



HIL/LHD/ENV/MoEF/709

Date: 23.05.2024

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

Sub: Compliance Report of EC conditions for Pakhar (35.12 ha) Bauxite Mining project of M/s Hindalco Industries Limited located in Lohardaga, Jharkhand for the period October'23 to March'24.

Ref: Environmental Clearance letter no J-11015/137/2006-IA II (M) dated 5th 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 October'23 to March'24.

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, mef@ori.nic.in, mef@nic.in, mef.or@nic.in, mscb.cpcb@nic.in, zolkatta.cpcb@nic.in, ranchiispcb@gmail.com, roranchi47@gmail.com

Hindalco Industries Limited

Mines Division, Court Road, Lohardaga 835302, Jharkhand, India

T: +91 6526 224112/224015/223113 | E: hindalco@adityabirla.com | W: www.hindalco.com

Registered Office: Ahura Centre, 1st Floor, B Wing, Mahakali Caves Road, Andheri (East), Mumbai 400 093, India

T: +91 22 6691 7000 | F: +91 22 6691 7001

Corporate ID No.: L27020MH1958PLC011238

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 1st October'2023 to 31st March'2024**

Specific Conditions: -

Condition i: - All the conditions stipulated by SPCB in their NOC shall be effectively implemented.

Reply: Implementation of the stipulated conditions in the NOC was fulfilled, after which consent to operate was obtained from time to time while the mine was operational.

Presently, the mine has not been in operation as the winning of bauxite is closed w.e.f 08.06.2009 due to the exhaustion of mineral reserve. The final mine closure plan (FMCP) has been submitted and approved by Indian Bureau of Mines.

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

Reply: - Presently, the mine has not been in operation as the winning of bauxite is closed w.e.f 08.06.2009 due to the exhaustion of mineral reserve. The final mine closure plan (FMCP) has been submitted and approved by Indian Bureau of Mines.

The entire land was acquired in accordance with applicable laws while the mine was operational.

Condition iii: - 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.

Reply: - Presently, the mine has not been in operation as the winning of bauxite is closed w.e.f 08.06.2009 due to the exhaustion of mineral reserve. The final mine closure plan (FMCP) has been submitted and approved by Indian Bureau of Mines.

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

Reply: - Presently, the mine has not been in operation as the winning of bauxite is closed w.e.f 08.06.2009 due to the exhaustion of mineral reserve. The final mine closure plan (FMCP) has been submitted and approved by Indian Bureau of Mines.

Shallow depth mining was carried out in the past; therefore, groundwater was not intersected during mining operations while the mine was operational.

Condition v: - The project proponent shall ensure that no natural watercourse shall be obstructed due to any mining operation.

Reply: - No natural water course was obstructed during mining operations in past. Presently, the mine has not been in operation as the winning of bauxite is closed w.e.f 08.06.2009 due to the exhaustion of mineral reserve. The final mine closure plan (FMCP) has been submitted and approved by Indian Bureau of Mines.

Condition vi: -Top soil shall be stacked properly with proper slope with adequate measures and should be used for reclamation and rehabilitation of mined out areas.

Reply: - The winning of bauxite is closed w.e.f 08.06.2009 due to the exhaustion of mineral reserve. Therefore, the mine has not been in operation. The final mine closure plan (FMCP) has been submitted and approved by Indian Bureau of Mines.

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

Reply: - Presently, The mine has not been in operation as the winning of bauxite is closed w.e.f 08.06.2009 due to the exhaustion of mineral reserve. There is no external OB dump in mine lease area.

The final mine closure plan (FMCP) has been submitted and approved by Indian Bureau of Mines.

Condition viii: - Catch drains and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from mine working. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains should be regularly desilted particularly after monsoon and maintained properly. Garland drain (size, gradient and length) shall be constructed for mine pit and sump capacity should be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper setting of silt material. Sedimentation pits should be constructed at the corners of the garland drains and desilted at regular intervals.

Reply: - Presently, the mine has not been in operation as the winning of bauxite is closed w.e.f 08.06.2009 due to the exhaustion of mineral reserve. The final mine closure plan (FMCP) has been submitted and approved by Indian Bureau of Mines.

Condition ix: - 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.

Reply: - Already 32.85 ha has been planted in and around the mine/Plateau area. Presently, the mine has not been in operation as the winning of bauxite is closed w.e.f 08.06.2009 due to the exhaustion of mineral reserve. The final mine closure plan (FMCP) has been submitted and approved by Indian Bureau of Mines.

Condition x: - 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.

Reply: - Presently, the mine has not been in operation as the winning of bauxite is closed w.e.f 08.06.2009 due to the exhaustion of mineral reserve. The final mine closure plan (FMCP) has been submitted and approved by Indian Bureau of Mines.

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

Reply: - Presently, the mine has not been in operation as the winning of bauxite is closed w.e.f 08.06.2009 due to the exhaustion of mineral reserve. The final mine closure plan (FMCP) has been submitted and approved by Indian Bureau of Mines.

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

Reply: - Presently, the mine has not been in operation as the winning of bauxite is closed w.e.f 08.06.2009 due to the exhaustion of mineral reserve. The final mine closure plan (FMCP) has been submitted and approved by Indian Bureau of Mines.

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

Reply: - The winning of bauxite is closed w.e.f 08.06.2009 due to the exhaustion of mineral reserve. Therefore, the mine has not been in operation.

Condition xiv: - Drills should either be operated with dust extractors or should be equipped with water injection system.

Reply: - The winning of bauxite is closed w.e.f 08.06.2009 due to the exhaustion of mineral reserve. Therefore, the mine has not been in operation.

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

Reply: - The winning of bauxite is closed w.e.f 08.06.2009 due to the exhaustion of mineral reserve. Therefore, the mine has not been in operation.

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

Reply: - The winning of bauxite is closed w.e.f 08.06.2009 due to the exhaustion of mineral reserve. Therefore, the mine has not been in operation.

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

Reply: - The winning of bauxite is closed w.e.f 08.06.2009 due to the exhaustion of mineral reserve. Therefore, the mine has not been in operation.

Condition xviii: - **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.**

Reply: - The winning of bauxite is closed w.e.f 08.06.2009 due to the exhaustion of mineral reserve. Therefore, the mine has not been in operation.
The final mine closure plan (FMCP) has been submitted and approved by Indian Bureau of Mines.

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

Reply: - Approval letter of Final Mine closure plan duly approved by Indian Bureau of Mines is hereby attached as **Annexure-1**.

General Conditions

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

Reply: - The winning of bauxite is closed w.e.f 08.06.2009 due to the exhaustion of mineral reserve. Therefore, the mine has not been in operation.

The final mine closure plan (FMCP) has been submitted and approved by Indian Bureau of Mines.

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

Reply: - The winning of bauxite is closed w.e.f 08.06.2009 due to the exhaustion of mineral reserve. Therefore, the mine has not been in operation.

The final mine closure plan (FMCP) has been submitted and approved by Indian Bureau of Mines.

Data of the same are enclosed herewith as **Annexure 4**.

Condition iii: - Four ambient air quality-monitoring station should be established in the core zone as well as in the buffer zone for RPM, SPM, SO₂, NO_x monitoring. Location of the stations should be decided based on the metrological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board.

Reply: - Monitoring Reports of Pakhar Plateau is enclosed as **Annexure-2**.

Condition iv: - Data on ambient air quality (RPM, SPM, SO₂, NO_x) should be regularly submitted to the Ministry including its Regional office located at Bhubneshwar and the State Pollution Control Board / Central pollution Control Board once in six months.

Reply: - Monitoring Reports of Pakhar Plateau is enclosed as **Annexure-2**.

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

Reply: - The winning of Bauxite is closed w.e.f 08.06.2009 due to exhaustion of resources. Therefore, the mine has not been in operation.

The final mine closure plan (FMCP) has been submitted and approved by Indian Bureau of Mines.

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

Reply: - The winning of Bauxite is closed w.e.f 08.06.2009 due to exhaustion of resources. Therefore, the mine has not been in operation.

The final mine closure plan (FMCP) has been submitted and approved by Indian Bureau of Mines.

Condition vii: - Industrial wastewater (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 19th May, 1993 and 31st December,1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.

Reply: - The winning of bauxite is closed w.e.f 08.06.2009 due to the exhaustion of mineral reserve. Therefore, the mine has not been in operation. The final mine closure plan (FMCP) has been submitted and approved by Indian Bureau of Mines.

Condition viii: - **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**

Reply: - The winning of bauxite is closed w.e.f 08.06.2009 due to the exhaustion of mineral reserve. Therefore, the mine has not been in operation. The final mine closure plan (FMCP) has been submitted and approved by Indian Bureau of Mines.

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

Reply: - The winning of bauxite is closed w.e.f 08.06.2009 due to the exhaustion of mineral reserve. Therefore, the mine has not been in operation. We have Environment Management Cell for our Pakhar Group of Mines. This cell is looking after Environment issues of this Mine. The copy of the same is attached herewith as **Annexure-3**. The final mine closure plan (FMCP) has been submitted and approved by Indian Bureau of Mines.

Condition x: - **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.**

Reply: - The winning of bauxite is closed w.e.f. 08.06.2009 due to the exhaustion of mineral reserve. Therefore, the mine has not been in operation. The final mine closure plan (FMCP) has been submitted and approved by Indian Bureau of Mines.

Approval letter of Final Mine closure plan duly approved by IBM is hereby attached as **Annexure-1**

Condition xi: - **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.**

Reply: - Statement of budgetary provision and actual expenses for environmental protection measure is enclosed as **Annexure-5**. The final mine closure plan (FMCP) has been submitted and approved by Indian Bureau of Mines. Now, the Regional Office of MoEFC&CC is in Ranchi.

Condition xii: - **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.

Reply: - Agreed. However, the winning of bauxite is closed w.e.f 08.06.2009 due to the exhaustion of mineral reserve. Therefore, the mine has not been in operation. Now, the Regional Office of MoEF&CC is in Ranchi.

Condition xiii: - 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.

Reply: - Being Complied. Six monthly reports on status of compliance of stipulated environmental clearance conditions are being submitted to the MoEFCC, Zonal office of CPCB and JSPCB Ranchi. Now, the Regional Office of MoEF&CC is in Ranchi.

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

Reply: - Already complied. A copy of clearance letter has already been submitted.

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

Reply: - Already complied. The EC Letter has been submitted to JSPCB for display of same at its Regional office and other government offices.

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

Reply: - Already complied. The information on grant of the EC has been published in two local newspapers. The copy of the advertisement has already been submitted to the Regional Office of the MoEFCC vide our letter no. HIL/GMO(M)/ENV/142 dated 23.05.2007. Now, the Regional office of MoEF&CC is in Ranchi.



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

Telephone: (0651) 2242889
(0651) 2242903
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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/बाक्साइड/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: -

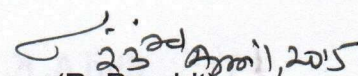
- (i) that the Final Mine Closure Plan is approved without prejudice to any other laws applicable to the mine/lease area from time to time whether made by the Central Government, State Government or any other Authority.
- (ii) that this approval of the Final Mine Closure Plan does not, in any way, imply 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 1st July of every year to the Regional office, Indian Bureau of Mines, Ranchi.

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
3rd 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

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

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

Pakhar.(15.58) Bauxite Mine-Environmental Monitoring Report



October 2023



CONTENT

| Minerals & Minerals : Pakhar (15.58) | | Environmental Monitoring Report | October 2023 |
|---|---|---------------------------------|--------------|
| Pakhar (15.58) | | | |
| AMBIENT AIR QUALITY- CORE ZONE | | | |
| 1 | Near Mine Office | | |
| 2 | Near Weigh Bridge | | |
| 3 | Near Mine Quarry No-M1 | | |
| 4 | Near Mine Quarry No-M4 | | |
| AMBIENT AIR QUALITY- BUFFER ZONE | | | |
| 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 | | |





CIN: U74999JH2018PTC011125

ENVIRONMENTAL LABORATORIES &

PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA
HATIA, RANCHI-834003 (JHARKHAND)
GST NO:-20AAACE9713D1Z4

ENGINEERING SERVICES PVT. LTD.

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

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2023/4417 | Report Release Date : 22.11.2023 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|--|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RNC/2023/AA/3943 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Mine Office Pakhar (15.58 ha) Bauxite Mine |
| | | Sampling Date | : 15.10.2023 to 16.10.2023 |
| Mines Status | : Operational | Sample Received Date | : 28.10.2023 |
| Period of Analysis | : 28.10.2023 to 09.11.2023 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Drawn By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 25 | 2 | Barometric Pressure (mmHg) | : 736 |
| 3 | Relative Humidity (%) | : 57 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°36'36.29"E | 6 | Latitude | : 23°32'24.04"N |

| Discipline : Chemical | | Group : Atmospheric Pollution | | |
|--------------------------------------|-------------------|---------------------------------|--------|------------------|
| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2022 | 54 | 100 (24hrs) |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part-24): 2019 | 26 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2022 | 5.8 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2006; RA2022 | 20.1 | 80 (24hrs) |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part-25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | <1.0 | 2 (8hrs) |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004; RA2019 | 0.011 | 1 (24hrs) |
| Nickel (Ni) | ng/m ³ | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |

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
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Phone no.: 0651-2290103

Website: www.elespl.co.in

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2023/4417 | Report Release Date : 22.11.2023 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

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

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



****End of Report****


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

Page 2 of 2

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ENVIRONMENTAL LABORATORIES &

PLDT NO-30, MANSAROVAR ENCLAVE, TUPUDANA
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GST NO:- 20AAECE97130124

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

CIN: U74999JH2018PTC011125

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2023/4418 | Report Release Date : 22.11.2023 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RNC/2023/AA/3944 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Weigh Bridge Pakhar (15.58 ha) Bauxite Mine |
| | | Sampling Date | : 15.10.2023 to 16.10.2023 |
| Mines Status | : Operational | Sample Received Date | : 28.10.2023 |
| Period of Analysis | : 28.10.2023 to 09.11.2023 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Drawn By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 25 | 2 | Barometric Pressure (mmHg) | : 736 |
| 3 | Relative Humidity (%) | : 57 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°36'34.50"E | 6 | Latitude | : 23°32'26.21"N |

| Discipline : Chemical | | Group : Atmospheric Pollution | | |
|--------------------------------------|-------------------|---------------------------------|--------|------------------|
| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2022 | 69 | 100 (24hrs) |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part-24): 2019 | 33 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2022 | 7.1 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2006; RA2022 | 23.5 | 80 (24hrs) |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part-25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | <1.0 | 2 (8hrs) |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004; RA2019 | 0.015 | 1 (24hrs) |
| Nickel (Ni) | ng/m ³ | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |



CIN: U74999JH2018PTC011125

ENVIRONMENTAL LABORATORIES &

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TEST REPORT

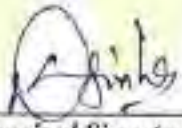
| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2023/4418 | Report Release Date : 22.11.2023 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

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

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



****End of Report****


Authorized Signatory

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



CIN: U74999JK2018PTC011125

ENVIRONMENTAL LABORATORIES &

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TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2023/4419 | Report Release Date : 22.11.2023 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RNC/2023/AA/3945 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Mine Quarry No- M1 Pakhar (15.58 ha) Bauxite Mine |
| | | Sampling Date | : 15.10.2023 to 16.10.2023 |
| Mines Status | : Operational | Sample Received Date | : 28.10.2023 |
| Period of Analysis | : 28.10.2023 to 09.11.2023 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Drawn By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|----------------|---|----------------------------|----------------|
| 1 | Average Temperature (°C) | : 25 | 2 | Barometric Pressure (mmHg) | : 736 |
| 3 | Relative Humidity (%) | : 57 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°36'6.67"E | 6 | Latitude | : 23°32'9.19"N |

| Discipline : Chemical | | Group : Atmospheric Pollution | | |
|--------------------------------------|-------------------|---------------------------------|--------|------------------|
| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2022 | 54 | 100 (24hrs) |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 29 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2022 | 7.1 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2006; RA2022 | 21.3 | 80 (24hrs) |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | <1.0 | 2 (8hrs) |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004; RA2019 | 0.012 | 1 (24hrs) |
| Nickel (Ni) | ng/m ³ | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |

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Phone no.: 0651-2290103

Website: www.elespl.co.in

CIN: U74999JH2018PTC011125

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2023/4419 | Report Release Date : 22.11.2023 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

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

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



****End of Report****

Authorized Signatory

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



ENVIRONMENTAL LABORATORIES &

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CIN: U74999JH2018PTC011125

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2023/4420 | Report Release Date : 22.11.2023 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|--|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RNC/2023/AA/3946 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Mine Quarry No-M4 Pakhar (15.58 ha) Bauxite Mine |
| | | Sampling Date | : 15.10.2023 to 16.10.2023 |
| Mines Status | : Operational | Sample Received Date | : 28.10.2023 |
| Period of Analysis | : 28.10.2023 to 09.11.2023 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Drawn By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 25 | 2 | Barometric Pressure (mmHg) | : 736 |
| 3 | Relative Humidity (%) | : 57 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°36'8.99"E | 6 | Latitude | : 23°32'13.12"N |

| Discipline : Chemical | | Group : Atmospheric Pollution | | |
|--------------------------------------|-------------------|---------------------------------|--------|------------------|
| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2022 | 53 | 100 (24hrs) |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part-24): 2019 | 29 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2022 | 6.3 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2006; RA2022 | 22.8 | 80 (24hrs) |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part-25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | <1.0 | 2 (8hrs) |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004; RA2019 | 0.014 | 1 (24hrs) |
| Nickel (Ni) | ng/m ³ | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |

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ENVIRONMENTAL LABORATORIES &

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CIN: U74999JH2018PTC011125

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2023/4420 | Report Release Date : 22.11.2023 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

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

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



****End of Report****

Authorised Signatory

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



ENVIRONMENTAL LABORATORIES &

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QIN: 101896/H3018PTCO/1125

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2023/4425 | Report Release Date : 22.11.2023 |
| Work Order No. : 13612310218 | Work Order Date : 21.04.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|--|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2023/AA/3951 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Bunglapart Village Pakhar Bauxite Mine |
| | | Sampling Date | : 14.10.2023 to 15.10.2023 |
| Mines Status | : Operational | Sample Received Date | : 28.10.2023 |
| Period of Analysis | : 28.10.2023 to 09.11.2023 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Drawn By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 25 | 2 | Barometric Pressure (mmHg) | : 734 |
| 3 | Relative Humidity (%) | : 57 | 4 | Weather Condition | : Clear |

| Discipline : Chemical | | Group : Atmospheric Pollution | | |
|--------------------------------------|-------------------|---------------------------------|--------|------------------|
| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2022 | 46 | 100 (24hrs) |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 22 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2022 | 5.5 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2006; RA2022 | 19.7 | 80 (24hrs) |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | <1.0 | 2 (8hrs) |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004; RA2019 | <0.002 | 1 (24hrs) |
| Nickel (Ni) | ng/m ³ | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |

Page 1 of 2

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"Save Environment, Save Future"



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TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2023/4425 | Report Release Date : 22.11.2023 |
| Work Order No. : 13612310218 | Work Order Date : 21.04.2023 |

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

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



****End of Report****


Authorized Signatory

Mr. Deependra Kumar Sinha
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TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2023/4426 | Report Release Date : 22.11.2023 |
| Work Order No. : 13612310218 | Work Order Date : 21.04.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2023/AA/3952 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Yatri Shed (Near K-10) Pakhar Bauxite Mine |
| | | Sampling Date | : 14.10.2023 to 15.10.2023 |
| Mines Status | : Operational | Sample Received Date | : 28.10.2023 |
| Period of Analysis | : 28.10.2023 to 09.11.2023 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Drawn By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | |
|----------------------------|--------------------------|------|------------------------------------|
| 1 | Average Temperature (°C) | : 25 | 2 Barometric Pressure (mmHg) : 734 |
| 3 | Relative Humidity (%) | : 57 | 4 Weather Condition : Clear |

| Discipline : Chemical | | Group : Atmospheric Pollution | | |
|--------------------------------------|-------------------|---------------------------------|--------|------------------|
| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2022 | 55 | 100 (24hrs) |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 26 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2022 | 5.9 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2006; RA2022 | 19.1 | 80 (24hrs) |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | <1.0 | 2 (8hrs) |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004; RA2019 | <0.002 | 1 (24hrs) |
| Nickel (Ni) | ng/m ³ | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |



CIN: U74999JH2016PTC011125

ENVIRONMENTAL LABORATORIES &

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ENGINEERING SERVICES PVT. LTD.

