



Ref No: HIL/LHD/VP (M)/MoEF/ 6957

Date: 26.05.14

To,
Joint Director(S)
MoEF ,GOI, Eastern Regional Office
A/3,Chandrashekharpur,
Bhubaneshwar- 751023 (Orissa)

Sub: Compliance Report of EC conditions for Pakhar (8.09 ha) Bauxite Mining project of M/s Hindalco Industries Limited located in Lohardaga, Jharkhand for the period Oct'13 to March'14.

Ref: Environmental Clearance letter no J-11015/135/2006-IA II (M) dated 24th January 2007


Sir,

With reference to the above, we are submitting herewith the Compliance status report of EC conditions for **Pakhar (8.09 ha)** Bauxite Mining project of M/s Hindalco located in Lohardaga, Jharkhand for the period **Oct'13 to March'14**.

Hope you will find the same in order.

Thanking You

Yours Sincerely
FOR HINDALCO INDUSTRIES LIMITED


(Bijesh Kumar Jha)
VP (Mines)

Enclosure: - As Above

HINDALCO INDUSTRIES LIMITED

Hindalco Complex
Court Road, Lohardaga-835302
Distt. Lohardaga (Jharkhand)

Telephone +91 6526 224112/224015/223113
Fax +91 6526 224118

Website www.hindalco.com

Compliance of conditions laid down in Environmental Clearance

PAKHAR (8.09 ha) BAUXITE MINES

Period: Oct'13 – March'14

J-11015/135 /2006-IA.II (M) Dated 24.1.2007

| Sl No | Specific Conditions | Compliance Status |
|--------------|--|--|
| 1 | All the conditions stipulated by SPCB in their NOC shall be effectively implemented. | Implementations of the stipulated condition are fulfilled. |
| 2 | The environmental clearance is subject to approval of the state land use Department, Government of Jharkhand for diversion of agricultural land for non-agricultural use. | Mining Lease is granted/ renewed by the State Govt. after due consideration and Cabinet approval on recommendation of DC who is the competent authority to give permission for using the agricultural land for non-agricultural purpose. |
| 3 | 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. | Shallow depth mining is being done & the ground water table levels much below the working depth. Hence, there will be no intersecting of the ground water table due to mining activities. |
| 4 | The project proponent shall ensure that no natural watercourse shall be obstructed due to any mining operation. | It is being ensured .No natural water course is obstructed during mining. |
| 5 | Top soil shall be stacked properly with proper slope with adequate measures and should be used for reclamation and rehabilitation of mined out areas. | Sequential backfilling and reclamation of the mined out area are being practiced during mining operation. Whenever backfilling will be done to the mined out area, Topsoil will be used for backfilling to reclaim and restore the damage area upto the extent possible. |
| 6 | The waste generated shall be concurrently backfilled in the mined out area. There shall be no external OB dump. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status should be submitted to the Ministry of Environment & Forest on six monthly basis. | Sequential backfilling and reclamation of the mined out area are being exercised during mining operation. Yearly backfill data is being submitted.(enclosed Annexure) |

| | | |
|----|--|--|
| 7 | <p>Catch drains and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from mine working. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains should be regularly desilted particularly after monsoon and maintained properly.</p> <p>Garland drain (size, gradient and length) shall be constructed for mine pit and sump capacity should be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper setting of silt material. Sedimentation pits should be constructed at the corners of the garland drains and desilted at regular intervals.</p> | <p>No run-off is generated from mining activities. However to collect & manage rain water during monsoon, part of mined out area is used as settling tank for the runoff. Sediment rain water is being used for watering the mine area, roads, green belt development etc.</p> |
| 8 | <p>Plantation shall be raised in an area of 6.35 ha including a green belt of adequate width by planting the native species around the ML area, roads, reclaimed area etc. in consultation with the local DFO / Agriculture Department. The density of the trees should be around 1500 plants per ha.</p> | <p>In 2013-14, plantation over approx. 1.5 Ha areas (1000 saplings) has been done in Pakhar. Rest to be complied during project period.</p> |
| 9 | <p>The project authority should implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.</p> | <p>A plan is drawn on the basis of discussions with Scientists of State unit office of Central Ground Water Board, Ranchi to implement suitable conservation measures to augment ground water resources in the area and is also submitted to the Regional Director, Central Ground Water Board, Patna, for his further suggestions. Recommendation of CGWB shall be implemented to augment the ground water resources of the area. Copy of letter already submitted.</p> |
| 10 | <p>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.</p> | <p>It is being monitored. Monitoring report is enclosed as Annexure</p> |

| | | |
|----|---|---|
| 11 | Prior permission from the competent authority should be obtained for drawl of water from the surface water bodies. | Water cess is being paid on monthly basis to State Pollution Control Board. |
| 12 | Vehicular emissions should be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and transportation of mineral. The vehicles should be covered with a tarpaulin and shall not be overloaded. | To keep vehicular emissions in control, company vehicles are periodically checked & repaired. All transporters have been instructed to obtain PUC certificate for their vehicles |
| 13 | Drills should either be operated with dust extractors or should be equipped with water injection system. | Wet drilling is being done in the holes intermittently for dust suppression. |
| 14 | 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. | Blasting at Mines is done at fixed blasting period of 12.00 Noon to 1.00 PM on working days. Mobile mining activities are stopped during blasting. All the precautionary and mitigative measures to control ground vibration and to arrest generation of fly rocks are being implemented. |
| 15 | Consent to operate should be obtained from SPCB prior to start of enhanced production from the mine. | There is no proposal for production enhancement. |
| 16 | Sewage treatment plant should be installed for the colony. ETP should also be provided for workshop and wastewater generated from mining operations. | There is no effluent discharge from Mine; hence ETP has not been installed. The sewage water from domestic uses is being collected through individual septic tanks & soak pits. Sludge is collected to an integrated soak pit. |
| 17 | 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. | Action plan for conservation of flora and fauna spotted in the study area has been prepared based on discussions with D.F.O of the area for implementation and a copy of the same is submitted to the D.F.O, on receipt of any suggestion to our action plan the same will be intimated to MOEF. A copy of Action plan drawn and of letter for submission to DFO is all ready submitted to regional office. |
| 18 | A Final Mine Closure plan along with details of Corpus Fund should be submitted to the Ministry of Environment & Forest 5 years in advance of final mine closure for approval. | Final Mine closure plan dully approved by Indian Bureau of Mines. |

