

# MINERALS & MINERALS LIMITED

Regd. Office P.O. & Dist. – Lohardaga (Jharkhand) PIN – 835302  
Phone : 06526-224016, 224112, FAX : 06526-224118

Ref No: M&M/LHD/VP (M)/MoEF/120

Date: 22.05.13

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

**Sub: Compliance Report of EC conditions for Pakhar (109.507 ha) Bauxite Mining project of M/s Minerals & Minerals Limited located in the District of Lohardaga, Jharkhand for the period Oct' 2012 - March' 2013.**

Ref: Environmental Clearance letter no J-11015/518/2008-IA II (M) dated 21<sup>st</sup> Oct 2010.


Sir,

With reference to the above, we are submitting herewith the Compliance status report of EC conditions for **Pakhar (109.507 ha)** Bauxite Mining project of M/s Minerals & Minerals Limited, located in Lohardaga, Jharkhand for the period **Oct' 2012 - March' 2013.**

Hope you will find the same in order.

Thanking You

Yours Sincerely  
FOR Minerals & Minerals Limited

  
(Bijesh Kumar Jha)  
VP (Mines)

Enclosure: - As Above

**Compliance of conditions laid down in Environmental Clearance**

**PAKHAR BAUXITE MINES(109.507 Ha)**

**Period : Oct'12 – March.'13**

J-11015/518/2008-IA.II (M) Dated 21.10.2010.

<b>Sl No</b>	<b>Conditions</b>	<b>Compliance Status</b>
Specific Conditions		
1	The project proponent shall obtain Consent to Establish and Consent to Operate from the Jharkhand State Pollution Control Board and effectively implement all the conditions stipulated therein.	Consent to Establish and Consent to Operate has been obtained. Consent to operate is valid up to 31.12.13. Copy enclosed
2	The environmental clearance is subject to approval of the state land use Department, Government of Jharkhand for diversion of agricultural land for non-agricultural use.	Mining Lease is granted by the State Govt. after due consideration and cabinet approval on recommendation of District Collector who is the competent authority to give permission for using the agricultural land for non-agricultural purpose.
3	The mining operation shall be confined to the hill tops only and restricted to above ground water table and it should not intersect the ground water table. In case of working below ground water table, prior approval of the Ministry of Environment & Forests and Central Ground Water Authority shall be obtained, for which a detailed hydro – geological study shall be carried out.	Working zone is being restricted to above ground water table.
4	The project proponent shall ensure that no natural watercourse and/or water resources are obstructed due to any mining operations. Adequate measures shall be taken for protection of seasonal channels, if any emanating from the mine lease, during the course of mining operation.	No natural water course has been obstructed.
5	The top soil shall temporarily be stored at earmarked site (s) only and it should not be kept unutilized for long. The topsoil shall be used for land reclamation and plantation.	Sequential backfilling and reclamation of the mined out area are being implemented during mining operation. Whenever backfilling will be done to the mined out area, Topsoil will be used for backfilling to reclaim and restore the damage area up to the extent possible.
6	The over burden (OB) generated shall be temporarily stacked in the earmarked area for a period of one year and thereafter concurrently backfilled. There shall be no external overburden dump. The backfilled area shall be progressively	Sequential backfilling and reclamation of the mined out area are being practiced. Backfill data is enclosed. Monitoring and management of rehabilitated areas is continuing until the vegetation becomes

	afforested. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status should be submitted to the Ministry of Environment & Forests and its Regional Office located at Bhubaneswar on six monthly basis.	self-sustaining.
7.	The void left unfilled in an area of 0.41 ha. shall be converted into water body. The higher benches of excavated void/ mining pits shall be terraced 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.	Being complied.
8	<p>Catch drains and siltation ponds of appropriate size should be constructed around the mine working, soil and mineral dumps to prevent run off of water and flow of sediments directly into the agricultural fields, the Kisko Nadi, the Sankh Nadi, the Surang River, the Chaupat Nadi and other 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.</p> <p>Garland drain, settling tanks and check dams of appropriate size, gradient and length shall be constructed around the mine pit, topsoil, dumps and the mineral dumps to prevent runoff water and flow sediments directly into the agricultural fields, the Kisko Nadi, the Sankh Nadi, the Surang River, the Chaupat 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 data) and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper setting of silt material. Sedimentation pits should be constructed at the corners of the garland drains and desilted at regular intervals.</p>	Being complied.
9	Dimension of the retaining wall at the toe of the OB benches within the mine to check run-off and siltation should be based on the rain fall data.	It will be ensured.
10	Plantation shall be raised in an area of 6.3 ha including a 7.5 m. wide statutory barrier all around the mining lease, reclaimed and rehabilitated areas, around water body, etc. by planting the native species in consultation with the local DFO /	Is being implemented in consultation with local forest department.

	Agriculture Department. The density of the trees should be around 2000 plants per ha., Greenbelt shall be developed all along the mine lease area in a phased manner and shall be completed within first five years.	
11	Regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of SPM and RSPM 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 Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.	Water tankers 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 arrest fugitive dust emission.
12	Regular monitoring of the flow rate of the springs and perennial nallahs flowing in and around the mine lease shall be carried out and records maintained.	Area falls under Pakhar Plateau which caters the need for water. Monitoring is being carried out on regular basis.
13	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 discussions with Scientists of State unit office of Central Ground Water Board, Ranchi to implement suitable conservation measures to augment ground water resources in the area.
14	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 periodic monitoring [(at least four times in a year – pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January) once in each season)] shall be carried out in consultation with the State Ground Water Board/ Central Ground water Authority and the data thus collected may be sent regularly to the Ministry of Environment and Forests and its Regional office Bhubneshwar, The Central Ground Water Authority and the Regional Director, Central Ground Water Board. If at any stage, it is observed that the ground water table is getting depleted due to the mining activity, necessary corrective measures shall be carried out.	Complied.
15	Appropriate mitigative measures shall be taken to prevent pollution of the Kisko Nadi, the Sankh Nadi, the Surang River, the Chaupat Nadi in consultation with the State Pollution Control Board.	There is no discharge of mine water. Monitoring is done.

16.	The project proponent shall obtain necessary prior permission of the competent authorities for drawl of requisite quantity of surface water (from natural spring) required for the project.	Will be complied
17.	Suitable rain water harvesting measures on long term basis shall be planned and implemented in consultation with the Regional Director, Central Ground Water Board.	Will be implemented.
18	Vehicular emissions shall be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of mineral within the mine lease up to the stock yard. The mineral transportation within the mine lease shall be carried out through the covered trucks only and the vehicles carrying the mineral shall not be overloaded.	Regular maintenance of vehicles are undertaken to minimize vehicular emission. All the transporters have been instructed to obtain PUC for their vehicles from the competent authority and submit to the concerned officer for verification
19	Blasting operation should be carried out only during the daytime. Controlled blasting shall be practiced. The mitigative measures for control of ground vibration and to arrest fly rocks and boulders should be implemented.	Blasting at Mines is done at fixed blasting period 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 is being exercised.
20	Drills shall either be operated with dust extractors or equipped with water injection system.	Drilling is being done with water pouring in the drill holes intermittently for dust suppression which is the best method for jackhammer drilling
21	Mineral handling area shall be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.	We are exploring the possibilities. However, water sprinkling is being carried out regularly at loading and unloading areas.
22	Sewage treatment plant should be installed for the colony. ETP shall also be provided for the workshop and wastewater generated during the mining operations.	There is no discharge of effluent from mine, hence ETP is not required. The sewage water for working population is planned to be collected through Septic Tank/Soak Pit and treated in Sewage Treatment Plant.
23	The project authorities should undertake sample survey to generate data on pre-project community health status within a radius of 1 Km. from proposed mine.	Under process
24	Pre-placement medical examination and periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of	System is already in place

