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balco
BHARAT ALUMINIUM COMPANY LIMITED
P.O. - BALCO Nagar, Korba, CG
India - 495684

BALCO/ENV/A-02(A)/2022/317

30th November 2022

To,
The Regional Officer (IRO)
Ministry of Environment, Forest & Climate Change
Integrated Regional Office, Aranya Bhawan
North Block, Sector-19 ,
Nava Raipur, Atal Nagar (CG) 492002

Sub: Half yearly compliance status (April 2022 to Sepptember - 2022) for Alumina refinery and Aluminium Smelter Plant (Potline-1)- BALCO Korba (CG)

Dear Sir/Madam,

Please find enclosed herewith, the half yearly compliance report of the Environmental Clearance No. J-11011/34/2003-IA II (I) dated 5th November 2003 for Alumina refinery and Aluminium smelter plant of Bharat Aluminium Company Limited

We hope that the above is in line with the referred Environmental Clearance. In case you require any further information, we will be glad to furnish the same.

Thanking you,

Yours truly,

RK Singh
COO-Metal

Encl: a/a

Copy to:
1. Regional Officer, CECB, KORBA

COMPLIANCE STATUS OF EXPANSION OF ALUMINA REFINERY AND ALUMINIUM SMELTER PLANT BY M/s BHARAT ALUMINIUM COMPANY LIMITED (BALCO) AT KORBA (C.G.)

No. J-11011/34/2003-IA II (I) MOEF – 5 Nov. 2003
Duration: April 2022 to September 2022

A – SPECIFIC CONDITION

Sr. No	Conditions	Compliance status
i	The gaseous emissions from various process units should conform to the standard prescribed from time to time. The State board may specify more stringent standards for the relevant parameters keeping in view the nature of the industry, its size and location. At no time the emission level should go beyond the prescribed standards, In the event of failure of any pollution control system adopted by the unit, the respective unit should not be restarted until the control; measures are rectified to achieve the desired efficiency. Ambient air quality monitoring stations should be set up in consultation with the Chhattisgarh Environment Conservation Board. Data should be regularly monitored and records maintained and report submitted to the Ministry/CPCB/CECB once in six months.	The gaseous emissions from various process units conform to the standard prescribed from time to time. At no time the emission level go beyond the prescribed standards. Ambient air quality monitoring stations have been set up in consultation with the Chhattisgarh Environment Conservation Board and data is regularly monitored and records are maintained and report are submitted to CECB every month and to the Ministry and CPCB once in every six months. (Copy of stack emission monitoring reports attached as **Annexure – I** and Copy of ambient air monitoring reports attached as **Annexure – II)**
ii	There should be no discharge of process effluent. As reflected in the EIA/EMP report. The proposed refinery and smelter plant shall be designed for zero discharge. In addition, efforts shall be made to reuse wastewater from the existing plant. The domestic wastewater after treatment in Sewage Treatment Plant should be used for green belt development.	The Smelter unit has been designed for zero effluent discharge and there is no discharge of process effluent from Smelter unit. Efforts are made to reuse the wastewater from smelter and in this direction Water used in rectifier for cooling purpose, is recycled. The domestic wastewater is treated in Sewage Treatment Plant and the treated water is being used for gardening purpose.
iii	In plant control measures for checking fugitive emission from spillage/ raw materials handling should be provided. Fluoride emissions should be monitored from the existing pot room, proposed pot and in the forage around the smelter complex. Further dry scrubbing system to control the emissions from the pot lines should be provided. The fluoride emissions shall not exceed 0.8 Kg/t of aluminium produced.	Fume treatment plant along with proper pot covering hoods in place to check fugitive emissions. Fluoride emissions from pot room and forage fluoride around the smelter complex are monitored regularly. (copy of fugitive emission reports attached as **Annexure – III** and copy of forage fluoride monitoring reports attached as **Annexure – IV** Dry scrubbing system has been provided in the Pre-baked Smelter. Fluoride emissions are well within the norms.

Sensitivity: Internal (C3)

iv	The particulate emissions from the new calciner shall be controlled by installation of electrostatic precipitator. The particulate emissions shall not exceed 150 mg/Nm^3. All the boiler stacks shall be provided with stack height as per the CPCB guidelines. The boiler stacks shall be provided with stack height as per the CPCB guidelines. The boiler and calciner stacks should be equipped with continuous monitoring devise to check SPM emission levels. The NOx emission from boiler land calciner stacks shall be less than 50ppm as guaranteed by the manufacturers. Low NOx burners should be installed to control the NOx emissions.	Alumina plant operation has been stopped and this clause is not applicable.
v	The poly-aromatic hydrocarbons from the carbon plant (anode bake oven) should not exceed 2 mg/Nm^3.	The poly-aromatic hydrocarbons from the carbon plant (anode bake oven) do not exceed 2 mg/Nm^3. (Copy of stack emission monitoring reports attached as **Annexure – I**)
vi	The company should adopt dry disposal (High concentration slurry disposal) system for red mud disposal. The ground water quality should be monitored around the red mud ponds by providing piezometeric holes.	The Alumina plant operation has been stopped since September 2009 and the same has been communicated to the CECB. The existing red mud ponds have been converted into ash dyke for disposal of fly ash generated from power plants as per approval granted in Environment Clearances received for BALCO Power plants. Ground water quality is being monitored regularly around these ponds/dyke and copy of monitoring reports are submitted to CECB and MoEF&CC. (Copy of groundwater quality monitoring reports attached as **Annexure – V**)
vii	The spent pot lining generated from the smelter should be utilized for cement/steel manufacturing alternatively to the disposed off in a secured landfill constructed as per the design of CPCB. The location of the landfill site should be approved by the Chhattisgarh Environment Conservation Board.	For utilizing the spent pot lining generated from the smelter, we have entered into agreement with CECB approved agencies for detoxification as per CPCB guidelines and SPL is sold to these authorized recyclers. We also have captive secured landfills with approved design by CECB.
viii	A green belt of adequate width and density should be developed in an area of 90 acre within and around the plant premises as per the CPCB guidelines.	Plantation is carried out in and around the plant premises on a regular basis. Greenbelt has been development in more than 90 acre area as per the CPCB guidelines to comply with the conditions. CECB approved 3rd party verification has also been completed and report has been submitted to CECB office.

Sensitivity: Internal (C3)

		(Copy of 3rd party verification report attached as **Annexure – VI** and copy of greenbelt details attached as **Annexure – VII)**
ix	Occupational Health Surveillance of the workers should be done on a regular basis and records maintained as per the Factories Act.	Regular PME of employees is being conducted and records are maintained as per the Factories Act.
x	All the recommendations of the Charter for Corporate Responsibility for Environment Protection (CREP) for the Aluminium sector should be strictly implemented.	All the recommendations of the Charter for Corporate Responsibility for Environment Protection (CREP) for the Aluminium sector are being complied with.
General Conditions		
i	The project authorities must strictly adhere to the stipulation made by the Chhattisgarh Environment Conservation Board and the State Government.	Complied with.
ii	No further expansion or modifications in the plant should be carried out without prior approval of the Ministry of Environment and Forests.	No further expansion or modifications in the plant is carried out without prior approval of the Ministry of Environment and Forests.
iii	Adequate ambient air quality-monitoring stations should be established in the downward direction as well as where maximum ground level concentration of SPM, SO2 and NOx are anticipated in consultation with the State Pollution Control Board. Data on ambient air quality, fugitive emission and stack emissions should be regularly submitted to this ministry including its Regional Office at Bhopal and the State Pollution Control Board/Central Pollution Control Board once in six months.	Ambient air quality monitoring stations have been established in consultation with Chhattisgarh Environment Conservation Board. We are regularly submitting the monitoring reports to CPCB/MOEF on half yearly basis. Copy of stack emission monitoring report attached as **Annexure – I,** copy of ambient air quality monitoring reports attached as **Annexure – II** and copy of fugitive emission monitoring reports attached as **Annexure – III** for the period from April'22 to September'22.
iv	Industrial waste water should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May, 1993 December, 1993 or as amended form time to time. The treated wastewater should be utilized for plantation purpose.	All waste water generated is properly collected and treated in the ETP with RO system and the treated water being reused in plant and not discharged outside plant premises.
v	The overall noise levels in and around the plant area should be kept well within the standards (85 dBA) by providing noise control measured including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under Rules, 1989 viz. 75 dBA (day time) and 70 dBA (Night time).	Noise prone equipment have been provided with acoustic enclosures and noise level kept below 85 dBA. Moreover, noise level is being regularly monitored and personal protective equipment like earplugs, ear muffs have been provided to people working in high noise prone areas. The ambient noise also being monitored regularly and all records observed well within the norms Copy of Ambient noise monitoring report attached as **Annexure – VIII**
vi	The project proponent shall also comply with all the environmental protection measures and safeguards recommended in the EIA/EMP report. Further the	All environmental protection measures have been implemented.

