



Ref No: HIL/LHD/VP (M)/MoEF/ 683

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 Bagru (75.41ha) Bauxite Mining project of M/s Hindalco Industries Limited located in Lohardaga District of Jharkhand for the period Oct'13 to March'14.**

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'13 to March'14**.

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'13 - March'14**

**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.	Implementations of the stipulated conditions are fulfilled.
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.	No natural water course and/or water resources are obstructed due to any mining operations.
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 carried out in such a manner that it is	Overburden and waste rock are being used for back filling. Data pertaining to backfilling is enclosed as Annexure.  Around 1500 sapling have been planted during the

	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 & Forest and its Regional Office, Bhubneshwar on six monthly basis.	FY2013-14.
7	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.	The void left unfilled area converted into water body. The higher benches of excavated void/mining pit are traced and plantation done to stabilize the slopes.
8	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 regularly 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.	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.
9	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.	The dimensions of the retaining wall of OB dumps are based on the average rain fall.

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.	This is being monitored in all season.
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	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

	vehicles should be covered with a tarpaulin and shall not be overloaded.	with Tarpaulin and overloading is avoided.
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	Wet drilling is done in the drill holes intermittently for dust suppression by pumping water.
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.	Consent to operate obtained prior to start of mining operation.
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.

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.	Progressive mine Closure Plan along with mining scheme has been prepared and submitted to IBM timely for approval.
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**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.	Being adhered to.
2	No change in the calendar plan including excavation, quantum of mineral bauxite and waste should be made	Excavation of OB and Bauxite is being done as per the approved mining plan/scheme and obtained EC capacity. Quantum of mineral and OB excavated during the FY2013-14 is annexed.
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.	Suitable conservation measures are being undertaken.
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.	Ambient air monitoring stations established and monitoring is being undertaken in consultation with State Pollution Control Board. Monitoring report annexed.
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.	Monitoring report annexed.
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 mobile 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.

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.	Measures are being taken for control of noise levels below 85 dBA in the work environment PPEs are provided to workers.
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.	Is being suitably done as per statute.
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.	PPE's provided.  Periodic training on safety & occupational health is being imparted to workers and health checks up conducted.
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.	Progressive mine Closure Plan along with mining scheme has been prepared and submitted to IBM timely for approval.
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	<p>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 Bhubaneswar, 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, Bhubaneswar, the respective zonal office of Central Pollution Control Board and the State Pollution Control Board.</p>	<p>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 ) are being submitted to the Ministry of Environment and Forests, its Regional office Bhubaneswar, the respective Zonal office of Central Pollution Control Board the State Pollution Control Board and uploaded in company's website.</p>
15	<p>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.</p>	<p>A copy of clearance letter has been sent to concerned Panchayat, Zila Parisad / Municipal corporation, urban local body and the local NGO.</p>
16	<p>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.</p>	<p>Displayed.</p>
17	<p>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.</p>	<p>Submitted.</p>



18	<p>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 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>	Already done (Documents already submitted).
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**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
<b>Minerals &amp; Minerals Limited</b>					
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
	2985	910	Open Well		24.20		24.50			26.89		27.19
	3001	915	Open Well		29.30		28.40			30.14		31.26
	2963	903	Open Well		22.90		33.10			35.21		35.89
	2983	909	Open Well		17.60		28.70			29.62		30.18
	3279	1000	Open Well		24.90		22.60			24.51		25.93
Pakhar	3552	1083	Hand Pump	35.40		31.60		34.34			35.49	
	3370	1027	Open Well		25.80		28.30			30.53		31.42
Sherengdag	3587	1094	Hand Pump	41.80		39.58		42.13			42.56	
	3546	1081	Hand Pump	39.60		31.26		41.37			41.31	
	3459	1055	Hand Pump	33.10		27.50		35.31			35.35	
	3495	1066	Hand Pump	27.70		26.13		29.12			30.25	
	3428	1045	Hand Pump	29.34		27.85		29.64			30.41	
	3481	1061	Hand Pump	28.30		24.87		25.42			26.79	
Gurdari	3472	1059	Hand Pump	38.10		36.63		35.21			35.98	
	3527	1075	Hand Pump	28.20		26.83		28.49			29.53	
	3526	1075	Hand Pump	28.30		29.32		30.29			30.05	
	3412	1040	Open Well		33.90		21.80			35.21		36.78
	3414	1041	Open Well		33.70		24.80			36.54		39.52
	3491	1064	Hand Pump	31.50		28.60		35.91			42.12	
Chiro Kukud	3450	1052	Hand Pump				21.12			24.13		23.54
	3765	1148	Hand Pump	33.40		28.35		34.12			37.26	
	3776	1151	Hand Pump	37.60		31.84		36.67			36.21	
	3556	1084	Hand Pump	34.30		36.85		35.69			39.19	

*B. Chand*



## Test Report

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 29/01/2014

Report No : KG14-000217.001

JOE No : KG14-000217

Sample Described by Customer as : AMBIENT AIR QUALITY MONITORING  
 Report Control No : KGR0000045914