Email: info@elespl.co.in, eles.ranchi@gmail.com

Phone no.: 0651-2290103

Website: www.elespl.co.in

TEST REPORT


| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2023/4426 | Report Release Date : 22.11.2023 |
| Work Order No. : 13612310218 | Work Order Date : 21.04.2023 |

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

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



****End of Report****


Authorized Signatory
Mr. Deependra Kumar Sinha
Ph: Environmental Engg
ELES Pvt. Ltd. Technical Manager



ENVIRONMENTAL LABORATORIES &

ENGINEERING SERVICES PVT. LTD.

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CG: U71950JH2018PTC021129

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2023/4427 | Report Release Date : 22.11.2023 |
| Work Order No. : 13612310218 | Work Order Date : 21.04.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2023/AA/3953 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Utkarmit Rajkiya Prathmik Vidyalaya Bunglapart Village Pakhar Bauxite Mine |
| | | Sampling Date | : 14.10.2023 to 15.10.2023 |
| Mines Status | : Operational | Sample Received Date | : 28.10.2023 |
| Period of Analysis | : 28.10.2023 to 09.11.2023 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Drawn By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

METEOROLOGICAL INFORMATION

| | | | | | |
|---|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 25 | 2 | Barometric Pressure (mmHg) | : 734 |
| 3 | Relative Humidity (%) | : 57 | 4 | Weather Condition | : Clear |

| Discipline : Chemical | | Group : Atmospheric Pollution | | |
|--------------------------------------|-------------------|---------------------------------|--------|------------------|
| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2022 | 49 | 100 (24hrs) |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 25 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2022 | 5.9 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2006; RA2022 | 18.5 | 80 (24hrs) |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | <1.0 | 2 (8hrs) |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004; RA2019 | <0.002 | 1 (24hrs) |
| Nickel (Ni) | ng/m ³ | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |

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TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2023/4427 | Report Release Date : 22.11.2023 |
| Work Order No. : 13612310218 | Work Order Date : 21.04.2023 |

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

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



****End of Report****


Authorized Signatory

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



ENVIRONMENTAL LABORATORIES A

Plot No-30, NANSAROVAR ENCLAVE, TURUDA NA-
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ENGINEERING CONSULTANTS PVT. LTD.

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TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2023/4428 | Report Release Date : 22.11.2023 |
| Work Order No. : 13612310218 | Work Order Date : 21.04.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2023/AA/3954 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Uttkarnit Rajkiya Prathmik Vidyalaya Dumrapart Village Pakhar Bauxite Mine |
| | | Sampling Date | : 14.10.2023 to 15.10.2023 |
| Mines Status | : Operational | Sample Received Date | : 28.10.2023 |
| Period of Analysis | : 28.10.2023 to 09.11.2023 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Drawn By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 25 | 2 | Barometric Pressure (mmHg) | : 734 |
| 3 | Relative Humidity (%) | : 57 | 4 | Weather Condition | : Clear |

| Discipline : Chemical | | Group : Atmospheric Pollution | | |
|--------------------------------------|-------------------|---------------------------------|--------|------------------|
| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23); 2006; RA2022 | 55 | 100 (24hrs) |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24); 2019 | 20 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2); 2001; RA2022 | 5.7 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6); 2006; RA2022 | 10.5 | 80 (24hrs) |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9); 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25); 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10); 1999; RA2019 | <1.0 | 2 (8hrs) |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22); 2004; RA2019 | <0.002 | 1 (24hrs) |
| Nickel (Ni) | ng/m ³ | IS 5182 (Part-26);2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |

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TEST REPORT


| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2023/4428 | Report Release Date : 22.11.2023 |
| Work Order No. : 13612310218 | Work Order Date : 21.04.2023 |

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

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



****End of Report****


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

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

Pakhar (15.58) Bauxite Mine-Environmental Monitoring Report

November- 2023



CONTENT

| Minerals & Minerals : Pakhar (15.58) | | Environmental Monitoring Report | November- 2023 |
|---|---|---------------------------------|----------------|
| Pakhar (15.58) | | | |
| AMBIENT AIR QUALITY- CORE ZONE | | | |
| 1 | Near Mine Office | | |
| 2 | Near Weigh Bridge | | |
| 3 | Near Mine Quarry No-M1 | | |
| 4 | Near Mine Quarry No-M4 | | |
| AMBIENT AIR QUALITY- BUFFER ZONE | | | |
| 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 | | |
| DRINKING WATER | | | |





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CIN: U74599JH2018FTCO11125

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2023/4760 | Report Release Date : 21.12.2023 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|--|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RNC/2023/AA/4230 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Mine Office Pakhar (15.58 ha) Bauxite Mine |
| | | Sampling Date | : 15.11.2023 to 16.11.2023 |
| Mines Status | : Operational | Sample Received Date | : 24.11.2023 |
| Period of Analysis | : 24.11.2023 to 08.12.2023 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Drawn By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 20 | 2 | Barometric Pressure (mmHg) | : 736 |
| 3 | Relative Humidity (%) | : 51 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°36'36.29"E | 6 | Latitude | : 23°32'24.04"N |

| Discipline : Chemical | | Group : Atmospheric Pollution | | |
|--------------------------------------|-------------------|---------------------------------|--------|------------------|
| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2022 | 60 | 100 (24hrs) |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 29 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2022 | 6.4 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2006; RA2022 | 23.5 | 80 (24hrs) |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | <1.0 | 2 (8hrs) |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004; RA2019 | 0.016 | 1 (24hrs) |
| Nickel (Ni) | ng/m ³ | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |



Reviewed by

****End of Report****

Authorized Signatory
Deependra Kumar Sinha
Environmental Engg.

Page 1 of 1

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Save Environment, Save Future



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CIN: U74999JH2018PT001125

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2023/4760 | Report Release Date : 21.12.2023 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|--|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RNC/2023/AA/4230 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Mine Office Pakhar (15.58 ha) Bauxite Mine |
| Mines Status | : Operational | Sampling Date | : 15.11.2023 to 16.11.2023 |
| Period of Analysis | : 24.11.2023 to 08.12.2023 | Sample Received Date | : 24.11.2023 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Drawn By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |


| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 20 | 2 | Barometric Pressure (mmHg) | : 736 |
| 3 | Relative Humidity (%) | : 51 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°36'36.29"E | 6 | Latitude | : 23°32'24.04"N |

| Discipline : Chemical | | Group : Atmospheric Pollution | | |
|---|-------------------|-------------------------------|--------|------------------|
| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
| Benzene (C ₆ H ₆)* | µg/m ³ | IS 5182 (Part-1)2006;RA2017 | <1.0 | 05(Annual) |
| Benzo-(a)-Pyrene* | ng/m ³ | IS 5182 (Part-12)2004;RA2019 | <0.5 | 01(Annual) |

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



****End of Report****


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

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ENVIRONMENTAL LABORATORIES & ENGINEERING SERVICES PVT. LTD.

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Website : www.elespl.co.in**



CIN: U74999JH2018PTC011125

TEST REPORT

| | |
|---|---|
| Test Report No. : ELES/RNC/2023/4761 | Report Release Date : 21.12.2023 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RNC/2023/AA/4231 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Weigh Bridge Pakhar (15.58 ha) Bauxite Mine |
| Mines Status | : Operational | Sampling Date | : 15.11.2023 to 16.11.2023 |
| Period of Analysis | : 24.11.2023 to 08.12.2023 | Sample Received Date | : 24.11.2023 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Drawn By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | |
|----------------------------|--------------------------|-----------------|------------------------------|
| 1 | Average Temperature (°C) | : 20 | 2 Barometric Pressure (mmHg) |
| 3 | Relative Humidity (%) | : 51 | 4 Weather Condition |
| 5 | Longitude | : 84°36'34.50"E | 6 Latitude |
| | | | : 23°32'26.21"N |

| Discipline : Chemical | | Group : Atmospheric Pollution | | |
|--------------------------------------|-------------------|---------------------------------|--------|------------------|
| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2022 | 76 | 100 (24hrs) |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 38 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2022 | 8.2 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2006; RA2022 | 25.4 | 80 (24hrs) |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | <1.0 | 2 (8hrs) |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004; RA2019 | 0.021 | 1 (24hrs) |
| Nickel (Ni) | ng/m ³ | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |



****End of Report****

Dr. Deepshikha Kulkarni Sinha
 Ph. D. Environmental Engg
ELES Pvt. Ltd. Technical Manager

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ENVIRONMENTAL LABORATORIES &

ENGINEERING SERVICES PVT. LTD.

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Website : www.elespl.co.in

CIN: U74999JH2018PTC011125

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2023/4761 | Report Release Date : 21.12.2023 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RNC/2023/AA/4231 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Weigh Bridge Pakhar (15.58 ha) Bauxite Mine |
| | | Sampling Date | : 15.11.2023 to 16.11.2023 |
| Mines Status | : Operational | Sample Received Date | : 24.11.2023 |
| Period of Analysis | : 24.11.2023 to 08.12.2023 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Drawn By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

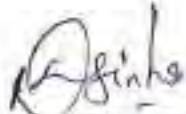
| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 20 | 2 | Barometric Pressure (mmHg) | : 736 |
| 3 | Relative Humidity (%) | : 51 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°36'34.50"E | 6 | Latitude | : 23°32'26.21"N |

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

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



****End of Report****


Authorised Signatory
 Deependra Kumar Sinha
 M. D Environmental Engg.
 Pvt. Ltd. Technical Manager

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CIN: U74999JH2018PTC011125

TC-8839

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2023/4762 | Report Release Date : 21.12.2023 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|---|---|--|---|
| Customer Name : Minerals & Minerals Limited | Address : Lohardaga, Jharkhand-835302 | Sample Ref. No. : ELES/RNC/2023/AA/4232 | Location : Near Mine Quarry No- M1 Pakhar (15.58 ha) Bauxite Mine |
| Mines Status : Operational | Period of Analysis : 24.11.2023 to 08.12.2023 | Sampling Date : 15.11.2023 to 16.11.2023 | Sample Received Date : 24.11.2023 |
| | | Type of Sample : Ambient Air | Sampling Procedure : ELES/DOC/SMPL/02 |
| | | Sample Drawn By : ELES Pvt. Ltd. | Sample Condition : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | |
|----------------------------|-------------------------------|---|----------------------------------|
| 1 | Average Temperature (°C) : 20 | 2 | Barometric Pressure (mmHg) : 736 |
| 3 | Relative Humidity (%) : 51 | 4 | Weather Condition : Clear |
| 5 | Longitude : 84°36'6.67"E | 6 | Latitude : 23°32'9.19"N |

| Discipline : Chemical | | Group : Atmospheric Pollution | | |
|--------------------------------------|-------------------|---------------------------------|--------|------------------|
| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2022 | 58 | 100 (24hrs) |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part-24): 2019 | 33 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2022 | 9.1 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2006; RA2022 | 23.5 | 80 (24hrs) |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part-25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | <1.0 | 2 (8hrs) |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004; RA2019 | 0.008 | 1 (24hrs) |
| Nickel (Ni) | ng/m ³ | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |



Ph. D. Sinha
Discovered Signature
Ph. D. Environmental Engg.

****End of Report****

Page 1 of 1

ELES Pvt. Ltd. Technical Manager

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"Save Environment, Save Future"



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Website : www.elespl.co.in

CIN: U74999BH2018PTC031125

TEST REPORT

| | | | |
|-----------------|----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2023/4762 | Report Release Date | : 21.12.2023 |
| Work Order No. | : M&M/23-24/01 | Work Order Date | : 31.03.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RNC/2023/AA/4232 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Mine Quarry No- M1 Pakhar (15.58 ha) Bauxite Mine |
| Mines Status | : Operational | Sampling Date | : 15.11.2023 to 16.11.2023 |
| Period of Analysis | : 24.11.2023 to 08.12.2023 | Sample Received Date | : 24.11.2023 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Drawn By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|----------------|---|----------------------------|----------------|
| 1 | Average Temperature (°C) | : 20 | 2 | Barometric Pressure (mmHg) | : 736 |
| 3 | Relative Humidity (%) | : 51 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°36'6.67"E | 6 | Latitude | : 23°32'9.19"N |

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

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



Reviewed by

****End of Report****

Authorised Signatory

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

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Website : www.elespl.co.in



TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2023/4763 | Report Release Date : 21.12.2023 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|--|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RNC/2023/AA/4233 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Mine Quarry No-M4 Pakhar (15.58 ha) Bauxite Mine |
| | | Sampling Date | : 15.11.2023 to 16.11.2023 |
| Mines Status | : Operational | Sample Received Date | : 24.11.2023 |
| Period of Analysis | : 24.11.2023 to 08.12.2023 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Drawn By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 20 | 2 | Barometric Pressure (mmHg) | : 736 |
| 3 | Relative Humidity (%) | : 51 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°36'8.99"E | 6 | Latitude | : 23°32'13.12"N |

| Discipline : Chemical | | Group : Atmospheric Pollution | | |
|--------------------------------------|-------------------|---------------------------------|--------|------------------|
| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2022 | 58 | 100 (24hrs) |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part-24): 2019 | 33 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2022 | 6.9 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2006; RA2022 | 24.1 | 80 (24hrs) |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part-25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | <1.0 | 2 (8hrs) |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004; RA2019 | 0.009 | 1 (24hrs) |
| Nickel (Ni) | ng/m ³ | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |

Reviewed by

****End of Report****

Authorized Signatory
Mr. Deependra Kumar Sinha
Environmental Engg.

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Website: www.elespl.co.in

TEST REPORT

| | | | |
|-------------------------|-------------------------------|-----------------------|--|
| Test Report No. | : ELES/RNC/2023/4763 | Report Release Date | : 21.12.2023 |
| Work Order No. | : M&M/23-24/01 | Work Order Date | : 31.03.2023 |
| CUSTOMER DETAILS | | SAMPLE DETAILS | |
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RNC/2023/AA/4233 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Mine Quarry No-M4 Pakhar (15.58 ha) Bauxite Mine |
| | | Sampling Date | : 15.11.2023 to 16.11.2023 |
| Mines Status | : Operational | Sample Received Date | : 24.11.2023 |
| Period of Analysis | : 24.11.2023 to 08.12.2023 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Drawn By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

METEOROLOGICAL INFORMATION

| | | | | | |
|---|--------------------------|----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 20 | 2 | Barometric Pressure (mmHg) | : 736 |
| 3 | Relative Humidity (%) | : 51 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°36'8.99"E | 6 | Latitude | : 23°32'13.12"N |

Discipline : Chemical


Group : Atmospheric Pollution

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

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



****End of Report****


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



ENVIRONMENTAL LABORATORIES &

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TC-8888

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2023/4768 | Report Release Date : 21.12.2023 |
| Work Order No. : 13612310218 | Work Order Date : 21.04.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|---|---|--|---|
| Customer Name : Hindalco Industries Limited | Address : Lohardaga, Jharkhand-835302 | Sample Ref. No. : ELES/RNC/2023/AA/4238 | Location : Near Bunglapart Village Pakhar Bauxite Mine |
| Mines Status : Operational | Period of Analysis : 24.11.2023 to 09.12.2023 | Sampling Date : 14.11.2023 to 15.11.2023 | Sample Received Date : 24.11.2023 |
| | | Type of Sample : Ambient Air | Sampling Procedure : ELES/DOC/SMPL/02 |
| | | Sample Drawn By : ELES Pvt. Ltd. | Sample Condition : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | |
|----------------------------|-------------------------------|---|----------------------------------|
| 1 | Average Temperature (°C) : 21 | 2 | Barometric Pressure (mmHg) : 734 |
| 3 | Relative Humidity (%) : 53 | 4 | Weather Condition : Clear |

| Discipline : Chemical | | Group : Atmospheric Pollution | | |
|--------------------------------------|-------------------|---------------------------------|--------|------------------|
| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-33): 2006; RA2022 | 51 | 100 (24hrs) |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part-24): 2019 | 25 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2022 | 6.1 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2006; RA2022 | 16.8 | 80 (24hrs) |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part-25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | <1.0 | 2 (8hrs) |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004; RA2019 | <0.002 | 1 (24hrs) |
| Nickel (Ni) | ng/m ³ | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |



Reviewed by

****End of Report****

Authorized Signatory
Dr. Deependra Kumar Sinha

Off. In Charge, Environmental Engg.