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	company must undertake socio-economic development-activities in the surrounding villages like community development programmes, educational programmes, drinking water supply and health care etc.	Socio-economic developmental projects like setting up regular Health Camps and Cancer Hospital, watershed development, upgradation of schools, Mother-Child Care Programs have been taken up.
vii	The project authorities will provide adequate funds both recurring and non-recurring to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so provided should not be diverted for any other purposes.	Separate funds are allocated for the implementation of environmental protection measures and not diverted for any other use.
viii	The Regional Office of this Ministry at Bhopal/Central pollution Control Board/State Pollution Control Board will monitor stipulated conditions. A six monthly compliance report and the monitored data along with Statistical interpretation should be submitted to them regularly.	Complied with. Last report was submitted vide: Letter No. BALCO/ENV/A-02(A)/2021/277 Dated 30, Nov 2021. Copy of last submitted report attached as **Annexure – IX.**
ix	The project proponent should inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the State Pollution Control Board/ Committee and may also be seen at Website of the Ministry of Environment and Forests at http:/envfor.nic.in. ; This should be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same should be forwarded to the Regional office.	Complied with. We had advertised in three newspapers. Please refer to **Annexure – X.**
x	The Project Authorities should inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of commencing the land development work.	Complied with.
3.0	The Ministry may revoke or suspend the clearance if implementation of any of the above conditions is not satisfactory.	Noted
4.0	The Ministry reserves the right to stipulated additional conditions if found necessary. The Company in at time bound manner will implement these conditions	Noted

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5.0	The above conditions will been forced, inter-alia under the provisions of the water (Prevention& Control of Pollution) Act 1974, the Air (Prevention &Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, Hazardous Wastes (Management and Handling) Rules, 1989/2003 and the Public Liability insurance Act, 1991 along with their amendments and rules.	Noted

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ISSUED TO:
M/s. Bharat Aluminium Company Limited
KORBA (C.G.)

Report No: VLL/VLS/22/09838/GAP-1
Issue Date: 2022-10-05
P.O N.O: 8500005780
P.O Date: 2022-06-29

Sample Particular:- STACK EMISSION MONITORING AT GAP - 1

Analysis starting date :- 2022-09-12

Analysis Completion date :- 2022-09-25

Test Required :- PM, Particulate Fluoride, Gaseous Fluoride, SO_2, NO_X, HC, VOC and PAH;

TEST RESULTS

GAP - 1					GAP - 1 D 6	GAP - 1 D 7	GAP - 1 D 8	GAP - 1 D 9	Method
S No.	Location	Parameter	Limits	Units	2022-09-12	2022-09-12		2022-09-12	
1	GAP - 1	Height of the stack	-	m	60	60	USD	60	-
2		Diameter	-	m	1.8	0.36		1.8	-
3		Area of Cross section	-	m^2	2.546	0.102		2.546	-
4		Stack Temperature	-	°C	58	66		51	-
7		Stack Pressure	-	mmHg	724	725		725	USEPA M-2
5		Velocity	-	m/s	7.59	7.92		5.33	USEPA M-2
6		Volumetric Flow Rate	-	Nm^3/Hr	59664	2439		42863	USEPA M-2
8		Particulate Matter (PM)	50	mg/Nm^3	20.4	15.8		16.6	USEPA M-5
9		Particulate Fluoride	-	mg/Nm^3	0.018	0.013		0.017	USEPA M-13B
10		Gaseous Fluoride	-	mg/Nm^3	0.070	0.051		0.047	USEPA M-13B
11		Sulphur Dioxide as SO_2	-	mg/Nm^3	11.44	8.58		5.72	Measured by Portable Combustion Analyser
12		Oxides of Nitrogen NO_X as NO_2	-	mg/Nm^3	2	ND		ND	
13		Hydrocarbon as HC	-	PPM	ND	ND		ND	
14		VOC	-	mg/Nm^3	<0.001	<0.001		<0.003	USEPA M-30/31
15		PAH	2	mg/Nm^3	0.029	0.031		0.026	CARB 429

*Instrument Used - Vayubodhan Stack Sampler Kit

*ND – Not Deducted

*USD – Unit Under Shut Down

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Sr. No.-5

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ISSUED TO:
M/s. Bharat Aluminium Company Limited
KORBA (C.G.)

Report No: VLL/VLS/22/08103/GAP-1
Issue Date: 2022-09-05
P.O N.O: 8500005780
P.O Date: 2022-06-29

Sample Particular:- STACK EMISSION MONITORING AT GAP - 1

Analysis starting date :- 2022-08-10

Analysis Completion date :- 2022-08-30

Test Required :- PM, Particulate Fluoride, Gaseous Fluoride, SO_2, NO_X, HC, VOC and PAH;

TEST RESULTS

GAP - 1					GAP - 1 D 6	GAP - 1 D 7	GAP - 1 D 8	GAP - 1 D 9	Method
S No.	Location	Parameter	Limits	Units	2022-08-09	2022-08-09		2022-08-09	
1	GAP - 1	Height of the stack	-	m	60	60	USD	60	-
2		Diameter	-	m	1.8	0.36		1.8	-
3		Area of Cross section	-	m^2	2.55	0.102		2.55	-
4		Temperature	-	°C	54	64		59	-
5		velocity	-	m/s	9.4	8.9		6.9	USEPA M-2
6		Volumetric Flow Rate	-	mmHg	74190	2726		53638	USEPA M-2
7		Absolute Barometric Pressure	-	Nm^3/Hr	717	719		717	USEPA M-2
8		Particulate Matter (PM)	50	mg/Nm^3	21.2	15.8		11.7	USEPA M-5
9		Particulate Fluoride	-	mg/Nm^3	0.016	0.011		0.014	USEPA M-13B
10		Gaseous Fluoride	-	mg/Nm^3	0.084	0.074		0.086	USEPA M-13B
11		Sulphur Dioxide as SO_2	-	mg/Nm^3	23	14		6	Measured by Portable Combustion Analyser
12		Oxides of Nitrogen NO_X as NO_2	-	mg/Nm^3	2	2		ND	
13		Hydrocarbon as HC	-	PPM	ND	ND		ND	
14		VOC	-	mg/Nm^3	<0.001	<0.001		<0.003	USEPA M-30/31
15		PAH	2	mg/Nm^3	0.036	0.029		0.024	CARB 429

*Instrument Used - Vayubodhan Stack Sampler Kit

*ND – Not Deducted

*USD – Unit Under Shut Down

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ISSUED TO:
M/s. Bhafat Aluminium Company Limited
KORBA (C.G.)