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 : Bhusar Mine (pit) (Bagru Plateau), Sampling date : 21.12.2013  
 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)	51.11	ug/m3	-	100
Particulate Matter (PM2.5)	USEPA CFR(40) Appendix-L	6.92	ug/m3	-	60
Nitrogen Dioxide (NO2)	IS:5182 (Part-6):1975 (Reaff.2004)	8.70	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		
<i>Analyzed at site.</i>					

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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](http://www.sgs.com)

Member of the SGS Group (SGS SA)



## Test Report

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 29/01/2014

Report No : KG14-000217.001

JOE No : KG14-000217

Report Control No : KGR0000045914

Per pro SGS India Private Ltd



Satya Manna

Section Incharge - ENVI

Authorized Signatory

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

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SGS India Pvt. Ltd.

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## Test Report

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 29/01/2014

Report No : KG14-000217.002

JOE No : KG14-000217

Sample Described by Customer as : AMBIENT AIR QUALITY MONITORING  
Report Control No : KGR0000045914

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: Bagru Colony near office bagru plateau, sampling : 21 12 2013  
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)	73.64	ug/m3	-	100
Particulate Matter (PM2.5)	USEPA CFR(40) Appendix-L	46.87	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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Page 1 of 2

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## Test Report

Report No : KG14-000217.002

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 29/01/2014

JOE No : KG14-000217

Report Control No : KGR0000045914

Per pro SGS India Private Ltd

Satya Manna

Section Incharge - ENVI

Authorized Signatory

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

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# Test Report

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 29/01/2014

Report No : KG14-000217.003

JOE No : KG14-000217

Report Control No : KGR0000045914

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 : Hisri Pit(Bagru plateau), Sampling date : 22.12.2013  
 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)	37.04	ug/m3	-	100
Particulate Matter (PM2.5)	USEPA CFR(40) Appendix-L	28.54	ug/m3	-	60
Nitrogen Dioxide (NO2)	IS 5182 (Part-6):1975 (Reaff.2004)	7.23	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		
<i>Analyzed at site</i>					

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## Test Report

Report No : KG14-000217.003

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 29/01/2014

JOE No : KG14-000217

Report Control No : KGR0000045914

Per pro SGS India Private Ltd



Satya Manna

Section Incharge - ENVI

Authorized Signatory

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## Test Report

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 29/01/2014

Report No : KG14-000217.004

JOE No : KG14-000217

Report Control No : KGR0000045914  
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 : Kekrang Village (Bagru plateau), Sampling date : 22.12.2013  
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)	57.97	ug/m3	-	100
Particulate Matter (PM2.5)	USEPA CFR(40) Appendix-L	32.04	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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## Test Report

Report No : KG14-000217.004

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 29/01/2014

JOE No : KG14-000217

Report Control No : KGR0000045914

Per pro SGS India Private Ltd

Satya Manna

Section Incharge - ENVI

Authorized Signatory

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## TEST REPORT

Report No. : KG14-000254.001

Date : 11.01.2014

JOE No. : KG13-000254

Report Control No. : KGR0000044243

### SAMPLE DRAWN BY SGS INDIA PVT. LTD.

<b>SAMPLE DESCRIPTION</b>	<b>MEASUREMENT OF NOISE LEVEL</b>
<b>COMPANY NAME</b>	<b>M/S. HINDALCO INDUSTRIES LIMITED (MINES DIVISION)</b>
<b>ADDRESS</b>	<b>MINES DIVISION, LOHARDAGA, JHARKHAND, PIN – 835 302</b>
<b>SAMPLING SITE</b>	<b>BAGRU MINES (BAGRU PLATEAU)</b>
<b>PROTOCOL</b>	<b>IS:9989/IS:7194</b>
<b>DATE OF SAMPLING</b>	<b>21.12.2013 TO 22.12.2013</b>
<b>TEST START DATE</b>	<b>10.01.2014</b>
<b>TEST END DATE</b>	<b>11.01.2014</b>

LOCATION	RESULT		LIMIT IN dB(A) Leq ( INDUSTRIAL AREA )	
	Day Time (L <sub>eq</sub> ) in dB(A)	Night time (L <sub>eq</sub> ) in dB(A)	Day Time	Night time
NEAR HINDALCO OFFICE	52	47	75	70

Note: (i) The value is the Leq of One Hundred Seventy readings taken in day time and seventy reading taken in night time. \*\*\*\*\*End of Report\*\*\*\*\*  
(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