Page 1 of 1

ELES Pvt. Ltd. Technical Manager

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Website : www.elespl.co.in

CIN: U74999JH2011PTC011125

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2023/4768 | Report Release Date : 21.12.2023 |
| Work Order No. : 13612310218 | Work Order Date : 21.04.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|--|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2023/AA/4238 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Bunglapart Village Pakhar Bauxite Mine |
| | | Sampling Date | : 14.11.2023 to 15.11.2023 |
| Mines Status | : Operational | Sample Received Date | : 24.11.2023 |
| Period of Analysis | : 24.11.2023 to 09.12.2023 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Drawn By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

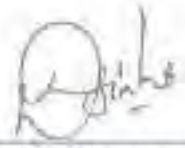
| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 21 | 2 | Barometric Pressure (mmHg) | : 734 |
| 3 | Relative Humidity (%) | : 53 | 4 | Weather Condition | : Clear |

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

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



****End of Report****


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

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPIUDANA
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CWC: U71999WH2018PTC011123

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2023/4769 | Report Release Date : 21.12.2023 |
| Work Order No. : 13612310218 | Work Order Date : 21.04.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2023/AA/4239 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Yatri Shed (Near K-10) Pakhar Bauxite Mine |
| | | Sampling Date | : 14.11.2023 to 15.11.2023 |
| Mines Status | : Operational | Sample Received Date | : 24.11.2023 |
| Period of Analysis | : 24.11.2023 to 09.12.2023 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Drawn By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 21 | 2 | Barometric Pressure (mmHg) | : 734 |
| 3 | Relative Humidity (%) | : 53 | 4 | Weather Condition | : Clear |

| Discipline : Chemical | | Group : Atmospheric Pollution | | |
|--------------------------------------|--------------------------|---------------------------------|--------|------------------|
| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
| Particulate Matter (PM10) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-23): 2006; RA2022 | 59 | 100 (24hrs) |
| Particulate Matter (PM2.5) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-24): 2019 | 28 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-2): 2001; RA2022 | 6.3 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-6): 2006; RA2022 | 21.6 | 80 (24hrs) |
| Ozone (O ₃) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m^3 | IS 5182 (Part-10): 1999; RA2019 | <1.0 | 2 (8hrs) |
| Lead (Pb) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-22): 2004; RA2019 | <0.002 | 1 (24hrs) |
| Nickel (Ni) | ng/m^3 | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m^3 | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |



****End of Report****

Authorized Signatory
Dr. Deependra Kumar Sinha
Pvt. Environmental Engg.

Page 1 of 1

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

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2023/4769 | Report Release Date : 21.12.2023 |
| Work Order No. : 13612310218 | Work Order Date : 21.04.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2023/AA/4239 |
| Address | : Lohandaga, Jharkhand-835302 | Location | : Yatri Shed (Near K-10) Pakhar Bauxite Mine |
| | | Sampling Date | : 14.11.2023 to 15.11.2023 |
| Mines Status | : Operational | Sample Received Date | : 24.11.2023 |
| Period of Analysis | : 24.11.2023 to 09.12.2023 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Drawn By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

METEOROLOGICAL INFORMATION


| | | | |
|---|-------------------------------|---|----------------------------------|
| 1 | Average Temperature (°C) : 21 | 2 | Barometric Pressure (mmHg) : 734 |
| 3 | Relative Humidity (%) : 53 | 4 | Weather Condition : Clear |

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

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



****End of Report****


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

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CIN: U74999RJ2016PTC011125

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2023/4770 | Report Release Date : 21.12.2023 |
| Work Order No. : 13612310218 | Work Order Date : 21.04.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|---|---|--|--|
| Customer Name : Hindalco Industries Limited | Address : Lohardaga, Jharkhand-835302 | Sample Ref. No. : ELES/RNC/2023/AA/4240 | Location : Near Utkarmit Rajkiya Prathmik Vidyalaya Bunglapart Village Pakhar Bauxite Mine |
| Mines Status : Operational | Period of Analysis : 24.11.2023 to 09.12.2023 | Sampling Date : 14.11.2023 to 15.11.2023 | Sample Received Date : 24.11.2023 |
| | | Type of Sample : Ambient Air | Sampling Procedure : ELES/DOC/SMPL/02 |
| | | Sample Drawn By : ELES Pvt. Ltd. | Sample Condition : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | |
|----------------------------|-------------------------------|---|----------------------------------|
| 1 | Average Temperature (°C) : 21 | 2 | Barometric Pressure (mmHg) : 734 |
| 3 | Relative Humidity (%) : 53 | 4 | Weather Condition : Clear |

| Discipline : Chemical | | Group : Atmospheric Pollution | | |
|--------------------------------------|-------------------|---------------------------------|--------|------------------|
| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2022 | 54 | 100 (24hrs) |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 29 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2022 | 5.1 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2006; RA2022 | 16.7 | 80 (24hrs) |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | <1.0 | 2 (8hrs) |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004; RA2019 | <0.002 | 1 (24hrs) |
| Nickel (Ni) | ng/m ³ | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |



End of Report

Authorized Signatory
Dr. Deependra Kumar Sinha
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Page 1 of 1

ELES Pvt. Ltd. Technical Manager

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Website : www.elespl.co.in

CIN: U74999JH2018PTC011125

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2023/4770 | Report Release Date : 21.12.2023 |
| Work Order No. : 13612310218 | Work Order Date : 21.04.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2023/AA/4240 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Ukarmit Rajkiya Prathamik Vidyalaya Bunglapart Village Pakhar Bauxite Mine |
| | | Sampling Date | : 14.11.2023 to 15.11.2023 |
| Mines Status | : Operational | Sample Received Date | : 24.11.2023 |
| Period of Analysis | : 24.11.2023 to 09.12.2023 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Drawn By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |


| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 21 | 2 | Barometric Pressure (mmHg) | : 734 |
| 3 | Relative Humidity (%) | : 53 | 4 | Weather Condition | : Clear |

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

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



****End of Report****


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

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TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2023/4771 | Report Release Date : 21.12.2023 |
| Work Order No. : 13612310218 | Work Order Date : 21.04.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2023/AA/4241 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Utkarmit Rajkiya Prathamik Vidyalaya Dumrapart Village Pakhar Bauxite Mine |
| | | Sampling Date | : 14.11.2023 to 15.11.2023 |
| Mines Status | : Operational | Sample Received Date | : 24.11.2023 |
| Period of Analysis | : 24.11.2023 to 09.12.2023 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Drawn By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 21 | 2 | Barometric Pressure (mmHg) | : 734 |
| 3 | Relative Humidity (%) | : 53 | 4 | Weather Condition | : Clear |

| Discipline : Chemical | | Group : Atmospheric Pollution | | |
|--------------------------------------|-------------------|---------------------------------|--------|------------------|
| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2022 | 61 | 100 (24hrs) |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 24 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2022 | 6.9 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2006; RA2022 | 17.2 | 80 (24hrs) |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | <1.0 | 2 (8hrs) |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004; RA2019 | <0.002 | 1 (24hrs) |
| Nickel (Ni) | ng/m ³ | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |



****End of Report****

Dr. Deependra Kumar Sinha
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Page 1 of 1

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CIN: U74999HR2018PTC011126

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TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2023/4771 | Report Release Date : 21.12.2023 |
| Work Order No. : 13612310218 | Work Order Date : 21.04.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|--|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2023/AA/4241 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Utkarmit Rajkiya Prathmik Vidyalaya Dumrapart Village Pakhar Bauxite Mine |
| | | Sampling Date | : 14.11.2023 to 15.11.2023 |
| Mines Status | : Operational | Sample Received Date | : 24.11.2023 |
| Period of Analysis | : 24.11.2023 to 09.12.2023 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Drawn By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

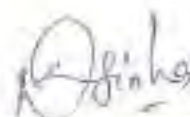
| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 21 | 2 | Barometric Pressure (mmHg) | : 734 |
| 3 | Relative Humidity (%) | : 53 | 4 | Weather Condition | : Clear |

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

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



****End of Report****


Authorized Signatory
Dr. Deependra Kumar Sinha
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ELES Pvt. Ltd. Technical Manag^{er}

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CIN: U74999JH2018PTC011125

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RAN/2023/3132 | Report Release Date : 21.12.2023 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|---------------------------|--|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RAN/2023/DW/3019 |
| Address | : Lohardaga, Jharkhand-835302 | Sampling Date | : 20.11.2023 |
| | | Sample Received Date | : 24.11.2023 |
| Mines Status | : Operational | Type of Sample | : Drinking Water |
| Period of Analysis | : 24.11.2023 to 08.12.2023 | Source/Location of Sample | : Near Mine Office Pakhar (15.58 ha) Bauxite Mine |
| | | Sampling Procedure | : ELES/DOC/SMPL/01 |
| | | Sample Collected By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| Discipline : Chemical | | Group : Water | | Regulatory Limit as per IS 10500:2012 | |
|---|-------|--|---------------------|--|-------------------|
| Parameter | Unit | Test Protocol | Result | Acceptable Limit | Permissible Limit |
| pH (at 24.6 °C) | - | APHA 23 rd Ed.2017, 4500-H ⁺ | 6.82 | 6.5-8.5 | No Relaxation |
| Turbidity | NTU | APHA 23 rd Ed.2017, 2130 B | 0.68 | 1.0 | 5.0 |
| Taste | - | APHA 23 rd Ed.2017, 2160 C | Agreeable | Agreeable | Agreeable |
| Odour | - | IS 3025 (Part-5) :2018 | Agreeable | Agreeable | Agreeable |
| Colour | Hazen | APHA 23 rd Ed.2017, 2120B&D | 2.0 | 5 | 15 |
| Total Dissolved Solids (TDS) | mg/L | APHA 23 rd Ed.2017, 2540B,C&D | 184 | 500 | 2000 |
| Chloride (as Cl) | mg/L | APHA 23 rd Ed.2017, 4500 Cl B | 26.8 | 250 | 1000 |
| Fluoride (as F) | mg/L | APHA 23 rd Ed.2017, 4500 F-D | BDL (DL: 0.1) | 1.0 | 1.5 |
| Total Alkalinity (as CaCO ₃) | mg/L | APHA 23 rd Ed.2017, 2320 B | 74.8 | 200 | 600 |
| Total Hardness (as CaCO ₃) | mg/L | APHA 23 rd Ed.2017, 2340 C | 68.4 | 200 | 600 |
| Sulphate (as SO ₄) | mg/L | APHA 23 rd Ed.2017, 4500 SO ₄ ⁻² -E | 12.8 | 200 | 400 |
| Nitrate (as NO ₃) | mg/L | APHA 23 rd Ed.2017, 4500 NO ₃ -B | 1.28 | 45 | No Relaxation |
| Phenolic Compound (as C ₆ H ₅ OH) | mg/L | IS 3025 (Part-43):1992;RA2019 | BDL (DL: 0.0005) | 0.001 | 0.002 |

Page 1 of 4

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"Save Environment, Save Future"



ENVIRONMENTAL LABORATORIES &

ENGINEERING SERVICES PVT. LTD.

PLOT NO-38, MANSAROVAR ENCLAVE, TUPUDANA
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Phone no.: 0651-2290103
Website: www.elespl.co.in

CIN: U74999JH2018PT1011125

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RAN/2023/3132 | Report Release Date : 21.12.2023 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

| Discipline : Chemical | | Group : Water | | Regulatory Limit as per IS10500:2012 | |
|------------------------------|------|--|--------------------|---|-------------------|
| Parameter | Unit | Test Protocol | Result | Acceptable Limit | Permissible Limit |
| Cyanide (as CN) | mg/L | APHA 23 rd Ed.2017, 4500 CN-E | BDL (DL: 0.012) | 0.05 | No Relaxation |
| Residual Free Chlorine (RFC) | mg/L | IS 3025 (Part-26):2021 | BDL (DL: 0.1) | 0.02 | 1.0 |
| Calcium (as Ca) | mg/L | APHA 23 rd Ed.2017, 3500 Ca B | 18.4 | 75 | 200 |
| Discipline : Chemical | | Group : Residues in Water | | | |
| Aluminum (as Al) | mg/L | IS 3025 (Part-55): 2003; RA2019 | BDL (DL: 0.02) | 0.03 | 0.2 |
| Arsenic (as As) | mg/L | IS 3025 (Part 37): 2022 | BDL (DL: 0.005) | 0.01 | No Relaxation |
| Boron (as B) | mg/L | IS 3025(Part-57): 2005; RA2021 | BDL (DL: 0.2) | 0.5 | 1.0 |
| Cadmium (as Cd) | mg/L | APHA 23 rd Ed.2017, 3111B | BDL (DL: 0.003) | 0.003 | No Relaxation |
| Total Chromium (as Cr) | mg/L | APHA 23 rd Ed.2017, 3111B | BDL (DL: 0.03) | 0.05 | No Relaxation |
| Copper (as Cu) | mg/L | APHA 23 rd Ed.2017, 3111B | BDL (DL: 0.03) | 0.05 | 1.5 |
| Iron (as Fe) | mg/L | APHA 23 rd Ed.2017, 3111B | 0.286 | 1.0 | 1.0 |
| Lead (as Pb) | mg/L | APHA 23 rd Ed.2017, 3111B | BDL (DL: 0.01) | 0.01 | No Relaxation |
| Manganese (as Mn) | mg/L | APHA 23 rd Ed.2017, 3111B | BDL (DL: 0.05) | 0.1 | 0.3 |
| Mercury (as Hg) | mg/L | IS 3025 (Part-48): 1994; RA2019 | BDL (DL: 0.001) | 0.001 | No Relaxation |
| Selenium (as Se) | mg/L | IS 3025 (Part-56): 2003; RA2019 | BDL (DL: 0.01) | 0.01 | No Relaxation |
| Zinc (as Zn) | mg/L | APHA 23 rd Ed.2017, 3111B | BDL (DL: 0.1) | 5 | 15 |

Remarks: 1. pH & RFC done at Lab.

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Website : www.elespl.co.in

CIN: U74999JH2018FT011125

TEST REPORT

| | | | |
|-----------------|----------------------|---------------------|--------------|
| Test Report No. | : ELES/RAN/2023/3132 | Report Release Date | : 21.12.2023 |
| Work Order No. | : M&M/23-24/01 | Work Order Date | : 31.03.2023 |

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

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Website : www.elespl.co.in

CIN: U74999JH2018PTC011125

TEST REPORT

| | | | |
|-----------------|----------------------|---------------------|--------------|
| Test Report No. | : ELES/RAN/2023/3132 | Report Release Date | : 21.12.2023 |
| Work Order No. | : M&M/23-24/01 | Work Order Date | : 31.03.2023 |

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

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



****End of Report****

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

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

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

Pakhar (15.58) Bauxite Mine-Environmental Monitoring Report

December 2023



CONTENT

| Minerals & Minerals : Pakhar (15.58) | | Environmental Monitoring Report | December 2023 |
|---|---|---------------------------------|---------------|
| Pakhar (15.58) | | | |
| AMBIENT AIR QUALITY- CORE ZONE | | | |
| 1 | Near Mine Office | | |
| 2 | Near Weigh Bridge | | |
| 3 | Near Mine Quarry No-M1 | | |
| 4 | Near Mine Quarry No-M4 | | |
| AMBIENT AIR QUALITY- BUFFER ZONE | | | |
| 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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CIN: U74999JH2018PTC011325

TEST REPORT

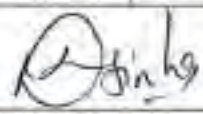
| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/0231 | Report Release Date : 15.01.2024 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |
| ULR No. : TC883924000000214F | |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|--|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RNC/2023/AA/4891 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Mine Office Pakhar (15.58 ha) Bauxite Mine |
| | | Sampling Date | : 23.12.2023 to 24.12.2023 |
| Mines Status | : Operational | Sample Received Date | : 30.12.2023 |
| Period of Analysis | : 30.12.2023 to 13.01.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | |
|----------------------------|--------------------------|-----------------|------------------------------|
| 1 | Average Temperature (°C) | : 20 | 2 Barometric Pressure (mmHg) |
| 3 | Relative Humidity (%) | : 48 | 4 Weather Condition |
| 5 | Longitude | : 84°36'36.29"E | 6 Latitude |
| | | | : 23°32'24.04"N |

| Discipline : Chemical | | Group : Atmospheric Pollution | | |
|--------------------------------------|-------------------|---------------------------------|--------|------------------|
| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2022 | 64 | 100 (24hrs) |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 32 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2022 | 7.3 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2006; RA2022 | 25.2 | 80 (24hrs) |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | <1.0 | 2 (8hrs) |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004; RA2019 | 0.012 | 1 (24hrs) |
| Nickel (Ni) | ng/m ³ | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |




 Authorized Signatory

****End of Report****

Page 1 of 1

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ENVIRONMENTAL LABORATORIES &

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Website : www.elespl.co.in

CIN: U74999JH2018FTC011325

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/0231 | Report Release Date : 15.01.2024 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|--|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RNC/2023/AA/4891 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Mine Office Pakhar (15.58 ha) Bauxite Mine |
| | | Sampling Date | : 23.12.2023 to 24.12.2023 |
| Mines Status | : Operational | Sample Received Date | : 30.12.2023 |
| Period of Analysis | : 30.12.2023 to 13.01.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 20 | 2 | Barometric Pressure (mmHg) | : 738 |
| 3 | Relative Humidity (%) | : 48 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°36'36.29"E | 6 | Latitude | : 23°32'24.04"N |

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

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



****End of Report****


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



ENVIRONMENTAL LABORATORIES &

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CIN: U74999JH2018PTC011125

TEST REPORT

| | | | |
|-----------------|----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2024/0232 | Report Release Date | : 15.01.2024 |
| Work Order No. | : M&M/23-24/01 | Work Order Date | : 31.03.2023 |
| ULR No. | : TC883924000000215F | | |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RNC/2023/AA/4892 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Weigh Bridge Pakhar (15.58 ha) Bauxite Mine |
| | | Sampling Date | : 23.12.2023 to 24.12.2023 |
| Mines Status | : Operational | Sample Received Date | : 30.12.2023 |
| Period of Analysis | : 30.12.2023 to 13.01.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

METEOROLOGICAL INFORMATION

| | | | | | |
|---|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 20 | 2 | Barometric Pressure (mmHg) | : 738 |
| 3 | Relative Humidity (%) | : 48 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°36'34.50"E | 6 | Latitude | : 23°32'26.21"N |

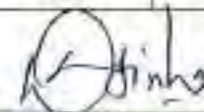
Discipline : Chemical

Group : Atmospheric Pollution

| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
|--------------------------------------|-------------------|---------------------------------|--------|------------------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2022 | 80 | 100 (24hrs) |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 46 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2022 | 9.4 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2006; RA2022 | 27.1 | 80 (24hrs) |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | <1.0 | 2 (8hrs) |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004; RA2019 | 0.018 | 1 (24hrs) |
| Nickel (Ni) | ng/m ³ | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |



****End of Report****


Authorized Signatory
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Page 1 of 1

ELES Pvt. Ltd. Technical Manager

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ENVIRONMENTAL LABORATORIES &

ENGINEERING SERVICES PVT. LTD.