Report No.: VLL/VLS/22/05859/GAP 1
Issue Date: 2022-08-04
Your reference: P.O.No. 8500005780
And Date: 2022-06-29

Sample Particular:- STACK EMISSION MONITORING AT GAP - 1

Analysis starting date :- 2022-07-23 Analysis Completion date :- 2022-07-31

Test Required :- PM, SO2, Nox, Particulate Fluoride,Gaseous Fluoride, HC, VOC and PAH;

TEST RESULTS

GAP - 1					GAP - 1 D 6	GAP - 1 D 7	GAP - 1 D 8	GAP - 1 D 9	Method
S No.	Location	Parameter	Limits	Units	(2022-07-23)	(2022-07-23)	(2022-07-23)	(2022-07-23)	
1	GAP - 1	Height of the stack	-	m	60	60	60	60	-
2		Diameter	-	m	1.8	0.36	0.36	1.8	-
3		Area of Cross section	-	m^2	2.54	0.1017	0.1017	2.54	-
4		Temperature	-	°C	35	62	39	48	-
5		velocity	-	m/s	8.27	12.3	5.75	5.65	USEPA 2
6		Flow	-	Nm_3/Hr	69664	3810	1913	45666	USEPA 2
7		Absolute Stack pressure	-	mmHg	722	722	722	722	USEPA 2
8		PM	50	mg/Nm3	13.46	11.55	7.48	15.56	USEPA 5
9		SO2	-	mg/Nm3	8.58	14.3	5.72	8.56	Flue Gas Analyser (Electro Chemical)
10		Nox	-	mg/Nm3	2.05	4.1	0	2.05	Flue Gas Analyser (Electro Chemical)
11		Particulate Fluoride	-	mg/Nm3	0.019	0.021	0.018	0.025	USEPA 13 B
12		Gaseous Fluoride	-	mg/Nm3	0.064	0.075	0.047	0.066	USEPA 13 B
13		HC	-	PPM	*ND	*ND	*ND	*ND	Flue Gas Analyser (Electro Chemical)
14		VOC	-	mg/Nm3	<0.001	<0.001	<0.002	<0.003	USEPA 30/31
14		PAH	2	mg/Nm3	0.021	0.025	0.031	0.037	CARB 429

Remarks: Instrument Used – Stack Monitoring Kit
Method Adopted: USEPA
*ND – Not Deducted
*SD - Shut Down

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ISSUED TO:
M/s. Bharat Aluminium Company Limited
KORBA (C.G.)

Report No.: VLL/VLS/22/04951/GAP 1
Issue Date: 2022-07-04
Your reference. P.O.No. 8500003497
And Date: 2019-02-16

Sample Particular:- STACK EMISSION MONITORING AT GAP - 1

Analysis starting date :- 2022-06-11 Analysis Completion date :- 2022-06-28

Test Required :- PM, SO2, Nox, Particulate Fluoride,Gaseous Fluoride, HC, VOC and PAH;

TEST RESULTS

GAP - 1					GAP - 1 D 6	GAP - 1 D 7	GAP - 1 D 8	GAP - 1 D 9	Method
S No.	Location	Parameter	Limits	Units	(2022-06-11)	(2022-06-11)	(2022-06-11)	(2022-06-11)	
1	GAP - 1	Height of the stack	-	m	60	60	60	60	-
2		Diameter	-	m	1.8	0.36	0.36	1.8	-
3		Area of Cross section	-	m^2	2.54	0.1017	0.1017	0.1017	-
4		Temperature	-	°C	56	65	43	52	-
5		velocity	-	m/s	6.71	7.61	7.16	5.06	USEPA 2
6		Flow	-	Nm_3/Hr	52948	2338	2353	40422	USEPA 2
7		Absolute Stack pressure	-	mmHg	722.45	722.35	722.56	722.49	USEPA 2
8		PM	50	mg/Nm3	15.46	6.47	10.32	14.81	USEPA 5
9		SO2	-	mg/Nm3	17.16	25.76	17.16	14.3	Flue Gas Analyser (Electro Chemical)
10		Nox	-	mg/Nm3	2	4	0	0	Flue Gas Analyser (Electro Chemical)
11		Particulate Fluoride	-	mg/Nm3	0.020	0.023	0.012	0.019	USEPA 13 B
12		Gaseous Fluoride	-	mg/Nm3	0.062	0.084	0.040	0.064	USEPA 13 B
13		HC	-	PPM	*ND	*ND	*ND	*ND	Flue Gas Analyser (Electro Chemical)
14		VOC	-	mg/Nm3	<0.001	<0.001	<0.002	<0.003	USEPA 30/31
14		PAH	2	mg/Nm3	0.020	0.023	0.037	0.047	CARB 429

Remarks: Instrument Used – Stack Monitoring Kit
Method Adopted: USEPA
*ND – Not Deducted
*SD - Shut Down

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ISSUED TO:
M/s. Bharat Aluminium Company Limited
KORBA (C.G.)

Report No.: VLL/VLS/22/03396/GAP 1
Issue Date: 2022-06-04
Your reference: P.O.No. 8500003497
And Date: 2019-02-16

Sample Particular:- STACK EMISSION MONITORING AT GAP - 1

Analysis starting date :- 2022-05-26

Analysis Completion date :-.2022-06-01

Test Required :- PM, SO2, Nox, Particulate Fluoride,Gaseous Fluoride, HC, VOC and PAH;

TEST RESULTS

GAP - 1					GAP - 1 D 6	GAP - 1 D 7	GAP - 1 D 8	GAP - 1 D 9	Method
S No.	Location	Parameter	Limits	Units	(2022-05-26)	(2022-05-26)			
1	GAP - 1	Height of the stack	-	m	60	60	SD	SD	-
2		Diameter	-	m	1.8	0.36			-
3		Area of Cross section	-	m^2	2.54	0.1017			
4		Temperature	-	°C	56	52			-
5		velocity	-	m/s	5.79	5.41			USEPA 2
6		Flow	-	Nm_3/Hr	45809.12	1732.46			USEPA 2
7		Absolute Stack pressure	-	mmHg	724.36	724.06			USEPA 2
8		PM	50	mg/Nm3	16.16	19.57			USEPA 5
9		SO2	-	mg/Nm3	32	20			Flue Gas Analyser (Electro Chemical)
10		Nox	-	mg/Nm3	4	2			Flue Gas Analyser (Electro Chemical)
11		Particulate Fluoride	-	mg/Nm3	0.021	0.025			USEPA 13 B
12		Gaseous Fluoride	-	mg/Nm3	0.094	0.070			USEPA 13 B
13		HC	-	PPM	*ND	*ND			Flue Gas Analyser (Electro Chemical)
14		VOC	-	mg/Nm3	<0.001	<0.001			USEPA 30/31
14		PAH	2	mg/Nm3	0.021	0.019			CARB 429

Remarks: Instrument Used – Stack Monitoring Kit
Method Adopted: USEPA
*ND – Not Deducted
*SD - Shut Down

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ISSUED TO:
M/s. Bharat Aluminium Company Limited
KORBA (C.G.)

Report No.: VLL/VLS/2/01794/GAP 1
Issue Date: 2022-05-05
Your reference: P.O.No. 8500003497
And Date: 2019-02-16

Sample Particular:- STACK EMISSION MONITORING AT GAP - 1

Analysis starting date :- 2022-04-16 **Analysis Completion date :- 2022-04-28**

Test Required :- PM, SO2, Fluoride (PM), Fluoride (GAS), HC, VOC and PAH;