	the workers should be drawn and followed accordingly.	
25.	The land oustees and land losers/ affected people shall be compensated/ rehabilitation as per the National Policy of Resettlement and Rehabilitation of project Affected Families (NPRR)	All land acquisition activities is done as per CNT Act and with permission of competent authority i.e. concerned Deputy Commissioner (D.C.) and consent of Raiyat (Land Owner) for 20 years period and will return the land so acquired as per the norms set by D.C. in land purchased agreement. There is no displacement involved & hence R&R is not applicable.
26.	Door to door sample survey should be undertaken within the impact zone to assess the family based need of the tribals and it should be appropriately addressed in the CSR activities to be undertaken in the area. An action plan in this regard should be prepared and submitted.	Company's CSR team is doing regular assessment of the family based need of the tribals and it appropriately addressed.
27.	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 the temporary structures to be removed after the completion of the project.	Necessary infrastructure is already in place.
28.	The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered flora and fauna ( python etc.) found in the study area. Action plan for conservation of flora and fauna prepared shall be implemented in consultation with the State Forest and Wildlife Department. All the safeguard measured brought out in the Wildlife conservation plan prepared specific to this project site shall be effectively implemented. Necessary allocation of funds for implementation of the conservation plan shall be made and the funds so allocated shall be included in the project cost. A copy of action plan shall be submitted to the Regional Office of the Ministry of Environment and Forests, Bhubaneswar.	Will be carried out.
27	The critical parameters such as RSPM (Particulate matter with size less than 10 $\mu\text{m}$ (i.e. $\text{PM}_{10}$ ) and $\text{NO}_x$ in the ambient air within the impact zone, peak particle velocity at 300 m. distance or within the nearest habitation, whichever is closer shall be monitored periodically. Further, quality of	Complied Monitoring Reports is enclosed as <b>Annexure</b> . Presently, there is no discharge of water from the mines. In case of discharge monitoring will be ensured.

	discharge water shall also be monitored [(TDS, DO, PH and Total Suspended Solids (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 Minisry of Environment and Forests, 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.	
28	A Final Mine Closure plan along with details of Corpus Fund should be submitted to the Ministry of Environment & Forest 5 years in advance of final mine closure for approval.	Progressive Mine Closure Plan duly approved by Indian Bureau of Mines. FMCP related provision will be compiled as per statue.

#### GENERAL CONDITIONS

Sl No	Conditions	Compliance Status
1	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forests.	Complied.
2	No change in the calendar plan including excavation, quantum of mineral bauxite and waste should be made.	Excavation of Over Burden and Bauxite is being done as per the approved calendar plan. Details of excavation, quantum of mineral, OB, etc have been furnished for the financial year 12-13 as Annexure
3	At least four ambient air quality-monitoring station should be established in the core zone as well as in the buffer zone for RSPM (Particulate matter with size less than 10 $\mu\text{m}$ (i.e. $\text{PM}_{10}$ ) & $\text{NO}_x$ monitoring. Location of the stations should be decided based on the metrological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board.	Complied. Monitoring Reports is enclosed as <b>Annexure</b>
4	Data on ambient air quality RSPM [(Particulate matter with size less than 10 $\mu\text{m}$ i.e. $\text{PM}_{10}$ ) & $\text{NO}_x$ ] should be regularly submitted to the Ministry including its Regional office located at Bhubneshwar and the State Pollution Control Board / Central pollution Control	Complied Monitoring Reports is enclosed as <b>Annexure</b>

	Board once in six months.	
5	Fugitive dust emission from all the sources should be controlled regularly. Water spraying arrangements on haul roads, loading and unloading and at transfer points should be provided and properly maintained.	Water tankers have been provided for sprinkling of water on haul roads and are generally being engaged at the places where active mining is in progress to contain fugitive dust.
6	Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operation of HEMM, etc. should be provided with ear plug / muffs.	Noise monitoring is being carried out at various locations of the work zone area  Workers engaged in operation of HEMMs, etc have also been provided with PPEs such as ear plug and ear muffs.
7	Industrial waste water (workshops and waste water from the mine) Should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19 <sup>th</sup> May, 1993 and 31 <sup>st</sup> December,1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.	There is no effluent discharge from Mine. Workshop has an Oil Catchment Pit to trap oil and grease. It is being ensured to make it operational and effective.
8	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.	Complied. Use of Personal Protective Equipment (PPE) by the individuals is being ensured. All the mine workers are being regularly and periodically sent to our own hospital for health checkup for any contraction of diseases due to exposure in dusty and noisy areas.  Training on safety, health and environmental aspects of mining is being regularly imparted through VT centre and also through various other training programmes conducted by the State Government, recognized agencies, etc
9	A separate environmental management cell with suitable qualified personnel should be set-up under the control of a Senior Executive, who will report directly to the Head of the Organization.	Separate Environmental Management Cell (EMC) has been constituted and is functioning effectively. Copy enclosed as Annexure.
10	The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry and its Regional Office located at Bhubneshwar.	Statement of budgetary provision and actual expenses for environmental protection measure is enclosed as Annexure It is once again reiterated that the funds so ear marked shall not be diverted for any other purposes other than it is committed at the



		beginning of the financial year.
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.	Not applicable.
12	The Regional Office of this Ministry located at Bhubneshwar shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information / monitoring reports.	Agreed.
13	The project proponent shall submit six monthly report on the status of the compliance of the stipulated environmental Clearance conditions including results of monitoring data (both in hard copies as well as by e-mail) to the Ministry of Environment and Forests, its Regional Officer, Bhubaneshwar, the respective Zonal office of Central Pollution Control Board the State Pollution Control Board. The proponent shall upload the status of compliance of the Environmental Clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the Ministry of Environment and Forests, Bhubneshwar, the respective Zonal Office of Central Pollution Control Board and State Pollution Control Board.	Being complied
14	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 suggestions/ representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the Company by the proponent.	Complied.
15	State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Center and Collector's office / Tehsildar's Office for 30 days.	Complied.

16	<p>The environmental 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 the compliance of environmental clearance conditions and shall also be sent to the Regional Office of the Ministry of Environment and Forests, Bhubneswar by e-mail.</p>	Complied.
17	<p>The project authorities should advertise at least in two local newspapers widely circulated, one of which locality concerned, within 7days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment and Forests at <a href="http://envfor.nic.in">http://envfor.nic.in</a> and a copy of the same should be forwarded to the Regional Office of this Ministry located at Bhubneshwar.</p>	Complied.



# Test Report

Report No : KG13-001949.001

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 18/03/2013

JOE No : KG13-001949

Sample Described by Customer as : AMBIENT AIR QUALITY MONITORING  
Report Control No : KGR0000012045

Client Name : Hindalco Industries Limited(Mines Division)  
Client Address : Lohardaga,  
Postal Code : 835203  
State : Jharkhand  
Country : India  
Sample Type : AMBIENT AIR QUALITY MONITORING  
Received : 12/03/2013  
Registered : 12/03/2013  
Marks on Sample : Location : Mine Lease Area, date : 05.03.2013  
Sampling Site : Pakhar(8.09)/Pakhar(15.58)/Pakhar(115.13)/Pakhar(109.507) Bauxite Mines(Pe  
Test Start/End Date : 12/03/2013 - 18/03/2013

Analysis	Method	Result	Unit	Requirement/Limit as Per NAAQS	
				Min	Max
Particulate Matter (PM10)	IS:5182 (Part-23 ):2006	73	ug/m3	-	100
Particulate Matter (PM2.5)	USEPA CFR(40) Appendix-L	36.41	ug/m3	-	60
Oxides of Nitrogen (NOx)	IS:5182 (Part-6):1975 (Reaff.2004)	7.62	ug/m3	-	80
Sulphur Dioxide (SO2)	IS:5182 (Part-2):2001 (Reaff.2006)	<5.00	ug/m3	-	80
Carbon Monoxide	By NDIR Spectroscopy.	<0.10	PPM		

Remark : CO Analyzed at site.