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

CIN: U74999WH2018PTC011125

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/0232 | Report Release Date : 15.01.2024 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RNC/2023/AA/4892 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Weigh Bridge Pakhar (15.58 ha) Bauxite Mine |
| | | Sampling Date | : 23.12.2023 to 24.12.2023 |
| Mines Status | : Operational | Sample Received Date | : 30.12.2023 |
| Period of Analysis | : 30.12.2023 to 13.01.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |


| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 20 | 2 | Barometric Pressure (mmHg) | : 738 |
| 3 | Relative Humidity (%) | : 48 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°36'34.50"E | 6 | Latitude | : 23°32'26.21"N |

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

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



****End of Report****


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



ENVIRONMENTAL LABORATORIES &

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TEST REPORT

| | | | |
|-----------------|----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2024/0233 | Report Release Date | : 15.01.2024 |
| Work Order No. | : M&M/23-24/01 | Work Order Date | : 31.03.2023 |
| ULR No. | : TC883924000000216F | | |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RNC/2023/AA/4893 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Mine Quarry No- M1 Pakhar (15.58 ha) Bauxite Mine |
| | | Sampling Date | : 23.12.2023 to 24.12.2023 |
| Mines Status | : Operational | Sample Received Date | : 30.12.2023 |
| Period of Analysis | : 30.12.2023 to 13.01.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

METEOROLOGICAL INFORMATION

| | | | | | |
|---|--------------------------|----------------|---|----------------------------|----------------|
| 1 | Average Temperature (°C) | : 20 | 2 | Barometric Pressure (mmHg) | : 738 |
| 3 | Relative Humidity (%) | : 48 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°36'6.67"E | 6 | Latitude | : 23°32'9.19"N |

Discipline : Chemical

Group : Atmospheric Pollution

| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
|--------------------------------------|-------------------|---------------------------------|--------|------------------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2022 | 62 | 100 (24hrs) |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part-24): 2019 | 36 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2022 | 11.5 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2006; RA2022 | 25.1 | 80 (24hrs) |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part-25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | <1.0 | 2 (8hrs) |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004; RA2019 | 0.01 | 1 (24hrs) |
| Nickel (Ni) | ng/m ³ | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |



Reviewed by

****End of Report****

Authorized Signatory
Dr. Deependra Kumar Sinha

Ph. D Environmental Engg

ELES Pvt. Ltd. Technical Manager

Page 1 of 1

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



ENVIRONMENTAL LABORATORIES &

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CIN: U74999JH2018PTC011125

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/0233 | Report Release Date : 15.01.2024 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RNC/2023/AA/4893 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Mine Quarry No- M1 Pakhar (15.58 ha) Bauxite Mine |
| | | Sampling Date | : 23.12.2023 to 24.12.2023 |
| Mines Status | : Operational | Sample Received Date | : 30.12.2023 |
| Period of Analysis | : 30.12.2023 to 13.01.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|----------------|---|----------------------------|----------------|
| 1 | Average Temperature (°C) | : 20 | 2 | Barometric Pressure (mmHg) | : 738 |
| 3 | Relative Humidity (%) | : 48 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°36'6.67"E | 6 | Latitude | : 23°32'9.19"N |

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

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



****End of Report****

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

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CIN: U74999JH2018PTC011123

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/0234 | Report Release Date : 15.01.2024 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |
| ULR No. : TC883924000000217F | |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|--|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RNC/2023/AA/4894 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Mine Quarry No-M4 Pakhar (15.58 ha) Bauxite Mine |
| | | Sampling Date | : 23.12.2023 to 24.12.2023 |
| Miners Status | : Operational | Sample Received Date | : 30.12.2023 |
| Period of Analysis | : 30.12.2023 to 13.01.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 20 | 2 | Barometric Pressure (mmHg) | : 738 |
| 3 | Relative Humidity (%) | : 48 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°36'8.99"E | 6 | Latitude | : 23°32'13.12"N |

| Discipline : Chemical | | Group : Atmospheric Pollution | | |
|--------------------------------------|-------------------|---------------------------------|--------|------------------|
| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2022 | 64 | 100 (24hrs) |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 36 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2022 | 7.7 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2006; RA2022 | 26.4 | 80 (24hrs) |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | <1.0 | 2 (8hrs) |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004; RA2019 | 0.011 | 1 (24hrs) |
| Nickel (Ni) | ng/m ³ | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |



****End of Report****

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

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Website: www.elespl.co.in

CIN: U74999JH2018PT0011225

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/0234 | Report Release Date : 15.01.2024 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|--|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RNC/2023/AA/4894 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Mine Quarry No-M4 Pakhar (15.58 ha) Bauxite Mine |
| | | Sampling Date | : 23.12.2023 to 24.12.2023 |
| Mines Status | : Operational | Sample Received Date | : 30.12.2023 |
| Period of Analysis | : 30.12.2023 to 13.01.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |


| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 20 | 2 | Barometric Pressure (mmHg) | : 738 |
| 3 | Relative Humidity (%) | : 48 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°36'8.99"E | 6 | Latitude | : 23°32'13.12"N |

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

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



****End of Report****


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



ENVIRONMENTAL LABORATORIES &

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TEST REPORT

| | | | |
|-----------------|----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2024/0239 | Report Release Date | : 15.01.2024 |
| Work Order No. | : 13612310218 | Work Order Date | : 21.04.2023 |
| ULR No. | : TC883924000000222F | | |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|--|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2023/AA/4899 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Bunglapart Village Pakhar Bauxite Mine |
| | | Sampling Date | : 22.12.2023 to 23.12.2023 |
| Mines Status | : Operational | Sample Received Date | : 30.12.2023 |
| Period of Analysis | : 30.12.2023 to 13.01.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

METEOROLOGICAL INFORMATION

| | | | | | |
|---|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 19 | 2 | Barometric Pressure (mmHg) | : 734 |
| 3 | Relative Humidity (%) | : 48 | 4 | Weather Condition | : Clear |

Discipline : Chemical

Group : Atmospheric Pollution

| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
|--------------------------------------|--------------------------|---------------------------------|--------|------------------|
| Particulate Matter (PM10) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-23): 2006; RA2022 | 56 | 100 (24hrs) |
| Particulate Matter (PM2.5) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-24): 2019 | 28 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-2): 2001; RA2022 | 7.4 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-6): 2006; RA2022 | 19.2 | 80 (24hrs) |
| Ozone (O ₃) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m^3 | IS 5182 (Part-10): 1999; RA2019 | <1.0 | 2 (8hrs) |
| Lead (Pb) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-22): 2004; RA2019 | <0.002 | 1 (24hrs) |
| Nickel (Ni) | ng/m^3 | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m^3 | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |



****End of Report****

Dr. Deependra Kumar Singh
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Page 1 of 1

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ENVIRONMENTAL LABORATORIES &

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CIN: U74999JH2018PTC011123

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/0239 | Report Release Date : 15.01.2024 |
| Work Order No. : 13612310218 | Work Order Date : 21.04.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|--|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2023/AA/4899 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Bunglapart Village Pakhar Bauxite Mine |
| | | Sampling Date | : 22.12.2023 to 23.12.2023 |
| Mines Status | : Operational | Sample Received Date | : 30.12.2023 |
| Period of Analysis | : 30.12.2023 to 13.01.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 19 | 2 | Barometric Pressure (mmHg) | : 734 |
| 3 | Relative Humidity (%) | : 48 | 4 | Weather Condition | : Clear |

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

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



****End of Report****

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

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ENVIRONMENTAL LABORATORIES &

PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA
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CM: UTR/BSIN/218P/001123

TEST REPORT

| | | | |
|-----------------|----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2024/0240 | Report Release Date | : 15.01.2024 |
| Work Order No. | : 13612310218 | Work Order Date | : 21.04.2023 |
| ULR No. | : TC883924000000223F | | |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2023/AA/4900 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Yatri Shed (Near K-10) Pakhar Bauxite Mine |
| | | Sampling Date | : 22.12.2023 to 23.12.2023 |
| Mines Status | : Operational | Sample Received Date | : 30.12.2023 |
| Period of Analysis | : 30.12.2023 to 13.01.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 19 | 2 | Barometric Pressure (mmHg) | : 734 |
| 3 | Relative Humidity (%) | : 48 | 4 | Weather Condition | : Clear |

| Discipline : Chemical | | Group : Atmospheric Pollution | | |
|--------------------------------------|-------------------|---------------------------------|--------|------------------|
| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2022 | 63 | 100 (24hrs) |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 33 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2022 | 7.5 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2006; RA2022 | 23.3 | 80 (24hrs) |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | <1.0 | 2 (8hrs) |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004; RA2019 | <0.002 | 1 (24hrs) |
| Nickel (Ni) | ng/m ³ | IS 5182 (Part-26):2020 | <6.0 | 30 (Annual) |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |



****End of Report****

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

Page 1 of 1

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ENVIRONMENTAL LABORATORIES &

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Website : www.elespl.co.in

CIN: U71909JH2018PTC011113

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/0240 | Report Release Date : 15.01.2024 |
| Work Order No. : 13612310218 | Work Order Date : 21.04.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2023/AA/4900 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Yatri Shed (Near K-10) Pakhar Bauxite Mine |
| | | Sampling Date | : 22.12.2023 to 23.12.2023 |
| Mines Status | : Operational | Sample Received Date | : 30.12.2023 |
| Period of Analysis | : 30.12.2023 to 13.01.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

METEOROLOGICAL INFORMATION

| | | | | | |
|---|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 19 | 2 | Barometric Pressure (mmHg) | : 734 |
| 3 | Relative Humidity (%) | : 48 | 4 | Weather Condition | : Clear |

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

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



End of Report

Authorised Signatory

Dr. Deependia Kumar Bhatia
Ph. D Environmental Engg
ELES Pvt. Ltd. Technical Manager

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Website: www.elespl.co.in



TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/0241 | Report Release Date : 15.01.2024 |
| Work Order No. : 13612310218 | Work Order Date : 21.04.2023 |
| ULR No. : TC883924000000224F | |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|--|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2023/AA/4901 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Utkarmit Rajkiya Prathamik Vidyalaya Bungalpart Village Pakhar Bauxite Mine |
| | | Sampling Date | : 22.12.2023 to 23.12.2023 |
| Mines Status | : Operational | Sample Received Date | : 30.12.2023 |
| Period of Analysis | : 30.12.2023 to 13.01.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

METEOROLOGICAL INFORMATION

| | | | |
|---|-------------------------------|---|----------------------------------|
| 1 | Average Temperature (°C) : 19 | 2 | Barometric Pressure (mmHg) : 734 |
| 3 | Relative Humidity (%) : 48 | 4 | Weather Condition : Clear |

| Discipline : Chemical | | Group : Atmospheric Pollution | | |
|--------------------------------------|-------------------|---------------------------------|--------|------------------|
| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2022 | 51 | 100 (24hrs) |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 33 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2022 | 6.7 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6). 2006; RA2022 | 19.1 | 80 (24hrs) |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | <1.0 | 2 (8hrs) |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004; RA2019 | 0.008 | 1 (24hrs) |
| Nickel (Ni) | ng/m ³ | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |



****End of Report****

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

Page 1 of 1

ELES Pvt. Ltd. Technical Manager

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Website : www.elespl.co.in

CIN: U74999HR2012PTC011125

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/0241 | Report Release Date : 15.01.2024 |
| Work Order No. : 13612310218 | Work Order Date : 21.04.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2023/AA/4901 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Utkarmit Rajkiya Prathmik Vidyalaya Bunglapart Village Pakhar Bauxite Mine |
| | | Sampling Date | : 22.12.2023 to 23.12.2023 |
| Mines Status | : Operational | Sample Received Date | : 30.12.2023 |
| Period of Analysis | : 30.12.2023 to 13.01.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

METEOROLOGICAL INFORMATION

| | | | | | |
|---|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 19 | 2 | Barometric Pressure (mmHg) | : 734 |
| 3 | Relative Humidity (%) | : 48 | 4 | Weather Condition | : Clear |

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

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



****End of Report****

Authorised Signatory

Dr. Deependra Kumar Sahu
Ph. D Environmental Engg.
ELES Pvt. Ltd, Technical Mans



ENVIRONMENTAL LABORATORIES &

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



TC-8839

CIN: U74999JH2018PTC01125

TEST REPORT

| | | | |
|-----------------|----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2024/0242 | Report Release Date | : 15.01.2024 |
| Work Order No. | : 13612310218 | Work Order Date | : 21.04.2023 |
| ULR No. | : TC883924000000225F | | |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2023/AA/4902 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Utkarmit Rajkiya Prathamik Vidyalaya Dumrapart Village Pakhar Bauxite Mine |
| | | Sampling Date | : 22.12.2023 to 23.12.2023 |
| Mines Status | : Operational | Sample Received Date | : 30.12.2023 |
| Period of Analysis | : 30.12.2023 to 13.01.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

METEOROLOGICAL INFORMATION

| | | | | | |
|---|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 19 | 2 | Barometric Pressure (mmHg) | : 734 |
| 3 | Relative Humidity (%) | : 48 | 4 | Weather Condition | : Clear |

| Discipline : Chemical | | Group : Atmospheric Pollution | | |
|--------------------------------------|-------------------|---------------------------------|--------|------------------|
| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2022 | 58 | 100 (24hrs) |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 26 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2022 | 7.4 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2006; RA2022 | 19.1 | 80 (24hrs) |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | <1.0 | 2 (8hrs) |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004; RA2019 | <0.002 | 1 (24hrs) |
| Nickel (Ni) | ng/m ³ | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |



****End of Report****

(Signature)
 Authorised Signatory
 Dr. Deepankar Kumar Singh
 P.B. D. Environmental Engg.

Page 1 of 1

ELES Pvt. Ltd. Technical Manager

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CIN: U74399JH2018PT0012125

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TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/0242 | Report Release Date : 15.01.2024 |
| Work Order No. : 13612310218 | Work Order Date : 21.04.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|--|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2023/AA/4902 |
| Address | : Lohandaga, Jharkhand-835302 | Location | : Near Utkarmit Rajkiya Prathmik Vidyalaya Dumrapart Village Pakhar Bauxite Mine |
| | | Sampling Date | : 22.12.2023 to 23.12.2023 |
| Mines Status | : Operational | Sample Received Date | : 30.12.2023 |
| Period of Analysis | : 30.12.2023 to 13.01.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

METEOROLOGICAL INFORMATION

| | | | | | |
|---|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 19 | 2 | Barometric Pressure (mmHg) | : 734 |
| 3 | Relative Humidity (%) | : 48 | 4 | Weather Condition | : Clear |

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

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



****End of Report****

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

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

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

Pakhar (15.58) Bauxite Mine-Environmental Monitoring Report

January 2024



CONTENT

| Minerals & Minerals : Pakhar (15.58) | | Environmental Monitoring Report | January 2024 |
|---|---|---------------------------------|--------------|
| Pakhar (15.58) | | | |
| AMBIENT AIR QUALITY- CORE ZONE | | | |
| 1 | Near Mine Office | | |
| 2 | Near Weigh Bridge | | |
| 3 | Near Mine Quarry No-M1 | | |
| 4 | Near Mine Quarry No-M4 | | |
| AMBIENT AIR QUALITY- BUFFER ZONE | | | |
| 1 | Near Bunglapart Village | | |
| 2 | Yatri Shed (Near K-10) | | |
| 3 | Near Utkarnit Rajkiya Prathmik Vidyalaya Bunglapart Village | | |
| 4 | Near Utkarnit Rajkiya Prathmik Vidyalaya Dumrapart Village | | |
| Surface Water | | | |
| Soil | | | |





ENVIRONMENTAL LABORATORIES &

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Website : www.elespl.co.in



CIN: U74999JH2018BPTC011123

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/0547 | Report Release Date : 06.02.2024 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |
| ULR No. : TC883924000000518F | |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RNC/2024/AA/0486 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Mine Office Pakhar (15.58 ha) Bauxite Mine. |
| | | Sampling Date | : 24.01.2024 to 25.01.2024 |
| Mines Status | : Operational | Sample Received Date | : 27.01.2024 |
| Period of Analysis | : 27.01.2024 to 05.02.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 18 | 2 | Barometric Pressure (mmHg) | : 738 |
| 3 | Relative Humidity (%) | : 46 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°36'36.29"E | 6 | Latitude | : 23°32'24.04"N |

| Discipline : Chemical | | Group : Atmospheric Pollution | | |
|--------------------------------------|-------------------|---------------------------------|--------|------------------|
| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2022 | 68 | 100 (24hrs) |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 36 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2022 | 10.6 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2006; RA2022 | 27.8 | 80 (24hrs) |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | <1.0 | 2 (8hrs) |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004; RA2019 | 0.015 | 1 (24hrs) |
| Nickel (Ni) | ng/m ³ | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |



Reviewed by

****End of Report****

Signature of the authorized signatory and their details.