TEST RESULTS

GAP - 1					GAP - 1 D 6	GAP - 1 D 7	GAP - 1 D 8	GAP - 1 D 9	Method
S No.	Location	Parameter	Norms	Units	(2022-04-16)	(2022-04-16)	(2022-04-16)	(2022-04-16)	
1	GAP - 1	Height	-	m	50	45	45	50	-
2		Diameter	-	m	1.8	0.36	0.36	1.8	-
3		Area of Cross section	-	m^2	2.54	0.1017	0.1017	2.54	-
4		Temperature	-	°C	45	49	34	65	-
5		velocity	-	m/s	11.15	9.06	7.51	6.73	USEPA 2
6		Flow	-	Nm_3/Hr	91439	2937	2553	52283	USEPA 2
7		Absolute Stack pressure	-	mmHg	725.72	726.22	726.15	730.72	USEPA 2
8		PM	50	mg/Nm3	13.1	14.52	16.83	23.18	USEPA 5
9		SO2	-	mg/Nm3	21	17	17	14	Flue Gas Analyser (Electro Chemical)
10		Nox	-	mg/Nm3	2	3	*ND	2	Flue Gas Analyser (Electro Chemical)
11		Fluoride (Particulate)	-	mg/Nm3	0.011	0.008	0.013	0.019	USEPA 13 B
12		Fluoride (Fluoride)	-	mg/Nm3	0.038	0.058	0.049	0.073	USEPA 13 B
13		HC	-	PPM	*ND	*ND	*ND	*ND	Flue Gas Analyser (Electro Chemical)
14		VOC	-	mg/Nm3	<0.001	<0.001	<0.001	<0.001	USEPA 30/31
15		PAH	2	mg/Nm3	0.015	0.018	0.013	0.017	CARB 429

Remarks: Instrument Used – Stack Monitoring Kit
Method Adopted: USEPA
***ND – Not Deducted**
***SD - Shut Down**

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ISSUED TO:
M/s. Bharat Aluminium Company Limited
KORBA (C.G.)

Report No: VLL/VLS/22/09838/PL-1
Issue Date: 2022-10-05
P.O N.O: 8500005780
P.O Date: 2022-06-29

Sample Particular:- STACK EMISSION MONITORING AT POTLINE - 1

Analysis starting date :- 2022-09-02

Analysis Completion date :- 2022-10-03

Test Required :- PM, Particulate Fluoride, Gaseous Fluoride, SO2;

TEST RESULTS

POTLINE - 1					POTLINE - 1 FTP - 1	POTLINE - 1 FTP - 2	POTLINE - 1 FTP - 3	POTLINE - 1 FTP - 4	Method
S No.	Location	Parameter	Limits	Units	2022-09-02	2022-09-26	2022-09-13	2022-09-26	
1	POTLINE - 1	Height of the stack	-	m	80	80	80	80	-
2		Diameter	-	m	6.7	6.7	6.7	6.7	-
3		Area of Cross section	-	m^2	35.271	35.271	35.271	35.271	-
4		Stack Temperature	-	°C	112	112	104	109	-
7		Stack Pressure	-	mmHg	728	729	725	729	USEPA M-2
5		Velocity	-	m/s	12.61	11.48	11.01	11.58	USEPA M-2
6		Volumetric Flow Rate	-	Nm^3/Hr	1187158	1082260	1054161	1100261	USEPA M-2
8		Particulate Matter (PM)	50	mg/Nm^3	2.63	3.84	3.06	4.35	USEPA M-5
9		Particulate Fluoride	-	mg/Nm^3	0.081	0.072	0.061	0.084	USEPA M-13B
10		Gaseous Fluoride	-	mg/Nm^3	0.235	0.227	0.173	0.210	USEPA M-13B
11		Sulphur Dioxide as SO_2	-	mg/Nm^3	146	194	128	209	Measured by Portable Combustion Analyser

*Instrument Used - Vayubodhan Stack Sampler Kit

*ND – Not Deducted

*USD – Unit Under Shut Down

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ISSUED TO:
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KORBA (C.G.)

Report No: VLL/VLS/22/08103/PL-1
Issue Date: 2022-09-05
P.O N.O: 8500005780
P.O Date: 2022-06-29

Sample Particular:- STACK EMISSION MONITORING AT POTLINE - 1

Analysis starting date :- 2022-08-03

Analysis Completion date :- 2022-08-25

Test Required :- PM, Particulate Fluoride, Gaseous Fluoride, SO2;

TEST RESULTS

POTLINE - 1					POTLINE - 1 FTP - 1	POTLINE - 1 FTP - 2	POTLINE - 1 FTP - 3	POTLINE - 1 FTP - 4	Method
S No.	Location	Parameter	Limits	Units	2022-08-04	2022-08-08	2022-08-06	2022-08-02	
1	POTLINE - 1	Height of the stack	-	m	80	80	80	80	-
2		Diameter	-	m	6.7	6.7	6.7	6.7	-
3		Area of Cross section	-	m^2	35.27	35.27	35.27	35.27	-
4		Temperature	-	°C	109	112	109	112	-
5		velocity	-	m/s	11.1	10.8	10.8	14.3	USEPA M-2
6		Volumetric Flow Rate	-	Nm^3/Hr	1050284	1009746	1020491	1336978	USEPA M-2
7		Absolute Barometric Pressure	-	mmHg	726	723	725	723	USEPA M-2
8		Particulate Matter (PM)	50	mg/Nm^3	3.42	2.78	3.10	3.57	USEPA M-5
9		Particulate Fluoride	-	mg/Nm^3	0.068	0.057	0.063	0.049	USEPA M-13B
10		Gaseous Fluoride	-	mg/Nm^3	0.276	0.234	0.255	0.252	USEPA M-13B
11		Sulphur Dioxide as SO_2	-	mg/Nm^3	246	212	235	209	Measured by Portable Combustion Analyser

*Instrument Used - Vayubodhan Stack Sampler Kit

*ND – Not Deducted

*USD – Unit Under Shut Down

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ISSUED TO:
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KORBA (C.G.)

Report No.: VLL/VLS/22/05859/PL 1
Issue Date: 2022-08-04
Your reference: P.O.No. 8500005780
And Date: 2022-06-29

Sample Particular:- STACK EMISSION MONITORING AT POTLINE - 1

Analysis starting date :- 2022-07-13 Analysis Completion date :- 2022-07-31

Test Required :- PM, SO2, Particulate Fluoride, Gaseous Fluoride;

TEST RESULTS

POTLINE - 1					POTLINE - 1 FTP - 1	POTLINE - 1 FTP - 2	POTLINE - 1 FTP - 3	POTLINE - 1 FTP - 4	Method
S No.	Location	Parameter	Limits	Units	(2022/07/13)	(2022/07/15)	(2022/07/17)	(2022/07/22)	
1	POTLINE - 1	Height of the stack	-	m	80	80	80	80	-
2		Diameter	-	m	6.7	6.7	6.7	6.7	-
3		Area of Cross section	-	m^2	35.27	35.27	35.27	35.27	-
4		Temperature	-	°C	113	110	111	111	-
5		velocity	-	m/s	10.69	9.83	10.67	10.42	USEPA 2
6		Flow	-	Nm3/Hr	1001029	921318	1001593	976774	USEPA 2
7		Absolute Stack pressure	-	mmHg	726	721	724	723	USEPA 2
8		PM	50	mg/Nm^3	3.67	2.22	2.72	2.67	USEPA 5
9		SO2	-	mg/Nm^3	169	149	135	183	Flue Gas Analyser (Electro Chemical)
10		Particulate Fluoride	-	mg/Nm^3	0.078	0.085	0.073	0.075	USEPA 13 B
11		Gaseous Fluoride	-	mg/Nm^3	0.225	0.191	0.194	0.211	USEPA 13 B

Remarks: Instrument Used – Stack Monitoring Kit
Method Adopted: USEPA
***ND – Not Deducted**

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ISSUED TO:
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KORBA (C.G.)