### Page 1 of 2

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SGS India Pvt. Ltd.

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



## Test Report

Report No : KG13-001949.001

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 18/03/2013

JOE No : KG13-001949

Report Control No : KGR0000012045

Per pro SGS India Private Ltd

Satya Manna

Section Incharge - ENVI

Authorized Signatory

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

Page 2 of 2

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# Test Report

Report No : KG13-001949.002

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 18/03/2013

JOE No : KG13-001949

Sample Described by Customer as : AMBIENT AIR QUALITY MONITORING

Report Control No : KGR0000012045

Client Name : Hindalco Industries Limited(Mines Division)  
 Client Address : Lohardaga,  
 Postal Code : 835203  
 State : Jharkhand  
 Country : India  
 Sample Type : AMBIENT AIR QUALITY MONITORING  
 Received : 12/03/2013  
 Registered : 12/03/2013  
 Marks on Sample : Location : Ketrang Village, date : 05.03.2013  
 Sampling Site : Pakhar(8.09)/Pakhar(15.58)/Pakhar(115.13)/Pakhar(109.507) Bauxite Mines(Pe  
 Test Start/End Date : 12/03/2013 - 18/03/2013

Analysis	Method	Result	Unit	Requirement/Limit as Per NAAQS	
				Min	Max
Particulate Matter (PM10)	IS:5182 (Part-23):2006	66	ug/m3	-	100
Particulate Matter (PM2.5)	USEPA CFR(40) Appendix-L	27.35	ug/m3	-	60
Oxides of Nitrogen (NOx)	IS:5182 (Part-6):1975 (Reaff.2004)	10.57	ug/m3	-	80
Sulphur Dioxide (SO2)	IS:5182 (Part-2):2001 (Reaff.2006)	<5.00	ug/m3	-	80
Carbon Monoxide	By NDIR Spectroscopy.	<0.10	PPM	-	-

Remark : CO Analyzed at site.

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JOE No : KG13-001949

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Satya Manna

Section Incharge - ENVI

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# Test Report

Report No : KG13-001949.003

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 18/03/2013

JOE No : KG13-001949

Sample Described by Customer as : AMBIENT AIR QUALITY MONITORING

Report Control No : KGR0000012045

Client Name : Hindalco Industries Limited(Mines Division)  
 Client Address : Lohardaga,  
 Postal Code : 835203  
 State : Jharkhand  
 Country : India  
 Sample Type : AMBIENT AIR QUALITY MONITORING  
 Received : 12/03/2013  
 Registered : 12/03/2013  
 Marks on Sample : Location : Semardih Village, date : 06.03.2013  
 Sampling Site : Pakhar(8.09)/Pakhar(15.58)/Pakhar(115.13)/Pakhar(109.507) Bauxite Mines(Pz  
 Test Start/End Date : 12/03/2013 - 18/03/2013

Analysis	Method	Result	Unit	Requirement/Limit as Per NAAQS	
				Min	Max
Particulate Matter (PM10)	IS:5182 (Part-23):2006	78	ug/m3	-	100
Particulate Matter (PM2.5)	USEPA CFR(40) Appendix-L	32.60	ug/m3	-	60
Oxides of Nitrogen (NOx)	IS:5182 (Part-6):1975 (Reaff.2004)	5.47	ug/m3	-	80
Sulphur Dioxide (SO2)	IS:5182 (Part-2):2001 (Reaff.2006)	<5.00	ug/m3	-	80
Carbon Monoxide	By NDIR Spectroscopy.	<0.10	PPM		

Remark : CO Analyzed at site.

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## Test Report

Report No : KG13-001949 003

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 18/03/2013

JOE No : KG13-001949

Report Control No : KGR0000012045

Per pro SGS India Private Ltd

Satya Manna

Section Incharge - ENVI

Authorized Signatory

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

Page 2 of 2

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# Test Report

Report No : KG13-001949.004

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 18/03/2013

JOE No : KG13-001949

Report Control No : KGR0000012045  
Sample Described by Customer as : AMBIENT AIR QUALITY MONITORING

Client Name : Hindalco Industries Limited(Mines Division)  
 Client Address : Lohardaga,  
 Postal Code : 835203  
 State : Jharkhand  
 Country : India  
 Sample Type : AMBIENT AIR QUALITY MONITORING  
 Received : 12/03/2013  
 Registered : 12/03/2013  
 Marks on Sample : Location : Patratoli Village, date : 14.02.2013  
 Sampling Site : Pakhar(8.09)/Pakhar(15.58)/Pakhar(115.13)/Pakhar(109.507) Bauxite Mines(Pa  
 Test Start/End Date : 12/03/2013 - 18/03/2013

Analysis	Method	Result	Unit	Requirement/Limit as Per NAAQS	
				Min	Max
Particulate Matter (PM10 )	IS:5182 (Part-23 ):2006	54	ug/m3	-	100
Particulate Matter (PM2.5)	USEPA CFR(40) Appendix-L	24.35	ug/m3	-	60
Oxides of Nitrogen (NOx)	IS:5182 (Part-6):1975 (Reaff.2004)	6.48	ug/m3	-	80
Sulphur Dioxide (SO2)	IS:5182 (Part-2):2001 (Reaff.2006)	16.89	ug/m3	-	80
Carbon Monoxide	By NDIR Spectroscopy.	<0.10	PPM		

Remark : CO Analyzed at site.

### Page 1 of 2

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## Test Report

Report No : KG13-001949.004

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 18/03/2013

JOE No : KG13-001949

Report Control No : KGR0000012045

Per pro SGS India Private Ltd

  
Satya Manna

Section Incharge - ENVI

Authorized Signatory

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# Test Report

Report No : KG13-001953.001

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Print Date : 22/03/2013

JOE No : KG13-001953

Sample Described by Customer as : SOIL(COMPOSITE) Report Control No : KGR0000012696

Client Name : Hindalco Industries Limited(Mines Division)  
 Client Address : Lohardaga,  
 Postal Code : 835203  
 State : Jharkhand  
 Country : India  
 Sample Type : SOIL(COMPOSITE)  
 Received : 12/03/2013  
 Registered : 12/03/2013  
 Marks on Sample : Location:Quarry No. 96.25 Reclaimed Area  
 Sampling Site : Pakhar(8.09)/(15.58)/(115.13)/(109.507) Bauxite Mines(Pakhar plateau)  
 Sample Collected : 05.03.2013  
 Quantity : 2.5Kg app  
 Test Start/End Date : 12/03/2013 - 21/03/2013

Analysis	Method	Result	Limit of Reporting (LOR)	Unit
Conductivity (1:5) Soil Suspension ( 1 : 2 aqueous solution )	F.A.U.N (2007)	30.6	1.00	µs/cm
pH (1:2) Soil Suspension ( 1 : 2 aqueous solution )	F.A.U.N (2007)	6	0.50	--
Porosity	F.A.U.N (2007)	48.89	-	%
Bulk Density	By Bulk Density Apparatus	1.17	0.10	gram/ml
Phosphorus (as P)	F.A.U.N (2007)	<20.000	20.00	mg/kg
Texture	F.A.U.N (2007)	Clay loam	-	
Clay	F.A.U.N (2007)	39.3	5.00	%
Sand	F.A.U.N (2007)	33.2	1.00	%
Silt	F.A.U.N (2007)	27.5	1.00	%
Available Chloride (as Cl)	Soil & Agriculture Organization (U.N-2007)	<20.00	20.00	mg/kg
Available Nitrogen	Food & Agriculture Organization (U.N-2007)	358.16	20.00	mg/kg

