



RefNo: HIL/LHD/VP (M)/MoEF/ 127

Date: 22.05.13

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

**Sub: Compliance Report of EC conditions for Bagru (75.41ha) Bauxite Mining project of M/s Hindalco Industries Limited located in Lohardaga District of Jharkhand for the period Oct' 2012 - March' 2013.**

**Ref: Environmental Clearance letter no J-11015/585/2007-IA II (M) dated 18<sup>th</sup> Sept 2011**

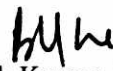
Sir,

With reference to the above, we are submitting herewith the Compliance status report of EC conditions for **Bagru (75.41ha) Bauxite Mining project of M/s Hindalco Industries Limited**, located in Lohardaga District of Jharkhand for the period **Oct' 2012 - March' 2013**.

Hope you will find the same in order.

Thanking You

Yours Sincerely  
FOR M/s Hindalco Industries Limited,

  
(Bijesh Kumar Jha)  
VP (Mines)

Enclosure: - As Above

**Compliance of conditions laid down in Environmental Clearance  
BAGRU BAUXITE MINES ( 75.41 Ha)**

**Period : Oct'12 - March'13**

**MoEF Environment Clearance ref. no. : J – 11015/585/2007 – IA.II (M) dated 04 Feb'2011**

| Sl No                      | Conditions   | Compliance Status   |
|----------------------------|--|---|
| <b>Specific Conditions</b> |  |   |
| 1                          | All the conditions stipulated by the State Pollution Control Board in their NOC should be effectively implemented.   | Complied  |
| 2                          | The environmental clearance is subject to grant of forestry clearance for diversion of 19.56 ha forestland.  | This provision has been taken care of during land acquisition with permission of competent authority i.e. concerned Deputy Commissioner (D.C.) and consent of Raiyat (Land Owner) for 20 years period and the land so acquired will be returned as per the norms set by D.C. in land purchased agreement. |
| 3                          | The mining operation shall be restricted to above ground water table and it should not intersect groundwater table. In case of working below ground water table, prior approval of the Ministry of Environment & Forest and Central Ground Water Authority shall be obtained for which a detailed hydro-geological study shall be carried out. | Being complied. Mining is restricted to above ground water table.   |
| 4                          | The project proponent shall ensure that no natural water course and/or water resources shall be obstructed due to any mining operations.   | Complied.   |
| 5                          | Top soil should be temporarily stacked with proper slope at earmarked site(s) only with adequate measures and it should not be kept unutilized for a period of more than 3 years. The top soil shall be used for land reclamation and rehabilitation of mined out areas.   | Sequential backfilling and reclamation of the mined out area are being exercised. Topsoil is being spread on backfilled area for reclamation. Topsoil is stacked only temporarily if required.  |
| 6                          | The entire waste generated shall be backfilled and there shall be no external over burden dump left at the end of the mine life. The entire backfilled area shall be reclaimed by plantation. The backfilling should be  | Overburden and waste rock are being used for back filling. Data pertaining to backfilling is enclosed as Annexure.  |

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|   | <p>carried out in such a manner that it is restored to the normal ground level. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status should be submitted to the Ministry of Environment &amp; Forest and its Regional Office, Bhubneshwar on six monthly basis.</p>   | <p>Around 4000 sapling have been planted during the FY12-13 within 3.68 Ha area of Bagru Plateau.</p>  |
| 7 | <p>The void left unfilled in an area of 1.76 ha shall be converted into water body. The higher benches of excavated void/mining pit shall be traced and plantation done to stabilize the slopes. The slopes of higher benches shall be made gentler for easy accessibility by local people to use the water body. Peripheral fencing shall be carried out along the excavated area.</p>   | <p>Complied</p>  |
| 8 | <p>Catch drains and siltation ponds of appropriate size shall be constructed around the working pit, sub-grade dump, and mineral dumps to arrest flow of silt and sediment directly into Chanpi Nallah, Sukri Nadi and others water bodies. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains should be regulary desilted, particularly after monsoon, and maintained properly. Garland drains settling tanks and check dams of appropriate size, gradient and length shall be constructed for both around the mine pit and sub-grade dump to prevent run off of water and flow sediments directly into Chanpi Nallah, Sukri Nadi and other water bodies and sump capacity should be designed keeping 50% safety margin over and above peak sudden rainfall(based on 50 years date) and maximum discharge in the area adjoin the mine site. Sump capacity should also provide adequate retention period to allow proper settling 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 being generated from mining activities. However, to collect and manage rainwater during monsoon rains, Pit sumps are made, part of mined out area is used as settling tank. Settled water is being used for sprinkling of quarry, roads, green belt development, etc.</p> |
| 9 | <p>Dimension of the retaining wall at the toe of sub grade dump and OB benches within the mine to check run-off and siltation should be based on the rain fall data.</p>  | <p>Complied</p>  |

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| 10 | Plantation shall be raise in an area of 50.11 ha including a 7.5m wide green belt in the safety zone around the mining lease by planting the native species around ML area, backfilled and reclaimed area, around water body, roads etc. in consultation with the local DFO/Agriculture Department. At least 1500 trees per year shall be planted with a tree density of 1000 trees per hectare.   | Being carried out progressively.   |
| 11 | Effective safeguard measures, such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as around crushing and screening plant, loading and unloading point and all transfer points. Extensive water sprinkling shall be carried out on haul roads. It should be ensured that the AAQ parameters conform to the norms prescribed by the central Pollution Control Board in this regard.                     | Being complied with. Regular water sprinkling is being carried out loading and unloading point and all transfer points. Extensive water sprinkling is also being carried out on haul roads and tankers are deployed for these job. AAQ parameters reported within limit. |
| 12 | 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.  | System is already in place.  |
| 13 | 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,its Regional Office,Bhubneshwar; Central Ground Water Authority and Central Ground Water Board. | Complied.  |
| 14 | The project authority shall obtain necessary prior approval of the competent authority for drawal of requisite quantity of water (surface water and ground water) for the project.   | We have water drawl right as per mining lease deed. Water cess is being paid to State Pollution Control Board on monthly basis.  |
| 15 | Vehicular emissions should be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of mineral. The vehicles should be covered with a tarpaulin and shall not be   | Regular maintenance of vehicles are undertaken to minimize vehicular emission. Care is taken on regular basis to arrest spillage/ dust emission. At most care is taken to cover bauxite loaded trucks with Tarpaulin and overloading is avoided.                         |

