.83"E	6	Latitude	: 23°33'30.72"N

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)	7.1
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)	0.011
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

## ENVIRONMENTAL LABORATORIES &

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

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles\\_ranchi@gmail.com](mailto:eles_ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No. : ELES/RNC/2022/2341	Report Release Date : 11.11.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 11): 2004	05(Annual)	2.4
Benzo (a) Pyrene*	$\text{ng}/\text{m}^3$	IS 5182 (Part- 12): 2006	01(Annual)	0.25

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)  
GST NO:- 20AAECE9713D124

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

CIN: U74999JH2018PTC011125

## TEST REPORT

Test Report No. : ELES/RNC/2022/2342	Report Release Date : 11.11.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3347
Address	: Lohardaga, Jharkhand-835302	Location	: Near Mine Quarry No-K10 Pakhar (109.507 ha) Bauxite Mine
Plant Status	: Operational	Sampling Date	: 13/09/2022 to 14/09/2022
		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) : 742
3	Relative Humidity (%) : 65	4	Weather Condition : Clear
5	Longitude : 84°37'21.94"E	6	Latitude : 23°33'14.59"N

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

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No. : ELES/RNC/2022/2342	Report Release Date : 11.11.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 11): 2004	05(Annual)	2.3
Benzo (a) Pyrene*	$\text{ng}/\text{m}^3$	IS 5182 (Part- 12): 2006	01(Annual)	0.24

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

Authorized Signatory

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

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HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D124

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

CIN: U74999JH2018PTC011125

## TEST REPORT

Test Report No. : ELES/RNC/2022/2343	Report Release Date : 11.11.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3348
Address	: Lohardaga, Jharkhand-835302	Location	: Pakhar Loading Area Pakhar (109.507 ha) Bauxite Mine
		Sampling Date	: 13/09/2022 to 14/09/2022
Plant Status	: Operational	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION			
1	Average Temperature (°C) : 24	2	Barometric Pressure (mmHg) : 742
3	Relative Humidity (%) : 65	4	Weather Condition : Clear
5	Longitude : 84°36'53.77"E	6	Latitude : 23°33'15.01"N

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)	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)	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)	0.009
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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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA  
HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D124

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No. : ELES/RNC/2022/2343	Report Release Date : 11.11.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 11): 2004	05(Annual)	<2.0
Benzo (a) Pyrene*	$\text{ng}/\text{m}^3$	IS 5182 (Part- 12): 2006	01(Annual)	0.22

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)  
GST NO:- 20AAECE9713D124

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

CIN: U74999JH2018PTC011125

## TEST REPORT

Test Report No. : ELES/RNC/2022/2352B	Report Release Date : 11.11.2022
Order No. : M&M/LHD/FY22-23/001	Order Date : 01/04/2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/DW/3260B
Address	: Lohardaga, Jharkhand-835302	Location	: Drinking Water Pakhar Bauxite Mines (109.507 ha)
Plant Status	: Operational	Sampling Date	: 14/09/2022
		Type of Sample	: Drinking Water
		Sampling Procedure	: ELES/DOC/SMPL/01
		Sample Condition	: Sealed & Preserved

Parameter	Unit	Test Protocol	Result	Regulatory Limit
				as per IS:10500:2012 Acceptable Limit
pH	-	APHA 23rd Edition 2017,4500-H+-B	7.4	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	0.18	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	192	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	37.2	200
Total Alkalinity (as CaCO <sub>3</sub> )	mg/L	IS 3025 (Part-23):1986	39.4	200
Chloride (as Cl)	mg/L	IS 3025 (Part-32): 1988: RA 2014	9.6	250

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# ENVIRONMENTAL LABORATORIES &

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

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

CIN: U74999JH2018PTC011125

## TEST REPORT

Test Report No. : ELES/RNC/2022/2352B	Report Release Date : 11.11.2022
Order No. : M&M/LHD/FY22-23/001	Order Date : 01/04/2022