Page 1 of 1

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## Test Report

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Print Date : 20/01/2014

Report No : KG14-000157.001

JOE No : KG14-000157

Report Control No : KGR0000045067

Sample Described by Customer as : DRINKING WATER

Client Name : Hindalco Industries Limited(Mines Division)  
Client Address : Lohardaga,  
Postal Code : 835203  
State : Jharkhand  
Country : India  
Sample Type : DRINKING WATER  
Received : 08/01/2014  
Registered : 08/01/2014  
Marks on Sample : Location:Bagru Colony Tap(Near Guest House)  
- : Bagru Plateau  
Quantity : 5.5L app  
Sample Collected on : 06.01.2014  
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)	5.0	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)	7.47		6.5	8.5
<i>Analyzed at site.</i>					
Total Hardness (as CaCO <sub>3</sub> )	IS:3025 (Part-21):1983 (Reaff.2006)	204.60	mg/L	200	600
Iron (as Fe)	IS:3025 (Part-2)	0.06	mg/L	0.3	No relaxation
Fluoride (as F)	IS:3025 (Part-60):2008	0.45	mg/L	1.0	1.5
Residual Free Chlorine	IS:3025 (Part-28):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 : 20/01/2014

Report No : KG14-000157.001

JOE No : KG14-000157

Report Control No : KGR0000045067

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)	278.60	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)	52.08	mg/L	75	200
Magnesium (as Mg)	IS:3025 (Part-46):1994 (Reaff.1999)	18.08	mg/L	30	100
Copper (as Cu)	IS:3025 (Part-2)	<0.01	mg/L	0.05	1.5
Manganese (as Mn)	IS:3025 (Part-2)	0.02	mg/L	0.1	0.3
Sulphate (as SO4)	IS:3025 (Part-24):1986 (Reaff.1998)	<2.00	mg/L	200	400
Nitrate (as NO3)	IS:3025 (Part-34):1988 (Reaff.1999)	<0.50	mg/L	45	No relaxation
Phenolic Compound (as C6H5OH)	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)	0.008	mg/L	0.01	No relaxation
Zinc (as Zn)	IS:3025 (Part-2)	0.33	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 : 20/01/2014

Report No : KG14-000157.001

JOE No : KG14-000157

Report Control No : KGR0000045067

Analysis	Method	Result	Unit	Requirement/Limit As per IS:10500:2012	
				Acceptable	Permissible
Total Alkalinity (as CaCO <sub>3</sub> )	IS:3025 (Part-23):1986 (Reaff.2003)	197.54	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)	<0.02	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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## Test Report

Print Date : 30/01/2014

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Report No : KG14-000133.001

JOE No : KG14-000133

Sample Described by Customer as : EFFLUENT

Report Control No : KGR0000046000

Client Name : Hindalco Industries Limited(Mines Division)  
Client Address : Lohardaga,  
Postal Code : 835203  
State : Jharkhand  
Country : India  
Sample Type : EFFLUENT  
Received : 08/01/2014  
Registered : 08/01/2014  
Marks on Sample : Location : STP Inlet(Bagru mines) (Bagru Plateau)  
Sample Collected on : 06.01.2014  
Sampling Site : Bagru Bauxite Mines(Bagru Plateau)  
Quantity : 4L app  
Sampling Method : APHA 1060B  
Test Start/End Date : 08/01/2014 - 15/01/2014

Analysis	Method	Result	Unit
pH	APHA 22nd. EDN. 2012-4500-B	7.89*	
Total Suspended Solids	APHA 22 nd EDN.:2012-2540 D	38.50	mg/L
BOD @ 27 deg C for 3 days	IS:3025 (Part-44):1993 (Reaff 2003)	27.84	mg/L
Oil & Grease	APHA 22 nd EDN.:2012-5520 B	2.04	mg/L
Aluminium (as Al)	APHA 22nd. EDN.:2012-3120 B	<0.05	mg/L
Calcium (as Ca)	APHA 22nd. EDN.:2012-3120 B	24.06	mg/L
Iron (as Fe)	APHA 22nd. EDN.:2012-3120 B	0.81	mg/L
Total Dissolved Solids (TDS)	APHA 22 nd. EDN. 2012-2540 C	495.80	mg/L

\*Analyzed at site.

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## Test Report

Print Date : 30/01/2014


SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Report No : KG14-000133.001

JOE No : KG14-000133

Report Control No : KGR0000046000

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 : 18/01/2014

Report No : KG14-000150.001

JOE No : KG14-000150

Sample Described by Customer as : EFFLUENT Report Control No : KGR0000044947

Client Name : Hindalco Industries Limited(Mines Division)  
Client Address : Lohardaga,  
Postal Code : 835203  
State : Jharkhand  
Country : India  
Sample Type : EFFLUENT  
Received : 08/01/2014  
Registered : 08/01/2014  
Marks on Sample : Location : STP Outlet  
Sample Collected on : 06.01.2014  
Sampling Site : Bagru Mines, Bagru Plateau  
Quantity : 4L app  
Test Start/End Date : 08/01/2014 - 18/01/2014

Analysis	Method	Result	Unit	Requirement/Limit as Per	
				CPCB DIS. LAND FOR IRREGATION	
				Min	Max
pH	APHA 22nd. EDN.:2012-4500-B	7.73*		5.5	9.0
Total Suspended Soilds	APHA 22 nd EDN.:2012-2540 D	17.55	mg/L		200mg/l
BOD @ 27 deg C for 3 days	IS:3025 (Part-44): 1993 (Reaff.2003)	6.55	mg/L		100mg/l
Oil & Grease	APHA 22 nd. EDN. 2012-5520 B	<2.00	mg/L		10mg/l
Total Dissolved Soilds (TDS)	APHA 22 nd. EDN. :2012-2540 C	383.20	mg/L		N/A
Aluminium (as Al )	APHA 22nd. EDN.:2012-3120 B	<0.05	mg/L		N/A
Calcium (as Ca )	APHA 22nd. EDN.:2012-3120 B	20.74	mg/L		N/A
Iron (as Fe )	APHA 22nd. EDN.:2012-3120 B	0.62	mg/L		N/A

Remark : \* analysed at site.