Page 1 of 2

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## Test Report

Report No : KG13-001953.001

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Print Date : 22/03/2013

JOE No : KG13-001953

Analysis	Method	Result	Limit of Reporting (LOR)	Unit
Available Potassium (as K)	Soil & Water Book By P.K. Gupta	1618.76	1.00	mg/kg
Available Magnesium (as Mg)	Soil & Water Book By P.K. Gupta	2195.32	1.00	mg/kg
Lead (as Pb)	USEPA 3052	10.36	2.00	mg/kg
Chromium (as Cr)	USEPA 3052	54.80	2.00	mg/kg
Mercury (as Hg)	USEPA 3052	<1.00	1.00	mg/kg
Total Organic Matter	Black & Walkely Wet Digestion Method	0.88	0.01	%

Per pro SGS India Private Ltd

Satya Manna

Section Incharge - ENVI

Authorized Signatory

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

Page 2 of 2

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# Test Report

Report No : KG13-001953.002

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Print Date : 22/03/2013

JOE No : KG13-001953

Sample Described by Customer as : SOIL(COMPOSITE) Report Control No : KGR0000012696

Client Name : Hindalco Industries Limited(Mines Division)  
 Client Address : Lohardaga,  
 Postal Code : 835203  
 State : Jharkhand  
 Country : India  
 Sample Type : SOIL(COMPOSITE)  
 Received : 12/03/2013  
 Registered : 12/03/2013  
 Marks on Sample : Location:Quarry No. 270.59 Mineral 8 Minard Reclaimed area  
 Sampling Site : Pakhar(8.09)/(15.58)/(115.13)/(109.507) Bauxite Mines(Pakhar plateau)  
 Sample Collected : 05.03.2013  
 Quantity : 2.5Kg app  
 Test Start/End Date : 12/03/2013 - 21/03/2013

Analysis	Method	Result	Limit of Reporting (LOR)	Unit
Conductivity (1:5) Soil Suspension. ( 1 : 2 aqueous solution )	F.A.U.N (2007)	30.8	1.00	µs/cm
pH (1:2) Soil Suspension ( 1 : 2 aqueous solution )	F.A.U.N (2007)	6	0.50	-
Porosity	F.A.U.N (2007)	51.2	-	%
Bulk Density	By Bulk Density Apparatus	1.02	0.10	gram/ml
Phosphorus (as P)	F.A.U.N (2007)	<20.000	20.00	mg/kg
Texture	F.A.U.N (2007)	Clay loam	-	-
Clay	F.A.U.N (2007)	29.3	5.00	%
Sand	F.A.U.N (2007)	43.2	1.00	%
Silt	F.A.U.N (2007)	27.5	1.00	%
Available Chloride (as Cl)	Soil & Agriculture Organization (U.N-2007)	<20.00	20.00	mg/kg
Available Nitrogen	Food & Agriculture Organization (U.N-2007)	302.31	20.00	mg/kg

Page 1 of 2

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## Test Report

Report No : KG13-001953.002

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Print Date : 22/03/2013

JOE No : KG13-001953

Analysis	Method	Result	Limit of Reporting (LOR)	Unit
Available Potassium (as K)	Soil & Water Book By P.K. Gupta	2522.06	1.00	mg/kg
Available Magnesium (as Mg)	Soil & Water Book By P.K. Gupta	3216.67	1.00	mg/kg
Lead (as Pb)	USEPA 3052	16.23	2.00	mg/kg
Chromium (as Cr)	USEPA 3052	48.84	2.00	mg/kg
Mercury (as Hg)	USEPA 3052	<1.00	1.00	mg/kg
Total Organic Matter	Black & Walkely Wet Digestion Method	0.63	0.01	%

Per pro SGS India Private Ltd

Satya Manna

Section Incharge - ENVI

Authorized Signatory

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

### Page 2 of 2

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# Test Report

Print Date : 02/04/2013

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Report No : KG13-002087.004

JOE No : KG13-002087

Report Control No : KGR0000013912

Sample Described by Customer as : SPRING WATER

Client Name : Hindalco Industries Limited(Mines Division)  
 Client Address : Lohardaga,  
 Postal Code : 835203  
 State : Jharkhand  
 Country : India  
 Sample Type : SPRING WATER  
 Received : 18/03/2013  
 Registered : 18/03/2013  
 Marks on Sample : Location: Pakhar Bangla Path  
 Quantity : 5.5L app  
 Sample Collected : 10.03.2013, time : 10.30 am  
 Test Start/End Date : 18/03/2013 - 01/04/2013

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
	IS:3025 (Part-8):1983 (Reaff.2006)	Agreeable		Agreeable	Agreeable
pH	IS:3025 (Part-11):1983 (Reaff.2006)	7.10*		6.5	8.5
Total Hardness (as CaCO <sub>3</sub> )	IS:3025 (Part-21):1983 (Reaff.2006)	4.04	mg/L	200	600
Iron (as Fe)	IS:3025 (Part-2)	0.28	mg/L	0.3	No relaxation
Fluoride (as F)	IS:3025 (Part-60):2008	0.30	mg/L	1.0	1.5
Residual Free Chlorine	IS:3025 (Part-26):1986 (Reaff.2003)	<0.10	mg/L	0.2	1.0
Chloride (as Cl)	IS:3025 (Part-32):1988 (Reaff.1999)	5.03	mg/L	250	1000
Total Dissolved Solids	IS:3025 (Part-16):1984 (Reaff.1996)	12.60	mg/L	500	2000
E.coli	IS:1622:1981(Reaff.2003)	Absent	per 100ml		Absent/100ml

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# Test Report

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Print Date : 02/04/2013

Report No : KG13-002087.004

JOE No : KG13-002087

Report Control No : KGR0000013912

Analysis	Method	Result	Unit	Requirement/Limit As per IS:10500:2012	
				Acceptable	Permissible

Analysis	Method	Result	Unit	Requirement/Limit As per IS:10500:2012	
				Acceptable	Permissible
Magnesium (as Mg)	IS:3025 (Part-46):1994 (Reaff.1999)	<1.00	mg/L	30	100
Calcium (as Ca)	IS:3025 (Part-40):1991 (Reaff.2003)	1.21	mg/L	75	200
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)	1.80	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)	0.024	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
Total Alkalinity (as CaCO3)	IS:3025 (Part-23):1986 (Reaff.2003)	5.24	mg/L	200	600
Aluminium (as Al)	IS:3025 (Part-55):2003	0.05	mg/L	0.03	0.2
Boron (as B)	IS:3025 (Part-57):2005	0.06	mg/L	0.5	1.0
Turbidity	IS:3025 (Part-10):1984 (Reaff.2006)	2.26	NTU	1	5
Coliform bacteria	IS:1622-1981 (Reaffirmation 2003)	Present	per 100ml		

Page 2 of 3

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## Test Report

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Print Date : 02/04/2013

Report No : KG13-002087.004

JOE No : KG13-002087

Analysis	Report Control No : KGR0000013912 Method	Result	Unit	Requirement/Limit As per IS:10500:2012	Acceptable Permissible
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Remark : \*Analyzed at site.