GENERAL CONDITIONS

| Sl No | Conditions | Compliance Status |
|-------|--|--|
| 1 | No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forest | Being adhered to. |
| 2 | No change in the calendar plan including excavation, quantum of mineral bauxite and waste should be made. | Excavation of Over Burden and Bauxite is being done as per the approved calendar plan. Details of excavation, quantum of mineral, OB, etc have been furnished for the financial year 2013-14 and copy enclosed. |
| 3 | Four ambient air quality-monitoring station should be established in the core zone as well as in the buffer zone for RPM, SPM, SO ₂ , NO _x monitoring. Location of the stations should be decided based on the metrological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board. | Monitoring locations have been fixed after due consultation of SPCB and regular monitoring is being carried out. Monitoring Reports is enclosed. |
| 4 | Data on ambient air quality (RPM, SPM, SO ₂ , and 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. | Regular monitoring is being carried out. Monitoring Reports is enclosed in Annexure |
| 5 | Fugitive dust emission from all the sources should be controlled regularly. Water spraying arrangements on haul roads, loading and unloading and at transfer points should be provided and properly maintained. | Water tanker have been provided for sprinkling of water on haul roads and are generally being engaged at the places where active mining is in progress to contain fugitive dust. Water spraying at dust prone areas is also being done manually. |
| 6 | Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operation of HEMM, etc. should be provided with ear plug / muffs. | Noise monitoring is being done at various locations of the work zone area and monitoring report is being submitted at MoEF. Workers engaged in operation of HEMMs, etc have also been provided with PPEs such as ear plug and ear muffs. |

| | | |
|----|---|---|
| 7 | Industrial waste water (workshops and waste water from the mine) Should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19 th May, 1993 and 31 st December, 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents. | Complied. There is no effluent discharge from Mine. Workshop has an Oil Catchment Pit to trap oil and grease. |
| 8 | Personnel working in dusty areas should wear protective respiratory devices and they should also provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed. | Complied. Use of Personal Protective Equipment (PPE) by the individuals is being ensured. All the mine workers are being regularly and periodically health checkup for any contraction of diseases due to exposure in dusty and noisy areas. Training on safety, health and environmental aspects of mining is being regularly imparted through VT centre and also through various other training programmes conducted by the State Government, recognized agencies, etc |
| 9 | A separate environmental management cell with suitable qualified personnel should be set-up under the control of a Senior Executive, who will report directly to the Head of the Organization. | Separate Environmental Management Cell (EMC) has been constituted and is functioning effectively. Copy enclosed as Annexure |
| 10 | The project authorities should inform to the Regional Office located at Bhubneshwar regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work. | Not applicable. The mine is running since 1976. Yearly date of financial closure is 31 st March. |
| 11 | The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry and its Regional Office located at Bhubneshwar. | Statement of budgetary provision and actual expenses for environmental protection measure is enclosed. It is once again reiterated that the funds so ear marked shall not be diverted for any other purposes other than it is committed at the beginning of the financial year. (Annexure). |
| 12 | The Regional Office of this Ministry located at Bhubneshwar shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information / monitoring reports. | Agreed. |

| | | |
|----|--|--|
| 13 | A copy of clearance letter will be marked to concerned Panchayat / local NGO, if any, from whom suggestion / representation has been received while processing the proposal. | Complied |
| 14 | State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Center and Collector's office / Tehsildar's Office for 30 days. | Displayed. |
| 15 | The project authorities should advertise at least in two local newspapers widely circulated, one of which locality concerned, within 7days of the issue of the 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. | Complied. Copies, of the advertisement made in the local newspapers, have already been submitted to the Regional Office. |



BREAK UP THE COST OF ENVIRONMENTAL MEASURES DURING THE YEAR 2013-14

The composite cost during the year 2013-14 for environmental protection & pollution control by Jharkhand Mines division of M/s Hindalco Industries Ltd & M/s Minerals & Minerals Ltd for implementation of the suggested measures in EC at our all the operating mines in the state of Jharkhand-namely Pakhar (115.13 Ha), Pakhar (15.58 Ha), Pakhar (109.507 Ha), Pakhar (8.09 Ha), Pakhar (35.12Ha), Serengdag (140.06 Ha), Serengdag (155.81 Ha), Jalim & Sanai (12.14 Ha), Gurdari (584.19 Ha), Amtipani (190.95 Ha), Kujam I (80.97 Ha) Kujam II (157.38 Ha) and Bagru (75.41 Ha), Hisri New (14.55 Ha), Chiro kukud, Orsa pat(196.36 Ha), Bhusar (65.31 Ha)& Bimarla Bauxite Mines (134.52 Ha).

| Sl No | Description | Budget (in Lakh Rupees) FY 2013-2014 | Actual (in Lakh Rupees) FY 2013-2014 from April'13 to Sep'13 | Actual (in Lakh Rupees) FY 2013-2014 from Oct'13 to March'14 |
|-------|--|---|--|--|
| 1 | Pollution Control & Environment monitoring | 10.00 | 6.44 | - |
| 2 | Reclamation/ Back filing & Rehabilitation | ** | 153.60 | 71.50 |
| 3 | Green belt & Plantation | 40.00 | 30.75 | 9.50 |
| 4 | Rural Development | 70.00 | 67.72 | 85.35 |

**Part of OB removed cost.


Convener

Environment Management Cell.



Date: 30.10.13

OFFICE ORDER

In connection with the earlier office order dated 12.11.2011 the re constituted team of Environment management cell to ensure compliance of various environmental Acts, regulations & rules at Mines Division, Hindalco, Lohardaga as follows:


The Environment Management Cell will consist of:

1. B. K. Mahapatra, AGM (Quality & Environment), Convenor.

Members:

2. Utpal Gupta, Manager (Environment)
3. Biplab Mukherjee (Asst Manager Geology)
4. S. Joshi, Mines Manager (Bagru Mines)
5. A. Anbarasu, Mines Manager (Serengdag A)
6. Ajay Pandey, Mines Manager (Pakhar 109.507 Hect)
7. Kiran Sankar Singh, Mines Manager (Gurdari)
8. Vidya Sagar Singh, Mines Manager (Kujam)
9. Amar Bharati, Mines Manager (Amtipani)
10. S P Jha, Mines Manager (Pakhar)
11. Rajesh Ambastha, Mines Manager (Chiro Kukud & Orsa)

By order


Bijesh Kumar Jha
VP (Mines)

Cc to: - All Mines Manager
All Department head
Notice Board.