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## Test Report

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Print Date : 18/01/2014

Report No : KG14-000150.001

JOE No : KG14-000150

Report Control No : KGR0000044947

Per pro SGS India Private Ltd

Satya Manna  
Section Incharge - ENVI  
Authorized Signatory

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

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# Test Report

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Print Date : 18/01/2014

Report No : KG14-000150.002

JOE No : KG14-000150

Report Control No : KGR0000044947  
Sample Described by Customer as : EFFLUENT

Client Name : Hindalco Industries Limited(Mines Division)  
 Client Address : Lohardaga,  
 Postal Code : 835203  
 State : Jharkhand  
 Country : India  
 Sample Type : EFFLUENT  
 Received : 08/01/2014  
 Registered : 08/01/2014  
 Marks on Sample : Location :Maintenance Garage  
 Sample Collected on : 06.01.2014  
 Sampling Site : Bagru Mines, Bagru Plateau  
 Quantity : 4L app  
 Test Start/End Date : 08/01/2014 - 18/01/2014

Analysis	Method	Result	Unit	Requirement/Limit as Per	
				CPCB DIS. LAND FOR IRREGATION	
				Min	Max
pH	APHA 22nd. EDN.:2012-4500-B	8.11*		5.5	9.0
Total Suspended Soilds	APHA 22 nd EDN.:2012-2540 D	28.05	mg/L		200mg/l
BOD @ 27 deg C for 3 days	IS 3025 (Part-44):1993 (Reaff 2003)	10.40	mg/L		100mg/l
Oil & Grease	APHA 22 nd. EDN.:2012-5520 B	<2.00	mg/L		10mg/l
Total Dissoolved Soilds (TDS)	APHA 22 nd. EDN.:2012-2540 C	158.00	mg/L		N/A
Aluminium (as Al )	APHA 22nd. EDN.:2012-3120 B	0.56	mg/L		N/A
Calcium (as Ca )	APHA 22nd. EDN.:2012-3120 B	21.35	mg/L		N/A
Iron (as Fe )	APHA 22nd. EDN.:2012-3120 B	0.68	mg/L		N/A

Remark : \* analysed at site.

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## Test Report

Report No : KG14-000150.002


SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Print Date : 18/01/2014

JOE No : KG14-000150

Report Control No : KGR0000044947

Per pro SGS India Private Ltd

  
Satya Manna  
Section Incharge - ENVI  
Authorized Signatory

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## Test Report

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 30/01/2014

Report No : KG14-000234.001

JOE No : KG14-000234

Sample Described by Customer as : FUGITIVE AIR Report Control No : KGR0000045988

Client Name : Hindalco Industries Limited(Mines Division)  
Client Address : Lohardaga,  
Postal Code : 835203  
State : Jharkhand  
Country : India  
Sample Type : FUGITIVE AIR  
Received : 10/01/2014  
Registered : 10/01/2014  
Marks on Sample : Location: Bhusar Pit(Bhusar Mine)(Bagru Plateau), date : 06.01.2014  
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	638.97	ug/m3	10000

Per pro SGS India Private Ltd

Satya Mann  
Section Incharge - ENVI  
Authorized Signatory

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**TEST REPORT**

REPORT NO.:KG14-000176.001

JOE NO : KG14-000176

Report Control No. KGR0000044341

Date : 13.01.2014

**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: 22.12.2013 (12:10 – 12:40 Hrs)

Sampling Site : Bagru/Bhuisal/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 : 90 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.

D. PARAMETERS	PROTOCOL	RESULTS	Limit as per MOEF G.S.R.448(E)
1. Temperature of emission ( °C)	IS 11255 Part : 3 1985 (Reaff.2008)	315	...
2. Barometric pressure (mm of Hg)	IS 11255 Part : 3 1985 (Reaff.2008)	681	...
3. Velocity of gas ( m/sec.)	IS 11255 Part : 3 1985 (Reaff.2008)	9.67	...
4. Quantity of gas flow (Nm <sup>3</sup> /hr.)	IS 11255 Part : 3 1985 (Reaff.2008)	496	...
5. Concentration of Carbon dioxide ( % v/v )	IS 11255 Part : 3 1985 (Reaff.2008)	6.4	...
6. Concentration of Carbon monoxide (gm/kw-h)	IS 11255 Part : 3 1985 (Reaff.2008)	0.35	5.0
7. Concentration of Sulphur dioxide (mg/Nm <sup>3</sup> )	USEPA – 6C	51	...
8. Concentration of Nitrogen dioxide (gm/kw-h)	USEPA – 7E	0.66	9.2
9. Concentration of Oxygen ( % v/v)	IS 11255 Part : 3 1985 (Reaff.2008)	13.6	...
10. Concentration of Particulate Matters(gm/kw-h)	IS 11255 Part : 1 1985 (Reaff.2003)	0.12	0.3

**E. Pollution control device**

Details of pollution control devices attached with the stack : Nil

**F. Remarks : Nil**

Checked by

**Dipankar De Sarkar**  
Manager (Operations)

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

per pro SGS India Private Ltd.