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|    | overloaded.   |  |
| 16 | Blasting operation should be carried out only during the daytime. Controlled blasting should be practiced. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented  | Being complied with. The mine is adopted control Blasting practice and Blasting is only being carried during specified day time.                 |
| 17 | Drills should either be operated with dust extractors or should be equipped with water injection system   | Being complied with.   |
| 18 | Sewage treatment plant should be installed for the colony. ETP should also be provided for workshop and wastewater generated from mining operations.  | The sewage water from domestic uses is collected and treated in Sewage Treatment Plant. No effluent is generated and hence, ETP is not required. |
| 19 | Consent to operate should be obtained from SPCB prior to start of production of mine  | Complied. Consent to Operate has been obtained from JSPCB and it is valid up to 31.12.13.  |
| 20 | Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project  | Since the mining operation is a very old. System is already in place.  |
| 21 | The critical parameters such as RSPM(Particulate matter with size less than 10micron (i.e., PM <sub>10</sub> , PM <sub>2.5</sub> ) and NO <sub>x</sub> in the ambient air within the impact zone, peak particle velocity at 300m distance or within the nearest habitation, whichever is closed shall be monitored periodically. Further, quantity of discharged water shall also be monitored [TDS,DO, PH and TSS}The monitored data shall be uploaded on the website of the company as well as displayed on a display board at the project site at a suitable location near the main gate of the Company in public domain. The Circular No. J-20012/1/2006-IA.II(M) dated 27.05.2009 issued by Ministry of Environment and Forest, which is available on the website of the Ministry <a href="http://www.envfor.nic.in">www.envfor.nic.in</a> shall also be referred in this regard for its compliance. | Being carried out. Monitoring report attached as annexure.   |

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| 22 | A Final Mine Closure Plan along with details of Corpus Fund should be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval. | Final mine Closure Plan has been submitted at IBM for approval. Presently we are having approved progressive mine Closure Plan. |
|----|---|---|

**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 & Forests.   | Complied with.  |
| 2     | No change in the calendar plan including excavation, quantum of mineral bauxite and waste should be made  | Quantum of bauxite and wastes is within the limit of approved calendar plan.  |
| 3     | Conservation measures for protection of flora and fauna in the core and buffer zone should be drawn up in consultation with the local forest and wild life department.  | Wild life conservation plan is submitted to DFO for approval.   |
| 4     | Four ambient air quality-monitoring stations should be established in the core zone as well as in the buffer zone for RPM, SPM, SO <sub>2</sub> , NO <sub>x</sub> monitoring. Location of the stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board. | AAQ monitoring report attached.   |
| 5     | Data on ambient air quality (RPM, SPM, SO <sub>2</sub> , NO <sub>x</sub> ) should be regularly submitted to the Ministry including its Regional office located at Bhopal and the State Pollution Control Board / Central Pollution Control Board once in six months.  | Complied.   |
| 6     | Fugitive dust emissions from all the sources should be controlled regularly. Water spraying arrangement on haul roads, loading and unloading and at transfer points should be provided and properly maintained.   | Dedicated water tanker(s) has/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 control fugitive dust. |

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| 7  | Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs / muffs.  | Complied.  |
| 8  | Industrial waste water (workshop 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.                                       | Complied.  |
| 9  | Personnel working in dusty areas should wear protective respiratory devices and they should also be 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. | System is in place and regularly being carried out.  |
| 10 | 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  | Already formed and informed. Vide annexure   |
| 11 | 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.  | Final mine closure plan submitted at IBM for approval. Presently we are having approved progressive mine closure plan. |
| 12 | 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.  | Fund for environment protection is earmarked. (Vide annexure for fund taken together for the mines division.)          |
| 13 | 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.   | Being complied with.   |

|    |   |   |
|----|---|---|
| 14 | The project proponent shall submit six monthly reports on the status of compliance of the stipulated environmental clearance conditions including results of monitored data (both in hard copies as well as by e mail ) to the Ministry of Environment and Forests, its Regional office Bhubaneshwar, the respective Zonal office of Central Pollution Control Board the State Pollution Control Board. The proponent shall upload the status of compliance of the environmental clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the Ministry of Environment and Forest, Bhubaneshwar, the respective zonal office of Central Pollution Control Board and the State Pollution Control Board. | Being complied with.                        |
| 15 | A copy of clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parisad / Municipal corporation, urban local body and the local NGO, if any, from whom and suggestions / representations if any were received while processing the proposal. The clearance letter shall also be put on the website of the company by the proponent.  | Complied.                                   |
| 16 | State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and Collector's office/ Tehsildar's Office for 30 days.  | Complied.                                   |
| 17 | The environment statement for each financial year ending 31 <sup>st</sup> March in Form V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection)Rules,1986 , as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental clearance conditions and shall also be sent to the Regional Office of the Ministry of Environment and Forests, Bhubaneswar by e-mail.   | Complied.                                   |
| 18 | The project authorities should advertise at least in two local newspapers widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7 days of the issue of the clearance  | Already done (Documents already submitted). |



|  |  |
|--|--|
| <p>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 <b>http://envfor.nic.in</b> and a copy of the same should be forwarded to the Regional Office of this Ministry located Bhubneshwar.</p> |  |
|--|--|



# Test Report

Print Date : 01/04/2013

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Report No : KG13-002092.001

JOE No : KG13-002092

Report Control No : KGR0000013682

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 : 18/03/2013  
 Registered : 18/03/2013  
 Marks on Sample : Location : Bagru Chappi GW-1  
 Quantity : 5.5L app  
 Sample Collected : 09.03.2013, time : 2.30 pm  
 Test Start/End Date : 18/03/2013 - 01/04/2013

| Analysis                               | Method                                 | Result    | Unit      | Requirement/Limit<br>As per IS:10500:2012 |               |
|--|--|-----------|-----------|---|---------------|
|  |  |           |           | Acceptable                                | Permissible   |
| Colour                                 | IS:3025 (Part-4):1983<br>(Reaff.2006)  | 5.0       | Hz        | 5   | 10            |
| Odour                                  | IS:3025 (Part-5):1983<br>(Reaff.2006)  | Agreeable |           | Agreeable                                 | Agreeable     |
| Taste                                  | IS:3025 (Part-8):1983<br>(Reaff.2006)  | Agreeable |           | Agreeable                                 | Agreeable     |
| pH                                     | IS:3025 (Part-11):1983<br>(Reaff.2006) | 7.20*     |           | 6.5                                       | 8.5           |
| Total Hardness (as CaCO <sub>3</sub> ) | IS:3025 (Part-21):1983<br>(Reaff.2006) | 33.33     | mg/L      | 200                                       | 600           |
| Iron (as Fe)                           | IS:3025 (Part-2)                       | 0.08      | mg/L      | 0.3                                       | No relaxation |
| Fluoride (as F)                        | IS:3025 (Part-60):2008                 | <0.10     | mg/L      | 1.0                                       | 1.5           |
| Residual Free Chlorine                 | IS:3025 (Part-26):1986<br>(Reaff.2003) | <0.10     | mg/L      | 0.2                                       | 1.0           |
| Chloride (as Cl)                       | IS:3025 (Part-32):1988<br>(Reaff.1999) | 5.39      | mg/L      | 250                                       | 1000          |
| Total Dissolved Solids                 | IS:3025 (Part-16):1984<br>(Reaff.1996) | 58.00     | mg/L      | 500                                       | 2000          |
| E.coli                                 | IS:1622:1981(Reaff.2003)               | Absent    | per 100ml |   | Absent/100ml  |
| Coliform bacteria                      | IS:1622-1981 (Reaffirmation<br>2003)   | Absent    | per 100ml |   | Absent/100ml  |
| Calcium (as Ca)                        | IS:3025 (Part-40):1991<br>(Reaff.2003) | 10.50     | mg/L      | 75  | 200           |
| Magnesium (as Mg)                      | IS:3025 (Part-46):1994<br>(Reaff.1999) | 1.72      | mg/L      | 30  | 100           |

