



Ref No: HIL/LHD/VP (M)/MoEF/ 685

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 Bhusar (65.31 ha) Bauxite Mining project of M/s Hindalco Industries Limited located in Lohardaga, Jharkhand for the period Oct'13 to March'14.**

Ref: **Environmental Clearance No-J-11015/184/2011-IA.II (M) dated 17th June 2013.**


Sir,

With reference to the above, we are submitting herewith the Compliance status report of EC conditions for **Bhusar (65.31 ha) Bauxite** Mining project of M/s Hindalco located in Lohardaga, Jharkhand for the period **Oct'13 to March'14.**

Hope you will find the same in order.

Thanking You

Yours Sincerely
FOR HINDALCO INDUSTRIES LIMITED


(Bijesh Kumar Jha)
VP (Mines)

Enclosure: - As Above

Bhusar Bauxite Mines of M/s Hindalco Industries Limited
Area 65.31 Ha-Period Oct'13 to March'14
Environmental Clearance No-J-11015/184/2011-IA.II (M) dated 17th June 2013.

SI No	Specific Condition	Compliance
(i)	All the conditions stipulated by the State Pollution Control Board in their NOC shall be effectively implemented.	Implementations of the stipulated conditions are fulfilled.
(ii)	Environmental clearance is subject to obtaining clearance under the wildlife (Protection) Act, 1972 from the competent authority, as may be applicable to this project.	Not applicable to this project.
(iii)	The mining operations shall be restricted to above ground water table and it should not intersect groundwater table. Prior approval of the Ministry of Environment & Forests and Central Ground Water Authority shall be obtained for mining below water table.	Shallow depth mining is being done in the Bagru Plateau. The ground water table is much below the working depth. Hence, ground water not intersected due to mining activities.
(iv)	The project proponent shall ensure that no natural watercourse shall be obstructed due to any mining operations.	Agreed. No natural water course will be obstructed due to mining activities.
(v)	Top soil should be stacked with proper slope at earmarked site(s) only with adequate measures and should be used for reclamation and rehabilitation of mined out areas.	Top soil will be stored temporarily and will spread over the back filled area in the process of reclamation.
(vi)	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 back filling should be carried out in such a manner that it is restored to the normal ground level. Monitoring	The over burden generated during the mining operation temporarily stacked at earmarked dump site (s) only for the purpose of backfilling, Backfilling area will be reclaimed by suitable plantation. Monitoring and management of rehabilitated area will continue until the vegetation becomes self-sustaining. Compliance status will be

	and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status should be submitted to the Ministry of Environment as Forests and its Regional Office, Bhubaneswar on six monthly basis.	submitted to MoEF on six monthly basis.
(vii)	<p>Catch drains and siltation ponds of appropriate size should be constructed for the working pit, temporary OB dumps, if any and mineral dumps to arrest flow of silt and sediment. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains should be regularly desilted, particularly after monsoon, and maintained properly.</p> <p>Garland drain of appropriate size, gradient and length shall be constructed for both mine pit and temporary dumps and sump capacity should be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper 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 generated from mining activities. However to collect & manage rain water during monsoon, part of mined out area is used as settling tank for the runoff. Rain water is being used for watering the mine area, roads, green belt development, sprinkling on haul roads etc.</p> <p>Garland drain of suitable size will be provided as & when required.</p>
(viii)	Dimension of the retaining wall at the toe of temporary dumps 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.
(ix)	Plantation shall be raised in an area of 52.50 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 the end	It is already in practice. Phase wise plantation of native species in consultation with forest department will be carried out within the safety zone and mined out/reclaimed pits. Around 1000 sapling planted during FY 2013-14.