PRODUCTION, MINED OUT, BACKFILLED, PRODUCTION AND OVERBURDEN REMOVAL FROM APR-13 TO MAR-14

| Name of Mines | Mining lease area (Ha) | Mined Out area (in Acres) | Backfilled area (in Acres) | Production (in MT) | Overburden Removal (in Cub.M.) |
|--|------------------------|---------------------------|----------------------------|--------------------|--------------------------------|
| Shrengdag Bauxite Mines | 155.81 | 25.95 | 19.20 | 253610.00 | 371290 |
| Gurdari Bauxite Mines | 584.19 | 33.20 | 25.60 | 313975.00 | 487773 |
| Jalim & Sanai | 12.14 | 4.00 | 2.00 | 49445.00 | 30124 |
| Serangdag | 140.06 | 7.96 | 3.48 | 99795.00 | 98371 |
| Pakhar Buxite Mines | 115.13 | 3.71 | 5.09 | 296950.00 | 449483 |
| Pakhar Buxite Mines | 8.09 | 1.70 | 0.80 | 68400.00 | 11380 |
| Kujam-I | 80.87 | 14.12 | 7.52 | 149255.00 | 99902 |
| Kujam-II | 157.38 | 5.41 | 3.60 | 149790.00 | 82386 |
| Amtipani | 190.95 | 16.46 | 16.03 | 149665.00 | 419976 |
| Chiro-Kukud | 152.57 | 2.90 | 6.18 | 52929.00 | 62222 |
| Orsa Bauxite Mines | 196.36 | 0.00 | 0.00 | 0.00 | 0 |
| Hisri New | 14.55 | 1.17 | 0.00 | 93813.00 | 6699 |
| Bagru | 75.41 | 0.94 | 0.24 | 56804.00 | 31935 |
| Bhusar | 65.31 | 2.26 | 8.32 | 203532.00 | 150616 |
| Minerals & Minerals Limited | | | | | |
| Pakhar Buxite Mines | 109.507 | 7.61 | 6.45 | 234500.00 | 210702 |
| Pakhar Buxite Mines | 15.58 | 1.45 | 1.85 | 57065.00 | 174812 |

Monitored water level

| Location (Mines) | Elevation (feet) | Elevation (Mtr) | Well type | Monsoon 2013 | | Post Monsoon 2013 | | Winter | | Pre Monsoon | |
|------------------|------------------|-----------------|-----------|--------------|------------|-------------------|------------|-----------|------------|-------------|------------|
| | | | | Inside ML | Outside ML | Inside ML | Outside ML | Inside ML | Outside ML | Inside ML | Outside ML |
| Bagru | 2970 | 905 | Open Well | 21.70 | 24.10 | 27.32 | 29.23 | | | | 29.23 |
| | 2985 | 910 | Open Well | 24.20 | 24.50 | 26.89 | 27.19 | | | | 27.19 |
| | 3001 | 915 | Open Well | 29.30 | 28.40 | 30.14 | 31.26 | | | | 31.26 |
| | 2963 | 903 | Open Well | 22.90 | 33.10 | 35.21 | 35.89 | | | | 35.89 |
| | 2983 | 909 | Open Well | 17.60 | 28.70 | 29.62 | 30.18 | | | | 30.18 |
| Pakhar | 3279 | 1000 | Open Well | 24.90 | 22.60 | 24.51 | 25.93 | | | | 25.93 |
| | 3552 | 1083 | Hand Pump | 35.40 | 31.60 | 34.34 | 35.49 | | | | 35.49 |
| Sherengdag | 3370 | 1027 | Open Well | 25.80 | 28.30 | 30.53 | 31.42 | | | | 31.42 |
| | 3587 | 1094 | Hand Pump | 41.80 | 39.58 | 42.13 | 42.56 | | | | 42.56 |
| | 3546 | 1081 | Hand Pump | 39.60 | 31.26 | 41.37 | 41.31 | | | | 41.31 |
| | 3459 | 1055 | Hand Pump | 33.10 | 27.50 | 35.31 | 35.35 | | | | 35.35 |
| | 3495 | 1066 | Hand Pump | 27.70 | 26.13 | 29.12 | 30.25 | | | | 30.25 |
| Gurdari | 3428 | 1045 | Hand Pump | 29.34 | 27.85 | 29.64 | 30.41 | | | | 30.41 |
| | 3481 | 1061 | Hand Pump | 28.30 | 24.87 | 25.42 | 26.79 | | | | 26.79 |
| | 3472 | 1059 | Hand Pump | 38.10 | 36.63 | 35.21 | 35.98 | | | | 35.98 |
| | 3527 | 1075 | Hand Pump | 28.20 | 26.83 | 28.49 | 29.53 | | | | 29.53 |
| | 3526 | 1075 | Hand Pump | 28.30 | 29.32 | 30.29 | 30.05 | | | | 30.05 |
| Kujam | 3412 | 1040 | Open Well | 33.90 | 21.80 | 35.21 | 36.78 | | | | 36.78 |
| | 3414 | 1041 | Open Well | 33.70 | 24.80 | 36.54 | 39.52 | | | | 39.52 |
| | 3491 | 1064 | Hand Pump | 31.50 | 28.60 | 35.91 | 42.12 | | | | 42.12 |
| | 3450 | 1052 | Hand Pump | | 21.12 | 24.13 | 23.54 | | | | 23.54 |
| | 3765 | 1148 | Hand Pump | 33.40 | 28.35 | 34.12 | 37.26 | | | | 37.26 |
| Chiro Kukud | 3776 | 1151 | Hand Pump | 37.60 | 31.84 | 36.67 | 36.21 | | | | 36.21 |
| | 3556 | 1084 | Hand Pump | 34.30 | 36.85 | 35.69 | 39.19 | | | | 39.19 |