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 Regd & Corp. Off : SGS House, 4B, A.S. Marg, Vikhroli (West), Mumbai-400083, Tel : (022) 25798421 to 28 Fax : (022) 25798431 to 35 www.sgs.com



## Test Report

Print Date : 01/04/2013

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Report No : KG13-002092.001

JOE No : KG13-002092

Report Control No : KGR0000013682

| Analysis  | Method                                 | Result | Unit | Requirement/Limit<br>As per IS:10500:2012 |               |
|---|--|--------|------|---|---------------|
|   |  |        |      | Acceptable                                | Permissible   |
| Copper (as Cu)  | IS:3025 (Part-2)                       | <0.01  | mg/L | 0.05                                      | 1.5           |
| Manganese (as Mn)                                       | IS:3025 (Part-2)                       | <0.01  | mg/L | 0.1                                       | 0.3           |
| Sulphate (as SO <sub>4</sub> )                          | IS:3025 (Part-24):1986<br>(Reaff.1998) | <2.00  | mg/L | 200                                       | 400           |
| Nitrate (as NO <sub>3</sub> )                           | IS:3025 (Part-34):1988<br>(Reaff.1999) | 6.91   | mg/L | 45  | No relaxation |
| Phenolic Compound (as C <sub>6</sub> H <sub>5</sub> OH) | IS:3025 (Part-43):1992<br>(Reaff.2003) | <0.001 | mg/L | 0.001                                     | 0.002         |
| Mercury (as Hg)   | IS:3025 (Part-48):1994<br>(Reaff.1999) | <0.001 | mg/L | 0.001                                     | No relaxation |
| Cadmium (as Cd)   | IS:3025 (Part-41):1992<br>(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<br>(Reaff.1999) | <0.005 | mg/L | 0.01                                      | No relaxation |
| Cyanide (as CN)   | IS:3025 (Part-27):1986<br>(Reaff.2003) | <0.020 | mg/L | 0.05                                      | No relaxation |
| Lead (as Pb)  | IS:3025 (Part-47):1994<br>(Reaff.1999) | <0.005 | mg/L | 0.01                                      | No relaxation |
| Zinc (as Zn)  | IS:3025 (Part-2)                       | 0.12   | 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<br>(Reaff.2003) | <0.01  | mg/L | 0.5                                       | No relaxation |
| Total Alkalinity (as CaCO <sub>3</sub> )                | IS:3025 (Part-23):1986<br>(Reaff.2003) | 38.61  | 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                 | 0.06   | mg/L | 0.5                                       | 1.0           |
| Turbidity   | IS:3025 (Part-10):1984<br>(Reaff.2006) | 1.15   | NTU  | 1   | 5             |

Remark : \*Analyzed at site.

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## Test Report

Print Date : 01/04/2013

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Report No : KG13-002092.001

JOE No : KG13-002092

Report Control No : KGR0000013682

Per pro SGS India Private Lt

*A. K. Chakraborty*

**Asish Chakraborty**  
**Laboratory Manager**  
**Authorized Signatory**

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

Page 3 of 3

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TEST REPORT

Date : 12.03.2013

REPORT NO.:KG13-001887.001

Report Control No. KGR0000011070

JOE NO : KG13-001887

SAMPLE DRAWN BY SGS INDIA PRIVATE LTD.

Sample described as : FLUE GAS

Name of the Industry : M/s. HINDALCO INDUSTRIES LIMITED
Address : Mines Division, Lohardaga, Jharkhand, PIN - 835 302

Date & time of sampling: 14.02.2013 (15:00 - 15:40 Hrs)

Sampling Site : Bagru/Bhuisal/Hisri(Old)/Hisri(New) Bauxite Mines ( Bagru Plateau)

Location : DG Set (250 KVA)

A. General information about stack :

- 1. Stack connected to : DG Set ( 250 KVA)
2. Emission due to : Burning of H.S.D
3. Material of construction of Stack : M S
4. Shape of Stack : Circular
5. Whether stack is provided with permanent platform & ladder : Yes
6. Capacity : 250 KVA
7. Running Load : 100 KVA

B. Physical characteristics of stack :

- 1. Height of the stack (a) from ground level : 7.0 M
2. Diameter of the stack at sampling point : 0.2032 M
3. Height of the sampling point from GL : 6.25 M

C. Analysis/Characteristic of Stack :

1. Fuel used : H.S.D

2. Fuel Consumption: 30 Lt/Hr.

Table with 4 columns: PARAMETERS, PROTOCOL, RESULTS, Limit as per MOEF G.S.R.448(E). Rows include Temperature of emission, Barometric pressure, Velocity of gas, Quantity of gas flow, Concentration of Carbon dioxide, Sulphur dioxide, Nitrogen dioxide, Oxygen, and Particulate Matters.

E. Pollution control device

Details of pollution control devices attached with the stack : Nil

F. Remarks : Nil

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

Checked by

Dipankar De Sarkar
Manager(Operations)

per pro SGS India Private Ltd.

Dr. Asish Chakraborty
Manager-Laboratory

Page 1 of 1

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# Test Report

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 18/03/2013

Report No : KG13-001940.003

JOE No : KG13-001940

Report Control No : KGR0000012034

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 : 12/03/2013  
 Registered : 12/03/2013  
 Marks on Sample : Location : Korgo Village, date : 14.02.2013  
 Sampling Site : Bagru/Bhusar/Hisri New/Hisri Old Bauxite Mines(Bagru Plateau)  
 Test Start/End Date : 12/03/2013 - 18/03/2013

| Analysis                   | Method                                | Result | Unit  | Requirement/Limit as Per |     |
|----------------------------|---------------------------------------|--------|-------|--------------------------|-----|
|                            |                                       |        |       | NAAQS                    |     |
|                            |                                       |        |       | Min                      | Max |
| Particulate Matter (PM10 ) | IS:5182 (Part-23 ):2006               | 62     | ug/m3 | -                        | 100 |
| Particulate Matter (PM2.5) | USEPA CFR(40) Appendix-L              | 27.70  | ug/m3 | -                        | 60  |
| Oxides of Nitrogen (NOx)   | IS:5182 (Part-6):1975<br>(Reaff.2004) | 8.45   | ug/m3 | -                        | 80  |
| Sulphur Dioxide (SO2)      | IS:5182 (Part-2):2001<br>(Reaff.2006) | <5.00  | ug/m3 | -                        | 80  |
| Carbon Monoxide            | By NDIR Spectroscopy.                 | <0.10  | PPM   |                          |     |

Remark : CO Analyzed at site.