Report No.: VLL/VLS/22/04951/PL 1
Issue Date: 2022-07-04
Your reference: P.O.No. 8500003497
And Date: 2019-02-16

Sample Particular:- STACK EMISSION MONITORING AT POTLINE - 1

Analysis starting date :- 2022-06-06

Analysis Completion date :- 2022-07-02

Test Required :- PM, SO2, Particulate Fluoride, Gaseous Fluoride;

TEST RESULTS

POTLINE - 1					POTLINE - 1 FTP - 1	POTLINE - 1 FTP - 2	POTLINE - 1 FTP - 3	POTLINE - 1 FTP - 4	Method
S No.	Location	Parameter	Limits	Units	(2022/06/06)	(2022/06/21)	(2022/06/16)	(2022/06/07)	
1	POTLINE - 1	Height of the stack	-	m	80	80	80	80	-
2		Diameter	-	m	6.7	6.7	6.7	6.7	-
3		Area of Cross section	-	m^2	35.27	35.27	35.27	35.27	
4		Temperature	-	°C	118	118	124	117	-
5		velocity	-	m/s	10.56	10.36	10.87	10.73	USEPA 2
6		Flow	-	Nm3/Hr	972163	953764	984228	989442	USEPA 2
7		Absolute Stack pressure	-	mmHg	722.99	723	722.00	722.33	USEPA 2
8		PM	50	mg/Nm^3	2.61	2.74	3.67	3.99	USEPA 5
9		SO2	-	mg/Nm^3	155	195	235	235	Flue Gas Analyser (Electro Chemical)
10		Particulate Fluoride	-	mg/Nm^3	0.095	0.071	0.087	0.068	USEPA 13 B
11		Gaseous Fluoride	-	mg/Nm^3	0.217	0.193	0.205	0.187	USEPA 13 B

Remarks: Instrument Used – Stack Monitoring Kit
Method Adopted: USEPA
***ND – Not Deducted**

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ISSUED TO:
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KORBA (C.G.)

Report No.: VLL/VLS/22/03396/PL 1
Issue Date: 2022-06-04
Your reference: P.O.No. 8500003497
And Date: 2019-02-16

Sample Particular:- STACK EMISSION MONITORING AT POTLINE - 1

Analysis starting date :- 2022-05-05 Analysis Completion date :- 2022-05-25

Test Required :- PM, SO2, Particulate Fluoride, Gaseous Fluoride;

TEST RESULTS

POTLINE - 1					POTLINE - 1 FTP - 1	POTLINE - 1 FTP - 2	POTLINE - 1 FTP - 3	POTLINE - 1 FTP - 4	Method
S No.	Location	Parameter	Limits	Units	(2022/05/09)	(2022/05/08)	(2022/05/05)	(2022/05/20)	
1	POTLINE - 1	Height of the stack	-	m	80	80	80	80	-
2		Diameter	-	m	6.7	6.7	6.7	6.7	-
3		Area of Cross section	-	m^2	35.27	35.27	35.27	35.27	-
4		Temperature	-	°C	120	120	125	117	-
5		velocity	-	m/s	10.63	11.09	10.71	10.93	USEPA 2
6		Flow	-	Nm3/Hr	980602	1023135	974418	1013870	USEPA 2
7		Absolute Stack pressure	-	mmHg	728.17	728.24	727.31	726.62	USEPA 2
8		PM	50	mg/Nm^3	4.19	2.85	5.75	3.29	USEPA 5
9		SO2	-	mg/Nm^3	235	206	217	237	Flue Gas Analyser (Electro Chemical)
10		Particulate Fluoride	-	mg/Nm^3	0.106	0.084	0.118	0.109	USEPA 13 B
11		Gaseous Fluoride	-	mg/Nm^3	0.229	0.197	0.372	0.236	USEPA 13 B

Remarks: Instrument Used – Stack Monitoring Kit
Method Adopted: USEPA
*ND – Not Deducted

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KORBA (C.G.)

Report No.: VLL/VLS/22/01794/PL 1
Issue Date: 2022-05-05
Your reference: P.O.No. 8500003497
And Date: 2019-02-16

Sample Particular:- STACK EMISSION MONITORING AT POTLINE - 1

Analysis starting date :- 2022-03-02 Analysis Completion date :- 2022-04-04

Test Required :- PM, SO2, Total Fluoride;

TEST RESULTS

POTLINE - 1					POTLINE - 1 FTP - 1	POTLINE - 1 FTP - 2	POTLINE - 1 FTP - 3	POTLINE - 1 FTP - 4	Method
S No.	Location	Parameter	Norms	Units	(2022/03/24)	(2022/04/22	(2022/04/08)	(2022/04/11)	
1	POTLINE - 1	Height	-	m	40	40	40	40	-
2		Diameter	-	m	6.7	6.7	6.7	6.7	-
3		Area of Cross section	-	m^2	35.27	35.27	35.27	35.27	-
4		Temperature	-	°C	113	119	116	109	-
5		velocity	-	m/s	10.84	10.850	9.34	10.14	USEPA 2
6		Flow	-	Nm_3/Hr	1017214	1004856	871800	963605	USEPA 2
7		Absolute Stack pressure	-	mmHg	727.53	729.19	729.29	729.13	USEPA 2
8		PM	50	mg/Nm^3	4.1	4.73	4.62	3.66	USEPA 5
9		SO2	-	mg/Nm^3	163	139	183	103	Flue Gas Analyser (Electro Chemical)
10		Fluoride (Particulate)		mg/Nm^3	0.077	0.089	0.108	0.106	USEPA 13 B
11		Fluoride (Fluoride)	-	mg/Nm^3	0.214	0.258	0.326	0.293	USEPA 13 B

Remarks: Instrument Used – Stack Monitoring Kit
Method Adopted: USEPA
***ND – Not Deducted**

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ISSUED TO: M/s. Bharat Aluminium Company Limited, KORBA (C.G.)	Report No.:	VLL/VLS/22/09838/002
	Issue Date:	2022-10-05
	P.O.No:	8500005780
	P.O. Date:	2022-06-29

AMBIENT AIR QUALITY MONITORING AT NEW ETP (BALCO)

Analysis starting date :- 2022-09-02

Analysis Completion date :- 2022-10-04

Tests required: Sulphur Dioxide (SO_2), Nitrogen Dioxide (NOx), Particulate Matter (PM10), Particulate Matter (PM2.5), Ammonia (NH3), Benzene (C_6H_6), Benzo (a) Pyrene in particulate phase, Heavy metals in particulate phase for Arsenic, Nickel & Lead.

TEST RESULTS

Parameters	Units	Limits	AAQ Location : NEW ETP									
Sampling Date			2022-09-01	2022-09-08	2022-09-10	2022-09-14	2022-09-16	2022-09-20	2022-09-22	2022-09-26	2022-09-29	Method
Sulphur Dioxide (SO_2)	µg/m³	80	28.2	33.4	30.6	28.5	35.4	25.1	28.3	13.6	21.8	Improved West and Gaeke Method
Nitrogen Dioxide (NO_x)	µg/m³	80	8.6	15.9	20.2	9.4	10.0	10.9	11.3	20.1	18.6	Modified Jacob & Hochheiser Method
Particulate Matter (PM10)	µg/m³	100	57.1	45.7	62.7	54.2	56.9	65.7	50.9	54.1	61.3	Gravimetric Method
Particulate Matter (PM2.5)	µg/m³	60	22.1	18.7	31.2	22.5	19.3	27.6	20.3	22.9	24.1	Gravimetric Method
Ammonia (NH_3)	µg/m³	400	2.7	2.1	2.6	2.7	2.2	3.6	3.1	2.7	3.6	Indophenol Blue Method
Benzene (C_6H_6)	µg/m³	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	Solvent Extraction followed by GC Analysis
Benzo(a) Pyrene in particulate phase	ng/m³	1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	Solvent Extraction followed by GC Analysis
Arsenic as As	ng/m³	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	AAS/ICP Method
Nickel as Ni	ng/m³	20	4.2	3.9	2.5	2.1	3.9	3.5	2.7	4.2	3.8	AAS/ICP Method
Lead as Pb	µg/m³	1	0.021	0.026	0.034	0.033	0.027	0.024	0.034	0.022	0.039	AAS/ICP Method
Carbon Monoxide	µg/m³	2000	385	492	227	361	524	373	296	419	394	NDIR Spectroscopy Method
Ozone	µg/m³	100	10.2	7.6	8.5	6.9	16.9	11.1	11.6	13.4	16.8	UV photometric method

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M/s. Bharat Aluminium Company Limited,	Issue Date:	2022-09-05
KORBA (C.G.)	P.O.No:	8500005780
	P.O. Date:	2022-06-29

Sample Particulars — AMBIENT AIR QUALITY MONITORING AT NEW ETP (BALCO)

Analysis starting date :- 2022-08-06 — Analysis Completion date :- 2022-09-04

Tests required: Sulphur Dioxide (SO_2), Nitrogen Dioxide (NOx), Particulate Matter (PM10), Particulate Matter (PM2.5), Ammonia (NH_3), Benzene (C_6H_6), Benzo (a) Pyrene in particulate phase, Heavy metals in particulate phase for Arsenic, Nickel & Lead.