B. Bahamud



Test Report

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 30/01/2014

Report No : KG14-000221.001

JOE No : KG14-000221

Report Control No : KGR0000046008

Sample Described by Customer as : AMBIENT AIR QUALITY MONITORING

Client Name : Hindalco Industries Limited(Mines Division)
Client Address : Lohardaga,
Postal Code : 835203
State : Jharkhand
Country : India
Sample Type : AMBIENT AIR QUALITY MONITORING
Received : 09/01/2014
Registered : 09/01/2014
Marks on Sample : Location : Pakhar -115.13 pit(Pakhar plateau), Sampling date 01.01.2014
Test Start/End Date : 09/01/2014 - 14/01/2014

| Analysis | Method | Result | Unit | Requirement/Limit as Per NAAQS | |
|----------------------------|---------------------------------------|--------|-------|--------------------------------|-----|
| | | | | Min | Max |
| Particulate Matter (PM10) | IS:5182 (PART 23) | 33.98 | ug/m3 | - | 100 |
| Particulate Matter (PM2.5) | USEPA CFR(40) Appendix-L | 25.08 | ug/m3 | - | 60 |
| Nitrogen Dioxide (NO2) | IS:5182 (Part-6):1975 (Reaff.2004) | <5.00 | ug/m3 | - | 80 |
| Sulphur Dioxide (SO2) | IS:5182 (Part-2):2001 (Reaff.2006) | <5.00 | ug/m3 | - | 80 |
| Carbon Monoxide (CO) | EPA 600/P-99/001F | <0.10 | PPM | | |
| Analyzed at site. | | | | | |

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Member of the SGS Group (SGS SA)



Test Report

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 30/01/2014

Report No : KG14-000221.001

JOE No : KG14-000221

Report Control No : KGR0000046008

Per pro SGS India Private Ltd

Satya Manna

Section Incharge - ENVI

Authorized Signatory

****End of Report****

Page 2 of 2

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Test Report

Print Date : 30/01/2014

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Report No : KG14-000221.002

JOE No : KG14-000221

Report Control No : KGR0000046008
Sample Described by Customer as : AMBIENT AIR QUALITY MONITORING

Client Name : Hindalco Industries Limited(Mines Division)
Client Address : Lohardaga,
Postal Code : 835203
State : Jharkhand
Country : India
Sample Type : AMBIENT AIR QUALITY MONITORING
Received : 09/01/2014
Registered : 09/01/2014
Marks on Sample : Location : Pakhar Hindalco Colony (Pakhar Plateau), Sampling dt. 01.01.2014
Test Start/End Date : 09/01/2014 - 14/01/2014

| Analysis | Method | Result | Unit | Requirement/Limit as Per NAAQS | |
|----------------------------|---------------------------------------|--------|-------|--------------------------------|-----|
| | | | | Min | Max |
| Particulate Matter (PM10) | IS:5182 (PART 23) | 41.96 | ug/m3 | - | 100 |
| Particulate Matter (PM2.5) | USEPA CFR(40) Appendix-L | 22.91 | ug/m3 | - | 60 |
| Nitrogen Dioxide (NO2) | IS:5182 (Part-6):1975 (Reaff.2004) | <5.00 | ug/m3 | - | 80 |
| Sulphur Dioxide (SO2) | IS:5182 (Part-2):2001 (Reaff.2006) | <5.00 | ug/m3 | - | 80 |
| Carbon Monoxide (CO) | EPA 600/P-99/001F | <0.10 | PPM | | |

Analyzed at site.

Page 1 of 2

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Test Report

Report No : KG14-000221.002

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 30/01/2014

JOE No : KG14-000221

Report Control No : KGR0000046008

Per pro SGS India Private Ltd

Satya Manna

Section Incharge - ENVI

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Page 2 of 2

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Test Report

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 30/01/2014

Report No : KG14-000221.003

JOE No : KG14-000221

Report Control No : KGR0000046008
Sample Described by Customer as : AMBIENT AIR QUALITY MONITORING

Client Name : Hindalco Industries Limited(Mines Division)
Client Address : Lohardaga,
Postal Code : 835203
State : Jharkhand
Country : India
Sample Type : AMBIENT AIR QUALITY MONITORING
Received : 09/01/2014
Registered : 09/01/2014
Marks on Sample : Location : Pakhar -109.507 Dumerpat village(Pakhar Plateau), Sampling date:02.01.2014
Test Start/End Date : 09/01/2014 - 14/01/2014

| Analysis | Method | Result | Unit | Requirement/Limit as Per NAAQS | |
|----------------------------|---------------------------------------|--------|-------|--------------------------------|-----|
| | | | | Min | Max |
| Particulate Matter (PM10) | IS:5182 (PART 23) | 96.36 | ug/m3 | - | 100 |
| Particulate Matter (PM2.5) | USEPA CFR(40) Appendix-L | 37.16 | ug/m3 | - | 60 |
| Nitrogen Dioxide (NO2) | IS:5182 (Part-6):1975 (Reaff.2004) | <5.00 | ug/m3 | - | 80 |
| Sulphur Dioxide (SO2) | IS:5182 (Part-2):2001 (Reaff.2006) | <5.00 | ug/m3 | - | 80 |
| Carbon Monoxide (CO) | EPA 600/P-99/001F | <0.10 | PPM | | |

Analyzed at site.

Page 1 of 2

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Test Report

Report No : KG14-000221.003

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 30/01/2014

JOE No : KG14-000221

Report Control No : KGR0000046008

Per pro SGS India Private Ltd

Satya Manna

Section Incharge - ENVI

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Test Report

Print Date : 30/01/2014

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Report No : KG14-000221.004

JOE No : KG14-000221

Report Control No : KGR0000046008
Sample Described by Customer as : AMBIENT AIR QUALITY MONITORING

Client Name : Hindalco Industries Limited(Mines Division)
Client Address : Lohardaga,
Postal Code : 835203
State : Jharkhand
Country : India
Sample Type : AMBIENT AIR QUALITY MONITORING
Received : 09/01/2014
Registered : 09/01/2014
Marks on Sample : Location : Pakhar-84.38, pokharapat village (pakhar plateau), Sampling date : 02.01.2014
Test Start/End Date : 09/01/2014 - 14/01/2014

| Analysis | Method | Result | Unit | Requirement/Limit as Per NAAQS | |
|----------------------------|---------------------------------------|--------|-------|--------------------------------|-----|
| | | | | Min | Max |
| Particulate Matter (PM10) | IS:5182 (PART 23) | 37.49 | ug/m3 | - | 100 |
| Particulate Matter (PM2.5) | USEPA CFR(40) Appendix-L | 14.41 | ug/m3 | - | 60 |
| Nitrogen Dioxide (NO2) | IS:5182 (Part-6):1975 (Reaff.2004) | <5.00 | ug/m3 | - | 80 |
| Sulphur Dioxide (SO2) | IS:5182 (Part-2):2001 (Reaff.2006) | <5.00 | ug/m3 | - | 80 |
| Carbon Monoxide (CO) | EPA 600/P-99/001F | <0.10 | PPM | | |