### Page 1 of 2

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## Test Report

Report No : KG13-001940.003

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 18/03/2013

JOE No : KG13-001940

Report Control No : KGR0000012034

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 : 18/03/2013

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Report No : KG13-001940.004

JOE No : KG13-001940

Report Control No : KGR0000012034

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 : 12/03/2013  
 Registered : 12/03/2013  
 Marks on Sample : Location : Siyarpara Village, date : 14.02.2013  
 Sampling Site : Bagru/Bhusar/Hisri New/Hisri Old Bauxite Mines(Bagru Plateau)  
 Test Start/End Date : 12/03/2013 - 18/03/2013

| Analysis                   | Method                             | Result | Unit  | Requirement/Limit as Per NAAQS |     |
|----------------------------|------------------------------------|--------|-------|--------------------------------|-----|
|                            |                                    |        |       | Min                            | Max |
| Particulate Matter (PM10 ) | IS:5182 (Part-23 ):2006            | 53     | ug/m3 | -                              | 100 |
| Particulate Matter (PM2.5) | USEPA CFR(40) Appendix-L           | 20.55  | ug/m3 | -                              | 60  |
| Oxides of Nitrogen (NOx)   | IS:5182 (Part-6):1975 (Reaff.2004) | 7.97   | ug/m3 | -                              | 80  |
| Sulphur Dioxide (SO2)      | IS:5182 (Part-2):2001 (Reaff.2006) | <5.00  | ug/m3 | -                              | 80  |
| Carbon Monoxide            | By NDIR Spectroscopy.              | <0.10  | PPM   |                                |     |

Remark : CO Analyzed at site.

### Page 1 of 2

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## Test Report

Report No : KG13-001940.004

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 18/03/2013

JOE No : KG13-001940

Report Control No : KGR0000012034

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

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 18/03/2013

Report No : KG13-001940.002

JOE No : KG13-001940

Report Control No : KGR000012034

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 : 12/03/2013  
Registered : 12/03/2013  
Marks on Sample : Location : Ketrang Village, date : 13.02.2013  
Sampling Site : Bagru/Bhusar/Hisri New/Hisri Old Bauxite Mines(Bagru Plateau)  
Test Start/End Date : 12/03/2013 - 18/03/2013

| Analysis                   | Method                                | Result | Unit  | Requirement/Limit as Per |     |
|----------------------------|---------------------------------------|--------|-------|--------------------------|-----|
|                            |                                       |        |       | NAAQS                    |     |
|                            |                                       |        |       | Min                      | Max |
| Particulate Matter (PM10 ) | IS:5182 (Part-23 ):2006               | 89     | ug/m3 | -                        | 100 |
| Particulate Matter (PM2.5) | USEPA CFR(40) Appendix-L              | 38.59  | ug/m3 | -                        | 60  |
| Oxides of Nitrogen (NOx)   | IS:5182 (Part-6):1975<br>(Reaff.2004) | 10.88  | ug/m3 | -                        | 80  |
| Sulphur Dioxide (SO2)      | IS:5182 (Part-2):2001<br>(Reaff.2006) | <5.00  | ug/m3 | -                        | 80  |
| Carbon Monoxide            | By NDIR Spectroscopy.                 | <0.10  | PPM   |                          |     |

Remark : CO Analyzed at site.

### Page 1 of 2

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## Test Report

Report No : KG13-001940.002

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 18/03/2013

JOE No : KG13-001940

Report Control No : KGR0000012034

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

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 18/03/2013

Report No : KG13-001940.001

JOE No : KG13-001940

Report Control No : KGR0000012034

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 : 12/03/2013  
Registered : 12/03/2013  
Marks on Sample : Location : Mine Lease Area, date : 13.02.2013  
Sampling Site : Bagru/Bhusar/Hisri New/Hisri Old Bauxite Mines(Bagru Plateau)  
Test Start/End Date : 12/03/2013 - 18/03/2013

| Analysis                   | Method                                | Result | Unit  | Requirement/Limit as Per |     |
|----------------------------|---------------------------------------|--------|-------|--------------------------|-----|
|                            |                                       |        |       | NAAQS                    |     |
|                            |                                       |        |       | Min                      | Max |
| Particulate Matter (PM10)  | IS:5182 (Part-23):2006                | 85     | ug/m3 | -                        | 100 |
| Particulate Matter (PM2.5) | USEPA CFR(40) Appendix-L              | 31.72  | ug/m3 | -                        | 60  |
| Oxides of Nitrogen (NOx)   | IS:5182 (Part-6):1975<br>(Reaff.2004) | <5.00  | ug/m3 | -                        | 80  |
| Sulphur Dioxide (SO2)      | IS:5182 (Part-2):2001<br>(Reaff.2006) | <5.00  | ug/m3 | -                        | 80  |
| Carbon Monoxide            | By NDIR Spectroscopy.                 | <0.10  | PPM   |                          |     |

Remark : CO Analyzed at site.

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## Test Report

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 18/03/2013

Report No : KG13-001940.001

JOE No : KG13-001940

Report Control No : KGR0000012034

Per pro SGS India Private Ltd

Satya Manna  
Section Incharge - ENVI  
Authorized Signatory

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

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TEST REPORT

Report No. : CA:GL:3120015211

DATE : 19/10/2012

JOE No. : 1212806597

Report Control No.:3125016394

SAMPLE DRAWN BY SGS INDIA PRIVATE LIMITED

SAMPLE IDENTIFIED AS : AMBIENT AIR QUALITY MONITORING  
CUSTOMER NAME HINDALCO INDUSTRIES LIMITED (MINES DIVISION)  
ADDRESS LOHARDAGA, JHARKHAND  
CITY 835302  
COUNTRY INDIA  
SAMPLING METHOD N.A.  
SAMPLE DESCRIPTION AMBIENT AIR QUALITY MONITORING

MARK/LOCATION SITE: BAGRU/BHUSAR/HISRI OLD/HISRI NEW/BAUXITE MINES(BAGRU PLATEAU)  
LOCATION: MINE LEASE AREA (CORE ZONE)  
DATE: 07.10.12 TO 08.10.12

SAMPLE RECD ON 11/10/2012  
TEST START DATE 11/10/2012  
TEST END DATE 19/10/2012

| TESTS                                 | PROTOCOL                    | RESULT                  | REQUIREMENT/LIMIT               |                       |
|---------------------------------------|-----------------------------|-------------------------|---------------------------------|-----------------------|
|                                       |                             |                         | As per CPCB<br>RESIDENTIAL AREA |                       |
|                                       |                             |                         | MIN                             | MAX                   |
| CARBON MONOXIDE (CO)                  | USEPA CHAPTER-2             | < 0.1 ppm               |                                 | 1.7ppm(8h)            |
| OXIDES OF NITROGEN (NO <sub>x</sub> ) | IS 5182 PART 6:2006         | 7.4 µg/m <sup>3</sup>   |                                 | 80 µg/m <sup>3</sup>  |
| PARTICULATE MATTER(10)                | IS:5182(PART 23)2006        | 94.8 µg/m <sup>3</sup>  |                                 | 100 µg/m <sup>3</sup> |
| PARTICULATE MATTER(2.5)               | USPEA CFR40(50), Appendix L | 42.9 µg/m <sup>3</sup>  |                                 | 60 µg/m <sup>3</sup>  |
| SULPHUR DIOXIDE (SO <sub>2</sub> )    | IS 5182:PART 2:2001         | < 4.0 µg/m <sup>3</sup> |                                 | 80 µg/m <sup>3</sup>  |

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

per pro SGS India Private Ltd.