Per pro SGS India Private Lt

Asish Chakraborty  
Laboratory Manager  
Authorized Signatory

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

### Page 3 of 3

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# Test Report

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Print Date : 02/04/2013

Report No : KG13-002087.005

JOE No : KG13-002087

Report Control No : KGR0000013912

Sample Described by Customer as : SPRING WATER

Client Name : Hindalco Industries Limited(Mines Division)  
 Client Address : Lohardaga,  
 Postal Code : 835203  
 State : Jharkhand  
 Country : India  
 Sample Type : SPRING WATER  
 Received : 18/03/2013  
 Registered : 18/03/2013  
 Marks on Sample : Location: Pakhar Sarnapath  
 Quantity : 5.5L app  
 Sample Collected : 10.03.2013, time : 11.00 am  
 Test Start/End Date : 18/03/2013 - 01/04/2013

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)	7.10*		6.5	8.5
Total Hardness (as CaCO <sub>3</sub> )	IS:3025 (Part-21):1983 (Reaff.2006)	5.05	mg/L	200	600
Iron (as Fe)	IS:3025 (Part-2)	0.09	mg/L	0.3	No relaxation
Fluoride (as F)	IS:3025 (Part-60):2008	<0.10	mg/L	1.0	1.5
Residual Free Chlorine	IS:3025 (Part-26):1986 (Reaff.2003)	<0.10	mg/L	0.2	1.0
Chloride (as Cl)	IS:3025 (Part-32):1988 (Reaff.1999)	5.75	mg/L	250	1000
Total Dissolved Solids	IS:3025 (Part-16):1984 (Reaff.1996)	15.60	mg/L	500	2000
E.coli	IS:1622:1981(Reaff.2003)	Absent	per 100ml		Absent/100ml

Page 1 of 3

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# Test Report

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Print Date : 02/04/2013

Report No : KG13-002087.005

JOE No : KG13-002087

Report Control No : KGR0000013912

Analysis	Method	Result	Unit	Requirement/Limit As per IS:10500:2012	
				Acceptable	Permissible

Analysis	Method	Result	Unit	Requirement/Limit As per IS:10500:2012	
				Acceptable	Permissible
Magnesium (as Mg)	IS:3025 (Part-46):1994 (Reaff.1999)	<1.00	mg/L	30	100
Calcium (as Ca)	IS:3025 (Part-40):1991 (Reaff.2003)	1.62	mg/L	75	200
Copper (as Cu)	IS:3025 (Part-2)	<0.01	mg/L	0.05	1.5
Manganese (as Mn)	IS:3025 (Part-2)	0.01	mg/L	0.1	0.2
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)	2.80	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)	0.021	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
Total Alkalinity (as CaCO3)	IS:3025 (Part-23):1986 (Reaff.2003)	5.52	mg/L	200	600
Aluminium (as Al)	IS:3025 (Part-55):2003	0.04	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)	3.35	NTU	1	5
Coliform bacteria	IS:1622-1981 (Reaffirmation 2003)	Present	per 100ml		

Page 2 of 3

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# Test Report

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Print Date : 02/04/2013

Report No : KG13-002087.005

JOE No : KG13-002087

Analysis	Report Control No Method	Result	Unit	Requirement/Limit As per IS:10500:2012	
				Acceptable	Permissible
Remark : *Analyzed at site.					

Per pro SGS India Private Lt

**Asish Chakraborty**  
Laboratory Manager  
Authorized Signatory

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

### Page 3 of 3

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# Test Report

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Print Date : 02/04/2013

Report No : KG13-002087.006

JOE No : KG13-002087

Report Control No : KGR0000013912

Sample Described by Customer as : SPRING WATER

Client Name : Hindalco Industries Limited(Mines Division)  
 Client Address : Lohardaga,  
 Postal Code : 835203  
 State : Jharkhand  
 Country : India  
 Sample Type : SPRING WATER  
 Received : 18/03/2013  
 Registered : 18/03/2013  
 Marks on Sample : Location: Pakhar  
 Quantity : 5.5L app  
 Sample Collected : 10.03.2013, time : 12.00 pm  
 Test Start/End Date : 18/03/2013 - 01/04/2013

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)	7.00*		6.5	8.5
Total Hardness (as CaCO <sub>3</sub> )	IS:3025 (Part-21):1983 (Reaff.2006)	2.52	mg/L	200	600
Iron (as Fe)	IS:3025 (Part-2)	0.23	mg/L	0.3	No relaxation
Fluoride (as F)	IS:3025 (Part-60):2008	<0.10	mg/L	1.0	1.5
Residual Free Chlorine	IS:3025 (Part-26):1986 (Reaff 2003)	<0.10	mg/L	0.2	1.0
Chloride (as Cl)	IS:3025 (Part-32):1988 (Reaff 1999)	<5.00	mg/L	250	1000
Total Dissolved Solids	IS:3025 (Part-16):1984 (Reaff.1996)	9.00	mg/L	500	2000
E.coli	IS:1622:1981(Reaff 2003)	Absent	per 100ml		Absent/100ml

Page 1 of 3

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# Test Report

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Print Date : 02/04/2013

Report No : KG13-002087.006

JOE No : KG13-002087

Report Control No : KGR0000013912

Analysis	Method	Result	Unit	Requirement/Limit As per IS:10500:2012	
				Acceptable	Permissible
Magnesium (as Mg)	IS:3025 (Part-46):1994 (Reaff.1999)	<1.00	mg/L	30	100
Calcium (as Ca)	IS:3025 (Part-40):1991 (Reaff.2003)	<1.00	mg/L	75	200
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)	3.78	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)	0.018	mg/L	0.01	No relaxation
Zinc (as Zn)	IS:3025 (Part-2)	0.04	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
Total Alkalinity (as CaCO3)	IS:3025 (Part-23):1986 (Reaff.2003)	4.96	mg/L	200	500
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)	0.97	NTU	1	5
Coliform bacteria	IS:1622-1981 (Reaffirmation 2003)	Present	per 100ml		

Page 2 of 3

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# Test Report

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Print Date : 02/04/2013

Report No : KG13-002087.006

JOE No : KG13-002087

Analysis	Report Control No Method	Result	Unit	Requirement/Limit As per IS:10500:2012	
				Acceptable	Permissible

Remark : \*Analyzed at site.

Per pro SGS India Private Lt

Asish Chakraborty  
Laboratory Manager  
Authorized Signatory

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

### Page 3 of 3

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# Test Report

Print Date : 02/04/2013

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Report No : KG13-002087.007

JOE No : KG13-002087

Report Control No : KGR0000013912

Sample Described by Customer as : SPRING WATER

Client Name : Hindalco Industries Limited(Mines Division)  
 Client Address : Lohardaga,  
 Postal Code : 835203  
 State : Jharkhand  
 Country : India  
 Sample Type : SPRING WATER  
 Received : 18/03/2013  
 Registered : 18/03/2013  
 Marks on Sample : Location: Pakhar Domurpath  
 Quantity : 5.5L app  
 Sample Collected : 10.03.2013, time : 1.30 pm  
 Test Start/End Date : 18/03/2013 - 01/04/2013

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)	7.30'		6.5	8.5
Total Hardness (as CaCO3)	IS:3025 (Part-21):1983 (Reaff.2006)	1.52	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	<0.10	mg/L	1.0	1.5
Residual Free Chlorine	IS:3025 (Part-26):1986 (Reaff.2003)	<0.10	mg/L	0.2	1.0
Chloride (as Cl)	IS:3025 (Part-32):1988 (Reaff.1999)	<5.00	mg/L	250	1000
Total Dissolved Solids	IS:3025 (Part-16):1984 (Reaff.1996)	9.60	mg/L	500	2000
E.coli	IS:1622:1981(Reaff.2003)	Absent	per 100ml		Absent/100ml

Page 1 of 3

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# Test Report

Print Date : 02/04/2013

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Report No : KG13-002087.007

JOE No : KG13-002087

Report Control No : KGR000013912

Analysis	Method	Result	Unit	Requirement/Limit As per IS:10500:2012	
				Acceptable	Permissible
Magnesium (as Mg)	IS:3025 (Part-46):1994 (Reaff.1999)	<1.00	mg/L	30	100
Calcium (as Ca)	IS:3025 (Part-40):1991 (Reaff.2003)	<1.00	mg/L	75	200
Copper (as Cu)	IS:3025 (Part-2)	<0.01	mg/L	0.05	1.5
Manganese (as Mn)	IS:3025 (Part-2)	<0.01	mg/L	0.1	0.3
Sulphate (as SO4)	IS:3025 (Part-24):1986 (Reaff.1998)	<2.00	mg/L	200	400
Nitrate (as NO3)	IS:3025 (Part-34):1988 (Reaff.1999)	1.13	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)	0.018	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
Total Alkalinity (as CaCO3)	IS:3025 (Part-23):1986 (Reaff.2003)	2.76	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)	0.94	NTU	1	5
Coliform bacteria	IS:1622-1981 (Reaffirmation 2003)	Present	per 100ml		

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# Test Report

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Print Date : 02/04/2013

Report No : KG13-002087.007

JOE No : KG13-002087

Report Control No : KGR0000013912

Analysis	Method	Result	Unit	Requirement/Limit As per IS:10500:2012
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Acceptable	Permissible
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Remark : \*Analyzed at site.