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SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 30/01/2014

Report No : KG14-000221.004

JOE No : KG14-000221

Report Control No : KGR0000046008

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Satya Manna

Section Incharge - ENVI

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TEST REPORT

Report No. : KG14-000252.001

Date :11.01.2014

JOE No. : KG13-000252

Report Control No. : KGR0000044247

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

| | |
|---------------------------|--|
| SAMPLE DESCRIPTION | MEASUREMENT OF NOISE LEVEL |
| COMPANY NAME | M/S. HINDALCO INDUSTRIES LIMITED (MINES DIVISION) |
| ADDRESS | MINES DIVISION, LOHARDAGA, JHARKHAND, PIN – 835 302 |
| SAMPLING SITE | PAKHAR-A (PAKHAR PLATEAU) |
| PROTOCOL | IS:9989/IS:7194 |
| DATE OF SAMPLING | 01.01.2014 TO 02.01.2014 |
| TEST START DATE | 10.01.2014 |
| TEST END DATE | 11.01.2014 |

| LOCATION | RESULT | | LIMIT IN dB(A) Leq (INDUSTRIAL AREA) | |
|----------------------|---|---|---|------------|
| | Day Time (L _{eq}) in dB(A) | Night time (L _{eq}) in dB(A) | Day Time | Night time |
| NEAR HINDALCO OFFICE | 56 | 47 | 75 | 70 |

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

Note: (i) The value is the Leq of One Hundred Seventy readings taken in day time and seventy reading taken in night time.
(ii) Day time shall mean from 6:00 am to 10:00 pm
(iii) Night time shall mean from 10:00 pm to 6:00 am

Checked by

per pro SGS India Private Ltd.

Dipankar De Sarkar
Manager (Operations)

Dr. Asish Chakraborty
Manager-Laboratory

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Test Report

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 30/01/2014

Report No : KG14-000231.001

JOE No : KG14-000231

Report Control No : KGR0000045993
Sample Described by Customer as : FUGITIVE AIR

Client Name : Hindalco Industries Limited(Mines Division)
Client Address : Lohardaga,
Postal Code : 835203
State : Jharkhand
Country : India
Sample Type : FUGITIVE AIR
Received : 09/01/2014
Registered : 10/01/2014
Marks on Sample : Location: Pakhar 115.13 Pit(Pakhar Plateau),date:01.01.2014
Test Start/End Date : 10/01/2014 - 15/01/2014

| Analysis | Method | Result | Unit | Requirement/Limit as Per |
|------------------------------------|------------------------|--------|-------|--|
| | | | | FACTORY ACT. 1948 & BIHAR/JHARKAND FACTORY Min RULE-1950 Max |
| Suspended Particulate Matter (SPM) | IS:5182 (Part-23):2006 | 917.02 | ug/m3 | 10000 |

Per pro SGS India Private Ltd

Satya Manna
Section Incharge - ENVI
Authorized Signatory

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Test Report

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Print Date : 21/01/2014

Report No : KG14-000162.001

JOE No : KG14-000162

Report Control No : KGR0000045139

Sample Described by Customer as : GROUND WATER

Client Name : Hindalco Industries Limited(Mines Division)
Client Address : Lohardaga,
Postal Code : 835203
State : Jharkhand
Country : India
Sample Type : GROUND WATER
Received : 08/01/2014
Registered : 08/01/2014
Marks on Sample : Location:Hand pump (Near Kukud Pit)
- : Chirokukud Bauxite Mines
Quantity : 5.5L app
Sample Collected on : 30.12.2013
Sampling Method : APHA 1060B/9060A
Test Start/End Date : 08/01/2014 - 20/01/2014

| Analysis | Method | Result | Unit | Requirement/Limit As per IS:10500:2012 | |
|--|--|-----------|------|---|---------------|
| | | | | Acceptable | Permissible |
| Colour | IS:3025 (Part-4):1983 (Reaff.2006) | 10.0 | Hz | 5 | 15 |
| Odour | IS:3025 (Part-5):1983 (Reaff.2006) | Agreeable | | Agreeable | Agreeable |
| Taste | IS:3025 (Part-8):1983 (Reaff.2006) | Agreeable | | Agreeable | Agreeable |
| pH | IS:3025 (Part-11):1983 (Reaff.2006) | 7.48 | | 6.5 | 8.5 |
| <i>Analyzed at site.</i> | | | | | |
| Total Hardness (as CaCO ₃) | IS:3025 (Part-21):1983 (Reaff.2006) | 18.60 | mg/L | 200 | 600 |
| Iron (as Fe) | IS:3025 (Part-2) | 0.07 | mg/L | 0.3 | No relaxation |
| Fluoride (as F) | IS:3025 (Part-60):2008 | 0.15 | mg/L | 1.0 | 1.5 |
| Residual Free Chlorine | IS:3025 (Part-26):1986 (Reaff.2003) | <0.10 | mg/L | 0.2 | 1.0 |