	of life of mine. The density of the trees should be around 2500 plants per ha.	
(x)	Regular water sprinkling should be carried out in critical areas prone to air pollution and having high levels of SPM and RSPM such as haul road, loading and unloading point and transfer points. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.	Mobile water tankers will be provided for sprinkling of water on road to contain dust. AAQ parameters are monitored on regular basis.
(xi)	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.	A plan will be drawn on the basis of discussion with Scientists of State unit office of Central Ground Water Board, Ranchi to implement suitable conservation measures to augment ground water resources in the area (Bagru Plateau).
(xii)	Regular monitoring of ground water level and quality should be carried out in and around the mine lease 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 i.e. January, April-May, August, November and the data thus collected may be sent regularly to Ministry of Environment and Forests, its Regional Office, Bhubaneswar; Central Ground Water Authority and Central Ground Water Board.	Being complied. Water quality monitoring report is enclosed.
(xiii)	The project authorities should obtain prior approval of the competent authority for drawl of groundwater if any, required for the project.	Water is collected from Rain water harvesting pond and necessary water cess is being paid regularly to Jharkhand State Pollution Control Board for Bagru group of Mines.
(xiv)	Vehicular emissions should be kept under control and regularly monitored. Measures shall be taken for	For our all operating mines regular maintenance of vehicles are undertaken to

	<p>maintenance of vehicles used in mining operations and in transportation of mineral. The vehicles should be covered with a tarpaulin and shall not be overloaded..</p>	<p>minimize vehicular emission. All the transporters have been instructed to obtain PUC for their vehicles from the concerned authority and submit to the concerned Officer for verification. Bauxite are transported through tarpaulin cover trucks or ropeway from Bagru Hill to Lohardaga siding.</p>
(xv)	<p>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</p>	<p>Blasting at Mines is done at fixed blasting period i.e 12.00 Noon to 1.00 PM on working days. Mobile mining activities are not being practiced during blasting. All the precautionary and mitigative measures to control ground vibration and to arrest fly rocks are implemented.</p>
(xvi)	<p>Drills shall either be operated with dust extractors or equipped with water injection system.</p>	<p>Wet drilling will be done in the drill holes by pumping water intermittently for dust suppression.</p>
(xvii)	<p>Consent to operate should be obtained from SPCB before starting/ enhanced production from the mine.</p>	<p>Consent to operate obtained from JSPCB prior to start of mining. There is no proposal for production enhancement.</p>
(xviii)	<p>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.</p>	<p>Progressive mine Closure Plan along with mining scheme has been approved by IBM.</p>

Sl No	General Condition	Compliance
(i)	<p>No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment and Forests.</p>	<p>Being adhered to.</p>
(ii)	<p>No change in the calendar plan including excavation, quantum of mineral bauxite and waste should be</p>	<p>Excavation of OB and Bauxite is being done as per the approved mining plan/scheme and obtained</p>

	made.	EC capacity. Quantum of mineral and OB excavated during the FY2013-14 is annexed.
(iii)	Four ambient air quality-monitoring stations should be established in the core zone as well as in the buffer zone for PM10, SO2 as NOx 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.	The system is already in place. Air quality monitoring report is being submitted regularly at JSPCB and MoEF.
(iv)	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.	Suitable water spraying system is already available for Bagru group of mines. To arrest fugitive dust proper water sprinkling will be carried out on haul roads, loading and unloading and at transfer points.
(v)	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.
(vi)	Industrial wastewater (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 03 or as amended from time to time. Oil and grease trap should be installed before discharge of effluents from workshop.	Is being complied as per statute.
(vii)	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.	PPE's provided. Periodic training on safety & occupational health is being imparted to workers and health checks up conducted.
(viii)	Occupational health surveillance programme of the workers should be undertaken periodically to observe any	Being carried out.