Per pro SGS India Private Li

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

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

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# Test Report

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Print Date : 01/04/2013

Report No : KG13-002092.006

JOE No : KG13-002092

Report Control No : KGR0000013682

Sample Described by Customer as : GROUND WATER

Client Name : Hindalco Industries Limited(Mines Division)  
 Client Address : Lohardaga,  
 Postal Code : 835203  
 State : Jharkhand  
 Country : India  
 Sample Type : GROUND WATER  
 Received : 18/03/2013  
 Registered : 18/03/2013  
 Marks on Sample : Location: Pakhar-Sarnapath  
 Quantity : 5.5L app  
 Sample Collected : 10.03.2013, time : 12.00 pm  
 Test Start/End Date : 18/03/2013 - 01/04/2013

Analysis	Method	Result	Unit	Requirement/Limit	
				As per IS:10500:2012	Acceptable Permissible
Colour	IS:3025 (Part-4):1983 (Reaff.2006)	20.0	Hz	5	15
Odour	IS:3025 (Part-5):1983 (Reaff.2006)	Agreeable		Agreeable	Agreeable
Taste	IS:3025 (Part-6):1983 (Reaff.2006)	Agreeable		Agreeable	Agreeable
pH	IS:3025 (Part-11):1983 (Reaff.2006)	7.30		6.5	8.5
Total Hardness (as CaCO <sub>3</sub> )	IS:3025 (Part-21):1983 (Reaff.2006)	9.09	mg/L	200	600
Iron (as Fe)	IS:3025 (Part-2):1983 (Reaff.2006)	0.17	mg/L	0.3	No relaxation
Fluoride (as F)	IS:3025 (Part-60):2008	0.18	mg/L	1.0	1.5
Residual Free Chlorine	IS:3025 (Part-26):1986 (Reaff.2003)	<0.10	mg/L	0.2	1.0
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)	19.00	mg/L	500	2000
E.coli	IS:1622:1981(Reaff.2003)	Absent	per 100ml		Absent/100ml
Coliform bacteria	IS:1622:1981 (Reaffirmation 2003)	Absent	per 100ml		Absent/100ml
Calcium (as Ca)	IS:3025 (Part-40):1991 (Reaff.2003)	2.42	mg/L	75	200
Magnesium (as Mg)	IS:3025 (Part-46):1994 (Reaff.1999)	<1.00	mg/L	30	100

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# Test Report

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Print Date : 01/04/2013

Report No : KG13-002092.006

JOE No : KG13-002092

Analysis Report Control No : KGR0000013682  
 Method Result Unit Requirement/Limit  
 As per IS:10500:2012

Analysis	Method	Result	Unit	Requirement/Limit	
				As per IS:10500:2012	Acceptable Permissible
Copper (as Cu)	IS:3025 (Part-2)	0.07	mg/L	0.05	1.5
Manganese (as Mn)	IS:3025 (Part-2)	0.08	mg/L	0.1	0.3
Sulphate (as SO <sub>4</sub> )	IS:3025 (Part-24):1988 (Reaff.1998)	<2.00	mg/L	200	400
Nitrate (as NO <sub>3</sub> )	IS:3025 (Part-34):1988 (Reaff.1999)	2.25	mg/L	45	No relaxation
Phenolic Compound (as C <sub>6</sub> H <sub>5</sub> OH)	IS:3025 (Part-43):1992 (Reaff.2003)	<0.001	mg/L	0.001	0.002
Mercury (as Hg)	IS:3025 (Part-48):1994 (Reaff.1999)	<0.001	mg/L	0.001	No relaxation
Cadmium (as Cd)	IS:3025 (Part-41):1992 (Reaff.2003)	<0.003	mg/L	0.003	No relaxation
Selenium (as Se)	IS:3025 (Part-2)	<0.005	mg/L	0.01	No relaxation
Arsenic (as As)	IS:3025 (Part-37):1988 (Reaff.1999)	<0.005	mg/L	0.01	No relaxation
Cyanide (as CN)	IS:3025 (Part-27):1986 (Reaff.2003)	<0.020	mg/L	0.05	No relaxation
Lead (as Pb)	IS:3025 (Part-47):1994 (Reaff.1999)	0.021	mg/L	0.01	No relaxation
Zinc (as Zn)	IS:3025 (Part-2)	0.82	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):1981 (Reaff.2003)	<0.01	mg/L	0.5	No relaxation
Total Alkalinity (as CaCO <sub>3</sub> )	IS:3025 (Part-23):1988 (Reaff.2003)	12.13	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	0.09	mg/L	0.5	1.0
Turbidity	IS:3025 (Part-10):1984 (Reaff.2006)	1.82	NTU	1	5

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## Test Report

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Print Date : 01/04/2013

Report No : KG13-002092.006

JOE No : KG13-002092

Report Control No : KGR0000013682

Per pro SGS India Private Lt

*Asish Chakraborty*

Asish Chakraborty  
Laboratory Manager  
Authorized Signatory

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

Page 3 of 3

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TEST REPORT

Report No. : CA:GL:3120015187

DATE : 17/10/2012

JOE No. : 1212806597

Report Control No.:3125016169

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

MARK/LOCATION **SITE:PAKHAR(8.09)/PAKHAR(15.58)/PAKHAR(115.13)/PAKHAR(109.507) BAUXITE**  
**MINES(PAKHAR PLATEAU)**  
**LOCATION:MINE LEASE AREA(COREZONE)**  
**DATE:23.09.12 TO 24.09.12**  
SAMPLE RECD ON **11/10/2012**  
TEST START DATE **11/10/2012**  
TEST END DATE **17/10/2012**

TESTS	PROTOCOL	RESULT	REQUIREMENT/LIMIT	
			As per CPCB RESIDENTIAL AREA	
			MIN	MAX
CARBON MONOXIDE (CO)	USEPA CHAPTER-2	<0.1 ppm		1.7ppm(8h)
OXIDES OF NITROGEN (NOx)	IS 5182 PART 6:2006	7.8 µg/m3		80 µg/m3
PARTICULATE MATTER(10)	IS:5182(PART 23)2006	81.3 µg/m3		100 µg/m3
PARTICULATE MATTER(2.5)	USPEA CFR40(50), Appendix L	39.3 µg/m3		60 µg/m3
SULPHUR DIOXIDE (SO2)	IS 5182:PART 2:2001	<4.0 µg/m3		80 µg/m3

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

per pro SGS India Private Ltd.