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Test Report

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Print Date : 21/01/2014

Report No : KG14-000162.001

JOE No : KG14-000162

Report Control No : KGR0000045139

| Analysis | Method | Result | Unit | Requirement/Limit As per IS:10500:2012 | |
|---|--|--------|-----------|---|---------------|
| | | | | Acceptable | Permissible |
| Chloride (as Cl) | IS:3025 (Part-32):1986 (Reaff.1999) | 6.78 | mg/L | 250 | 1000 |
| Total Dissolved Solids | IS:3025 (Part-16):1984 (Reaff.1996) | 44.50 | mg/L | 500 | 2000 |
| E.coli | IS:1622:1981(Reaff.2003) | Absent | per 100ml | | |
| Coliform bacteria | IS:1622-1981 (Reaffirmation 2003) | Absent | per 100ml | | |
| Calcium (as Ca) | IS:3025 (Part-40):1991 (Reaff.2003) | 5.95 | mg/L | 75 | 200 |
| Magnesium (as Mg) | IS:3025 (Part-46):1994 (Reaff.1999) | <1.00 | mg/L | 30 | 100 |
| Copper (as Cu) | IS:3025 (Part-2) | 0.05 | mg/L | 0.05 | 1.5 |
| Manganese (as Mn) | IS:3025 (Part-2) | <0.01 | mg/L | 0.1 | 0.3 |
| Sulphate (as SO ₄) | IS:3025 (Part-24):1986 (Reaff.1998) | <2.00 | mg/L | 200 | 400 |
| Nitrate (as NO ₃) | IS:3025 (Part-34):1988 (Reaff.1999) | 15.86 | mg/L | 45 | No relaxation |
| Phenolic Compound (as C ₆ H ₅ OH) | IS:3025 (Part-43):1992 (Reaff.2003) | <0.001 | mg/L | 0.001 | 0.002 |
| Mercury (as Hg) | IS:3025 (Part-48):1994 (Reaff.1999) | <0.001 | mg/L | 0.001 | No relaxation |
| Cadmium (as Cd) | IS:3025 (Part-41):1992 (Reaff.2003) | <0.003 | mg/L | 0.003 | No relaxation |
| Selenium (as Se) | IS:3025 (Part-2) | 0.005 | mg/L | 0.01 | No relaxation |
| Arsenic (as As) | IS:3025 (Part-37):1988 (Reaff.1999) | <0.005 | mg/L | 0.01 | No relaxation |
| Cyanide (as CN) | IS:3025 (Part-27):1986 (Reaff.2003) | <0.020 | mg/L | 0.05 | No relaxation |
| Lead (as Pb) | IS:3025 (Part-47):1994 (Reaff.1999) | <0.005 | mg/L | 0.01 | No relaxation |
| Zinc (as Zn) | IS:3025 (Part-2) | 0.02 | mg/L | 5 | 15 |
| Anionic Surface Active Agent (as MBAS) | IS:13428:2005 Annex K | <0.05 | mg/L | 0.2 | 1.0 |
| Chromium (as Cr) | IS:3025 (Part-2) | <0.01 | mg/L | 0.05 | No relaxation |
| Mineral Oil | IS:3025 (Part-39):1991 (Reaff.2003) | <0.01 | mg/L | 0.5 | No relaxation |

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Test Report

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Print Date : 21/01/2014

Report No : KG14-000162.001

JOE No : KG14-000162

Report Control No : KGR0000045139

| Analysis | Method | Result | Unit | Requirement/Limit As per IS:10500:2012 | |
|--|--|--------|------|---|-------------|
| | | | | Acceptable | Permissible |
| Total Alkalinity (as CaCO ₃) | IS:3025 (Part-23):1986 (Reaff.2003) | 4.56 | mg/L | 200 | 600 |
| Aluminium (as Al) | IS:3025 (Part-55):2003 | <0.03 | mg/L | 0.03 | 0.2 |
| Boron (as B) | IS:3025 (Part-57):2005 | <0.05 | mg/L | 0.5 | 1.0 |
| Turbidity | IS:3025 (Part-10):1984 (Reaff.2006) | 0.40 | NTU | 1 | 5 |

Per pro SGS India Private Ltd

Aniruddha Das

Section Incharge-Microbiology

Authorized Signatory

Per pro SGS India Private Ltd

Satya Manna

Section Incharge - ENVI

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Test Report

Print Date : 29/01/2014

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Report No : KG14-000135.001

JOE No : KG14-000135

Sample Described by Customer as : SOIL Report Control No : KGR0000045888

Client Name : Hindalco Industries Limited(Mines Division)
Client Address : Lohardaga,
Postal Code : 835203
State : Jharkhand
Country : India
Sample Type : SOIL
Received : 08/01/2014
Registered : 08/01/2014
Marks on Sample : Location:K-5, Quarry 109.507 Hector(Pakhar 109.507 Mines)
- : (Pakhar Plateau)
Sample Collected on : 01.01.2014
Quantity : 2.5Kg app
Test Start/End Date : 08/01/2014 - 22/01/2014

| Analysis | Method | Result | Unit |
|-------------------------------------|--|------------|---------|
| Conductivity (1:5) Soil Suspension. | F.A.U.N (2007) | 5.9 | µs/cm |
| pH (1:2) Soil Suspension | F.A.U.N (2007) | 5.75 | -- |
| Porosity | F.A.U.N (2007) | 56.45 | % |
| Bulk Density | By Bulk Density Apparatus | 1.06 | gram/ml |
| Phosphorus (as P) | F.A.U.N (2007) | <20.000 | mg/kg |
| Texture | F.A.U.N (2007) | Sandy clay | |
| Clay | F.A.U.N (2007) | 35.8 | % |
| Sand | F.A.U.N (2007) | 46.2 | % |
| Silt | F.A.U.N (2007) | 18.0 | % |
| Available Chloride (as Cl) | Soil & Agriculture Organization (U.N-2007) | <20.00 | mg/kg |
| Available Nitrogen | Food & Agriculture Organization (U.N-2007) | 270.01 | mg/kg |

Page 1 of 2

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Test Report

Print Date : 29/01/2014

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Report No : KG14-000135.001

JOE No : KG14-000135

Report Control No : KGR0000045888

| Analysis | Method | Result | Unit |
|-----------------------------|--------------------------------------|---------|-------|
| Available Potassium (as K) | Soil & Water Book By P.K. Gupta | 1319.23 | mg/kg |
| Available Magnesium (as Mg) | Soil & Water Book By P.K. Gupta | 2666.03 | mg/kg |
| Lead (as Pb) | USEPA 3052 | 18.89 | mg/kg |
| Chromium (as Cr) | USEPA 3052 | 137.76 | mg/kg |
| Mercury (as Hg) | USEPA 3052 | 1.02 | mg/kg |
| Total Organic Matter | Black & Walkely Wet Digestion Method | 0.46 | % |

Per pro SGS India Private Ltd

Satya Manna

Section Incharge - ENVI

Authorized Signatory

****End of Report****

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TEST REPORT

Report No. : KG17-000178.001- 004

Date : 10.01.2014

JOE No. : KG14-000178

Report Control No:KGR0000044181

SAMPLE DRAWN BY SGS INDIA PRIVATE LTD.