**Dr. Asish Chakraborty**  
Manager-Laboratory

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**TEST REPORT**

<b>REPORT NO.:</b> KG14-000177.001		<b>Date :</b> 13.01.2014
JOE NO : KG14-000177		Report Control No. KGR0000044344
<b>SAMPLE DRAWN BY SGS INDIA PRIVATE LTD.</b>		
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: 22.12.2013 (09:50 – 10:20 Hrs)		
Sampling Site : Crusher Large, Bagru Mines ( Bagru Plateau)		
<b>A. General information about stack :</b>		
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>B. Physical characteristics of stack :</b>		
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	
<b>C. Analysis/Characteristic of Stack :</b>		
1. Fuel used : H.S.D		2. Fuel Consumption: 13 Lt/Hr.
<b>D. PARAMETERS</b>		
	<b>PROTOCOL</b>	<b>RESULTS</b>
1. Temperature of emission ( °C)	IS 11255:Part 3 :1985(Reaff.2008)	184
2. Barometric pressure (mm of Hg)	IS 11255:Part 3 :1985(Reaff.2008)	681
3. Velocity of gas ( m/sec.)	IS 11255:Part 3 :1985(Reaff.2008)	12.48
4. Quantity of gas flow (Nm <sup>3</sup> /hr.)	IS 11255:Part 3 :1985(Reaff.2008)	825
5. Concentration of Carbon dioxide ( % v/v )	IS 11255:Part 3 :1985(Reaff.2008)	6.8
6. Concentration of Carbon monoxide (mg/Nm <sup>3</sup> )	IS 11255:Part 3 :1985(Reaff.2008)	48
7. Concentration of Oxygen ( % v/v)	IS 11255:Part 3 :1985(Reaff.2008)	13.2
8. Concentration of Particulate Matters (mg/Nm <sup>3</sup> )	IS 11255 Part : 1 1985 (Reaff.2003)	73
<b>E. Pollution control device</b>		
Details of pollution control devices attached with the stack : Nil		
<b>F. Remarks :</b> Nil		

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

Checked by

per pro SGS India Private Ltd.

Dipankar De Sarkar  
Manager (Operations)

Dr. Asish Chakraborty  
Manager-Laboratory

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## Test Report

Print Date : 29/01/2014

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Report No : KG14-000134.001

JOE No : KG14-000134

Sample Described by Customer as : SOIL Report Control No : KGR0000045884

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:Re-claim Area(Bhusher Mines,Bagru Plateau)  
Sample Collected on : 06.01.2014  
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)	10.6	µs/cm
pH (1:2) Soil Suspension	F.A.U.N (2007)	6.10	--
Porosity	F.A.U.N (2007)	56.63	%
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)	41.8	%
Sand	F.A.U.N (2007)	42.2	%
Silt	F.A.U.N (2007)	16.0	%
Available Chloride (as Cl)	Soil & Agriculture Organization (U.N-2007)	<20.00	mg/kg
Available Nitrogen	Food & Agriculture Organization (U.N-2007)	328.92	mg/kg
Available Potassium (as K)	Soil & Water Book By P.K. Gupta	1893.15	mg/kg

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## Test Report

Print Date : 29/01/2014

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Report No : KG14-000134.001

JOE No : KG14-000134

Report Control No : KGR0000045884

Analysis	Method	Result	Unit
Available Magnesium (as Mg)	Soil & Water Book By P.K Gupta	2196.98	mg/kg
Lead (as Pb)	USEPA 3052	18.83	mg/kg
Chromium (as Cr)	USEPA 3052	48.32	mg/kg
Mercury (as Hg)	USEPA 3052	<1.00	mg/kg
Total Organic Matter	Black & Walkely Wet Digestion Method	0.49	%

Per pro SGS India Private Ltd



Satya Manna  
Section Incharge - ENVI  
Authorized Signatory

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

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### TEST REPORT

Report No. : KG17-000179.001-004

Date : 10.01.2014

JOE No : KG14-000179

Report Control No:KGR0000044179

#### 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** : BHUSAR MINES (BAGRU 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.	WAGON DRILL (ROC-203)	23.12.2013 (11:03 Hrs)	83	75
2.	ATLAS COPCO – XAH – 210)	23.12.2013 (11:12 Hrs)	81	75
3.	DUMPER (TATA PRIMA 25280K)	23.12.2013 (11:20 Hrs)	73	75
4.	POCKLEN (TATA HITACHI EX- 850 KCGV)	23.12.2013 (11:30 Hrs)	78	75

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

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

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 COLLECTED BY SGS INDIA PVT. LTD.