TEST RESULTS

Parameters	Units	Limits	AAQ Location : NEW ETP									
Sampling Date			2022-08-05	2022-08-07	2022-08-11	2022-08-13	2022-08-17	2022-08-19	2022-08-23	2022-08-25	2022-08-29	Method
Sulphur Dioxide (SO_2)	µg/m³	80	27.9	18.3	25.7	22.3	15.2	20.1	26.4	23.4	28.8	Improved West and Gaeke Method
Nitrogen Dioxide (NO_x)	µg/m³	80	14.4	16.4	15.9	12.6	16.9	15.2	10.8	15.5	12.9	Modified Jacob & Hochheiser Method
Particulate Matter (PM10)	µg/m³	100	53.2	58.6	55.3	62.7	52.4	56.3	59.3	56.4	54.9	Gravimetric Method
Particulate Matter (PM2.5)	µg/m³	60	29.3	26.9	22.4	27.3	20.9	28.3	24.9	23.7	20.8	Gravimetric Method
Ammonia (NH_3)	µg/m³	400	3.1	2.1	4.5	3.1	4.7	2.2	2.7	4.5	2.4	Indophenol Blue Method
Benzene (C_6H_6)	µg/m³	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	Solvent Extraction followed by GC Analysis
Benzo(a) Pyrene in particulate phase	ng/m³	1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	Solvent Extraction followed by GC Analysis
Arsenic as As	ng/m³	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	AAS/ICP Method
Nickel as Ni	ng/m³	20	3.1	3.6	4.9	2.9	2.7	3.3	4.6	3.9	3.5	AAS/ICP Method
Lead as Pb	µg/m³	1	0.032	0.029	0.036	0.031	0.038	0.025	0.019	0.021	0.039	AAS/ICP Method
Carbon Monoxide	µg/m³	2000	265	387	352	493	257	383	516	439	308	NDIR Spectroscopy Method
Ozone	µg/m³	100	6.5	10.4	6.9	8.9	10.4	6.1	7.6	11.6	8.7	UV photometric method

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KORBA (C.G.)

Report Number :- VLL/VLS/22/05859/002
Issue Date :- 2022/08/05
Your Ref :- 8500005780
and date :- 2022/06/29

Sample Particulars: AMBIENT AIR QUALITY MONITORING AT NEW ETP (BALCO)

Analysis starting date :- 2022-07-08

Analysis Completion date :- 2022-08-04

Tests required: Sulphur Dioxide (SO_2), Nitrogen Dioxide (NOx), Particulate Matter (PM10), Particulate Matter (PM2.5), Ammonia (NH3), Benzene (C_6H_6), Benzo (a) Pyrene in particulate phase, Heavy metals in particulate phase for Arsenic, Nickel & Lead,Carbon monoxide,Ozone

TEST RESULTS

Parameters	Units	Limits	AAQ Location : NEW ETP								
Sampling Date			2022-07-07	2022-07-09	2022-07-13	2022-07-15	2022-07-19	2022-07-21	2022-07-25	2022-07-27	Method
Sulphur Dioxide (SO_2)	$\mu g/m^3$	80	30.1	23.7	27.8	24.6	21.2	18.9	14.7	25.8	Improved West and Gaeke Method
Nitrogen Dioxide (NO_x)	$\mu g/m^3$	80	13.8	11.8	11.7	9.9	8.0	7.7	16.2	13.9	Modified Jacob & Hochheiser Method
Particulate Matter (PM10)	$\mu g/m^3$	100	47.1	53.6	57.8	46.8	47.0	54.2	48.2	53.4	Gravimetric Method
Particulate Matter (PM2.5)	$\mu g/m^3$	60	17.6	21.8	26.2	19.4	17.6	24.0	17.1	24.9	Gravimetric Method
Ammonia (NH_3)	$\mu g/m^3$	400	6.9	5.4	3.8	6.2	4.3	4.9	3.9	4.5	Indophenol Blue Method
Benzene (C_6H_6)	$\mu g/m^3$	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	Solvent Extraction followed by GC Analysis
Benzo(a) Pyrene in particulate phase	ng/m^3	1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	Solvent Extraction followed by GC Analysis
Arsenic as As	ng/m^3	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	AAS/ICP Method
Nickel as Ni	ng/m^3	20	2.4	3.6	3.8	1.9	2.2	4.8	3.8	4.1	AAS/ICP Method
Lead as Pb	$\mu g/m^3$	1	0.036	0.032	0.018	0.026	0.024	0.041	0.028	0.019	AAS/ICP Method
Carbon Monoxide	$\mu g/m^3$	2000	362	487	256	493	337	519	473	342	NDIR Spectroscopy Method
Ozone	$\mu g/m^3$	100	11.3	6.4	5.1	7.4	13.6	5.5	6.0	6.5	UV photometric method

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ISSUED TO:
M/s. Bharat Aluminium Company Limited,
KORBA (C.G.)

Report Number :- VLL/VLS/22/04951/002
Issue Date :- 2022/07/05
Your Ref :- 8500003497
and date :- 2019/02/16

Sample Particulars

AMBIENT AIR QUALITY MONITORING AT NEW ETP (BALCO)

Analysis starting date :- 2022-06-02

Analysis Completion date :- 2022-07-04

Tests required: Sulphur Dioxide (SO_2), Nitrogen Dioxide (NOx), Particulate Matter (PM10), Particulate Matter (PM2.5), Ammonia (NH3), Benzene (C_6H_6), Benzo (a) Pyrene in particulate phase, Heavy metals in particulate phase for Arsenic, Nickel & Lead.

TEST RESULTS

Parameters	Units	Limits	AAQ Location : NEW ETP									
Sampling Date			2022-06-01	2022-06-03	2022-06-08	2022-06-10	2022-06-14	2022-06-16	2022-06-20	2022-06-22	2022-06-27	Method
Sulphur Dioxide (SO_2)	$\mu g/m^3$	80	27.7	19.4	13.0	30.2	25.6	11.4	18.6	26.2	22.5	Improved West and Gaeke Method
Nitrogen Dioxide (NO_x)	$\mu g/m^3$	80	10.9	9.6	13.4	7.1	13.8	11.0	14.3	11.5	14.8	Modified Jacob & Hochheiser Method
Particulate Matter (PM10)	$\mu g/m^3$	100	58.6	71.8	60.1	68.2	53.7	50.1	57.6	53.4	55.6	Gravimetric Method
Particulate Matter (PM2.5)	$\mu g/m^3$	60	22.4	30.9	25.3	28.2	23.4	15.7	22.8	20.6	24.2	Gravimetric Method
Ammonia (NH_3)	$\mu g/m^3$	400	4.3	5.3	7.4	6.6	6.0	6.4	5.1	5.3	5.7	Indophenol Blue Method
Benzene (C_6H_6)	$\mu g/m^3$	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	Solvent Extraction followed by GC Analysis
Benzo(a) Pyrene in particulate phase	ng/m^3	1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	Solvent Extraction followed by GC Analysis
Arsenic as As	ng/m^3	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	AAS/ICP Method
Nickel as Ni	ng/m^3	20	3.6	4.1	2.4	2.3	4.6	3.6	3.9	4.4	2.9	AAS/ICP Method
Lead as Pb	$\mu g/m^3$	1	0.041	0.034	0.038	0.028	0.026	0.022	0.039	0.042	0.025	AAS/ICP Method
Carbon Monoxide	$\mu g/m^3$	2000	362	338	514	432	282	351	294	546	379	NDIR Spectroscopy Method
Ozone	$\mu g/m^3$	100	8.5	7.1	11.1	6.7	8.7	16.8	10.4	16.8	14.2	UV photometric method

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Report Number :- VLL/VLS/22/03396/002
Issue Date :- 2022/06/04
Your Ref :- 8500003497
and date :- 2019/02/16

Sample Particulars

AMBIENT AIR QUALITY MONITORING AT NEW ETP (BALCO)

Analysis starting date :- 2022-05-06

Analysis Completion date :- 2022-06-03

Tests required: Sulphur Dioxide (SO_2), Nitrogen Dioxide (NOx), Particulate Matter (PM10), Particulate Matter (PM2.5), Ammonia (NH_3), Benzene (C_6H_6), Benzo (a) Pyrene in particulate phase, Heavy metals in particulate phase for Arsenic, Nickel & Lead.