*S. A. Chakraborty*  
Asish Chakraborty  
Manager Laboratory

Page 1 of 1



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TEST REPORT

Report No. : CA:GL:3120015212 DATE : 19/10/2012

JOE No. : 1212806597

Report Control No.:3125016395

SAMPLE DRAWN BY SGS INDIA PRIVATE LIMITED

SAMPLE IDENTIFIED AS : AMBIENT AIR QUALITY MONITORING
CUSTOMER NAME HINDALCO INDUSTRIES LIMITED (MINES DIVISION)
ADDRESS LOHARDAGA, JHARKHAND
CITY 835302
COUNTRY INDIA
SAMPLING METHOD N.A.
SAMPLE DESCRIPTION AMBIENT AIR QUALITY MONITORING

MARK/LOCATION SITE: BAGRU/BHUSAR/HISRI OLD/HISRI NEW/BAUXITE MINES(BAGRU PLATEAU)
LOCATION: KEKRANG VILLAGE (BUFFER ZONE)
DATE: 07.10.12 TO 08.10.12

SAMPLE RECD ON 11/10/2012
TEST START DATE 11/10/2012
TEST END DATE 19/10/2012

Table with 4 columns: TESTS, PROTOCOL, RESULT, REQUIREMENT/LIMIT. Rows include CARBON MONOXIDE (CO), OXIDES OF NITROGEN (NOx), PARTICULATE MATTER(10), PARTICULATE MATTER(2.5), and SULPHUR DIOXIDE (SO2).

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

per pro SGS India Private Ltd.

Signature of Asish Chakraborty, Manager Laboratory

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TEST REPORT

Report No. : CA:GL:3120015213 DATE : 19/10/2012

JOE No. : 1212806597

Report Control No.:3125016396

SAMPLE DRAWN BY SGS INDIA PRIVATE LIMITED

SAMPLE IDENTIFIED AS : AMBIENT AIR QUALITY MONITORING
CUSTOMER NAME HINDALCO INDUSTRIES LIMITED (MINES DIVISION)
ADDRESS LOHARDAGA, JHARKHAND
CITY 835302
COUNTRY INDIA
SAMPLING METHOD N.A.
SAMPLE DESCRIPTION AMBIENT AIR QUALITY MONITORING

MARK/LOCATION SITE:BAGRU/BHUSAR/HISRI OLD/HISRI NEW/BAUXITE MINES(BAGRU PLATEAU)
LOCATION:KORGO VILLAGE (BUFFER ZONE)
DATE:08.10.12 TO 09.10.12
SAMPLE RECD ON 11/10/2012
TEST START DATE 11/10/2012
TEST END DATE 19/10/2012

Table with 4 columns: TESTS, PROTOCOL, RESULT, REQUIREMENT/LIMIT. Rows include CARBON MONOXIDE (CO), OXIDES OF NITROGEN (NOx), PARTICULATE MATTER(10), PARTICULATE MATTER(2.5), and SULPHUR DIOXIDE (SO2).

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

per pro SGS India Private Ltd.

Signature of Asish Chakraborty, Manager Laboratory



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**TEST REPORT**

**Report No. : CA:GL:3120015214**

**DATE : 19/10/2012**

JOE No. : 1212806597

Report Control No.:3125016397

**SAMPLE DRAWN BY SGS INDIA PRIVATE LIMITED**

**SAMPLE IDENTIFIED AS : AMBIENT AIR QUALITY MONITORING**

**CUSTOMER NAME HINDALCO INDUSTRIES LIMITED (MINES DIVISION)**  
**ADDRESS LOHARDAGA, JHARKHAND**  
**CITY 835302**  
**COUNTRY INDIA**  
**SAMPLING METHOD N.A.**  
**SAMPLE DESCRIPTION AMBIENT AIR QUALITY MONITORING**

**MARK/LOCATION SITE: BAGRU/BHUSAR/HISRI OLD/HISRI NEW/BAUXITE MINES(BAGRU PLATEAU)**  
**LOCATION: SIYARPARA VILLAGE (BUFFER ZONE)**  
**DATE: 08.10.12 TO 09.10.12**

**SAMPLE RECD ON 11/10/2012**  
**TEST START DATE 11/10/2012**  
**TEST END DATE 19/10/2012**

| TESTS                              | PROTOCOL                    | RESULT                  | REQUIREMENT/LIMIT               |                       |
|------------------------------------|-----------------------------|-------------------------|---------------------------------|-----------------------|
|                                    |                             |                         | As per CPCB<br>RESIDENTIAL AREA |                       |
|                                    |                             |                         | MIN                             | MAX                   |
| CARBON MONOXIDE (CO)               | USEPA CHAPTER-2             | < 0.1 ppm               |                                 | 1.7ppm(8h)            |
| OXIDES OF NITROGEN (NOx)           | IS 5182 PART 6:2006         | 8.3 µg/m <sup>3</sup>   |                                 | 80 µg/m <sup>3</sup>  |
| PARTICULATE MATTER(10)             | IS:5182(PART 23)2006        | 87.0 µg/m <sup>3</sup>  |                                 | 100 µg/m <sup>3</sup> |
| PARTICULATE MATTER(2.5)            | USPEA CFR40(50), Appendix L | 34.6 µg/m <sup>3</sup>  |                                 | 60 µg/m <sup>3</sup>  |
| SULPHUR DIOXIDE (SO <sub>2</sub> ) | IS 5182:PART 2:2001         | < 4.0 µg/m <sup>3</sup> |                                 | 80 µg/m <sup>3</sup>  |

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

per pro SGS India Private Ltd.

*S. A. Chakraborty*  
**Asish Chakraborty**  
Manager Laboratory

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**TEST REPORT**

**Report No. : CA:GL:3120011468**

**DATE : 10/08/2012**

JOE No. : 1212805059

Control No.:3125012287

**SAMPLE COLLECTED BY SGS**

**SAMPLE IDENTIFIED AS : GROUND WATER**

**COMPANY NAME** HINDALCO INDUSTRIES LIMITED (MINES DIVISION)  
**ADDRESS** LOHARDAGA, JHARKHAND  
**CITY** 835302  
**SAMPLING METHOD** APHA 1060B  
**SAMPLE DESCRIPTION** GROUND WATER  
**SAMPLE CONDITION** IN PLASTIC BOTTLE  
**SAMPLE QTY.** 7L APP  
**MARKS ON SAMPLE** LOCATION : CHAPPY VILLAGE OPEN WELL - I  
**COLLECTED ON** 31.07.2012, TIME : 2.30 PM  
**REGISTERED ON** 02/08/2012  
**TEST START DATE** 02/08/2012  
**TEST END DATE** 10/08/2012

| TESTS                              | PROTOCOL                                   | RESULT      | REQUIREMENT/LIMIT |             |
|------------------------------------|--|-------------|-------------------|-------------|
|                                    |  |             | Desirable         | Permissible |
| ALKALINITY (as CaCO <sub>3</sub> ) | IS 3025:PART 23 :1986(Reaff.1998)          | 7.53 mg/l   | 200mg/l           | 600mg/l     |
| ALUMINIUM (as Al)                  | IS 3025 : Part 55 : 2003                   | 0.09 mg/l   | 0.03mg/l          | 0.2mg/l     |
| ANIONIC DETERGENTS (as MBAS)       | ANNEX. K of IS 13428: 2005                 | <0.05 mg/l  | 0.2mg/l           | 1mg/l       |
| ARSENIC (as As)                    | IS 3025:PART 37:1988(Reaff.1999)BY ICPOES  | <0.005 mg/l | 0.01mg/l          | No Relax.   |
| BORON                              | Annex.H OF IS:13428:2005                   | <0.05 mg/l  | 1.0mg/l           | 5.0mg/l     |
| CADMIUM (as Cd)                    | IS 3025:PART 41 :1992(Reaff.1998)BY ICPOES | <0.005 mg/l | 0.01mg/l          | No Relax.   |