Print Date : 20/01/2014

Report No : KG14-000164.001

JOE No : KG14-000164

Report Control No : KGR0000045103

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:Pond Bhusher V-25  
- : Bagru Plateau  
Quantity : 5.5L app  
Sample Collected on : 06.01.2014  
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)	5.0	H <sub>z</sub>	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)	7.59		6.5	8.5
<i>Analyzed at site</i>					
Total Hardness (as CaCO <sub>3</sub> )	IS:3025 (Part-21):1983 (Reaff.2006)	14.88	mg/L	200	600
Iron (as Fe)	IS:3025 (Part-2)	<0.05	mg/L	0.3	No relaxation
Fluoride (as F)	IS:3025 (Part-60):2008	0.37	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 : 20/01/2014

Report No : KG14-000164 001

JOE No : KG14-000164

Report Control No : KGR0000045103

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)	37.00	mg/L	500	2000
E.coli	IS:1622:1981(Reaff 2003)	Absent	per 100ml		
Coliform bacteria	IS:1622-1981 (Reaffirmation 2003)	Present(34cfu)	per 100ml		
Calcium (as Ca)	IS:3025 (Part-40):1991 (Reaff 2003)	3.72	mg/L	75	200
Magnesium (as Mg)	IS:3025 (Part-46):1994 (Reaff 1999)	1.36	mg/L	30	100
Copper (as Cu)	IS:3025 (Part-2)	<0.01	mg/L	0.05	1.5
Manganese (as Mn)	IS:3025 (Part-2)	0.12	mg/L	0.1	0.3
Sulphate (as SO4)	IS:3025 (Part-24):1986 (Reaff 1998)	<2.00	mg/L	200	400
Nitrate (as NO3)	IS:3025 (Part-34):1988 (Reaff 1999)	16.48	mg/L	45	No relaxation
Phenolic Compound (as C6H5OH)	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)	0.01	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 : 20/01/2014

Report No : KG14-000164.001

JOE No : KG14-000164

Report Control No : KGR0000045103

Analysis	Method	Result	Unit	Requirement/Limit As per IS:10500:2012	
				Acceptable	Permissible
Total Alkalinity (as CaCO <sub>3</sub> )	IS:3025 (Part-23):1986 (Reaff.2003)	<2.00	mg/L	200	600
Aluminium (as Al)	IS:3025 (Part-55):2003	0.61	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)	1.29	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

Authorized Signatory

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

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**TEST REPORT**

<b>REPORT NO.:</b> KG14-002592.001		<b>Date :</b> 23.04.2014		
JOE NO : KG14-002592		Report Control No. KGR0000054210		
<b>SAMPLE DRAWN BY SGS INDIA PRIVATE LTD.</b>				
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: 27.03.2014 (10:00 Hrs)				
Sampling Site : Bagru/Bhuisal/Hisri(Old)/Hisri(New) Bauxite Mines ( Bagru Plateau)				
<b>A. General information about stack :</b>				
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	:	110 KVA	
<b>B. Physical characteristics of stack :</b>				
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	
<b>C. Analysis/Characteristic of Stack :</b>				
1.	Fuel used	:	H.S.D	
		2. Fuel Consumption:	30 Lt/Hr.	
<b>D.</b>	<b>PARAMETERS</b>	<b>PROTOCOL</b>	<b>RESULTS</b>	<b>Limit as per MOEF G.S.R.448(E)</b>
1.	Temperature of emission ( °C)	IS 11255 Part : 3 1985 (Reaff.2008)	318	...
2.	Barometric pressure (mm of Hg)	IS 11255 Part : 3 1985 (Reaff.2008)	682	...
3.	Velocity of gas ( m/sec.)	IS 11255 Part : 3 1985 (Reaff.2008)	9.63	...
4.	Quantity of gas flow (Nm <sup>3</sup> /hr.)	IS 11255 Part : 3 1985 (Reaff.2008)	509	...
5.	Concentration of Carbon dioxide ( % v/v )	IS 11255 Part : 3 1985 (Reaff.2008)	5.8	...
6.	Concentration of Carbon monoxide (gm/kw-h)	IS 11255 Part : 3 1985 (Reaff.2008)	0.19	5.0
7.	Concentration of Sulphur dioxide (mg/Nm <sup>3</sup> )	USEPA – 6C	36	...
8.	Concentration of Nitrogen dioxide (gm/kw-h)	USEPA – 7E	0.42	9.2
9.	Concentration of Oxygen ( % v/v)	IS 11255 Part : 3 1985 (Reaff.2008)	14.2	...
10.	Concentration of Particulate Matters(gm/kw-h)	IS 11255 Part : 1 1985 (Reaff.2003)	0.005	0.3
<b>E. Pollution control device</b>				
Details of pollution control devices attached with the stack : Nil				
<b>F. Remarks :</b> Nil				

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

Checked by

per pro SGS India Private Ltd.