Authorized Signatory
Dr. Deependra Kumar Sinha

Ph.D Environmental Engg.
ELES Pvt. Ltd. Ranchi

Page 1 of 1

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ENVIRONMENTAL LABORATORIES &

ENGINEERING SERVICES PVT. LTD.

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

CIN: U74999JH2018PTC011125

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/0547 | Report Release Date : 06.02.2024 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|--|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RNC/2024/AA/0486 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Mine Office Pakhar (15.58 ha) Bauxite Mine |
| | | Sampling Date | : 24.01.2024 to 25.01.2024 |
| Mines Status | : Operational | Sample Received Date | : 27.01.2024 |
| | | Type of Sample | : Ambient Air |
| Period of Analysis | : 27.01.2024 to 05.02.2024 | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 18 | 2 | Barometric Pressure (mmHg) | : 738 |
| 3 | Relative Humidity (%) | : 46 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°36'36.29"E | 6 | Latitude | : 23°32'24.04"N |

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

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



****End of Report****

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

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Website : www.elespl.co.in



CIN: U74999JK2018PTC011125

TEST REPORT

| | | | |
|-----------------|----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2024/0548 | Report Release Date | : 06.02.2024 |
| Work Order No. | : M&M/23-24/01 | Work Order Date | : 31.03.2023 |
| ULR No. | : TC883924000000519F | | |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RNC/2024/AA/0487 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Weigh Bridge Pakhar (15.58 ha) Bauxite Mine |
| | | Sampling Date | : 24.01.2024 to 25.01.2024 |
| Mines Status | : Operational | Sample Received Date | : 27.01.2024 |
| Period of Analysis | : 27.01.2024 to 05.02.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 18 | 2 | Barometric Pressure (mmHg) | : 738 |
| 3 | Relative Humidity (%) | : 46 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°36'34.50"E | 6 | Latitude | : 23°32'26.21"N |

| Discipline : Chemical | | Group : Atmospheric Pollution | | |
|--------------------------------------|-------------------|---------------------------------|--------|------------------|
| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2022 | 77 | 100 (24hrs) |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 43 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2022 | 12.8 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2006; RA2022 | 29.4 | 80 (24hrs) |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | <1.0 | 2 (8hrs) |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004; RA2019 | 0.026 | 1 (24hrs) |
| Nickel (Ni) | ng/m ³ | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |



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

****End of Report****

Page 1 of 1

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"Save Environment, Save Future"



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Website: www.elespl.co.in

CIN: U74999JH2018PTC011125

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/0548 | Report Release Date : 06.02.2024 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RNC/2024/AA/0487 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Weigh Bridge Pakhar (15.58 ha) Bauxite Mine |
| | | Sampling Date | : 24.01.2024 to 25.01.2024 |
| Mines Status | : Operational | Sample Received Date | : 27.01.2024 |
| Period of Analysis | : 27.01.2024 to 05.02.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

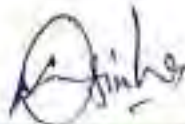
| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 18 | 2 | Barometric Pressure (mmHg) | : 738 |
| 3 | Relative Humidity (%) | : 46 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°36'34.50"E | 6 | Latitude | : 23°32'26.21"N |

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

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



****End of Report****


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

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Website: www.elespl.co.in



CIN: U74999JH2018PTC011125

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/0549 | Report Release Date : 06.02.2024 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |
| ULR No. : TC883924000000520F | |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RNC/2024/AA/0488 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Mine Quarry No- M1 Pakhar (15.58 ha) Bauxite Mine |
| | | Sampling Date | : 24.01.2024 to 25.01.2024 |
| Mines Status | : Operational | Sample Received Date | : 27.01.2024 |
| Period of Analysis | : 27.01.2024 to 05.02.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|----------------|---|----------------------------|----------------|
| 1 | Average Temperature (°C) | : 18 | 2 | Barometric Pressure (mmHg) | : 738 |
| 3 | Relative Humidity (%) | : 46 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°36'6.67"E | 6 | Latitude | : 23°32'9.19"N |

| Discipline : Chemical | | Group : Atmospheric Pollution | | |
|--------------------------------------|-------------------|---------------------------------|--------|------------------|
| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2022 | 68 | 100 (24hrs) |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 40 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2022 | 13.1 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2006; RA2022 | 27.4 | 80 (24hrs) |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | <1.0 | 2 (8hrs) |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004; RA2019 | 0.013 | 1 (24hrs) |
| Nickel (Ni) | ng/m ³ | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |



Reviewed by

****End of Report****

Signature of Dr. Deependra Kumar Sinha
 Authorised Signatory
 Dr. Deependra Kumar Sinha

Page 1 of 1

Environmental Engg.

ELES Pvt. Ltd. Technical Manager

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ENVIRONMENTAL LABORATORIES &

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

CIN: U74999JH2018PTC011125

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/0549 | Report Release Date : 06.02.2024 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RNC/2024/AA/0488 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Mine Quarry No- M1 Pakhar (15.58 ha) Bauxite Mine |
| | | Sampling Date | : 24.01.2024 to 25.01.2024 |
| Mines Status | : Operational | Sample Received Date | : 27.01.2024 |
| Period of Analysis | : 27.01.2024 to 05.02.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

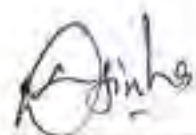
| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|----------------|---|----------------------------|----------------|
| 1 | Average Temperature (°C) | : 18 | 2 | Barometric Pressure (mmHg) | : 738 |
| 3 | Relative Humidity (%) | : 46 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°36'6.67"E | 6 | Latitude | : 23°32'9.19"N |

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

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



****End of Report****


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



ENVIRONMENTAL LABORATORIES & ENGINEERING SERVICES PVT. LTD.

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



CIN: U74999JH2011NPT011125

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/0550 | Report Release Date : 06.02.2024 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |
| ULR No. : TC883924000000521F | |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RNC/2024/AA/0489 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Mine Quarry No-M4 Pakhar (15.58 ha) Bauxite Mine |
| | | Sampling Date | : 24.01.2024 to 25.01.2024 |
| Mines Status | : Operational | Sample Received Date | : 27.01.2024 |
| Period of Analysis | : 27.01.2024 to 05.02.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 18 | 2 | Barometric Pressure (mmHg) | : 738 |
| 3 | Relative Humidity (%) | : 46 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°36'8.99"E | 6 | Latitude | : 23°32'13.12"N |

| Discipline : Chemical | | Group : Atmospheric Pollution | | |
|--------------------------------------|-------------------|---------------------------------|--------|------------------|
| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2022 | 68 | 100 (24hrs) |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part-24): 2019 | 39 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2022 | 10.8 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2006; RA2022 | 28.1 | 80 (24hrs) |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part-25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | <1.0 | 2 (8hrs) |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004; RA2019 | 0.016 | 1 (24hrs) |
| Nickel (Ni) | ng/m ³ | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |



****End of Report****

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

Page 1 of 1

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ENVIRONMENTAL LABORATORIES &

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

CIN: U74999JH2018PTC011125

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/0550 | Report Release Date : 06.02.2024 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|--|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RNC/2024/AA/0489 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Mine Quarry No-M4 Pakhar (15.58 ha) Bauxite Mine |
| | | Sampling Date | : 24.01.2024 to 25.01.2024 |
| Mines Status | : Operational | Sample Received Date | : 27.01.2024 |
| Period of Analysis | : 27.01.2024 to 05.02.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |


| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 18 | 2 | Barometric Pressure (mmHg) | : 738 |
| 3 | Relative Humidity (%) | : 46 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°36'8.99"E | 6 | Latitude | : 23°32'13.12"N |

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

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



****End of Report****


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

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CIN: U74999JH2018PTC011125

TEST REPORT

| | | | |
|-----------------|----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2024/0559 | Report Release Date | : 06.02.2024 |
| Work Order No. | : 13612310218 | Work Order Date | : 21.04.2023 |
| ULR No. | : TC883924000000530F | | |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|--|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2024/AA/0602 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Bunglapart Village Pakhar Bauxite Mine |
| | | Sampling Date | : 26.01.2024 to 27.01.2024 |
| Mines Status | : Operational | Sample Received Date | : 31.01.2024 |
| Period of Analysis | : 31.01.2024 to 06.02.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

METEOROLOGICAL INFORMATION

| | | | | | |
|---|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 19 | 2 | Barometric Pressure (mmHg) | : 734 |
| 3 | Relative Humidity (%) | : 45 | 4 | Weather Condition | : Clear |

| Discipline : Chemical | | Group : Atmospheric Pollution | | |
|--------------------------------------|-------------------|---------------------------------|--------|------------------|
| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2022 | 60 | 100 (24hrs) |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 31 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2022 | 9.3 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2006; RA2022 | 21.4 | 80 (24hrs) |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 35): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | <1.0 | 2 (8hrs) |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004; RA2019 | <0.002 | 1 (24hrs) |
| Nickel (Ni) | ng/m ³ | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |



****End of Report****

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Website : www.elespl.co.in

CIN: U74999JH2018PTC011125

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/0559 | Report Release Date : 06.02.2024 |
| Work Order No. : 13612310218 | Work Order Date : 21.04.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|--|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2024/AA/0602 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Bunglapart Village Pakhar Bauxite Mine |
| | | Sampling Date | : 26.01.2024 to 27.01.2024 |
| Mines Status | : Operational | Sample Received Date | : 31.01.2024 |
| Period of Analysis | : 31.01.2024 to 06.02.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 19 | 2 | Barometric Pressure (mmHg) | : 734 |
| 3 | Relative Humidity (%) | : 45 | 4 | Weather Condition | : Clear |

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

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



End of Report


Authorized Signatory
 Dr. Deepanjana Kumari Saha
 Ph. D Environmental Engg.
 ELES Pvt. Ltd. Technical Manager

Page 1 of 1

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CIN: U74999JH2016PPY001125

TEST REPORT

| | | | |
|-----------------|----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2024/0560 | Report Release Date | : 06.02.2024 |
| Work Order No. | : 13612310218 | Work Order Date | : 21.04.2023 |
| ULR No. | : TC883924000000531F | | |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2024/AA/0603 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Yatri Shed (Near K-10) Pakhar Bauxite Mine |
| | | Sampling Date | : 26.01.2024 to 27.01.2024 |
| Mines Status | : Operational | Sample Received Date | : 31.01.2024 |
| Period of Analysis | : 31.01.2024 to 06.02.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SAMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

METEOROLOGICAL INFORMATION

| | | | | | |
|---|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 19 | 2 | Barometric Pressure (mmHg) | : 734 |
| 3 | Relative Humidity (%) | : 45 | 4 | Weather Condition | : Clear |

Discipline : Chemical

Group : Atmospheric Pollution

| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
|--------------------------------------|--------------------------|---------------------------------|--------|------------------|
| Particulate Matter (PM10) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-23): 2006; RA2022 | 67 | 100 (24hrs) |
| Particulate Matter (PM2.5) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-24): 2019 | 36 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-2): 2001; RA2022 | 8.2 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-6): 2006; RA2022 | 25.5 | 80 (24hrs) |
| Ozone (O ₃) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m^3 | IS 5182 (Part-10): 1999; RA2019 | <1.0 | 2 (8hrs) |
| Lead (Pb) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-22): 2004; RA2019 | <0.002 | 1 (24hrs) |
| Nickel (Ni) | ng/m^3 | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | $\mu\text{g}/\text{m}^3$ | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |



****End of Report****

Dr. Deepshikha
 Authorized Signatory
 Dr. Deepshikha Ramani
 Ph.D Environmental Engg.
 ELES Pvt. Ltd. Technical Manager

Page 1 of 1

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CIN: U74999JH2018PTC011125

ENVIRONMENTAL LABORATORIES &

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TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/0560 | Report Release Date : 06.02.2024 |
| Work Order No. : 13612310218 | Work Order Date : 21.04.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2024/AA/0603 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Yatri Shed (Near K-10) Pakhar Bauxite Mine |
| | | Sampling Date | : 26.01.2024 to 27.01.2024 |
| Mines Status | : Operational | Sample Received Date | : 31.01.2024 |
| Period of Analysis | : 31.01.2024 to 06.02.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |


| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 19 | 2 | Barometric Pressure (mmHg) | : 734 |
| 3 | Relative Humidity (%) | : 45 | 4 | Weather Condition | : Clear |

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

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



End of Report


Authorised Signatory
 Dr. Deepshikha K. Jaiswal
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 ELES Pvt. Ltd. Technical Manager

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CR: 07999/H/2018/PFC/011125

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/0561 | Report Release Date : 06.02.2024 |
| Work Order No. : 13612310218 | Work Order Date : 21.04.2023 |
| ULR No. : TC883924000000532F | |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|---|---|--|---|
| Customer Name : Hindalco Industries Limited | Address : Lohardaga, Jharkhand-835302 | Sample Ref. No. : ELES/RNC/2024/AA/0604 | Location : Near Utkarmit Rajkiya Prathamik Vidyalaya Bunglapart Village Pakhar Bauxite Mine |
| Mines Status : Operational | Period of Analysis : 31.01.2024 to 06.02.2024 | Sampling Date : 26.01.2024 to 27.01.2024 | Sample Received Date : 31.01.2024 |
| | | Type of Sample : Ambient Air | Sampling Procedure : ELES/DOC/SMPL/02 |
| | | Sampling Done By : ELES Pvt. Ltd. | Sample Condition : Sealed & Preserved |

METEOROLOGICAL INFORMATION

| | | | |
|---|-------------------------------|---|----------------------------------|
| 1 | Average Temperature (°C) : 19 | 2 | Barometric Pressure (mmHg) : 734 |
| 3 | Relative Humidity (%) : 45 | 4 | Weather Condition : Clear |

| Discipline : Chemical | | Group : Atmospheric Pollution | | |
|--------------------------------------|-------------------|---------------------------------|--------|------------------|
| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2022 | 59 | 100 (24hrs) |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part-24): 2019 | 35 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2022 | 7.8 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2006; RA2022 | 22.2 | 80 (24hrs) |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part-25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | <1.0 | 2 (8hrs) |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004; RA2019 | 0.011 | 1 (24hrs) |
| Nickel (Ni) | ng/m ³ | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |



Reviewed by

****End of Report****

Authorized Signatory
Dr. Deebendra Kumar Sinha
Pvt. Environmental Engg

Page 1 of 1

ELES Pvt. Ltd. Technical Manager

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CIN: U24998MH2018PTC011215

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/0561 | Report Release Date : 06.02.2024 |
| Work Order No. : 13612310218 | Work Order Date : 21.04.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2024/AA/0604 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Utkarmit Rajkiya Prathmik Vidyalaya Bunglapani Village Pakhar Bauxite Mine |
| | | Sampling Date | : 26.01.2024 to 27.01.2024 |
| Mines Status | : Operational | Sample Received Date | : 31.01.2024 |
| Period of Analysis | : 31.01.2024 to 06.02.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

METEOROLOGICAL INFORMATION

| | | | | | |
|---|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 19 | 2 | Barometric Pressure (mmHg) | : 734 |
| 3 | Relative Humidity (%) | : 45 | 4 | Weather Condition | : Clear |

Discipline : Chemical


Group : Atmospheric Pollution

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

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



****End of Report****


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

Page 1 of 1

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CIN: U74995JH2016PTC011125

ENVIRONMENTAL LABORATORIES &

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Website : www.elespl.co.in



TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/0562 | Report Release Date : 06.02.2024 |
| Work Order No. : I3612310218 | Work Order Date : 21.04.2023 |
| ULR No. : TC883924000000533F | |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2024/AA/0605 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Utkarmit Rajkiya Prathamik Vidyalaya Dumrapart Village Pakhar Bauxite Mine |
| | | Sampling Date | : 26.01.2024 to 27.01.2024 |
| Mines Status | : Operational | Sample Received Date | : 31.01.2024 |
| Period of Analysis | : 31.01.2024 to 06.02.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

METEOROLOGICAL INFORMATION

| | | | | | |
|---|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 19 | 2 | Barometric Pressure (mmHg) | : 734 |
| 3 | Relative Humidity (%) | : 45 | 4 | Weather Condition | : Clear |

| Discipline : Chemical | | Group : Atmospheric Pollution | | |
|--------------------------------------|-------------------|---------------------------------|--------|------------------|
| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2022 | 63 | 100 (24hrs) |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 32 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2022 | 7.8 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2006; RA2022 | 21.5 | 80 (24hrs) |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | <1.0 | 2 (8hrs) |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004; RA2019 | <0.002 | 1 (24hrs) |
| Nickel (Ni) | ng/m ³ | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |



****End of Report****

Dr. Deependra Kumar Sinha
 Authorised Signatory
 Dr. Deependra Kumar Sinha
 P. O. Environmental Engg
 ELES Pvt. Ltd. Technical Manager

Page 1 of 1

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Website : www.elespl.co.in

CIN: U74599JH2018PTC011225

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/0562 | Report Release Date : 06.02.2024 |
| Work Order No. : 13612310218 | Work Order Date : 21.04.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Hindalen Industries Limited | Sample Ref. No. | : ELES/RNC/2024/AA/0605 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Utkarmit Rajkiya Prathamik Vidyalaya Dumrapart Village Pakhar Bauxite Mine |
| | | Sampling Date | : 26.01.2024 to 27.01.2024 |
| Mines Status | : Operational | Sample Received Date | : 31.01.2024 |
| Period of Analysis | : 31.01.2024 to 06.02.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 19 | 2 | Barometric Pressure (mmHg) | : 734 |
| 3 | Relative Humidity (%) | : 45 | 4 | Weather Condition | : Clear |