TEST RESULTS

Parameters	Units	Limits	AAQ Location : NEW ETP								
Sampling Date			2022-05-05	2022-05-07	2022-05-11	2022-05-13	2022-05-17	2022-05-19	2022-05-23	2022-05-25	Method
Sulphur Dioxide (SO_2)	µg/m³	80	30.1	36.8	21.2	38.7	27.1	29.0	26.4	29.1	Improved West and Gaeke Method
Nitrogen Dioxide (NO_x)	µg/m³	80	15.9	8.7	11.4	14.1	10.1	9.5	15.9	13.6	Modified Jacob & Hochheiser Method
Particulate Matter (PM10)	µg/m³	100	62.8	59.7	52.8	64.3	61.9	62.0	54.6	63.7	Gravimetric Method
Particulate Matter (PM2.5)	µg/m³	60	21.8	19.3	17.4	25.6	20.4	23.7	18.9	22.7	Gravimetric Method
Ammonia (NH_3)	µg/m³	400	6.3	4.5	4.2	9.5	7.7	4.2	5.9	8.1	Indophenol Blue Method
Benzene (C_6H_6)	µg/m³	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	Solvent Extraction followed by GC Analysis
Benzo(a) Pyrene in particulate phase	ng/m³	1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	Solvent Extraction followed by GC Analysis
Arsenic as As	ng/m³	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	AAS/ICP Method
Nickel as Ni	ng/m³	20	3.3	1.8	6.2	4.7	2.8	5.3	3.6	4.3	AAS/ICP Method
Lead as Pb	µg/m³	1	0.021	0.035	0.017	0.042	0.039	0.022	0.015	0.046	AAS/ICP Method
Carbon Monoxide	µg/m³	2000	482	361	552	196	459	287	564	329	NDIR Spectroscopy Method
Ozone	µg/m³	100	11.4	10.3	8.3	13.1	7.5	5.9	8.1	12.9	UV photometric method

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Report Number :- VLL/VLS/22/01794/002
Issue Date :- 2022/05/05
Your Ref :- 8500003497
and date :- 2019/02/16

Sample Particulars

AMBIENT AIR QUALITY MONITORING AT NEW ETP (BALCO)

Analysis starting date :- 2022-04-02

Analysis Completion date :- 2022-05-04

Tests required: Sulphur Dioxide (SO_2), Nitrogen Dioxide (NOx), Particulate Matter (PM10), Particulate Matter (PM2.5), Ammonia (NH_3), Benzene (C_6H_6), Benzo (a) Pyrene in particulate phase, Heavy metals in particulate phase for Arsenic, Nickel & Lead.

TEST RESULTS

Parameters	Units	Limits	AAQ Location : NEW ETP									
Sampling Date			2022-04-01	2022-04-07	2022-04-09	2022-04-13	2022-04-15	2022-04-19	2022-04-21	2022-04-25	2022-04-27	Method
Sulphur Dioxide (SO_2)	µg/m³	80	15.2	22.9	36.2	26.9	21.8	31.7	19.5	28.3	25.4	Improved West and Gaeke Method
Nitrogen Dioxide (NO_x)	µg/m³	80	11.6	14.2	18.7	10.4	13.7	18.3	12.9	14.9	15.8	Modified Jacob & Hochheiser Method
Particulate Matter (PM10)	µg/m³	100	59.3	54.8	58.2	60.7	62.4	54.3	58.2	60.5	62.7	Gravimetric Method
Particulate Matter (PM2.5)	µg/m³	60	24.3	20.9	19.7	22.6	28.4	16.7	18.4	25.1	21.8	Gravimetric Method
Ammonia (NH_3)	µg/m³	400	6.3	3.8	7.4	5.9	5.3	4.2	3.9	5.2	5.6	Indophenol Blue Method
Benzene (C_6H_6)	µg/m³	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	Solvent Extraction followed by GC Analysis
Benzo(a) Pyrene in particulate phase	ng/m³	1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	Solvent Extraction followed by GC Analysis
Arsenic as As	ng/m³	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	AAS/ICP Method
Nickel as Ni	ng/m³	20	2.6	2.8	1.4	3.9	4.3	2.9	3.7	3.2	4.9	AAS/ICP Method
Lead as Pb	µg/m³	1	0.036	0.028	0.047	0.037	0.026	0.028	0.011	0.028	0.043	AAS/ICP Method
Carbon Monoxide	µg/m³	2000	269	473	461	246	338	417	366	425	274	NDIR Spectroscopy Method
Ozone	µg/m³	100	9.4	5.6	8.4	5.9	6.6	7.9	10.1	7.1	4.3	UV photometric method

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M/s. Bharat Aluminium Company Limited,	Issue Date:	2022-10-05
KORBA (C.G.)	P.O.No:	8500005780
	P.O. Date:	2022-06-29

AMBIENT AIR QUALITY MONITORING AT GAP & BAKE OVEN ROAD (BALCO)

Analysis starting date :- 2022-09-02

Analysis Completion date :- 2022-10-04

Tests required: Sulphur Dioxide (SO_2), Nitrogen Dioxide (NOx), Particulate Matter (PM10), Particulate Matter (PM2.5), Ammonia (NH3), Benzene (C_6H_6), Benzo (a) Pyrene in particulate phase, Heavy metals in particulate phase for Arsenic, Nickel & Lead.

TEST RESULTS

Parameters	Units	Limits	AAQ Location : GAP & BAKE OVEN									
Sampling Date			2022-09-01	2022-09-08	2022-09-10	2022-09-14	2022-09-16	2022-09-20	2022-09-22	2022-09-26	2022-09-29	Method
Sulphur Dioxide (SO_2)	$\mu g/m^3$	80	31.1	33.5	26.2	31.6	28.1	37.7	29.4	27.8	23.6	Improved West and Gaeke Method
Nitrogen Dioxide (NO_x)	$\mu g/m^3$	80	15.9	12.7	12.3	20.7	21.3	14.8	18.7	23.7	15.1	Modified Jacob & Hochheiser Method
Particulate Matter (PM10)	$\mu g/m^3$	100	56.3	54.7	57.9	54.2	59.6	50.3	49.5	51.5	48.2	Gravimetric Method
Particulate Matter (PM2.5)	$\mu g/m^3$	60	29.3	23.6	24.6	21.4	27.6	22.3	23.2	22.6	28.1	Gravimetric Method
Ammonia (NH_3)	$\mu g/m^3$	400	4.2	3.2	2.4	5.0	4.5	4.2	6.2	3.0	4.6	Indophenol Blue Method
Benzene (C_6H_6)	$\mu g/m^3$	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	Solvent Extraction followed by GC Analysis
Benzo(a) Pyrene in particulate phase	ng/m^3	1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	Solvent Extraction followed by GC Analysis
Arsenic as As	ng/m^3	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	AAS/ICP Method
Nickel as Ni	ng/m^3	20	3.6	2.9	2.5	4.2	3.9	2.7	4.4	2.1	3.7	AAS/ICP Method
Lead as Pb	$\mu g/m^3$	1	0.24	0.022	0.017	0.039	0.031	0.047	0.016	0.028	0.034	AAS/ICP Method
Carbon Monoxide	$\mu g/m^3$	2000	584	412	497	346	468	263	374	561	273	NDIR Spectroscopy Method
Ozone	$\mu g/m^3$	100	10.0	6.9	12.8	9.6	13.0	9.9	11.4	16.2	12.5	UV photometric method