Satya Charan Manna  
Asst. Manager (Multi Laboratory)

Dr. Ashish Chakraborty  
Manager-Laboratory

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**TEST REPORT**

<b>REPORT NO.:</b> KG14-002590.001		<b>Date :</b> 23.04.2014	
JOE NO : KG14-002590		Report Control No. KGR0000054207	
<b>SAMPLE DRAWN BY SGS INDIA PRIVATE LTD.</b>			
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: 27.03.2014 (15:10 Hrs)			
Sampling Site : Crusher Large, Bagru Mines ( Bagru Plateau)			
<b>A. General information about stack :</b>			
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>B. Physical characteristics of stack :</b>			
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	
<b>C. Analysis/Characteristic of Stack :</b>			
1.	Fuel used : H.S.D	2. Fuel Consumption: 13 Lt/Hr.	
<b>D.</b>			
	<b>PARAMETERS</b>	<b>PROTOCOL</b>	<b>RESULTS</b>
1.	Temperature of emission ( °C)	IS 11255:Part 3 :1985(Reaff.2008)	174
2.	Barometric pressure (mm of Hg)	IS 11255:Part 3 :1985(Reaff.2008)	682
3.	Velocity of gas ( m/sec.)	IS 11255:Part 3 :1985(Reaff.2008)	16.71
4.	Quantity of gas flow (Nm <sup>3</sup> /hr.)	IS 11255:Part 3 :1985(Reaff.2008)	1168
5.	Concentration of Carbon dioxide ( % v/v )	IS 11255:Part 3 :1985(Reaff.2008)	5.4
6.	Concentration of Carbon monoxide (mg/Nm <sup>3</sup> )	IS 11255:Part 3 :1985(Reaff.2008)	34
7.	Concentration of Oxygen ( % v/v)	IS 11255:Part 3 :1985(Reaff.2008)	14.6
8.	Concentration of Particulate Matters (mg/Nm <sup>3</sup> )	IS 11255 Part 1 1985 (Reaff.2003)	34
<b>E. Pollution control device</b>			
Details of pollution control devices attached with the stack : Nil			
<b>F. Remarks :</b> Nil			

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

Checked by

per pro SGS India Private Ltd.

Satya Charan Manna  
Asst. Manager (Multi Laboratory)

Dr. Asish Chakraborty  
Manager-Laboratory

Page 1 of 1

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## Test Report

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Print Date : 30/04/2014

Report No : KG14-002511.001

JOE No : KG14-002511

Sample Described by Customer as : EFFLUENT Report Control No : KGR0000055133

Client Name : Hindalco Industries Limited(Mines Division)  
Client Address : Lohardaga,  
Postal Code : 835203  
State : Jharkhand  
Country : India  
Sample Type : EFFLUENT  
Received : 16/04/2014  
Registered : 16/04/2014  
Marks on Sample : Location : STP Outlet (Bagru Mines)  
Sample Collected on : 12.04.2014  
Quantity : 4L app  
Test Start/End Date : 16/04/2014 - 29/04/2014

Analysis	Method	Result	Unit	Requirement/Limit as Per	
				Min	Max
pH	APHA 22nd. EDN.:2012-4500-B	7.55*		5.5	9.0
Total Suspended Solids	APHA 22 nd EDN.:2012-2540 D	15.70	mg/L		200mg/l
BOD @ 27 deg C for 3 days	IS:3025 (Part-4):1993 (Reaff 2003)	9.25	mg/L		100mg/l
Oil & Grease	APHA 22 nd. EDN.:2012-5520 B	<2.00	mg/L		10mg/l
Total Dissolved Solids (TDS)	APHA 22 nd. EDN.:2012-2540 C	422.40	mg/L		N/A
Aluminium (as Al )	APHA 22nd. EDN.:2012-3120 B	0.12	mg/L		N/A
Calcium (as Ca )	APHA 22nd. EDN.:2012-3120 B	23.09	mg/L		N/A
Iron (as Fe )	APHA 22nd. EDN.:2012-3120 B	0.91	mg/L		N/A

Remark : \* analysed at site.

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## Test Report

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Print Date : 30/04/2014

Report No : KG14-002511.001

JOE No : KG14-002511

Report Control No : KGR0000055133

Per pro SGS India Private Ltd



Satya Manna

Section Incharge - ENVI

Authorized Signatory

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

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## Test Report

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Print Date : 30/04/2014

Report No : KG14-002511.002

JOE No : KG14-002511

Report Control No : KGR0000055133  
Sample Described by Customer as : EFFLUENT

Client Name : Hindalco Industries Limited(Mines Division)  
 Client Address : Lohardaga,  
 Postal Code : 835203  
 State : Jharkhand  
 Country : India  
 Sample Type : EFFLUENT  
 Received : 16/04/2014  
 Registered : 16/04/2014  
 Marks on Sample : Location :Maintenance Garage(Bagru Mines)  
 Sample Collected on : 12.04.2014  
 Quantity : 4L app  
 Test Start/End Date : 16/04/2014 - 29/04/2014