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

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



****End of Report****


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

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Website : www.elespl.co.in



CIN: U74999JH2018PTC011125

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/0592 | Report Release Date : 06.02.2024 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |
| ULR No. : TC883924000000563F | |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|--|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RNC/2024/SW/0627 |
| Address | : Lohardaga, Jharkhand-835302 | Sampling Date | : 25.01.2024 |
| | | Sample Received Date | : 31.01.2024 |
| Plant Status | : Operational | Type of Sample | : Surface Water |
| | | Source of Sample | : Near Mine Quarry No-M1 Pakhar (15.58 ha) Bauxite Mine |
| Period of Analysis | : 31.01.2024 to 05.02.2024 | Sampling Procedure | : ELES/DOC/SMPL/01 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| Discipline : Chemical | | Group : Water | | Tolerance Limits |
|---|------|--------------------------------------|-------------------|--|
| Parameter | Unit | Test Protocol | Result | as per IS 2296-1992 Class C (Inland Surface Water) |
| pH (at 24.5 °C) | - | IS 3025 (Part 11) : 2022 | 6.75 | 6.5-8.5 |
| Temperature | °C | IS 3025 (Part 9):1984; RA2017 | 24.6 | - |
| Chemical Oxygen Demand (COD) | - | IS 3025 (Part-58) :2006; RA2017 | 4.0 | - |
| Biochemical Oxygen Demand (BOD) (@ 20°C for 5 days) | mg/L | APHA 23 rd Ed.2017; 5210B | 1.4 | 3.0 |
| Total Dissolved Solids (TDS) | mg/L | IS 3025 (Part 16):1984; RA2017 | 92.8 | 1500 |
| Total Suspended Solids (TSS) | mg/L | IS 3025 (Part-17):2022 | 8.8 | --- |
| Oil & Grease | mg/L | IS 3025 (Part-39): 2021 | BDL (DL: 0.1) | 0.1 |
| Calcium (as Ca) | mg/L | IS 3025 (Part-40) :1991, RA2019 | 3.1 | -- |
| Discipline : Chemical | | Group : Residues in Water | | |
| Aluminium (Al) | mg/L | IS 3025 (Part-55) :2003; RA2019 | BDL (DL: 0.02) | 0.03 |
| Iron (as Fe) | mg/L | APHA23 rd Ed 2017; 3111B | 0.095 | 50 |

Remarks: 1. pH done at Lab

Reviewed by

****End of Report****

Authorized Signatory
Dr. Deependra Kumar Sinha

Page 1 of 1

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



TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/0607 | Report Release Date : 06.02.2024 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |
| ULR No. : TC883924000000578F | |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|--|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RNC/2024/SL/0642 |
| Address | : Lohardaga, Jharkhand-835302 | Sampling Date | : 25.01.2024 |
| | | Sample Received Date | : 31.01.2024 |
| Plant Status | : Operational | Type of Sample | : Soil |
| | | Location of Sample | : Near Mine Quarry No-M1 Pakhar Bauxite Mine (15.58 ha) |
| Period of Analysis | : 31.01.2024 to 05.02.2024 | Sampling Procedure | : ELES/DOC/SMPL/05 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed |

| Discipline : Chemical | | Group : Pollution & Environment | |
|------------------------------------|-------|---|-------------------|
| Parameter | Unit | Test Protocol | Result |
| pH (1:2) at 24.6 °C | - | IS 2720 (Part 26):1987; RA2021 | 4.13 |
| Conductivity (1:2) at 24.6 °C | µS/cm | IS 14767: 2000; RA2021 | 243 |
| Total Organic Carbon (TOC) | % | Soil Testing in India: 2011 (Walkley & Black Method) | 0.22 |
| Available Phosphorus (as P) (1:10) | kg/ha | Soil Testing in India: 2011 | 4.8 |
| Potassium (as K) | mg/kg | IS 9497:1980; RA 2020 | 2300 |
| Available Nitrogen | % | Soil Testing in India: 2011 | 8.68 |
| Chloride (1:2) | % | ELES/SOIL/SOP/01 | 0.13 |
| Lead (as Pb) | mg/kg | US EPA 3050 A&B : 1996 | BDL (DL: 0.1) |
| Cadmium (as Cd) | mg/kg | US EPA 3050 A&B : 1996 | BDL (DL: 0.1) |
| Mercury (as Hg) | mg/kg | US EPA 7473 : 2007 | BDL (DL: 0.01) |
| Magnesium (as Mg) | mg/kg | Soil Testing in India: 2011 | 280 |

Remarks: 1. pH done at Lab.

Abhishek Kumar
Reviewed by

Dr. Deependra Kumar Sahu
Authorised Signatory
Dr. Deependra Kumar Sahu

****End of Report****

Page 1 of 1

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CIN: U74999JH2018FTC011125

ENVIRONMENTAL LABORATORIES &

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TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/0607 | Report Release Date : 06.02.2024 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|--|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RNC/2024/SL/0642 |
| Address | : Lohardaga, Jharkhand-835302 | Sampling Date | : 25.01.2024 |
| | | Sample Received Date | : 31.01.2024 |
| Plant Status | : Operational | Type of Sample | : Soil |
| | | Location of Sample | : Near Mine Quarry No-M1 Pakhar Bauxite Mine (15.58 ha) |
| Period of Analysis | : 31.01.2024 to 05.02.2024 | Sampling Procedure | : ELES/DOC/SMPL/05 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed |

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



****End of Report****


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

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

Pakhar (15.58) Bauxite Mine-Environmental Monitoring Report

February 2024



CONTENT

| Minerals & Minerals : Pakhar (15.58) Environmental Monitoring Report | | February 2024 |
|---|---|----------------------|
| Pakhar (15.58) | | |
| AMBIENT AIR QUALITY- CORE ZONE | | |
| 1 | Near Mine Office | |
| 2 | Near Weigh Bridge | |
| 3 | Near Mine Quarry No-M1 | |
| 4 | Near Mine Quarry No-M4 | |
| AMBIENT AIR QUALITY- BUFFER ZONE | | |
| 1 | Near Bunglapart Village | |
| 2 | Yatri Shed (Near K-10) | |
| 3 | Near UtkarmitRajkiyaPrathmikVidyalayaBunglapart Village | |
| 4 | Near UtkarmitRajkiyaPrathmikVidyalayaDumrapart Village | |
| Drinking Water | | |
| Ambient Noise | | |
| Workzone Noise | | |





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

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RAN/2024/1300 | Report Release Date : 11.03.2024 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|--|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RAN/2024/AA/1343 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Mine Office Pakhar (15.58 ha) Bauxite Mine |
| | | Sampling Date | : 22.02.2024 to 23.02.2024 |
| Mines Status | : Operational | Sample Received Date | : 26.02.2024 |
| Period of Analysis | : 26.02.2024 to 05.03.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 22 | 2 | Barometric Pressure (mmHg) | : 738 |
| 3 | Relative Humidity (%) | : 47 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°36'36.29"E | 6 | Latitude | : 23°32'24.04"N |

| Discipline : Chemical | | Group : Atmospheric Pollution | | |
|--------------------------------------|-------------------|---------------------------------|--------|------------------|
| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2022 | 66 | 100 (24hrs) |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part-24): 2019 | 34 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2022 | 9.2 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2006; RA2022 | 25.1 | 80 (24hrs) |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part-25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | <1.0 | 2 (8hrs) |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004; RA2019 | 0.008 | 1 (24hrs) |
| Nickel (Ni) | ng/m ³ | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |



****End of Report****

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

Page 1 of 1

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ENVIRONMENTAL LABORATORIES &

ENGINEERING SERVICES PVT. LTD.

PLOT NO-38, MANSAROVAR ENCLAVE, TUPUDANA
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GST NO:- 20AAECE9713D124

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

CIN: U74999JH2018PTC011125

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RAN/2024/1300 | Report Release Date : 11.03.2024 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|--|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RAN/2024/AA/1343 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Mine Office Pakhar (15.58 ha) Bauxite Mine |
| | | Sampling Date | : 22.02.2024 to 23.02.2024 |
| Mines Status | : Operational | Sample Received Date | : 26.02.2024 |
| Period of Analysis | : 26.02.2024 to 05.03.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |


| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 22 | 2 | Barometric Pressure (mmHg) | : 738 |
| 3 | Relative Humidity (%) | : 47 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°36'36.29"E | 6 | Latitude | : 23°32'24.04"N |

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

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



****End of Report****


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

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Website : www.elespl.co.in

CIN: U74999JH2018PTC011125

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RAN/2024/1301 | Report Release Date : 11.03.2024 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RAN/2024/AA/1344 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Weigh Bridge Pakhar (15.58 ha) Bauxite Mine |
| | | Sampling Date | : 22.02.2024 to 23.02.2024 |
| Mines Status | : Operational | Sample Received Date | : 26.02.2024 |
| Period of Analysis | : 26.02.2024 to 05.03.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 22 | 2 | Barometric Pressure (mmHg) | : 738 |
| 3 | Relative Humidity (%) | : 47 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°36'34.50"E | 6 | Latitude | : 23°32'26.21"N |

| Discipline : Chemical | | Group : Atmospheric Pollution | | |
|--------------------------------------|-------------------|---------------------------------|--------|------------------|
| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2022 | 82 | 100 (24hrs) |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 45 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2022 | 13.3 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2006; RA2022 | 28.5 | 80 (24hrs) |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | <1.0 | 2 (8hrs) |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004; RA2019 | 0.032 | 1 (24hrs) |
| Nickel (Ni) | ng/m ³ | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |



****End of Report****

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

Page 1 of 1

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Save Environment, Save Future



CIN: U74999JH2018PTC011125

ENVIRONMENTAL LABORATORIES &

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

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RAN/2024/1301 | Report Release Date : 11.03.2024 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RAN/2024/AA/1344 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Weigh Bridge Pakhar (15.58 ha) Bauxite Mine |
| | | Sampling Date | : 22.02.2024 to 23.02.2024 |
| Mines Status | : Operational | Sample Received Date | : 26.02.2024 |
| Period of Analysis | : 26.02.2024 to 05.03.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

METEOROLOGICAL INFORMATION

| | | | | | |
|---|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 22 | 2 | Barometric Pressure (mmHg) | : 738 |
| 3 | Relative Humidity (%) | : 47 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°36'34.50"E | 6 | Latitude | : 23°32'26.21"N |

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

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



****End of Report****


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



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CIN: U74999JH2018PTC011125

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RAN/2024/1302 | Report Release Date : 11.03.2024 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RAN/2024/AA/1345 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Mine Quarry No- M1 Pakhar (15.58 ha) Bauxite Mine |
| | | Sampling Date | : 22.02.2024 to 23.02.2024 |
| Mines Status | : Operational | Sample Received Date | : 26.02.2024 |
| Period of Analysis | : 26.02.2024 to 05.03.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

METEOROLOGICAL INFORMATION

| | | | | | |
|---|--------------------------|----------------|---|----------------------------|----------------|
| 1 | Average Temperature (°C) | : 22 | 2 | Barometric Pressure (mmHg) | : 738 |
| 3 | Relative Humidity (%) | : 47 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°36'6.67"E | 6 | Latitude | : 23°32'9.19"N |

| Discipline : Chemical | | Group : Atmospheric Pollution | | |
|--------------------------------------|--------------------------|---------------------------------|--------|------------------|
| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
| Particulate Matter (PM10) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-23): 2006; RA2022 | 62 | 100 (24hrs) |
| Particulate Matter (PM2.5) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part- 24): 2019 | 31 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-2): 2001; RA2022 | 8.8 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-6): 2006; RA2022 | 22.6 | 80 (24hrs) |
| Ozone (O ₃) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part- 25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m^3 | IS 5182 (Part-10): 1999; RA2019 | <1.0 | 2 (8hrs) |
| Lead (Pb) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-22): 2004; RA2019 | 0.011 | 1 (24hrs) |
| Nickel (Ni) | ng/m^3 | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m^3 | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |



Authorised Signatory

Dr. Deependra Kumar Sinha

Ph. D Environmental Engg.

ELES Pvt. Ltd. Technical Manager

****End of Report****

Page 1 of 1

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ENVIRONMENTAL LABORATORIES &

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

CIN: U74999JH2018PTC011125

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RAN/2024/1302 | Report Release Date : 11.03.2024 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RAN/2024/AA/1345 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Mine Quarry No- M1 Pakhar (15.58 ha) Bauxite Mine |
| | | Sampling Date | : 22.02.2024 to 23.02.2024 |
| Mines Status | : Operational | Sample Received Date | : 26.02.2024 |
| Period of Analysis | : 26.02.2024 to 05.03.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|----------------|---|----------------------------|----------------|
| 1 | Average Temperature (°C) | : 22 | 2 | Barometric Pressure (mmHg) | : 738 |
| 3 | Relative Humidity (%) | : 47 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°36'6.67"E | 6 | Latitude | : 23°32'9.19"N |

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

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



****End of Report****


Authorized Signatory
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ELES Pvt. Ltd. Technical Manager

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Website : www.elespl.co.in

CIN: U74999JH2018PTC011125

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RAN/2024/1303 | Report Release Date : 11.03.2024 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|--|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RAN/2024/AA/1346 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Mine Quarry No-M4 Pakhar (15.58 ha) Bauxite Mine |
| | | Sampling Date | : 22.02.2024 to 23.02.2024 |
| Mines Status | : Operational | Sample Received Date | : 26.02.2024 |
| Period of Analysis | : 26.02.2024 to 05.03.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

METEOROLOGICAL INFORMATION

| | | | | | |
|---|--------------------------|----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 22 | 2 | Barometric Pressure (mmHg) | : 738 |
| 3 | Relative Humidity (%) | : 47 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°36'8.99"E | 6 | Latitude | : 23°32'13.12"N |

| Discipline : Chemical | | Group : Atmospheric Pollution | | |
|--------------------------------------|-------------------|---------------------------------|--------|------------------|
| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2022 | 70 | 100 (24hrs) |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 41 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2022 | 12.2 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2006; RA2022 | 25.6 | 80 (24hrs) |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | <1.0 | 2 (8hrs) |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004; RA2019 | 0.012 | 1 (24hrs) |
| Nickel (Ni) | ng/m ³ | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |



****End of Report****

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

Page 1 of 1

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ELES Pvt. Ltd. Technical Manager

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CIN: U74999JH2018PTC011125

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RAN/2024/1303 | Report Release Date : 11.03.2024 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|--|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RAN/2024/AA/1346 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Mine Quarry No-M4 Pakhar (15.58 ha) Bauxite Mine |
| | | Sampling Date | : 22.02.2024 to 23.02.2024 |
| Mines Status | : Operational | Sample Received Date | : 26.02.2024 |
| Period of Analysis | : 26.02.2024 to 05.03.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 22 | 2 | Barometric Pressure (mmHg) | : 738 |
| 3 | Relative Humidity (%) | : 47 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°36'8.99"E | 6 | Latitude | : 23°32'13.12"N |

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

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



****End of Report****


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

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Phone no.: 0652-2290103

Website : www.elespl.co.in

CIN: U74999JH2018PTC011125

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RAN/2024/1294 | Report Release Date : 11.03.2024 |
| Work Order No. : 13612310218 | Work Order Date : 21.04.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|--|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RAN/2024/AA/1334 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Bunglapani Village Paktar Bauxite Mine |
| | | Sampling Date | : 20.02.2024 to 21.02.2024 |
| Mines Status | : Operational | Sample Received Date | : 26.02.2024 |
| Period of Analysis | : 26.02.2024 to 05.03.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

METEOROLOGICAL INFORMATION

| | | | | | |
|---|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 22 | 2 | Barometric Pressure (mmHg) | : 734 |
| 3 | Relative Humidity (%) | : 48 | 4 | Weather Condition | : Clear |

Discipline : Chemical

Group : Atmospheric Pollution

| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
|--------------------------------------|--------------------------|---------------------------------|--------|------------------|
| Particulate Matter (PM10) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-23): 2006; RA2022 | 57 | 100 (24hrs) |
| Particulate Matter (PM2.5) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-24): 2019 | 28 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-2): 2001; RA2022 | 8.1 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-6): 2006; RA2022 | 19.4 | 80 (24hrs) |
| Ozone (O ₃) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m^3 | IS 5182 (Part-10): 1999; RA2019 | <1.0 | 2 (8hrs) |
| Lead (Pb) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-22): 2004; RA2019 | <0.002 | 1 (24hrs) |
| Nickel (Ni) | ng/m^3 | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m^3 | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |



****End of Report****

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

Page 1 of 1

Ph. D Environmental Engg.