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

Page 1 of 1

*A. K. Datta*  
**Asish Chakraborty**

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TEST REPORT

Report No. : CA:GL:3120015188 DATE : 17/10/2012

JOE No. : 1212806597

Report Control No.:3125016170

SAMPLE DRAWN BY SGS INDIA PRIVATE LIMITED

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

MARK/LOCATION SITE:PAKHAR(8.09)/PAKHAR(15.58)/PAKHAR(115.13)/PAKHAR(109.507) BAUXITE MINES(PAKHAR PLATEAU)
LOCATION:KEKRANG VILLAGE(BUFFER ZONE)
DATE:23.09.12 TO 24.09.12
SAMPLE RECD ON 11/10/2012
TEST START DATE 11/10/2012
TEST END DATE 17/10/2012

Table with 5 columns: TESTS, PROTOCOL, RESULT, REQUIREMENT/LIMIT (As per CPCB RESIDENTIAL AREA MIN, MAX). Rows include CARBON MONOXIDE (CO), OXIDES OF NITROGEN (NOx), PARTICULATE MATTER(10), PARTICULATE MATTER(2.5), and SULPHUR DIOXIDE (SO2).

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

per pro SGS India Private Ltd.

Signature of Asish Chakraborty, Manager Laboratory

Signature of Chemist cum QA

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TEST REPORT

Report No. : CA:GL:3120015189 DATE : 17/10/2012

JOE No. : 1212806597

Report Control No.:3125016171

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

MARK/LOCATION SITE:PAKHAR(8.09)/PAKHAR(15.58)/PAKHAR(115.13)/PAKHAR(109.507) BAUXITE MINES(PAKHAR PLATEAU)
LOCATION:SEMARDEH VILLAGE(BUFFER ZONE)
DATE:24.09.12 TO 25.09.12
SAMPLE RECD ON 11/10/2012
TEST START DATE 11/10/2012
TEST END DATE 17/10/2012

Table with 5 columns: TESTS, PROTOCOL, RESULT, REQUIREMENT/LIMIT (As per CPCB RESIDENTIAL AREA MIN, MAX). Rows include CARBON MONOXIDE (CO), OXIDES OF NITROGEN (NOx), PARTICULATE MATTER(10), PARTICULATE MATTER(2.5), and SULPHUR DIOXIDE (SO2).

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

per pro SGS India Private Ltd.

Signature of Asish Chakraborty, Manager Laboratory

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**TEST REPORT**

**Report No. : CA:GL:3120015190** **DATE : 17/10/2012**

JOE No. : 1212806597

Report Control No. :3125016172

**SAMPLE DRAWN BY SGS INDIA PRIVATE LIMITED**

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

**MARK/LOCATION** SITE:PAKHAR(8.09)/PAKHAR(15.58)/PAKHAR(115.13)/PAKHAR(109.507) BAUXITE MINES(PAKHAR PLATEAU)  
LOCATION:PATRATOLI VILLAGE(BUFFER ZONE)  
DATE:24.09.12 TO 25.09.12

**SAMPLE RECD ON** 11/10/2012  
**TEST START DATE** 11/10/2012  
**TEST END DATE** 17/10/2012

TESTS	PROTOCOL	RESULT	REQUIREMENT/LIMIT	
			As per CPCB RESIDENTIAL AREA MIN	MAX
CARBON MONOXIDE (CO)	USEPA CHAPTER-2	< 0.1 ppm	1.7ppm(8h)	
OXIDES OF NITROGEN (NO <sub>x</sub> )	IS 5182 PART 6:2006	6.3 µg/m <sup>3</sup>	80 µg/m <sup>3</sup>	
PARTICULATE MATTER(10)	IS:5182(PART 23)2006	94.8 µg/m <sup>3</sup>	100 µg/m <sup>3</sup>	
PARTICULATE MATTER(2.5)	USPEA CFR40(50), Appendix L	44.6 µg/m <sup>3</sup>	60 µg/m <sup>3</sup>	
SULPHUR DIOXIDE (SO <sub>2</sub> )	IS 5182:PART 2:2001	< 4.0 µg/m <sup>3</sup>	80 µg/m <sup>3</sup>	

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

per pro SGS India Private Ltd.

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

*A. K. Datta*  
**A. K. Datta**  
Chemist cum QA

Page 1 of 1

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TEST REPORT

Report No. : CA:GL:3120011479

DATE : 10/08/2012

JOE No. : 1212805062

Control No.:3125012285

**SAMPLE COLLECTED BY SGS**

SAMPLE IDENTIFIED AS : SPRING WATER

COMPANY NAME HINDALCO INDUSTRIES LIMITED (MINES DIVISION)

ADDRESS LOHARDAGA, JHARKHAND  
CITY 835302

SAMPLING METHOD APHA 1060B

SAMPLE DESCRIPTION SPRING WATER

SAMPLE CONDITION IN PLASTIC BOTTLE

SAMPLE QTY. 7L APP

\*\*MARKS ON SAMPLE PAKHAR

COLLECTED ON 01.08.2012, TIME : 11.30 AM

REGISTERED ON 02/08/2012

TEST START DATE 02/08/2012

TEST END DATE 10/08/2012

TESTS	PROTOCOL	RESULT	REQUIREMENT/LIMIT	
			Desirable	Permissible
ALKALINITY (as CaCO <sub>3</sub> )	IS 3025:PART 23 :1986(Reaff.1998)	<5.0 mg/l	200mg/l	600mg/l
ALUMINIUM (as Al)	IS 3025 : Part 55 : 2003	<0.02 mg/l	0.03mg/l	0.2mg/l
ANIONIC DETERGENTS (as MBAS)	ANNEX. K of IS 13428: 2005	<0.05 mg/l	0.2mg/l	1mg/l
ARSENIC (as As)	IS 3025:PART 37:1988(Reaff.1999)BY ICPOES	<0.005 mg/l	0.01mg/l	No Relax.
BORON	Annex.H OF IS:13428:2005	<0.05 mg/l	1.0mg/l	5.0mg/l
CADMIUM (as Cd)	IS 3025.PART 41 :1992(Reaff.1998)BY ICPOES	<0.005 mg/l	0.01mg/l	No Relax.

Page 1 of 4

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TEST REPORT

Report No. : CA:GL:3120011479

DATE : 10/08/2012

JOE No. : 1212805062

Control No.:3125012285

TESTS	PROTOCOL	RESULT	REQUIREMENT/LIMIT	
			Desirable	Permissible
CALCIUM (as Ca)	IS 3025:PART 40 :1991(Reaff.2003)	<1.0 mg/l	75mg/l	200mg/l
CHLORIDE ( as Cl)	Clause 2 of IS 3025 Part 32:1988(Reaff. 1999)	<2.0 mg/l	250mg/l	1000mg/l
CHROMIUM (Cr6+)	IS 3025:PART 52:2003	<0.01 mg/l	0.05mg/l	No Relax.
COLOUR ( HAZEN UNITS)	IS 3025:PART 4 :1983(Reaff.2002)	5	5.0	25
COPPER	IS 3025: PART 42:1992(Reaff. 2003) BY ICPOES	<0.01 mg/l	0.05mg/l	1.5mg/l
CYANIDE ( as CN)	IS 3025:PART 27 :1986(Reaff.1998)	<0.02 mg/l	0.05mg/l	No Relax.
E.coli	IS 1622:1981(Reaff.2003)	Absent/100ml		ABS/100ml
FLUORIDE	IS:3025(PART 60):2008	<0.10 mg/l	1.0mg/l	1.5mg/l
IRON ( as Fe)	IS 3025:PART 53:2003 (BY ICPOES)	<0.05 mg/l	0.3mg/l	1 mg/l
LEAD (as Pb)	IS 3025:PART 47:1994(Reaff.2003) BY ICPOES	<0.005 mg/l	0.05mg/l	No Relax.
MAGNESIUM ( as Mg)	IS 3025:PART 46 :1994(Reaff.1999)	<1.0 mg/l	30mg/l	100mg/l
MANGANESE	IS:3025(PART 59) 2006	<0.01 mg/l	0.1mg/l	0.3mg/l
MERCURY (as Hg)	IS 3025:PART 48 :1994(Reaff.1999)BY ICPOES	<0.001 mg/l	0.001mg/l	No Relax.