Analysis	Method	Result	Unit	Requirement/Limit as Per	
				CPCB DIS. LAND FOR IRREGATION	
				Min	Max
pH	APHA 22nd. EDN.:2012-4500-B	7.85*		5.5	9.0
Total Suspended Solids	APHA 22 nd EDN.:2012-2540 D	7.00	mg/l		200mg/l
BOD @ 27 deg C for 3 days	IS:3025 (Part-44):1993 (Reaff 2003)	5.69	mg/l		100mg/l
Oil & Grease	APHA 22 nd. EDN.:2012-5520 B	<2.00	mg/l		10mg/l
Total Dissolved Solids (TDS)	APHA 22 nd. EDN.:2012-2540 C	165.40	mg/l		N/A
Aluminium (as Al )	APHA 22nd. EDN.:2012-3120 B	<0.05	mg/l		N/A
Calcium (as Ca )	APHA 22nd. EDN.:2012-3120 B	17.55	mg/l		N/A
Iron (as Fe )	APHA 22nd. EDN.:2012-3120 B	0.57	mg/l		N/A

Remark : \* analysed at site.

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## Test Report

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Print Date : 30/04/2014

Report No : KG14-002511.002

JOE No : KG14-002511

Report Control No : KGR0000055133

Per pro SGS India Private Ltd

Satya Manna

Section Incharge - ENVI

Authorized Signatory

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## Test Report

Print Date : 29/04/2014

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Report No : KG14-002510.001

JOE No : KG14-002510

Sample Described by Customer as : EFFLUENT Report Control No : KGR0000054874

Client Name : Hindalco Industries Limited(Mines Division)  
Client Address : Lohardaga,  
Postal Code : 835203  
State : Jharkhand  
Country : India  
Sample Type : EFFLUENT  
Received : 16/04/2014  
Registered : 16/04/2014  
Marks on Sample : Location : STP Inlet(Bagru mines)  
Sample Collected on : 12.04.2014  
Quantity : 4L app  
Sampling Method : APHA 1060B  
Test Start/End Date : 16/04/2014 - 28/04/2014

Analysis	Method	Result	Unit
pH	APHA 22nd. EDN.:2012-4500-B	7.66*	
Total Suspended Solids	APHA 22 nd EDN.:2012-2540 D	53.80	mg/L
BOD @ 27 deg C for 3 days	IS:3025 (Part-44):1993 (Reaff.2003)	19.66	mg/L
Oil & Grease	APHA 22 nd. EDN.:2012-5520 B	3.16	mg/L
Aluminium (as Al )	APHA 22nd. EDN.:2012-3120 B	0.22	mg/L
Calcium (as Ca )	APHA 22nd. EDN.:2012-3120 B	21.16	mg/L
Iron (as Fe )	APHA 22nd. EDN.:2012-3120 B	1.37	mg/L
Total Dissolved Solids (TDS)	APHA 22 nd. EDN.:2012-2540 C	407.20	mg/L

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## Test Report

Print Date : 29/04/2014

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Report No : KG14-002510.001

JOE No : KG14-002510

Report Control No : KGR0000054874

Per pro SGS India Private Ltd

Satya Manna  
Section Incharge - ENVI  
Authorized Signatory

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## Test Report

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 24/04/2014

Report No : KG14-002514.001

JOE No : KG14-002514

Sample Described by Customer as : **Report Control No** : KGR0000054254  
: 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: Bagru Colony Near Office  
Sampling Date : 26.03.2014  
Test Start/End Date : 16/04/2014 - 23/04/2014

Analysis	Method	Result	Unit	Requirement/Limit as Per NAAQS	
				Min	Max
Particulate Matter (PM10 )	IS:5182 (PART 23)	67.47	ug/m3	-	100
Particulate Matter (PM2.5)	USEPA CFR(40) Appendix-L	38.53	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	0.11	PPM		

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## Test Report

Report No : KG14-002514.001

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 24/04/2014

JOE No : KG14-002514

Report Control No : KGR0000054254

Per pro SGS India Private Ltd

Satya Manna

Section Incharge - ENVI

Authorized Signatory

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## Test Report

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 24/04/2014

Report No : KG14-002514.003

JOE No : KG14-002514

Report Control No : KGR0000054254  
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: Bhusar Mine Pit(Bagru Platu)  
Sampling Date : 27.03.2014  
Test Start/End Date : 16/04/2014 - 23/04/2014

Analysis	Method	Result	Unit	Requirement/Limit as Per NAAQS	
				Min	Max
Particulate Matter (PM10 )	IS:5182 (PART 23)	81.83	ug/m3	-	100
Particulate Matter (PM2.5)	USEPA CFR(40) Appendix-L	43.82	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	0.11	PPM		

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## Test Report

Report No : KG14-002514.003

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 24/04/2014

JOE No : KG14-002514

Report Control No : KGR0000054254

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