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Website : www.elespl.co.in

CIN: U74999JH2018PTC011125

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RAN/2024/1294 | Report Release Date : 11.03.2024 |
| Work Order No. : 13612310218 | Work Order Date : 21.04.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|--|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RAN/2024/AA/1334 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Bunglapart Village Pakhar Bauxite Mine |
| | | Sampling Date | : 20.02.2024 to 21.02.2024 |
| Mines Status | : Operational | Sample Received Date | : 26.02.2024 |
| Period of Analysis | : 26.02.2024 to 05.03.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

METEOROLOGICAL INFORMATION

| | | | | | |
|---|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 22 | 2 | Barometric Pressure (mmHg) | : 734 |
| 3 | Relative Humidity (%) | : 48 | 4 | Weather Condition | : Clear |

Discipline : Chemical

Group : Atmospheric Pollution

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

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



****End of Report****


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

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Website : www.elespl.co.in

CIN: U74999JH2023OPPC012125

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RAN/2024/1292 | Report Release Date : 11.03.2024 |
| Work Order No. : 13612310218 | Work Order Date : 21.04.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RAN/2024/AA/1335 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Yatri Shed (Near K-10) Pakhar Bauxite Mine |
| | | Sampling Date | : 20.02.2024 to 21.02.2024 |
| Mines Status | : Operational | Sample Received Date | : 26.02.2024 |
| Period of Analysis | : 26.02.2024 to 05.03.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

METEOROLOGICAL INFORMATION

| | | | | | |
|---|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 22 | 2 | Barometric Pressure (mmHg) | : 734 |
| 3 | Relative Humidity (%) | : 48 | 4 | Weather Condition | : Clear |

Discipline : Chemical

Group : Atmospheric Pollution

| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
|--------------------------------------|--------------------------|---------------------------------|--------|------------------|
| Particulate Matter (PM10) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-23): 2006; RA2022 | 71 | 100 (24hrs) |
| Particulate Matter (PM2.5) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part- 24): 2019 | 39 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-2): 2001; RA2022 | 9.5 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-6): 2006; RA2022 | 23.8 | 80 (24hrs) |
| Ozone (O ₃) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part- 25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m^3 | IS 5182 (Part-10): 1999; RA2019 | <1.0 | 2 (8hrs) |
| Lead (Pb) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-22): 2004; RA2019 | 0.012 | 1 (24hrs) |
| Nickel (Ni) | ng/m^3 | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m^3 | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |



Reviewed by

****End of Report****

Authorized Signatory
Dr. Deependra Kumar Sinha

Page 1 of 1

Pt. G Environmental Engrg.

ELES Pvt. Ltd. Technical Manager

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Website: www.elespl.co.in

CIN: U74999/JH2013/PTC011125

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RAN/2024/1292 | Report Release Date : 11.03.2024 |
| Work Order No. : 13612310218 | Work Order Date : 21.04.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Hindaleo Industries Limited | Sample Ref. No. | : ELES/RAN/2024/AA/1335 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Yatri Shed (Near K-10) Pakhar Bauxite Mine |
| | | Sampling Date | : 20.02.2024 to 21.02.2024 |
| Mines Status | : Operational | Sample Received Date | : 26.02.2024 |
| Period of Analysis | : 26.02.2024 to 05.03.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

METEOROLOGICAL INFORMATION

| | | | | | |
|---|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 22 | 2 | Barometric Pressure (mmHg) | : 734 |
| 3 | Relative Humidity (%) | : 48 | 4 | Weather Condition | : Clear |

Discipline : Chemical

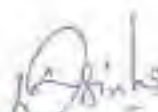
Group : Atmospheric Pollution

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

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



****End of Report****


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

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TEST REPORT

| Test Report No. : ELES/RAN/2024/1293 | | Report Release Date : 11.03.2024 | |
|--------------------------------------|-------------------------------|----------------------------------|---|
| Work Order No. : 13612310218 | | Work Order Date : 21.04.2023 | |
| CUSTOMER DETAILS | | SAMPLE DETAILS | |
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RAN/2024/AA/1336 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Utkarmit Rajkiya Prathmik Vidyalaya Bunglapart Village Pakhar Bauxite Mine |
| | | Sampling Date | : 20.02.2024 to 21.02.2024 |
| Mines Status | : Operational | Sample Received Date | : 26.02.2024 |
| Period of Analysis | : 26.02.2024 to 05.03.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

METEOROLOGICAL INFORMATION

| | | | | | |
|---|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 22 | 2 | Barometric Pressure (mmHg) | : 734 |
| 3 | Relative Humidity (%) | : 48 | 4 | Weather Condition | : Clear |

Discipline : Chemical

Group : Atmospheric Pollution

| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
|--------------------------------------|-------------------|---------------------------------|--------|------------------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2022 | 62 | 100 (24hrs) |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 33 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2022 | 6.2 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2006; RA2022 | 20.5 | 80 (24hrs) |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | <1.0 | 2 (8hrs) |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004; RA2019 | <0.002 | 1 (24hrs) |
| Nickel (Ni) | ng/m ³ | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |



****End of Report****


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

Page 1 of 1

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Website : www.elespl.co.in

CIN: U74999JH2018PTC011125

TEST REPORT

| | |
|---|--|
| Test Report No. : ELES/RAN/2024/1293 | Report Release Date : 11.03.2024 |
| Work Order No. : 13612310218 | Work Order Date : 21.04.2023 |
| CUSTOMER DETAILS | |
| Customer Name : Hindalco Industries Limited | Sample Ref. No. : ELES/RAN/2024/AA/1336 |
| Address : Lohardaga, Jharkhand-835302 | Location : Near Utkarmit Rajkiya Prathmik Vidyalaya Bunglapart Village Pakhar Bauxite Mine |
| | Sampling Date : 20.02.2024 to 21.02.2024 |
| Mines Status : Operational | Sample Received Date : 26.02.2024 |
| Period of Analysis : 26.02.2024 to 05.03.2024 | Type of Sample : Ambient Air |
| | Sampling Procedure : ELES/DOC/SMPL/02 |
| | Sampling Done By : ELES Pvt. Ltd. |
| | Sample Condition : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 22 | 2 | Barometric Pressure (mmHg) | : 734 |
| 3 | Relative Humidity (%) | : 48 | 4 | Weather Condition | : Clear |

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

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



****End of Report****


Authorized Signatory

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

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

CIN: U74999JH2016FTCO11125

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RAN/2024/1295 | Report Release Date : 11.03.2024 |
| Work Order No. : 13612310218 | Work Order Date : 21.04.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|--|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RAN/2024/AA/1337 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Utkarmit Rajkiya Prathmik Vidyalaya Dumrapart Village Pakhar Bauxite Mine |
| | | Sampling Date | : 20.02.2024 to 21.02.2024 |
| Mines Status | : Operational | Sample Received Date | : 26.02.2024 |
| Period of Analysis | : 26.02.2024 to 05.03.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 22 | 2 | Barometric Pressure (mmHg) | : 734 |
| 3 | Relative Humidity (%) | : 48 | 4 | Weather Condition | : Clear |

| Discipline : Chemical | | Group : Atmospheric Pollution | | |
|--------------------------------------|-------------------|---------------------------------|--------|------------------|
| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2022 | 67 | 100 (24hrs) |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part-24): 2019 | 35 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2022 | 6.9 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2006; RA2022 | 19.3 | 80 (24hrs) |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part-25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | <1.0 | 2 (8hrs) |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004; RA2019 | <0.002 | 1 (24hrs) |
| Nickel (Ni) | ng/m ³ | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |



****End of Report****

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

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

Page 1 of 1

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ENGINEERING SERVICES PVT. LTD.

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Website : www.elespl.co.in

CIN: U74999JH2018PTC011125

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RAN/2024/1295 | Report Release Date : 11.03.2024 |
| Work Order No. : 13612310218 | Work Order Date : 21.04.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RAN/2024/AA/1337 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Utkarmit Rajkiya Prathamik Vidyalaya Dumrapert Village Pakhar Bauxite Mine |
| | | Sampling Date | : 20.02.2024 to 21.02.2024 |
| Mines Status | : Operational | Sample Received Date | : 26.02.2024 |
| Period of Analysis | : 26.02.2024 to 05.03.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 22 | 2 | Barometric Pressure (mmHg) | : 734 |
| 3 | Relative Humidity (%) | : 48 | 4 | Weather Condition | : Clear |

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

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



****End of Report****


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



CIN: U74999JH2018PFC011125

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TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RAN/2024/1323 | Report Release Date : 11.03.2024 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|---------------------------|--|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RAN/2024/DW/1360 |
| Address | : Lohardaga, Jharkhand-835302 | Sampling Date | : 22.02.2024 |
| | | Sample Received Date | : 26.02.2024 |
| Mines Status | : Operational | Type of Sample | : Drinking Water |
| Period of Analysis | : 26.02.2024 to 07.03.2024 | Source/Location of Sample | : Near Mine Office Pakhar (15.58 ha) Bauxite Mine |
| | | Sampling Procedure | : ELES/DOC/SMPL/01 |
| | | Sample Collected By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| Discipline : Chemical | | Group : Water | | Regulatory Limit as per IS 10500:2012 | |
|--|-------|--|--------------------|--|-------------------|
| Parameter | Unit | Test Protocol | Result | Acceptable Limit | Permissible Limit |
| pH (at 24.4 °C) | - | APHA 23 rd Ed.2017, 4500-H | 6.68 | 6.5-8.5 | No Relaxation |
| Turbidity | NTU | APHA 23 rd Ed.2017, 2130 B | 0.80 | 1.0 | 5.0 |
| Taste | - | APHA 23 rd Ed.2017, 2160 C | Agreeable | Agreeable | Agreeable |
| Odour | - | IS 3025 (Part-5) :2018 | Agreeable | Agreeable | Agreeable |
| Colour | Hazen | APHA 23 rd Ed.2017, 2120B&D | 1.0 | 5 | 15 |
| Total Dissolved Solids (TDS) | mg/L | APHA 23 rd Ed.2017, 2540B,C&D | 218 | 500 | 2000 |
| Chloride (as Cl) | mg/L | APHA 23 rd Ed.2017, 4500 Cl B | 28.4 | 250 | 1000 |
| Fluoride (as F) | mg/L | APHA 23 rd Ed.2017, 4500 F-D | BDL (DL: 0.1) | 1.0 | 1.5 |
| Total Alkalinity (as CaCO ₃) | mg/L | APHA 23 rd Ed.2017, 2320 B | 72.8 | 200 | 600 |
| Total Hardness (as CaCO ₃) | mg/L | APHA 23 rd Ed.2017, 2340 C | 86.8 | 200 | 600 |
| Sulphate (as SO ₄) | mg/L | APHA 23 rd Ed.2017, 4500 SO ₄ ²⁻ -E | 18.6 | 200 | 400 |
| Nitrate (as NO ₃) | mg/L | APHA 23 rd Ed.2017, 4500 NO ₃ -B | 1.45 | 45 | No Relaxation |
| Phenolic Compound (as C ₆ H ₅ OH) | mg/L | IS 3025 (Part-43):1992;RA2019 | BDL (DL: 0.001) | 0.001 | 0.002 |

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TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RAN/2024/1323 | Report Release Date : 11.03.2024 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

| Discipline : Chemical | | | Group : Water | | Regulatory Limit as per IS10500:2012 | |
|------------------------------|------|--|---------------------------|------------------|---|--|
| Parameter | Unit | Test Protocol | Result | Acceptable Limit | Permissible Limit | |
| Cyanide (as CN) | mg/L | APHA 23 rd Ed.2017, 4500 CN-E | BDL (DL: 0.012) | 0.05 | No Relaxation | |
| Residual Free Chlorine (RFC) | mg/L | IS 3025 (Part-26):2021 | BDL (DL: 0.1) | 0.02 | 1.0 | |
| Calcium (as Ca) | mg/L | APHA 23 rd Ed.2017, 3500 Ca B | 23.3 | 75 | 200 | |
| Discipline : Chemical | | | Group : Residues in Water | | | |
| Aluminum (as Al) | mg/L | IS 3025 (Part-55): 2003; RA2019 | BDL (DL: 0.02) | 0.03 | 0.2 | |
| Arsenic (as As) | mg/L | IS 3025 (Part 37): 2022 | BDL (DL: 0.005) | 0.01 | No Relaxation | |
| Boron (as B) | mg/L | IS 3025(Part-57): 2005; RA2021 | BDL (DL: 0.2) | 0.5 | 1.0 | |
| Cadmium (as Cd) | mg/L | APHA 23 rd Ed.2017, 3111B | BDL (DL: 0.003) | 0.003 | No Relaxation | |
| Total Chromium (as Cr) | mg/L | APHA 23 rd Ed.2017, 3111B | BDL (DL: 0.03) | 0.05 | No Relaxation | |
| Copper (as Cu) | mg/L | APHA 23 rd Ed.2017, 3111B | BDL (DL: 0.03) | 0.05 | 1.5 | |
| Iron (as Fe) | mg/L | APHA 23 rd Ed.2017, 3111B | 0.224 | 1.0 | 1.0 | |
| Lead (as Pb) | mg/L | APHA 23 rd Ed.2017, 3111B | BDL (DL: 0.01) | 0.01 | No Relaxation | |
| Manganese (as Mn) | mg/L | APHA 23 rd Ed.2017, 3111B | BDL (DL: 0.05) | 0.1 | 0.3 | |
| Mercury (as Hg) | mg/L | IS 3025 (Part-48): 1994; RA2019 | BDL (DL: 0.001) | 0.001 | No Relaxation | |
| Selenium (as Se) | mg/L | IS 3025 (Part-56): 2003; RA2019 | BDL (DL: 0.01) | 0.01 | No Relaxation | |
| Zinc (as Zn) | mg/L | APHA 23 rd Ed.2017, 3111B | BDL (DL: 0.1) | 5 | 15 | |

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CIN- U74999JH2018PTC011125

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Website : www.elespl.co.in

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RAN/2024/1323 | Report Release Date : 11.03.2024 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

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

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CIN: U74999JH2018PTC011325

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TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RAN/2024/1323 | Report Release Date : 11.03.2024 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

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

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



****End of Report****


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

Page 4 of 4

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CIN: U74999JH2018PTC011225

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RAN/2024/1342 | Report Release Date : 11.03.2024 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|------------------------|----------------------------|
| Customer Name | : Minerals & Minerals Limited | Sampling Date | : 22.02.2024 to 23.02.2024 |
| Address | : Lehardaga, Jharkhand-835302 | Sampling Received Date | : 26.02.2024 |
| | | Type of Sample | : Ambient Noise |
| | | Sampling procedure | : ELES/DOC/SMPL/03 |
| Mines Status | : Operational | Sampling Done By | : ELES Pvt. Ltd. |
| | | Period of Analysis | : 26.02.2024 to 02.03.2024 |

METEOROLOGICAL INFORMATION

| | | | |
|---|-------------------------------|---|----------------------------------|
| 1 | Average Temperature (°C) : 23 | 2 | Barometric Pressure (mmHg) : 734 |
| 3 | Relative Humidity (%) : 48 | 4 | Weather Condition : Clear |

| Location | Unit | Test Protocol | Result | | Regulatory Limit (Industrial Zone) |
|--|-------|--------------------------|------------|----------|---|
| | | | Time | L_{eq} | |
| Near Mine Office Pakhar Bauxite Mine (15.58 ha) | dB(A) | IS 9989:1981, RA 2020 | Day Time | 62 | 75 dB(A) Day Time & 70 dB(A) Night Time |
| | | | Night Time | 49 | |
| Sample ID: ELES/RAN/2024/AN/1352 | | | | | |



****End of Report****

Authorized Signatory

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

Page 1 of 1

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Website : www.elespl.co.in

CIN: U74999JH2018PTC011125

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RAN/2024/1356 | Report Release Date : 11.03.2024 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|------------------------|----------------------------|
| Customer Name | : Minerals & Minerals Limited | Sampling Date | : 23.02.2024 |
| Address | : Lohardaga, Jharkhand-835302 | Sampling Received Date | : 26.02.2024 |
| | | Type of Sample | : Workzone Noise |
| Mines Status | : Operational | Sampling procedure | : ELES/DOC/SMPL/03 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Period of Analysis | : 26.02.2024 to 02.03.2024 |

METEOROLOGICAL INFORMATION

| | | | | | |
|---|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 23 | 2 | Barometric Pressure (mmHg) | : 734 |
| 3 | Relative Humidity (%) | : 48 | 4 | Weather Condition | : Clear |

| Location | Unit | Test Protocol | Result | | Regulatory Limit (Industrial Zone) |
|---|-------|--------------------------|----------|-----------------|---------------------------------------|
| | | | Time | L _{eq} | |
| Near Weigh Bridge – Pakhar Bauxite Mine (15.58 ha) | dB(A) | IS 4758:1968; RA 2017 | Day Time | 74 | 90 dB (A) |
| Sample ID: ELES/RAN/2024/WN/1356 | | | | | |



****End of Report****


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

ENVIROCHECK

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

State- Jharkhand.