	contractions due to exposure to dust and take corrective measures, if needed.	
(ix)	A separate environmental management cell with suitable qualified personnel should be set up under the control of a senior Executive, who will report directly to the Head of the organization.	Separate Environmental Management Cell (EMC) has been constituted and is functioning effectively. Copy enclosed.
(x)	The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purposes. Year-wise expenditure should be reported to the Ministry and its Regional Office located at Bhubaneswar	The fund earmarked for environmental protection measures is being kept in separate account. Year wise expenditure is being reported to the Ministry and its Regional Office located at Bhubaneswar.
(xi)	The Regional Office of this Ministry located at Bhubaneswar shall monitor compliance of the stipulated conditions. The Project authorities should extend full cooperation to the officer(s) of the Regional Office by furnishing requisite data/information/monitoring reports.	Agreed.
(xii)	The project proponent shall submit six monthly report on the status of the implementation of the stipulated environmental safeguards to the Ministry of Environment and Forests, its Regional Office, Bhubaneswar, Central Pollution Control Board and State Pollution Control Board.	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 Bhunaneswar, the respective Zonal office of Central Pollution Control Board the State Pollution Control Board and uploaded in company's website.
(xiii)	A copy of the clearance letter will be marked to the concerned Panchayat/local NGO, if any, from whom suggestions/representation has been received while processing the proposal.	A copy of clearance letter has been sent to concerned Panchayat, Zila Parisad / Municipal corporation, urban local body and the local NGO.
(xiv)	The project authorities should inform to the Regional Office located at Bhubaneswar regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.	Complied. Yearly date of financial closure is 31 st March.

(xv)	State Pollution Control Board should display a copy of the clearance letter at the Regional Office, District Industry Centre and Collector's/Tehsildar's Office for 30 days.	Displayed.
(xvi)	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 http://envfor.nic.in and a copy of the same should be forwarded to the Regional Office of this Ministry located at Bhubaneswar.	Complied. Copies of relevant paper cutting are enclosed for information and records.



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

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

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

**Part of OB removed cost.


Convener

Environment Management Cell.



Date: 30.10.13

OFFICE ORDER

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

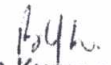
The Environment Management Cell will consist of:

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

Members:

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

By order


Bijesh Kumar Jha
VP (Mines)

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

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

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

Monitored water level

Location (Mines)	Elevation (feet)	Elevation (Mtr)	Well type	Monsoon 2013		Post Monsoon 2013		Winter		Pre Monsoon		
				Inside ML	Outside ML	Inside ML	Outside ML	Inside ML	Outside ML	Inside ML	Outside ML	
Bagru	2970	905	Open Well		21.70		24.10			27.32		29.23
	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
Pakhar	3279	1000	Open Well		24.90		22.60			24.51		25.93
	3552	1083	Hand Pump	35.40		31.60		34.34			35.49	
Sherengdag	3370	1027	Open Well		25.80		28.30			30.53		31.42
	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	
Gurdari	3428	1045	Hand Pump	29.34		27.85		29.64			30.41	
	3481	1061	Hand Pump	28.30		24.87		25.42			26.79	
	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	
Kujam	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	
	3450	1052	Hand Pump				21.12			24.13		23.54
Chiro Kukud	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. Baham



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

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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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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	-	
Analyzed at site.					

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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

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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-5):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>					

Page 1 of 2

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Test Report

Report No : KG14-000217.003

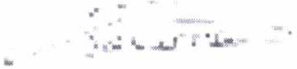
SAMPLE DRAWN BY SGS INDIA PVT. LTD.

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

****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 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		

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Test Report

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Print Date : 29/01/2014

Report No : KG14-000217.004

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.

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

LOCATION	RESULT		LIMIT IN dB(A) Leq (INDUSTRIAL AREA)	
	Day Time (L_{eq}) in dB(A)	Night time (L_{eq}) in dB(A)	Day Time	Night time
NEAR HINDALCO OFFICE	52	47	75	70

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

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

Checked by

per pro SGS India Private Ltd.

Dipankar De Sarkar
Manager (Operations)

Dr. Asish Chakraborty
Manager-Laboratory

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Test Report

SAMPLE 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 ₃)	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-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 : KG14-000157.001

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 ₃)	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

Authorized Signatory

Per pro SGS India Private Ltd

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

Report Control No : KGR0000046000
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 : 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

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Satya Manna
Section Incharge - ENVI
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****End of Report****

Page 2 of 2

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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 Solids	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 Solids (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.