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	3.45	200
Nitrate (as NO <sub>3</sub> )	mg/L	IS 3025 (Part-34): 1988	2.34	45
Fluoride (as F)	mg/L	APHA 23rd Edition 2017,4500-F--D	0.1099	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	10.2	75
Magnesium (as Mg)	mg/L	IS 3025 (Part-46):1994	2.8	30
Iron (as Fe)	mg/L	APHA 23rd Edition, 3111 B&C	0.234	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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# ENVIRONMENTAL LABORATORIES &

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

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

CIN: U74999/JH2018PTC011125

## TEST REPORT

Test Report No. : ELES/RNC/2022/2352B	Report Release Date : 11.11.2022
Order No. : M&M/LHD/FY22-23/001	Order Date : 01/04/2022

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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# ENVIRONMENTAL LABORATORIES &

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

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

CIN: U74999JH2018PTC011125

## TEST REPORT

Test Report No. : ELES/RNC/2022/2352B	Report Release Date : 11.11.2022
Order No. : M&M/LHD/FY22-23/001	Order Date : 01/04/2022

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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# ENVIRONMENTAL LABORATORIES &

PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA  
HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D1Z4

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

CIN: U74999JH2018PTC031125

## TEST REPORT

Test Report No.	: ELES/RNC/2022/2276	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/3281
Address	: Lohardaga, Jharkhand-835203	Location	: Near Bunglapart Village Pakhar Bauxite Mine
Plant Status	: Operational	Sampling Date	: 12/09/2022 to 13/09/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 24	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 65	4	Weather Condition	: Clear
5	Longitude	: 84°35'36.40"E	6	Latitude	: 23°33'6.92"N

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)	12
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)	6.5
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)	<0.002
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





CIN: U74999JH2018PTC011125

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDAMA  
HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE97130124

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No. : ELES/RNC/2022/2276

Report Release Date : 11.11.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 11): 2004	05(Annual)	<2.0
Benzo (a) Pyrene*	$\text{ng}/\text{m}^3$	IS 5182 (Part- 12): 2006	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, MAHSAROVAR ENCLAVE, TUPUDANA  
HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D124

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No. : ELES/RNC/2022/2277	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/3282
Address	: Lohardaga, Jharkhand-835203	Location	: Yatri Shed (Near K-10) Pakhar Bauxite Mine
		Sampling Date	: 12/09/2022 to 13/09/2022
Plant Status	: Operational	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 24	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 65	4	Weather Condition	: Clear
5	Longitude	: 84°37'29.76"E	6	Latitude	: 23°33'12.96"N

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)	14
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)	0.004
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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## ENVIRONMENTAL LABORATORIES &

PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA  
HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D1Z4

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No. : ELES/RNC/2022/2277	Report Release Date : 11.11.2022
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Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 11): 2004	05(Annual)	<2.0
Benzo (a) Pyrene*	$\text{ng}/\text{m}^3$	IS 5182 (Part- 12): 2006	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, MAHSAROVAR ENCLAVE, TUPUDANA  
HATIA, RANCHI-834003 (JHARKHAND)  
GST NO:- 20AAECE9713D1Z4

**ENGINEERING SERVICES PVT. LTD.**

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

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

### TEST REPORT

Test Report No.	: ELES/RNC/2022/2278	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/3283
Address	: Lohardaga, Jharkhand-835203	Location	: Near Utkarmit Rajkiya Prathmik Vidyalaya Bunglapart Village
Plant Status	: Operational	Sampling Date	: 12/09/2022 to 13/09/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 24	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 65	4	Weather Condition	: Clear
5	Longitude	: 84°36'4.75"E	6	Latitude	: 23°32'40.97"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m <sup>3</sup>	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	30
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)	7.2
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



CIN: U74999JH2018PTC011125

## ENVIRONMENTAL LABORATORIES &

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

ENGINEERING SERVICES PVT. LTD.