Pakhar (15.58) Bauxite Mine-Environmental Monitoring Report

March 2024

CONTENT

| Minerals & Minerals : Pakhar (15.58) Environmental Monitoring Report | | March 2024 |
|---|---|-------------------|
| Pakhar (15.58) | | |
| AMBIENT AIR QUALITY- CORE ZONE | | |
| 1 | Near Mine Office | |
| 2 | Near Weigh Bridge | |
| 3 | Near Mine Quarry No-M1 | |
| 4 | Near Mine Quarry No-M4 | |
| AMBIENT AIR QUALITY- BUFFER ZONE | | |
| 1 | Near Bunglapart Village | |
| 2 | Yatri Shed (Near K-10) | |
| 3 | Near UtkarmitRajkiyaPrathmikVidyalayaBunglapart Village | |
| 4 | Near UtkarmitRajkiyaPrathmikVidyalayaDumrapart Village | |
| Stack | | |
| Spring Water | | |
| 1 | Chapa Kona | |

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/1509 | Report Release Date : 10.04.2024 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|--|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RNC/2024/AA/1590 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Mine Office Pakhar (15.58 ha) Bauxite Mine |
| | | Sampling Date | : 19.03.2024 to 20.03.2024 |
| Mines Status | : Operational | Sample Received Date | : 22.03.2024 |
| Period of Analysis | : 22.03.2024 to 28.03.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 25 | 2 | Barometric Pressure (mmHg) | : 738 |
| 3 | Relative Humidity (%) | : 47 | 4 | Weather Condition | : Clear |

| Discipline: Chemical | | Group: Atmospheric Pollution | | |
|--|-------------------|--|--------|------------------|
| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2022 | 62 | 100 (24hrs) |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part-24): 2019 | 30 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2022 | 11.7 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2006; RA2022 | 22.3 | 80 (24hrs) |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part-25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 (NDIR Method) | <1.0 | 2 (8hrs) |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004; RA2019 | 0.011 | 1 (24hrs) |
| Nickel (Ni) | ng/m ³ | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |
| Benzene (C ₆ H ₆) | µg/m ³ | ELES/GC/SOP/06 | <2.5 | 05(Annual) |
| Benzo-(a)-Pyrene | ng/m ³ | ELES/GC/SOP/05 | <0.5 | 01(Annual) |

Reviewed by :



(Saswata Burman Roy, Dy. Quality Manager)

****End of Report****



Authorised Signatory :



(Bapan Das, Dy. Technical Manager)

TEST REPORT

| | |
|---|---|
| Test Report No. : ELES/RNC/2024/1511 | Report Release Date : 10.04.2024 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RNC/2024/AA/1592 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Mine Quarry No- M1 Pakhar (15.58 ha) Bauxite Mine |
| | | Sampling Date | : 19.03.2024 to 20.03.2024 |
| Mines Status | : Operational | Sample Received Date | : 22.03.2024 |
| Period of Analysis | : 22.03.2024 to 28.03.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

METEOROLOGICAL INFORMATION

| | | | | | |
|---|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 25 | 2 | Barometric Pressure (mmHg) | : 738 |
| 3 | Relative Humidity (%) | : 47 | 4 | Weather Condition | : Clear |

| Discipline: Chemical | | Group: Atmospheric Pollution | | |
|--|-------------------|--|--------|------------------|
| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2022 | 65 | 100 (24hrs) |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part-24): 2019 | 28 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2022 | 10.3 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2006; RA2022 | 18.4 | 80 (24hrs) |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part-25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 (NDIR Method) | <1.0 | 2 (8hrs) |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004; RA2019 | 0.008 | 1 (24hrs) |
| Nickel (Ni) | ng/m ³ | IS 5182 (Part-26): 2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |
| Benzene (C ₆ H ₆) | µg/m ³ | ELES/GC/SOP/06 | <2.5 | 05 (Annual) |
| Benzo-(a)-Pyrene | ng/m ³ | ELES/GC/SOP/05 | <0.5 | 01 (Annual) |

Reviewed by :



(Saswata Burman Roy, Dy. Quality Manager)

****End of Report****



Authorised Signatory :



(Bapan Das, Dy. Technical Manager)

Page 1 of 1

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/1517 | Report Release Date : 10.04.2024 |
| Work Order No. : 15612510218 | Work Order Date : 21.04.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|---|---------------------------------------|--|--|
| Customer Name : Hindalco Industries Limited | Address : Lohardaga, Jharkhand-835302 | Sample Ref. No. : ELES/RNC/2024/AA/1598 | Location : Near Bunglapart Village, Pakhar Bauxite Mine. |
| Mines Status : Operational | | Sampling Date : 18.03.2024 to 19.03.2024 | |
| Period of Analysis : 22.03.2024 to 28.03.2024 | | Sample Received Date : 23.03.2024 | Type of Sample : Ambient Air |
| | | Sampling Procedure : ELES/DOC/SMP/02 | Sampling Done By : ELES Pvt. Ltd. |
| | | Sample Condition : Sealed & Preserved | |

| METEOROLOGICAL INFORMATION | | | |
|----------------------------|-------------------------------|---|----------------------------------|
| 1 | Average Temperature (°C) : 26 | 2 | Barometric Pressure (mmHg) : 734 |
| 3 | Relative Humidity (%) : 45 | 4 | Weather Condition : Clear |

| Discipline: Chemical | | Group: Atmospheric Pollution | | |
|--|-------------------|---|--------|------------------|
| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2022 | 53 | 100 (24hrs) |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 33 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2022 | 7.4 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2006; RA2022 | 17.9 | 80 (24hrs) |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 (NDIR Method) | <1.0 | 2 (8hrs) |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004; RA2019 | 0.005 | 1 (24hrs) |
| Nickel (Ni) | ng/m ³ | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |
| Benzene (C ₆ H ₆) | µg/m ³ | ELES/GC/SOP/06 | <2.5 | 05(Annual) |
| Benzo-(a)-Pyrene | ng/m ³ | ELES/GC/SOP/05 | <0.5 | 01(Annual) |

Reviewed by :



(Saswata Burman Roy, Dy. Quality Manager)

****End of Report****



Authorised Signatory :



(Bapan Das, Dy. Technical Manager)

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/1519 | Report Release Date : 10.04.2024 |
| Work Order No. : 13612310218 | Work Order Date : 21.04.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2024/AA/1600 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Ushaarmit Rajkiya Prathmik Vidyalaya Bungiapat Village Pakhar Bauxite Mine |
| | | Sampling Date | : 18.03.2024 to 19.03.2024 |
| Mines Status | : Operational | Sample Received Date | : 22.03.2024 |
| Period of Analysis | : 22.03.2024 to 28.03.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 26 | 2 | Barometric Pressure (mmHg) | : 734 |
| 3 | Relative Humidity (%) | : 45 | 4 | Weather Condition | : Clear |

| Discipline: Chemical | | Group: Atmospheric Pollution | | |
|--|-------------------|---|--------|------------------|
| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2022 | 55 | 100 (24hrs) |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 31 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2022 | 7.3 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2006; RA2022 | 23.1 | 80 (24hrs) |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 (NDIR Method) | <1.0 | 2 (8hrs) |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004; RA2019 | 0.007 | 1 (24hrs) |
| Nickel (Ni) | ng/m ³ | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |
| Benzene (C ₆ H ₆) | µg/m ³ | ELES/GC/SOP/06 | <2.5 | 05(Annual) |
| Benzo-(a)-Pyrene | ng/m ³ | ELES/GC/SOP/05 | <0.5 | 01(Annual) |

Reviewed by :



(Saswata Burman Roy, Dy. Quality Manager)

****End of Report****

Authorised Signatory :



(Bapan Das, Dy. Technical Manager)



TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/1520 | Report Release Date : 10.04.2024 |
| Work Order No. : 13612310218 | Work Order Date : 21.04.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2024/AA/1601 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Utkermit Rajkiya Prathmik Vidyalaya Dumrapart Village Pakhar Barade Mine |
| | | Sampling Date | : 18.03.2024 to 19.03.2024 |
| Mines Status | : Operational | Sample Received Date | : 22.03.2024 |
| Period of Analysis | : 22.03.2024 to 28.03.2024 | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 26 | 2 | Barometric Pressure (mmHg) | : 734 |
| 3 | Relative Humidity (%) | : 45 | 4 | Weather Condition | : Clear |

| Discipline: Chemical | | Group: Atmospheric Pollution | | |
|--|-------------------|---|--------|------------------|
| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2022 | 62 | 100 (24hrs) |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part-24): 2019 | 31 | 60 (24hrs) |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2022 | 7.4 | 80 (24hrs) |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2006; RA2022 | 23.6 | 80 (24hrs) |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2019 | <20.0 | 100 (8hrs) |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part-25): 2018 | <10.0 | 400 (24hrs) |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 (NDIR Method) | <1.0 | 2 (8hrs) |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004; RA2019 | 0.007 | 1 (24hrs) |
| Nickel (Ni) | ng/m ³ | IS 5182 (Part-26):2020 | <6.0 | 20 (Annual) |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01 | <2.0 | 06 (Annual) |
| Benzene (C ₆ H ₆) | µg/m ³ | ELES/GC/SOP/06 | <2.5 | 05(Annual) |
| Benzo-(a)-Pyrene | ng/m ³ | ELES/GC/SOP/05 | <0.5 | 01(Annual) |

Reviewed by :

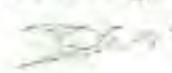


(Saswata Buman Roy, Dy. Quality Manager)

****End of Report****



Authorised Signatory :



(Bapan Das, Dy. Technical Manager)

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/1563 | Report Release Date : 10.04.2024 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|--|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RNC/2024/SM/1609 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Pakhar (15.58) Bauxite Mine DG (45 KVA) |
| | | Sampling Date | : 19.03.2024 |
| Mines Status | : Operational | Sample Received Date | : 22.03.2024 |
| Period of Analysis | : 22.03.2024 to 29.03.2024 | Type of Sample | : Flue Gas |
| | | Sampling Procedure | : ELES/DOC/SMPL/02(A) |
| | | Sampling Done By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

GENERAL INFORMATION

| | | |
|----|---|------------------|
| 1 | Particular of the Plant | : Bauxite Mines |
| 2 | Emission Due to | : Burning of HSD |
| 3 | Stack Connected to | : DG 45 KVA |
| 4 | Material of Construction of Stack | : MS |
| 5 | Stack Height from Ground Level (m) | : 4.2 |
| 6 | Height of Sampling Port from Ground Level (m) | : 4.2 |
| 7 | Inner Diameter of Stack at Sampling Point (m) | : 0.102 |
| 8 | Shape of the Stack | : Circular |
| 9 | Working Load of the Stack | : 45 KVA |
| 10 | Pollution Control System | : N/A |
| 11 | Ladder & Platform | : Temporary |

FUEL CHARACTERISTICS DETAILS

| | | |
|---|-----------------------------------|-------|
| 1 | Type of Fuel Used | : HSD |
| 2 | Fuel Consumption | : N/A |
| 3 | Calorific Value of Fuel (Kcal/Kg) | : N/A |



TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/1563 | Report Release Date : 10.04.2024 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

| Discipline : Chemical | | Group : Atmospheric Pollution | |
|---------------------------------------|---------------------|---------------------------------|---------|
| Parameter | Unit | Test Protocol | Results |
| Particulate Matter (PM) | mg/Nm ³ | IS 11255 (Part-1): 1985; RA2019 | 34 |
| Sulphur Di-Oxide (SO ₂) | mg/Nm ³ | USEPA 6C:2017 | 18 |
| Oxides of Nitrogen (NO _x) | mg/Nm ³ | USEPA 7E :2020 | 107 |
| Carbon Monoxide (CO) | mg/Nm ³ | USEPA 10B :2017 | 28 |
| Carbon Di- Oxide (CO ₂) | % | IS 13270:1992; RA2019 | 5.9 |
| Flue Gas Temperature | °C | IS 11255 (Part-3): 2008; RA2018 | 159 |
| Barometric Pressure | mmHg | IS 11255 (Part-3): 2008; RA2018 | 741 |
| Velocity of Flue Gas | m/sec | IS 11255 (Part-3): 2008; RA2018 | 12.03 |
| Quantity of Gas Flow | Nm ³ /hr | IS 11255 (Part-3): 2008; RA2018 | 238 |

Reviewed by :

(Saswata Burman Roy, Dy. Quality Manager)

****End of Report****

Authorised Signatory :

(Bapan Das, Dy. Technical Manager)



TEST REPORT

| | |
|---|---|
| Test Report No. : ELES/RNC/2024/1552 | Report Release Date : 10.04.2024 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|--------------------|-------------------------------|----------------------|---|
| Customer Name | : Minerals & Minerals Limited | Sample Ref. No. | : ELES/RNC/2024/SW/1602 |
| Address | : Lohardaga, Jharkhand-835302 | Sampling Date | : 20.03.2024 |
| | | Sample Received Date | : 22.03.2024 |
| Mines Status | : Operational | Type of Sample | : Surface Water |
| | | Source of Sample | : Spring Water |
| Period of Analysis | : 22.03.2024 to 29.03.2024 | Location of Sample | : Chapa Kona (Bunglapani Village), Pakhar Bauxite Mine (15.58 ha) |
| | | Sampling Procedure | : ELES/DOC/SMPL/01 |
| | | Sample Collected By | : ELES Pvt. Ltd. |
| | | Sample Condition | : Sealed & Preserved |

| Discipline : Chemical | | Group : Water | | Tolerance Limits |
|---|-------|--|--------------------|--|
| Parameter | Unit | Test Protocol | Result | as per IS 2296-1992 Class C (Inland Surface Water) |
| pH (at 25.2 °C) | - | IS 3025 (Part 11) : 2022 | 6.52 | 6.5-8.5 |
| Colour | Hazen | IS 3025 (Part -4) : 2023 | 3.0 | 300 |
| Odour | - | IS 3025 (Part-5) : 2018 | Unobjectionable | - |
| Taste | - | APHA 23 rd Ed.2017, 2160 C | N/A | - |
| Turbidity | mg/L | IS 3025 (Part-10) :1984;RA2017 | 0.95 | - |
| Total Dissolved Solids (TDS) | mg/L | IS 3025 (Part 16):1984; RA2017 | 96.8 | 1500 |
| Total Alkalinity (as CaCO ₃) | mg/L | IS 3025 (Part-23) :1986; RA2019 | 14.2 | - |
| Total Hardness (as CaCO ₃) | mg/L | IS 3025 (Part-21) : 2009; RA2019 | 25.7 | - |
| Sulphate (as SO ₄) | mg/L | IS 3025 (Part 24) : 1986; RA2019 | 10.2 | 400 |
| Nitrate (as NO ₃) | mg/L | APHA 23 rd Ed.2017, 4500 NO ₃ -B | 1.71 | 50 |
| Chloride (as Cl) | mg/L | IS 3025 (Part-32) :1988; RA2019 | 7.7 | 600 |
| Fluoride (as F) | mg/L | IS 3025 (Part-60) :2008; RA2019 | 0.142 | 1.5 |
| Cyanide (as CN) | mg/L | APHA 23 rd Ed.2017, 4500 CN-E | BDL (DL: 0.012) | 0.05 |
| Phenols Compounds (as C ₆ H ₅ OH) | mg/L | IS 3025 (Part-43): 1992;RA2019 | BDL (DL: 0.001) | 0.005 |

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/1552 | Report Release Date : 10.04.2024 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

| Discipline: Chemical | | Group: Water | | Tolerance Limits |
|---|------|---------------------------------------|-----------------|--|
| Parameter | Unit | Test Protocol | Result | as per IS 2296-1992 Class C (Inland Surface Water) |
| Calcium (as Ca) | mg/L | IS 3025 (Part-40): 1991; RA2019 | 2.5 | -- |
| Free Residual Chlorine (RFC) | mg/L | IS 3025 (Part-26) :2021 | BDL (DL: 0.1) | -- |
| Anionic Surfactants (as MBAS) | mg/L | APHA 24 th Ed.2023, 5540-C | BDL (DL: 0.025) | 1.0 |
| Discipline: Chemical | | Group: Residues in Water | | |
| Aluminium (as Al) | mg/L | IS 3025 (Part-55) :2003; RA2019 | BDL (DL: 0.02) | -- |
| Arsenic (as As) | mg/L | IS 3025 (Part-37): 2022 | BDL (DL: 0.005) | 0.2 |
| Boron (as B) | mg/L | IS 3025 (Part-57) :2021 | BDL (DL: 0.2) | -- |
| Cadmium (as Cd) | mg/L | APHA 23 rd Ed.2017; 3111 B | BDL (DL: 0.003) | 0.01 |
| Total Chromium (as Cr) | mg/L | APHA 23 rd Ed.2017; 3111 B | BDL (DL: 0.03) | -- |
| Copper (as Cu) | mg/L | APHA 23 rd Ed.2017; 3111 B | BDL (DL: 0.03) | 1.5 |
| Iron (as Fe) | mg/L | APHA 23 rd Ed.2017; 3111 B | 0.109 | 50 |
| Lead (as Pb) | mg/L | APHA 23 rd Ed.2017, 3111 B | BDL (DL: 0.01) | 0.1 |
| Manganese (as Mn) | mg/L | APHA 23 rd Ed.2017; 3111 B | BDL (DL: 0.05) | -- |
| Mercury (as Hg) | mg/L | IS 3025 (Part-48) :1994; RA2019 | BDL (DL: 0.001) | -- |
| Selenium (as Se) | mg/L | IS 3025 (Part-56) :2003; RA2019 | BDL (DL: 0.01) | 0.05 |
| Zinc (as Zn) | mg/L | APHA 23 rd Ed.2017, 3111 B | BDL (DL: 0.1) | 15 |
| Polynuclear Aromatic Hydrocarbons (PAH) | µg/L | ELES/GC/SOP/04 | BDL (DL: 0.05) | -- |

Remarks: 1. pH & RFC done at Lab.

TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2024/1552 | Report Release Date : 10.04.2024 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

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



ENVIROCHECK

Certified by: ISO 9001:2015 (TQM) & Accredited by: ISO 17025
ISO 14001:2015 & ISO 45001:2018 (OHS) Certified Laboratory
Lab: MIG, R-3 Housing Colony, Dhanbad, Pin - 826001, State - Jharkhand ☎ 9830067944 / ☎ 9304513737



TC-115021

TEST REPORT

| | |
|---|---|
| Test Report No. : ELES/RNC/2024/1552 | Report Release Date : 10.04.2024 |
| Work Order No. : M&M/23-24/01 | Work Order Date : 31.03.2023 |

| Discipline : Biological | | Group : Water | | Tolerance Limits |
|-------------------------|------------|------------------------|----------------------|--|
| Parameter | Unit | Test Protocol | Result | as per IS 2296-1992 Class C (Inland Surface Water) |
| Total Coliform | CFU/100 mL | IS 15185: 2016, RA2021 | 2.63×10 ² | 5000 |
| Escherichia Coli | CFU/100 mL | IS 15185: 2016; RA2021 | <1.0 | -- |

Reviewed by :

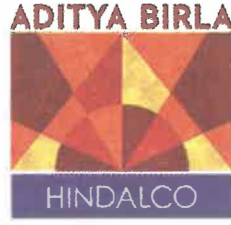
(Saswata Burman Roy, Dy. Quality Manager)

****End of Report****

Authorised Signatory :

(Bapan Das, Dy. Technical Manager)





Annexure 3

Date – 28.10.2023

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. Biswajeet Deogharia (Geologist)
3. Ms. Abhilasha Singh – Environment Engineer
4. Mr. Anand Prakash Tiwari – Environment Engineer

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

A handwritten signature in blue ink, appearing to read 'Basudev Gangopadhyay', is positioned above the printed name.

Basudev Gangopadhyay

AVP (Planning, Environment & Compliance)

Annexure-5

BREAK UP THE COST OF ENVIRONMENTAL MEASURES DURING THE YEAR 2023-24

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

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

**Part of OB removed cost.



Basudev Gangopadhyay
AVP (Planning, Environment & Compliance)