SAMPLE DESCRIPTION : MEASUREMENT OF NOISE LEVEL
NAME OF THE CLIENT : M/S. HINDALCO INDUSTRIES LIMITED
ADDRESS : MINES DIVISION, LOHARDAGA, JHARKHAND, PIN – 835 302
SAMPLING METHOD : INSTRUMENTAL, USING SOUND LEVEL METER
SAMPLING SITE : PAKHER-B (PAKHAR PLATEAU)
PROTOCOL : GENSOP/CALLAB-116
TEST START DATE : 09.01.2014
TEST END DATE : 10.01.2014

| SL NO. | SAMPLING LOCATION | DATE & TIME OF SAMPLING | DAY TIME NOISE LEVEL dB (A) Leq | LIMIT IN dB(A) Leq DAY TIME (INDUSTRIAL AREA) |
|--------|------------------------------------|---------------------------|------------------------------------|---|
| 1. | POCKLEN (TATA HITACHI EX 2001 LC) | 02.01.2014 (12:05 Hrs) | 77 | 75 |
| 2. | COMPRESSOR (ATLAS XAHS-186) | 02.01.2014 (12:20 Hrs) | 81 | 75 |
| 3. | WAGON DRILL (ROC-203) | 02.01.2014 (12:35 Hrs) | 84 | 75 |
| 4. | COMPRESSOR (XAH -210) | 02.01.2014 (12:50 Hrs) | 73 | 75 |

****End of Report***

Note: (i) The value is the Leq of twenty readings taken in each location (Day time).
(ii) Day time shall mean from 6:00 am to 10:00 pm

Checked by

per pro SGS India Private Ltd.

Dipankar De Sarkar
Manager (Operations)

Dr. Asish Chakraborty
Manager-Laboratory

Page 1 of 1

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Test Report

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Print Date : 21/01/2014

Report No : KG14-000165.001

JOE No : KG14-000165

Report Control No : KGR0000045145

Sample Described by Customer as : SURFACE WATER

Client Name : Hindalco Industries Limited(Mines Division)
Client Address : Lohardaga,
Postal Code : 835203
State : Jharkhand
Country : India
Sample Type : SURFACE WATER
Received : 08/01/2014
Registered : 08/01/2014
Marks on Sample : Location:Spring Water Near Hindalco Colony
- : Pakhar Plateau
Quantity : 5.5L app
Sample Collected on : 02.01.2014
Sampling Method : APHA 1060B/9060A
Test Start/End Date : 08/01/2014 - 20/01/2014

| Analysis | Method | Result | Unit | Requirement/Limit As per IS:10500:2012 | |
|--|--|-----------|------|---|---------------|
| | | | | Acceptable | Permissible |
| Colour | IS:3025 (Part-4):1983 (Reaff.2006) | 10.0 | Hz | 5 | 15 |
| Odour | IS:3025 (Part-5):1983 (Reaff.2006) | Agreeable | | Agreeable | Agreeable |
| Taste | IS:3025 (Part-8):1983 (Reaff.2006) | Agreeable | | Agreeable | Agreeable |
| pH | IS:3025 (Part-11):1983 (Reaff.2006) | 7.92 | | 6.5 | 8.5 |
| <i>Analyzed at site.</i> | | | | | |
| Total Hardness (as CaCO ₃) | IS:3025 (Part-21):1983 (Reaff.2006) | 3.72 | mg/L | 200 | 600 |
| Iron (as Fe) | IS:3025 (Part-2) | 0.18 | mg/L | 0.3 | No relaxation |
| Fluoride (as F) | IS:3025 (Part-60):2008 | 0.28 | mg/L | 1.0 | 1.5 |
| Residual Free Chlorine | IS:3025 (Part-26):1986 (Reaff.2003) | <0.10 | mg/L | 0.2 | 1.0 |

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SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Print Date : 21/01/2014

Report No : KG14-000165.001

JOE No : KG14-000165

Report Control No : KGR0000045145

| Analysis | Method | Result | Unit | Requirement/Limit As per IS:10500:2012 | |
|---|--|----------------|-----------|---|---------------|
| | | | | Acceptable | Permissible |
| Chloride (as Cl) | IS:3025 (Part-32):1988 (Reaff.1999) | <5.00 | mg/L | 250 | 1000 |
| Total Dissolved Solids | IS:3025 (Part-16):1984 (Reaff.1996) | 9.00 | mg/L | 500 | 2000 |
| E.coli | IS:1622:1981(Reaff.2003) | Absent | per 100ml | | |
| Coliform bacteria | IS:1622-1981 (Reaffirmation 2003) | Present(80cfu) | per 100ml | | |
| Calcium (as Ca) | IS:3025 (Part-40):1991 (Reaff.2003) | 1.12 | mg/L | 75 | 200 |
| Magnesium (as Mg) | IS:3025 (Part-46):1994 (Reaff.1999) | <1.00 | mg/L | 30 | 100 |
| Copper (as Cu) | IS:3025 (Part-2) | 0.02 | mg/L | 0.05 | 1.5 |
| Manganese (as Mn) | IS:3025 (Part-2) | 0.04 | mg/L | 0.1 | 0.3 |
| Sulphate (as SO ₄) | IS:3025 (Part-24):1986 (Reaff.1998) | <2.00 | mg/L | 200 | 400 |
| Nitrate (as NO ₃) | IS:3025 (Part-34):1988 (Reaff.1999) | 0.51 | mg/L | 45 | No relaxation |
| Phenolic Compound (as C ₆ H ₅ OH) | IS:3025 (Part-43):1992 (Reaff.2003) | <0.001 | mg/L | 0.001 | 0.002 |
| Mercury (as Hg) | IS:3025 (Part-48):1994 (Reaff.1999) | <0.001 | mg/L | 0.001 | No relaxation |
| Cadmium (as Cd) | IS:3025 (Part-41):1992 (Reaff.2003) | <0.003 | mg/L | 0.003 | No relaxation |
| Selenium (as Se) | IS:3025 (Part-2) | <0.005 | mg/L | 0.01 | No relaxation |
| Arsenic (as As) | IS:3025 (Part-37):1988 (Reaff.1999) | <0.005 | mg/L | 0.01 | No relaxation |
| Cyanide (as CN) | IS:3025 (Part-27):1986 (Reaff.2003) | <0.020 | mg/L | 0.05 | No relaxation |
| Lead (as Pb) | IS:3025 (Part-47):1994 (Reaff.1999) | <0.005 | mg/L | 0.01 | No relaxation |
| Zinc (as Zn) | IS:3025 (Part-2) | 0.03 | mg/L | 5 | 15 |
| Anionic Surface Active Agent (as MBAS) | IS:13428:2005: Annex K | <0.05 | mg/L | 0.2 | 1.0 |
| Chromium (as Cr) | IS:3025 (Part-2) | <0.01 | mg/L | 0.05 | No relaxation |
| Mineral Oil | IS:3025 (Part-39):1991 (Reaff.2003) | <0.01 | mg/L | 0.5 | No relaxation |