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No.	: ELES/RNC/2022/2278	Report Release Date	: 11.11.2022
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Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 11): 2004	05(Annual)	<2.0
Benzo (a) Pyrene*	$\text{ng}/\text{m}^3$	IS 5182 (Part- 12): 2006	01(Annual)	<0.20

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

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

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



CIN: U74999JH2018PTC031125

# ENVIRONMENTAL LABORATORIES &

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

## ENGINEERING SERVICES PVT. LTD.

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No. : ELES/RNC/2022/2279	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/3284
Address	: Lohardaga, Jharkhand-835203	Location	: Near Utkarmit Rajkiya Prathmik Vidyalaya Dumrapart Village
Plant Status	: Operational	Sampling Date	: 12/09/2022 to 13/09/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 24	2	Barometric Pressure (mmHg)	: 741
3	Relative Humidity (%)	: 65	4	Weather Condition	: Clear
5	Longitude	: 84°37'29.39"E	6	Latitude	: 23°33'39.63"N

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)	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)	0.007
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

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



## ENVIRONMENTAL LABORATORIES &

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

ENGINEERING SERVICES PVT. LTD.

Email: [info@elespl.co.in](mailto:info@elespl.co.in), [eles.ranchi@gmail.com](mailto:eles.ranchi@gmail.com)

Phone no : 0651-2290103

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

### TEST REPORT

Test Report No.	: ELES/RNC/2022/2279	Report Release Date	: 11.11.2022
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Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 11): 2004	05(Annual)	<2.0
Benzo (a) Pyrene*	$\text{ng}/\text{m}^3$	IS 5182 (Part- 12): 2006	01(Annual)	<0.20

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

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

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



Annexure 3

Date – 01.09.2022

**Office Order**

Environmental Cell has been re-constituted at Pakhar Bauxite Mine (Area 35.12 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. Kiran Shankar Singh (Coordinator)
2. Mr. Anupam Kumar (Geologist)
3. Ms. Abhilasha Singh – Environment Engineer
4. Mr. Abhay Kumar – Environment Engineer

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

A handwritten signature in blue ink, appearing to read "Basudev Gangopadhyay".

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

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

## Annexure-5

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

The composite cost during the year 2022-23 for environmental protection & pollution control by Jharkhand Mines division of M/s Hindalco Industries Ltd & M/s Minerals & Minerals Ltd for implementation of the suggested measures in EC at our all the operating mines in the state of Jharkhand-namely Pakhar (115.13 ha), Pakhar (15.58 ha), Pakhar (109.507 ha), Pakhar (8.09 ha), Pakhar (35.12 ha), Serengdag (140.06 ha), Serengdag (155.81 ha), Jalim & Sanai (12.14 ha), Gurdari (584.19 ha), Amtipani (190.95 ha), Kujam I (80.97 ha) Kujam II (157.38 ha), Bagru (75.41 ha), Hisri New (14.55 ha), Chiro kukud (152.57 ha), Orsa pat (196.36 ha), Bhusar (65.31 ha), Bimarla Bauxite Mines (134.52 ha) and Amtipani Chirodih (130.01 ha) Bauxite Mine.

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

\*\*Part of OB removed cost.

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

Registered Parcel



**GOVERNMENT OF INDIA  
MINISTRY OF MINES  
INDIAN BUREAU OF MINES  
OFFICE OF THE REGIONAL CONTROLLER OF MINES**

Telephone: (0651) 2242889  
(0651) 2242903  
Fax: (0651) 2242903  
E-mail: ro.ranchi@ibm.gov.in

No.: RAN/LOH/BX/FMCP-02/2014-15.

318-B, Road No.- 3,  
Ashok Nagar,  
Ranchi - 834 002,  
Date: 23/04/2015

To:  **Shri A. K. Agarwal,**  
Director cum Nominated Owner  
M/s HINDALCO Industries Ltd.,  
Court Road, Lohardaga - 835 302 (Jharkhand).