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**TEST REPORT**

**Report No. : CA:GL:3120011468**

**DATE : 10/08/2012**

JOE No. : 1212805059

Control No.:3125012287

| TESTS                        | PROTOCOL  | RESULT       | REQUIREMENT/LIMIT                      |             |
|------------------------------|---|--------------|--|-------------|
|                              |   |              | As per IS<br>10500:1991(REAFF<br>1993) |             |
|                              |   |              | Desirable                              | Permissible |
| <b>CALCIUM (as Ca)</b>       | IS 3025:PART 40<br>:1991(Reaff.2003)                | 2.66 mg/l    | 75mg/l                                 | 200mg/l     |
| <b>CHLORIDE ( as Cl)</b>     | Clause 2 of IS 3025<br>Part 32:1988(Reaff.<br>1999) | 7.15 mg/l    | 250mg/l                                | 1000mg/l    |
| <b>CHROMIUM (Cr6+)</b>       | IS 3025:PART 52:2003                                | <0.01 mg/l   | 0.05mg/l                               | No Relax.   |
| <b>COLOUR ( HAZEN UNITS)</b> | IS 3025:PART 4<br>:1983(Reaff.2002)                 | 5            | 5.0                                    | 25          |
| <b>COPPER</b>                | IS 3025: PART<br>42:1992(Reaff. 2003)<br>BY ICPOES  | <0.01 mg/l   | 0.05mg/l                               | 1.5mg/l     |
| <b>CYANIDE ( as CN)</b>      | IS 3025:PART 27<br>:1986(Reaff. 1998)               | <0.02 mg/l   | 0.05mg/l                               | No Relax.   |
| <b>E.coli</b>                | IS<br>1622:1981(Reaff.2003)                         | Absent/100ml |  | ABS/100ml   |
| <b>FLUORIDE</b>              | IS:3025(PART<br>60):2008                            | <0.10 mg/l   | 1.0mg/l                                | 1.5mg/l     |
| <b>IRON ( as Fe)</b>         | IS 3025:PART 53:2003<br>(BY ICPOES)                 | 0.07 mg/l    | 0.3mg/l                                | 1 mg/l      |
| <b>LEAD (as Pb)</b>          | IS 3025:PART<br>47:1994(Reaff.2003)<br>BY ICPOES    | <0.005 mg/l  | 0.05mg/l                               | No Relax.   |
| <b>MAGNESIUM ( as Mg)</b>    | IS 3025:PART 46<br>:1994(Reaff.1999)                | <1.0 mg/l    | 30mg/l                                 | 100mg/l     |
| <b>MANGANESE</b>             | IS:3025(PART 59)<br>2006                            | <0.01 mg/l   | 0.1mg/l                                | 0.3mg/l     |
| <b>MERCURY (as Hg)</b>       | IS 3025:PART 48<br>:1994(Reaff.1999)BY<br>ICPOES    | <0.001 mg/l  | 0.001mg/l                              | No Relax.   |

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**TEST REPORT**

**Report No. : CA:GL:3120011468**

**DATE : 10/08/2012**

JOE No. : 1212805059

Control No.:3125012287

| TESTS  | PROTOCOL  | RESULT            | REQUIREMENT/LIMIT |             |
|--|---|-------------------|-------------------|-------------|
|  |   |                   | Desirable         | Permissible |
| MINERAL OIL  | CLAUSE 6 OF IS<br>3025:PART<br>39:1991(Reaff. 2003) | BDL(DL-0.01 mg/l) | 0.01mg/l          | 0.03mg/l    |
| NITRATE  | IS 3025:PART 34<br>:1988(Reaff.1999)                | 6.05 mg/l         | 45mg/l            | No Relax.   |
| ODOUR  | IS 3025:PART<br>5:1983(Reaff.2002)                  | Unobjectionable   | Unobject.         | Unobject.   |
| pH   | IS 3025:PART<br>11:1983(Reaff.2002)                 | 7.1 *             | 6.5-8.5           | No Relax.   |
| PHENOLIC COMPOUNDS (as C <sub>6</sub> H <sub>5</sub> OH) | IS 3025(Part<br>43)1992(Reaff 2005)                 | <0.001 mg/l       | 0.001mg/l         | 0.002mg/l   |
| RESIDUAL FREE CHLORINE                                   | GEN/SOP/CALLAB-13<br>3                              | <0.10 mg/l *      | 0.2mg/l           | --          |
| SELENIUM   | IS 3025:PART 56:2003<br>(BY ICPOES)                 | <0.005 mg/l       | 0.01mg/l          | No Relax.   |
| SULPHATE   | CLAUSE 4 OF IS<br>3025:PART<br>24:1986(Reaff. 2003  | <2.0 mg/l         | 200mg/l           | 400mg/l     |
| TASTE  | IS 3025:PART 7<br>:1984(Reaff.2002)                 | Agreeable         | Agreeable         | -           |
| Total Coliforms  | IS<br>1622:1981(Reaff.2003)                         | <2 MPN/100ml      |                   | 10/100 ml   |
| TOTAL DISSOLVED SOLIDS                                   | IS 3025:PART<br>16:1984(Reaff.2002)                 | 37 mg/l           | 500mg/l           | 2000mg/l    |
| TOTAL HARDNESS (as CaCO <sub>3</sub> )                   | IS 3025:PART 21<br>:1983(Reaff.2002)                | 9.50 mg/l         | 300mg/l           | 600mg/l     |
| TURBIDITY( in NTU )                                      | IS 3025:PART 10<br>:1984(Reaff.2002)                | 8.20              | 5.0NTU            | 10NTU       |

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**TEST REPORT**

**Report No. : CA:GL:3120011468** **DATE : 10/08/2012**

JOE No. : 1212805059

Control No.:3125012287

| TESTS | PROTOCOL | RESULT | REQUIREMENT/LIMIT |             |
|-------|----------|--------|-------------------|-------------|
|       |          |        | Desirable         | Permissible |

|              |  |           |       |        |
|--------------|--|-----------|-------|--------|
| ZINC (as Zn) | IS 3025 Part<br>49:1991(Reaff.2003)<br>BY ICPOES | 0.01 mg/l | 5mg/l | 15mg/l |
|--------------|--|-----------|-------|--------|

Remarks: BDL=Below Detection Limit; DL=Detection Limit, \* Analyzed at site.

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

per pro SGS India Private Ltd.

*S. A. Ghosh*  
Dr.Nemai Ghosh  
Manager Laboratory  
A. N. Dutta  
Chemist cum OAO

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TEST REPORT

REPORT NO.: CA:GL:3120015278

Date : 16.10.2012

JOE NO : 1212806625

Report Control No. 3125016066

SAMPLE DRAWN BY SGS INDIA PRIVATE LTD.