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Test Report

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Print Date : 21/01/2014

Report No : KG14-000165.001

JOE No : KG14-000165

Report Control No : KGR0000045145

| Analysis | Method | Result | Unit | Requirement/Limit As per IS:10500:2012 | |
|--|--|--------|------|---|-------------|
| | | | | Acceptable | Permissible |
| Total Alkalinity (as CaCO ₃) | IS:3025 (Part-23):1986 (Reaff.2003) | 4.05 | mg/L | 200 | 600 |
| Aluminium (as Al) | IS:3025 (Part-55):2003 | 0.05 | mg/L | 0.03 | 0.2 |
| Boron (as B) | IS:3025 (Part-57):2005 | <0.05 | mg/L | 0.5 | 1.0 |
| Turbidity | IS:3025 (Part-10):1984 (Reaff.2006) | 0.10 | NTU | 1 | 5 |

Per pro SGS India Private Ltd

Aniruddha Das

Section Incharge-Microbiology

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Satya Manna

Section Incharge - ENVI

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****End of Report****

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Test Report

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 25/04/2014

Report No : KG14-002516.001

JOE No : KG14-002516

Report Control No : KGR0000054472

Sample Described by Customer as : AMBIENT AIR QUALITY MONITORING

Client Name : Hindalco Industries Limited(Mines Division)
Client Address : Lohardaga,
Postal Code : 835203
State : Jharkhand
Country : India
Sample Type : AMBIENT AIR QUALITY MONITORING
Received : 16/04/2014
Registered : 16/04/2014
Marks on Sample : Location: Pakhar Hindalco Colony(Pakhar Platue)
Sampling Date : 29.03.2014
Test Start/End Date : 16/04/2014 - 24/04/2014

| Analysis | Method | Result | Unit | Requirement/Limit as Per NAAQS | |
|----------------------------|---------------------------------------|--------|-------|--------------------------------|-----|
| | | | | Min | Max |
| Particulate Matter (PM10) | IS:5182 (PART 23) | 109.22 | ug/m3 | - | 100 |
| Particulate Matter (PM2.5) | USEPA CFR(40) Appendix-L | 27.79 | ug/m3 | - | 60 |
| Nitrogen Dioxide (NO2) | IS:5182 (Part-6):1975 (Reaff.2004) | <5.00 | ug/m3 | - | 80 |
| Sulphur Dioxide (SO2) | IS:5182 (Part-2):2001 (Reaff.2006) | <5.00 | ug/m3 | - | 80 |
| Carbon Monoxide (CO) | EPA 600/P-99/001F | <1.00 | PPM | | |

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Print Date : 25/04/2014

JOE No : KG14-002516

Report Control No : KGR0000054472

Per pro SGS India Private Ltd

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Section Incharge - ENVI

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****End of Report****

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Test Report

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 25/04/2014

Report No : KG14-002516.002

JOE No : KG14-002516

Report Control No : KGR0000054472
Sample Described by Customer as : AMBIENT AIR QUALITY MONITORING

Client Name : Hindalco Industries Limited(Mines Division)
Client Address : Lohardaga,
Postal Code : 835203
State : Jharkhand
Country : India
Sample Type : AMBIENT AIR QUALITY MONITORING
Received : 16/04/2014
Registered : 16/04/2014
Marks on Sample : Location:Pakhar 115.13pit(Pakhar Plateau)
Sampling Date : 29.03.2014
Test Start/End Date : 16/04/2014 - 24/04/2014

| Analysis | Method | Result | Unit | Requirement/Limit as Per NAAQS | |
|----------------------------|---------------------------------------|--------|-------|--------------------------------|-----|
| | | | | Min | Max |
| Particulate Matter (PM10) | IS:5182 (PART 23) | 61.44 | ug/m3 | - | 100 |
| Particulate Matter (PM2.5) | USEPA CFR(40) Appendix-L | 24.91 | ug/m3 | - | 60 |
| Nitrogen Dioxide (NO2) | IS:5182 (Part-6):1975 (Reaff.2004) | 5.11 | ug/m3 | - | 80 |
| Sulphur Dioxide (SO2) | IS:5182 (Part-2):2001 (Reaff.2006) | <5.00 | ug/m3 | - | 80 |
| Carbon Monoxide (CO) | EPA 600/P-99/001F | <1.00 | PPM | | |

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Report No : KG14-002516.002

JOE No : KG14-002516

Report Control No : KGR0000054472

Per pro SGS India Private Ltd

Satya Manna
Section Incharge - ENVI
Authorized Signatory

****End of Report****

Page 2 of 2

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SGS India Pvt. Ltd.

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Test Report

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 25/04/2014

Report No : KG14-002516.004

JOE No : KG14-002516

Report Control No : KGR0000054472
Sample Described by Customer as : AMBIENT AIR QUALITY MONITORING

Client Name : Hindalco Industries Limited(Mines Division)
Client Address : Lohardaga,
Postal Code : 835203
State : Jharkhand
Country : India
Sample Type : AMBIENT AIR QUALITY MONITORING
Received : 16/04/2014
Registered : 16/04/2014
Marks on Sample : Location:Pakhar 84.38 Pokhra pat(Pakhar Platue)
Sampling Date : 30.03.2014
Test Start/End Date : 16/04/2014 - 24/04/2014

| Analysis | Method | Result | Unit | Requirement/Limit as Per NAAQS | |
|----------------------------|---------------------------------------|--------|-------|--------------------------------|-----|
| | | | | Min | Max |
| Particulate Matter (PM10) | IS:5182 (PART 23) | 113.59 | ug/m3 | - | 100 |
| Particulate Matter (PM2.5) | USEPA CFR(40) Appendix-L | 51.29 | ug/m3 | - | 60 |
| Nitrogen Dioxide (NO2) | IS:5182 (Part-6):1975 (Reaff.2004) | <5.00 | ug/m3 | - | 80 |
| Sulphur Dioxide (SO2) | IS:5182 (Part-2):2001 (Reaff.2006) | <5.00 | ug/m3 | - | 80 |
| Carbon Monoxide (CO) | EPA 600/P-99/001F | <1.00 | PPM | | |

Page 1 of 2

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