**Sub: Approval of Final Mine Closure Plan in respect of PAKHAR Bauxite Mines of M/s HINDALCO Industries Ltd. over an area of 38.95 hectares in village-Pakhar, Lohardaga district of Jharkhand State submitted under Rule 23C of MCDR, 1988.**

Ref: Your A.G.M. (Geology) letters no. HIL/LHD/BX/IBM/245 Dated 02/08/2014

Your R.Q.P. letter nos. NIL, dated.03/11/2014 & 26/12/2014

This office letter no. रांची/लोहरदगा/बाक्साइट/एफ.एम.सी पी.-02/2014-15,दिनांक:26/09/2014

Sir,

In exercise of the powers conferred by the sub-rule 2 of Rule 23C of Mineral Conservation & Development Rules, 1988; I hereby **approve** the above said Final Mine Closure Plan in respect of PAKHAR Bauxite mines of M/s HINDALCO Industries Ltd. over an area of 38.95 hectares in village-Pakhar, Lohardaga district of Jharkhand State, submitted under Rule 23C of MCDR, 1988. This approval is subject to the following conditions: -

- (i) that the Final Mine Closure Plan is approved without prejudice to any other laws applicable to the mine/lease area from time to time whether made by the Central Government, State Government or any other Authority.
- (ii) that this approval of the Final Mine Closure Plan does not, in any way, imply the approval of the Government in terms of any other provisions of the Mines & Minerals (Development & Regulation) Act, 1957 or the Mineral Concession Rules, 1960 and any other laws including Forest (Conservation) Act, 1980, Environment (Protection) Act, 1986 and the rules made there under.
- (iii) that the Final Mine Closure Plan is approved without prejudice to any order or direction from any court of competent jurisdiction.
- (iv) that the Regional Office, Indian Bureau of Mines, Ranchi shall be informed after completion of activities of final mine closure as per proposal of the Final Mine Closure Plan.
- (v) that the Yearly report as required under Rule 23E(2) of MCDR, 1988 setting forth the extent of protection and rehabilitation works carried out as envisaged in the approved final mine closure plan and if there is any deviations, reasons thereof shall be submitted before 1<sup>st</sup> July of every year to the Regional office, Indian Bureau of Mines, Ranchi.

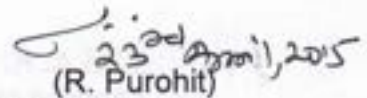
Contd...2

No.: RAN/LOH/BX/FMCP-02/2014-15.

- (iv) The financial assurance submitted for Rs. 2,74,000/- (Two lacs seventy four thousand only) is valid up to 31/03/2016. A new bank guarantee is to be submitted on or before its expiry i.e. 31/03/2016, if the rehabilitation proposal not completed by the time.

Yours faithfully

Encl.: One copy of approved  
Final Mine Closure Plan.

  
(R. Purohit)

Regional Controller of Mines

Copy forwarded for information to: -

1. **The Director (Mines),**  
Directorate of Mines and Geology,  
Government of Jharkhand,  
Nepal House Area, Doranda,  
Ranchi - 834 002. (Jharkhand), along with a copy of approved Final Mine Closure Plan. It is requested to ensure that the determination of aforesaid lease is not accepted unless and until a certificate issued by the Indian Bureau of Mines under Rule 29A (2) of Mineral Concession Rules, 1960 to the effect that protective, reclamation and rehabilitative works as envisaged in the approved Final Mine Closure Plan are carried out.
2. **The Director of Mines Safety**  
Ranchi Region  
CMPDIL-Campus  
3<sup>rd</sup> Floor, Old Building  
Kanke Road, Ranchi-834008  
along with a copy of approved Final Mine Closure Plan.
3. **Shri P.K. Sen, RQP,**  
Kali Mandir Road,  
Doranda, Ranchi - 834 002.

  
(R. Purohit)

Regional Controller of Mines