Sample described as : FLUE GAS
Name of the Industry : M/s. HINDALCO INDUSTRIES LIMITED

Address : Mines Division, Lohardaga, Jharkhand, PIN - 835 302

Date & time of sampling: 07.10.2012 (11:00 - 11:40 Hrs)

Sampling Site : Crusher Large

A. General information about stack :

- 1 Stack connected to : Crusher Large
2 Emission due to : Burning of H.S.D
3 Material of construction of Stack : M S
4 Shape of Stack : Circular
5 Whether stack is provided with permanent platform & ladder : Yes

B. Physical characteristics of stack :

- 1 Height of the stack (a) from ground level : 9.5 M
2 Diameter of the stack at sampling point : 0.2032 M
3 Height of the sampling point from GL : 6.7 M

C. Analysis/Characteristic of Stack :

- 1 Fuel used : H.S.D 2. Fuel Consumption: 13.0 Lt/Hr.

Table with 3 columns: PARAMETERS, PROTOCOL, RESULTS. Rows include Temperature of emission, Barometric pressure, Velocity of gas, Quantity of gas flow, Concentration of Carbon dioxide, Carbon monoxide, Oxygen, and Particulate Matters.

E. Pollution control device

Details of pollution control devices attached with the stack : Nil

F. Remarks: Instrument used : VSS -1 SI No.56

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

Checked by

Dipankar De Sarkar
Asst. Manager(Operations)

per pro SGS India Private Ltd.

Dr. Asish Chakraborty
Manager-Laboratory

Signature of Dr. Asish Chakraborty

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TEST REPORT

REPORT NO.:CA:GL:3120015279

Date : 16.10.2012

JOE NO : 1212806625

Report Control No. 3125016065

SAMPLE DRAWN BY SGS INDIA PRIVATE LTD.

Sample described as : FLUE GAS

Name of the Industry : M/s. HINDALCO INDUSTRIES LIMITED

Address : Mines Division, Lohardaga, Jharkhand, PIN - 835 302

Date & time of sampling: 07.10.2012 (12:30 - 13:10 Hrs)

Sampling Site : Bagru/Bhusar/Hisri(Old)/Hisri(New) Bauxite Mines ( Bagru Plateau)

A. General information about stack :

- 1. Stack connected to : DG Set ( 250 KVA)
- 2. Emission due to : Burning of H.S.D
- 3. Material of construction of Stack : M S
- 4. Shape of Stack : Circular
- 5. Whether stack is provided with permanent platform & ladder : Yes
- 6. Capacity : 250 KVA
- 7. Running Load : 190 KVA 152

B. Physical characteristics of stack :

- 1. Height of the stack (a) from ground level : 7.0 M
- 2. Diameter of the stack at sampling point : 0.2032 M
- 3. Height of the sampling point from GL : 6.25 M

C. Analysis/Characteristic of Stack :

- 1. Fuel used : H.S.D
- 2. Fuel Consumption: 30 Lt/Hr.

| D. PARAMETERS   | PROTOCOL                            | RESULTS | Limit as per MOEF G.S.R.448(E) |
|---|-------------------------------------|---------|--------------------------------|
| 1. Temperature of emission ( °C)                          | IS 11255 Part : 3 1985 (Reaff.1999) | 428     | ...                            |
| 2. Barometric pressure (mm of Hg)                         | IS 11255 Part : 3 1985 (Reaff.1999) | 682     | ...                            |
| 3. Velocity of gas ( m/sec.)                              | IS 11255 Part : 3 1985 (Reaff.1999) | 14.48   | ...                            |
| 4. Quantity of gas flow (Nm <sup>3</sup> /hr.)            | IS 11255 Part : 3 1985 (Reaff.1999) | 644     | ...                            |
| 5. Concentration of Carbon dioxide (% v/v)                | IS 11255 Part : 3 1985 (Reaff.1999) | 5.8     | ...                            |
| 6. Concentration of Sulphur dioxide (mg/Nm <sup>3</sup> ) | USEPA - 6C                          | 78      | ...                            |
| 7. Concentration of Nitrogen dioxide (gm/kw-h)            | USEPA - 7E                          | 0.64    | 9.2                            |
| 8. Concentration of Oxygen (% v/v)                        | IS 11255 Part : 3 1985 (Reaff.1999) | 13.8    | ...                            |
| 9. Concentration of Particulate Matters(gm/kw-h)          | IS 11255 Part : 1 1985 (Reaff.1999) | 0.07    | 0.3                            |

E. Pollution control device

Details of pollution control devices attached with the stack : Nil

F. Remarks: Instrument used : VSS -1 (SI No: 56)

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

Checked by

Dipankar De Sarkar  
Asst. Manager(Operations)

per pro SGS India Private Ltd.

Dr. Asish Chakraborty  
Manager-Laboratory

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झारखण्ड राज्य प्रदूषण नियंत्रण पर्वद  
**JHARKHAND STATE POLLUTION CONTROL BOARD**  
[ CONSTITUTED UNDER SECTION 4 OF THE WATER (PREVENTION & CONTROL OF POLLUTION ACT, 1974) ]  
T.A.DIVISION BUILDING (GROUND FLOOR),HEC COMPLEX, DHURWA, RANCHI-834004.  
Phone No:-0651- 2400852, 2400851. Fax No:- 2400850.

Ref.No- PC/RNC/77/11-

Date.....

**CONSENT TO OPERATE**

With reference to the application dated 28.08.2012 of G.M. (Operation), M/s Hindalo Industries Ltd; Court Road, I/C Bagru Bauxite Mines-75.41 Ha, P.O+Dist- Lohardaga for consent under section 25/26 of the Water (Prevention & Control of Pollution) Act, 1974 and that under section 21 of the Air (Prevention & Control of Pollution) Act,1981, he (they) is (are) granted consent to bring into use his(their) new/altered/existing outlet(s) for discharge of trade effluent and (or) domestic sewage and to operate his (their) industrial plant to produce maximum 85,000 TPA of Bauxite At – Bagru, P.O + Dist- Lohardaga for the period from 01.01.2013 to 31.12.2013 with the following conditions :

1. That, he(they) shall not make any alteration, addition, deletion or modification in the mines without the prior clearance from the Board.
2. That, he(they) shall abide by the obligations provided under section 24, 31 and 33A of the Water (Prevention & Control of Pollution) Act, 1974 and shall extend co-operation to the Board in performing its functions entrusted under section 20, 21, 23, 30 and 32 of the Act.
3. That, he(they) shall comply with the requirements of the Water (Prevention & Control of Pollution) Cess Act, 1977 read with the Water (Prevention & Control of Pollution) Cess Rules, 1978.
4. That, he(they) shall abide by the obligations provided under section 22, 23 and 31A of the Air (Prevention & Control of Pollution) Act, 1981 and shall extend co-operation to the Board in performing its functions entrusted under sections 24, 25 and 26 of the Act.
5. That, he(they) shall abide by the obligations provided under sections 5, 7, 8 and 9 of the Environment (Protection) Act, 1986 and shall extend co-operation in performing the functions entrusted under section 3, 10 and 11 of the Act.
6. That, he(they) shall abide by the applicable provisions of the Environment (Protection) Rules, 1986, the Hazardous Wastes (Management, Handling & Transboundary Movement) Rules, 2008; the Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989; the Bio-medical Waste (Management & Handling) Rules, 1998; the Municipal Solid Wastes (Management & Handling) Rules, 2000 and the Batteries (Management & Handling) Rules, 2001.
7. That, he(they) shall maintain the quality of discharge and (or) emission and (or) noise level of environmental pollutants in conformity with the standards as laid under Rule 3 of the Environment (Protection) Rules, 1986.
8. That, he(they) shall monitor his(their) effluent(s), emission(s) and the ambient air, noise level regularly and shall submit the report to the Board in compliance of the condition laid in paragraph 7.