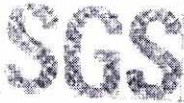
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**TEST REPORT**

**Report No. : CA:GL:3120011479**

**DATE : 10/08/2012**

JOE No. : 1212806062

Control No. : 3125012285

TESTS	PROTOCOL	RESULT	REQUIREMENT/LIMIT	
			Desirable	Permissible
MINERAL OIL	CLAUSE 6 OF IS 3025:PART 39:1991(Reaff. 2003)	BDL(DL-0.01 mg/l)	0.01mg/l	0.03mg/l
NITRATE	IS 3025:PART 34 :1988(Reaff. 1999)	6.23 mg/l	45mg/l	No Relax.
ODOUR	IS 3025:PART 5:1983(Reaff.2002)	Unobjectionable	Unobject.	Unobject.
pH	IS 3025:PART 11:1983(Reaff.2002)	7.2 *	6.5-8.5	No Relax.
PHENOLIC COMPOUNDS (as C6H5OH)	IS 3025(Part 43)1992(Reaff 2005)	<0.001 mg/l	0.001mg/l	0.002mg/l
RESIDUAL FREE CHLORINE	GEN/SOP/CALLAB-13 3	<0.10 mg/l *	0.2mg/l	-
SELENIUM	IS 3025:PART 56:2003 (BY ICPOES)	<0.005 mg/l	0.01mg/l	No Relax.
SULPHATE	CLAUSE 4 OF IS 3025:PART 24:1986(Reaff. 2003)	<2.0 mg/l	200mg/l	400mg/l
TASTE	IS 3025:PART 7 :1984(Reaff. 2002)	Agreeable	Agreeable	-
Total Coliforms	IS 1622:1981(Reaff.2003)	10.0 MPN/100ml	-	10/100 ml
TOTAL DISSOLVED SOLIDS	IS 3025:PART 16:1984(Reaff.2002)	13 mg/l	500mg/l	2000mg/l
TOTAL HARDNESS (as CaCO3)	IS 3025:PART 21 :1983(Reaff.2002)	<1.0 mg/l	300mg/l	600mg/l
TURBIDITY( in NTU )	IS 3025:PART 10 :1984(Reaff.2002)	0.33	5.0NTU	10NTU

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TEST REPORT

Report No. : CA:GL:3120011479 DATE : 10/08/2012  
JOE No. : 1212805062 Control No.:3125012285

TESTS	PROTOCOL	RESULT	REQUIREMENT/LIMIT	
			Desirable	Permissible
ZINC (as Zn)	IS 3025 Part 49:1991(Reaff.2003) BY ICPOES	<0.01 mg/l	5mg/l	15mg/l
* Analyzed at site.				

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

per pro SGS India Private Ltd.

*S. A. Ghosh*  
Dr. Nema Ghosh  
Manager Laboratory

*A. M. Ghosh*  
Quality Control

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Ref.No- PC/RNC/127/11-

Date.....

**CONSENT TO OPERATE**

With reference to the application dated **28.08.2012** of **G.M. (Operation), M/s Hindalco Industries Ltd; Court Road, I/C Pakhar Bauxite Mines-109.507 Ha, P.O+Dist- Lohardaga** for consent under section 25/26 of the Water (Prevention & Control of Pollution) Act, 1974 and that under section 21 of the Air (Prevention & Control of Pollution) Act,1981, he (they) is (are) granted consent to bring into use his(their) new/altered/existing outlet(s) for discharge of trade effluent and (or) domestic sewage and to operate his (their) industrial plant to produce maximum **2,80,000 TPA** of Bauxite At – **Pakhar, P.O + Dist- Lohardaga** for the period from **01.01.2013 to 31.12.2013** with the following conditions :

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

9. That, he(they) shall establish well equipped environmental laboratory with the facilities of system(s) of continuous monitoring of effluent(s), emission(s) ambient water quality(ies), ambient air quality(ies) and ambient noise level(s) and transferring them (monitoring results) to his(their) website(s) and to the e-mail address(es) of the key persons of Jharkhand State Pollution Control Board, Zonal Office, Kolkata and Ministry of Environment & Forests, Regional Office, Bhubaneswar with simultaneous displaying at prominent locations in front of his(their) premises. [\*Unit(s) of medium and large scale under 17 categories of polluting industries of category A of EIA Notification, 2006.]
10. That, he(they) shall submit the environmental statement every year by 30<sup>th</sup> September and shall harvest all rain water precipitating in the premises and do three tier tree plantation in the premises as air barrier.
11. That, he(they) shall submit application for consent under section 25/26 of the Water (Prevention & Control of Pollution) Act, 1974 and that under section 21 of the Air (Prevention & Control of Pollution) Act, 1981 again 120 days before the expiration of the consent order 31.12.2013 or within 120 days from the date of receipt of the order, whichever is earlier.
12. That, unit shall submit quality report of Ambient Air Quality and Ground Water Quality every quarter of the year.
13. That, unit shall submit the status of compliance Environmental Clearance every quarter to the Board.
14. That, unit) shall reclaim the mined out area in phased manner as per EIA/EMP report.
15. That, the unit shall implement harvest rain water of the mine and recharge it to the ground by the method of Central Ground Water Board Guideline that fits most to the mine.
16. That, the unit shall make arrangement to control the fugitive emissions occurring during the mining activities and plying of vehicles on haul as well as transport roads.
17. That, the unit shall ensure that no transport vehicle should ply on road without covering the materials.
18. That, the proponent shall submit compliance report of Environmental Clearance dated 21.10.2010 and submit photographs in compliance of special condition No. ~~VH~~ and ~~IX~~ of the same.



~~VH~~ ~~IX~~

Sd/-

(Sanjay Kumar Sinha)

**MEMBER SECRETARY**

Memo no. PC/RNC/127/11-16-345

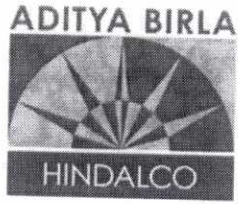
Ranchi, Dated ..... 31/1/13

Copy forwarded to:- G.M. (Operation), M/S Hindalco Industries Ltd; (I/C Pakhar Bauxite Mines-109.507 Ha.), Court Road, P.O+Dist- Lohardaga/ Deputy Commissioner, Lohardaga/ D.F.O, Ranchi West Forest Division, Lohardaga/ D.M.O, Lohardaga/ Regional Officer, Regional Office, Ranchi for information & necessary action.

  
(Sanjay Kumar Sinha)

**MEMBER SECRETARY**





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

The composite cost during the year 2012-13 (April to March) for environmental protection & pollution control by Jharkhand Mines division of Hindalco Industries Ltd for implementation the suggested measures in EC at our all the operating mines in the state of Jharkhand-namely Pakhar (115.13 Ha), Pakhar (15.58 Ha), Pakhar (109.507 Ha), Pakhar (8.09 Ha), Pakhar (35.12Ha), Serengdag (140.06 Ha), Serengdag (155.81 Ha), Jalim & Sanai (12.14 Ha), Gurdari (584.19 Ha), Amtipani (190.95 Ha), Kujam I (80.97 Ha) Kujam II (157.38 Ha) and Bagru (75.41 Ha), Hisri, Chiro kukud, & Orsa pat.

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

\*\*part of OB removed cost.

  
Convener

Environment Management Cell.





Date:20.03.13

**OFFICE ORDER**

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


The Environment Management Cell will consist of:

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

Members:

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

By order

  
Bijesh Kumar Jha  
VP (Mines)

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

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

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