Page 1 of 2

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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
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****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 Dissolved 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

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

Per pro SGS India Private Ltd

Satya Manna

Section Incharge - ENVI

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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 RULE-1956 Min Max
Suspended Particulate Matter (SPM)	IS:5182 (Part-23) 2006	638.97	ug/m3	10000

Per pro SGS India Private Ltd

Satya Manna
Section Incharge - ENVI
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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 ³ /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 ³)	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

***End of Report**
per pro SGS India Private Ltd.

Dipankar De Sarkar
Manager (Operations)

Dr. Asish Chakraborty
Manager-Laboratory

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TEST REPORT

REPORT NO.:KG14-000177.001		Date : 13.01.2014																											
JOE NO : KG14-000177		Report Control No. KGR0000044344																											
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 (09:50 – 10:20 Hrs)																													
Sampling Site : Crusher Large, Bagru Mines (Bagru Plateau)																													
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 Lt/Hr.																												
D. PARAMETERS																													
<table border="1"><thead><tr><th>PARAMETERS</th><th>PROTOCOL</th><th>RESULTS</th></tr></thead><tbody><tr><td>1. Temperature of emission (°C)</td><td>IS 11255:Part 3 :1985(Reaff.2008)</td><td>184</td></tr><tr><td>2. Barometric pressure (mm of Hg)</td><td>IS 11255:Part 3 :1985(Reaff.2008)</td><td>681</td></tr><tr><td>3. Velocity of gas (m/sec.)</td><td>IS 11255:Part 3 :1985(Reaff.2008)</td><td>12.48</td></tr><tr><td>4. Quantity of gas flow (Nm³/hr.)</td><td>IS 11255:Part 3 :1985(Reaff.2008)</td><td>825</td></tr><tr><td>5. Concentration of Carbon dioxide (% v/v)</td><td>IS 11255:Part 3 :1985(Reaff.2008)</td><td>6.8</td></tr><tr><td>6. Concentration of Carbon monoxide (mg/Nm³)</td><td>IS 11255:Part 3 :1985(Reaff.2008)</td><td>48</td></tr><tr><td>7. Concentration of Oxygen (% v/v)</td><td>IS 11255:Part 3 :1985(Reaff.2008)</td><td>13.2</td></tr><tr><td>8. Concentration of Particulate Matters (mg/Nm³)</td><td>IS 11255 Part : 1 1985 (Reaff.2003)</td><td>73</td></tr></tbody></table>			PARAMETERS	PROTOCOL	RESULTS	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 ³ /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 ³)	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 ³)	IS 11255 Part : 1 1985 (Reaff.2003)	73
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E. Pollution control device																													
Details of pollution control devices attached with the stack : Nil																													
F. Remarks : 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	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)	7.59		6.5	8.5
<i>Analyzed at site.</i>					
Total Hardness (as CaCO ₃)	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 ₃)	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

REPORT NO.: KG14-002592.001		Date : 23.04.2014		
JOE NO : KG14-002592		Report Control No. KGR0000054210		
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: 27.03.2014 (10:00 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	:	110 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)	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 ³ /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 ³)	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
E. Pollution control device				
Details of pollution control devices attached with the stack : Nil				
F. Remarks : 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

REPORT NO.: KG14-002590.001		Date : 23.04.2014	
JOE NO : KG14-002590		Report Control No. KGR0000054207	
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: 27.03.2014 (15:10 Hrs)			
Sampling Site : Crusher Large, Bagru Mines (Bagru Plateau)			
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 Lt/Hr.	
D. PARAMETERS		PROTOCOL	RESULTS
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 ³ /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 ³)	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 ³)	IS 11255 Part 1 1985 (Reaff.2003)	34
E. Pollution control device			
Details of pollution control devices attached with the stack : Nil			
F. Remarks : Nil			

End of Report

Checked by

per pro SGS India Private Ltd.

Satya Charan Manna
Asst. Manager (Multi Laboratory)

Dr. Asish Chakraborty
Manager-Laboratory

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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	
				CPCB DIS. LAND FOR IRREGATION	
				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
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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

Report Control No : KGR0000054874
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 : 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	7.68*	
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

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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 : AMBIENT AIR QUALITY MONITORING
Report Control No : KGR0000054254

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

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Print Date : 24/04/2014

JOE No : KG14-002514

Report Control No : KGR0000054254

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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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Print Date : 24/04/2014

JOE No : KG14-002514

Report Control No : KGR0000054254

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