9. That, he(they) shall establish well equipped environmental laboratory with the facilities of system(s) of continuous monitoring of effluent(s), emission(s) ambient water quality(ies), ambient air quality(ies) and ambient noise level(s) and transferring them (monitoring results) to his(their) website(s) and to the e-mail address(es) of the key persons of Jharkhand State Pollution Control Board, Zonal Office, Kolkata and Ministry of Environment & Forests, Regional Office, Bhubaneswar with simultaneous displaying at prominent locations in front of his(their)premises. [\*Unit(s) of medium and large scale under 17 categories of polluting industries of category A of EIA Notification, 2006.]
10. That, he(they) shall submit the environmental statement every year by 30<sup>th</sup> September and shall harvest all rain water precipitating in the premises and do three tier tree plantation in the premises as air barrier.
11. That, he(they) shall submit application for consent under section 25/26 of the Water (Prevention & Control of Pollution) Act, 1974 and that under section 21 of the Air (Prevention & Control of Pollution) Act, 1981 again 120 days before the expiration of the consent order 31.12.2013 or within 120 days from the date of receipt of the order, whichever is earlier.
12. That, unit shall submit quality report of Ambient Air Quality and Ground Water Quality every quarter of the year.
13. That, unit shall submit the status of compliance Environmental Clearance every quarter to the Board.
14. That, unit) shall reclaim the mined out area in phased manner as per EIA/EMP report.
15. That, the unit shall implement harvest rain water of the mine and recharge it to the ground by the method of Central Ground Water Board Guideline that fits most to the mine.
16. That, the unit shall make arrangement to control the fugitive emissions occurring during the mining activities and plying of vehicles on haul as well as transport roads.
17. That, the unit shall ensure that no transport vehicle should ply on road without covering the materials.
18. That, the proponent shall submit compliance report of Environmental Clearance dated 04.02.2011 and submit photographs in compliance of special condition No. ~~VII~~ and ~~IX~~ of the same.

*Sd/-*  
VIII and XII

(Sanjay Kumar Sinha)  
MEMBER SECRETARY

Memo no. PC/RNC/77/11- 14339

Ranchi, Dated .....30/1/15

Copy forwarded to:- G.M. (Operation), M/S Hindalco Industries Ltd; (I/C Bagru Bauxite Mines-75.41 Ha.), Court Road, P.O+Dist- Lohardaga/ Deputy Commissioner, Lohardaga/ D.F.O. Ranchi West Forest Division, Lohardaga/ D.M.O, Lohardaga/ Regional Officer, Regional Office, Ranchi for information & necessary action.

*Sd/-*  
30/1/15  
(Sanjay Kumar Sinha)  
MEMBER SECRETARY

ADITYA BIRLA



**BREAK UP THE COST OF ENVIRONMENTAL MEASURES DURING THE YEAR 2012-13**

The composite cost during the year 2012-13 (April to March) for environmental protection & pollution control by Jharkhand Mines division of Hindalco Industries Ltd for implementation 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, Chiro kukud, & Orsa pat.

| Sl No | Description                                | Budget (in Lakh Rs.) | Actual (in Lakh Rs.)<br>FY 2012-2013 |
|-------|--|----------------------|--------------------------------------|
| 1     | Pollution Control & Environment monitoring | 7.50                 | 11.32                                |
| 2     | Reclamation/ Back filing & Rehabilitation  | **                   | 46.60                                |
| 3     | Green belt & Plantation                    | 25.00                | 88.09                                |
| 4     | Rural Development                          | 65.00                | 81.50                                |

\*\*part of OB removed cost.

  
Convener

Environment Management Cell.

HINDALCO INDUSTRIES LIMITED  
Hindalco Complex  
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Distt. Lohardaga (Jharkhand)

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

Website www.hindalco.com

**ADITYA BIRLA**



Date:20.03.13

**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, Manager (Bagru Mines)
5. A. Anbarasu, Mines Manager (Serengdag A)
6. Ajay Pandey, Mines Manager (Pakhar)
7. Kiran Sankar Singh, Mines Manager (Gurdari)
8. Vidya Sagar Singh, Mines Manager (Serengdag B)
9. Ashish Upadhyay, Mines Manager (Kujam I & II)
10. Amar Bharati, Mines Manager (Amtipani)
11. Monaj Kumar Singh, Mines Manager (Pakhar 109.507 Ha)
12. Rajesh Ambastha, Mines Manager (Chiro Kukud & Orsa)

By order

  
Bijesh Kumar Jha  
VP (Mines)

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

**DETAILS OF PRODUCTION, OVERBURDEN HANDLING, AREA MINED OUT AND AREA RECLAIMED**  
**FROM APR-12 TO MAR-13**

| SN   | Name of Leases          | Lease Area<br>(in Ha) | Production<br>(in MT) | Overburden<br>Handling<br>(in MT) | Mined Out Area<br>(in Acres) | Reclaimed Area<br>(in Acres) |
|--|-------------------------|-----------------------|-----------------------|-----------------------------------|------------------------------|------------------------------|
| 1  | Pakhar Bauxite Mines    | 8.09                  | 78470                 | 51682                             | 0.75                         | 1.10                         |
| 2  | Pakhar (115.13)         | 115.13                | 208503                | 425872                            | 7.42                         | 2.42                         |
| 3  | Gurdari                 | 584.19                | 324648                | 832640                            | 14.70                        | 24.80                        |
| 4  | Kujam-I                 | 80.87                 | 149018                | 158530                            | 14.70                        | 12.10                        |
| 5  | Kujam-II                | 157.38                | 149542                | 677633                            | 18.18                        | 11.41                        |
| 6  | Amtipani                | 190.95                | 149579                | 468731                            | 18.02                        | 15.37                        |
| 7  | Shrengdag               | 155.81                | 259630                | 570878                            | 19.50                        | 35.00                        |
| 8  | Serengdag Bauxite Mines | 140.06                | 99772                 | 133089                            | 6.52                         | 5.80                         |
| 9  | Jalim & Sanai           | 12.14                 | 49505                 | 34438                             | 1.24                         | 0.80                         |
| 10   | Bagru                   | 75.41                 | 84320                 | 188767                            | 1.78                         | 9.69                         |
| 11   | Hisri New               | 14.55                 | 99651                 | 115676                            | 1.24                         | 0.00                         |
| 12   | Chiro-Kukud             | 152.57                | 64847                 | 78598                             | 3.13                         | 5.37                         |
| <b>M/s Minerals &amp; Minerals Limited</b> |                         |                       |                       |                                   |                              |                              |
| 1  | Pakhar Bauxite Mines    | 15.58                 | 34445                 | 115848                            | 1.25                         | 2.00                         |
| 2  | Pakhar (109.507)        | 109.507               | 99840                 | 204868                            | 6.76                         | 1.92                         |