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ISSUED TO:	Report No.:	VLL/VLS/22/08103/003
M/s. Bharat Aluminium Company Limited,	Issue Date:	2022-09-05
KORBA (C.G.)	P.O.No:	8500005780
	P.O. Date:	2022-06-29

Sample Particulars AMBIENT AIR QUALITY MONITORING AT GAP & BAKE OVEN ROAD (BALCO)

Analysis starting date :- 2022-08-05 **Analysis Completion date :- 2022-09-04**

Tests required: Sulphur Dioxide (SO_2), Nitrogen Dioxide (NOx), Particulate Matter (PM10), Particulate Matter (PM2.5), Ammonia (NH_3), Benzene (C_6H_6), Benzo (a) Pyrene in particulate phase, Heavy metals in particulate phase for Arsenic, Nickel & Lead.

TEST RESULTS

Parameters	Units	Limits	AAQ Location : GAP & BAKE OVEN									
Sampling Date			2022-08-05	2022-08-07	2022-08-11	2022-08-13	2022-08-17	2022-08-19	2022-08-23	2022-08-25	2022-08-29	Method
Sulphur Dioxide (SO_2)	µg/m³	80	24.5	33.7	36.8	23.5	25.7	28.4	16.1	35.0	27.8	Improved West and Gaeke Method
Nitrogen Dioxide (NO_2)	µg/m³	80	19.2	17.3	15.4	21.7	26.3	21.1	15.7	18.0	28.5	Modified Jacob & Hochheiser Method
Particulate Matter (PM10)	µg/m³	100	58.2	60.2	61.5	64.9	59.5	60.8	57.3	64.8	58.4	Gravimetric Method
Particulate Matter (PM2.5)	µg/m³	60	29.3	25.9	26.8	32.9	23.7	28.6	26.9	24.3	27.3	Gravimetric Method
Ammonia (NH_3)	µg/m³	400	5.5	4.7	6.0	4.3	6.2	4.7	3.3	5.7	4.6	Indophenol Blue Method
Benzene (C_6H_6)	µg/m³	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	Solvent Extraction followed by GC Analysis
Benzo(a) Pyrene in particulate phase	ng/m³	1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	Solvent Extraction followed by GC Analysis
Arsenic as As	ng/m³	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	AAS/ICP Method
Nickel as Ni	ng/m³	20	3.5	3.1	4.9	1.8	3.6	2.2	4.1	3.9	4.6	AAS/ICP Method
Lead as Pb	µg/m³	1	0.029	0.014	0.036	0.032	0.029	0.037	0.022	0.015	0.039	AAS/ICP Method
Carbon Monoxide	µg/m³	2000	464	382	516	229	583	492	318	397	485	NDIR Spectroscopy Method
Ozone	µg/m³	100	7.1	9.1	6.0	6.4	6.7	7.6	9.7	5.4	9.0	UV photometric method

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Report Number :- VLL/VLS/22/05859/003
Issue Date :- 2022/08/05
Your Ref :- 8500005780
and date :- 2022/06/29

Sample Particulars: AMBIENT AIR QUALITY MONITORING AT GAP & BAKE OVEN ROAD (BALCO)

Analysis starting date :- 2022-07-08

Analysis Completion date :- 2022-08-04

Tests required: Sulphur Dioxide (SO_2), Nitrogen Dioxide (NOx), Particulate Matter (PM10), Particulate Matter (PM2.5), Ammonia (NH_3), Benzene (C_6H_6), Benzo (a) Pyrene in particulate phase, Heavy metals in particulate phase for Arsenic, Nickel & Lead,Carbon monoxide,Ozone

TEST RESULTS

Parameters	Units	Limits	AAQ Location : GAP & BAKE OVEN								
Sampling Date			2022-07-07	2022-07-09	2022-07-13	2022-07-15	2022-07-19	2022-07-21	2022-07-25	2022-07-27	Method
Sulphur Dioxide (SO_2)	$\mu g/m^3$	80	25.1	24.3	27.4	30.7	18.8	25.2	16.8	27.3	Improved West and Gaeke Method
Nitrogen Dioxide (NO_x)	$\mu g/m^3$	80	16.2	22.9	13.0	10.5	13.7	9.2	15.7	12.4	Modified Jacob & Hochheiser Method
Particulate Matter (PM10)	$\mu g/m^3$	100	57.4	52.1	46.1	52.0	59.9	53.7	57.6	56.9	Gravimetric Method
Particulate Matter (PM2.5)	$\mu g/m^3$	60	30.3	23.1	20.9	26.2	31.4	21.2	23.9	24.7	Gravimetric Method
Ammonia (NH_3)	$\mu g/m^3$	400	6.4	9.7	7.0	4.4	8.6	5.3	10.6	6.1	Indophenol Blue Method
Benzene (C_6H_6)	$\mu g/m^3$	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	Solvent Extraction followed by GC Analysis
Benzo(a) Pyrene in particulate phase	ng/m^3	1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	Solvent Extraction followed by GC Analysis
Arsenic as As	ng/m^3	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	AAS/ICP Method
Nickel as Ni	ng/m^3	20	4.9	3.3	3.8	2.7	1.6	2.9	5.7	4.2	AAS/ICP Method
Lead as Pb	$\mu g/m^3$	1	0.032	0.014	0.026	0.022	0.039	0.027	0.034	0.029	AAS/ICP Method
Carbon Monoxide	$\mu g/m^3$	2000	425	393	587	312	461	283	429	378	NDIR Spectroscopy Method
Ozone	$\mu g/m^3$	100	12.5	8.8	6.7	7.2	6.0	5.9	8.0	9.7	UV photometric method

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KORBA (C.G.)

Report Number :- VLL/VLS/22/04951/003
Issue Date :- 2022/07/05
Your Ref :- 8500003497
and date :- 2019/02/16

Sample Particulars — AMBIENT AIR QUALITY MONITORING AT GAP & BAKE OVEN ROAD (BALCO)

Analysis starting date :- 2022-06-02

Analysis Completion date :- 2022-07-04

Tests required: Sulphur Dioxide (SO_2), Nitrogen Dioxide (NOx), Particulate Matter (PM10), Particulate Matter (PM2.5), Ammonia (NH3), Benzene (C_6H_6), Benzo (a) Pyrene in particulate phase, Heavy metals in particulate phase for Arsenic, Nickel & Lead.

TEST RESULTS

Parameters	Units	Limits	AAQ Location : GAP & BAKE OVEN RAOD									
Sampling Date			2022-06-01	2022-06-03	2022-06-08	2022-06-10	2022-06-14	2022-06-16	2022-06-20	2022-06-22	2022-06-27	Method
Sulphur Dioxide (SO_2)	µg/m³	80	30.6	40.0	31.8	25.5	29.6	24.5	26.4	26.3	21.8	Improved West and Gaeke Method
Nitrogen Dioxide (NO_x)	µg/m³	80	16.3	20.2	15.6	19.3	26.5	9.6	15.7	11.1	10.6	Modified Jacob & Hochheiser Method
Particulate Matter (PM10)	µg/m³	100	76.1	67.9	75.4	66.8	59.2	61.3	57.3	52.9	56.5	Gravimetric Method
Particulate Matter (PM2.5)	µg/m³	60	28.2	26.4	34.7	25.8	24.3	29.3	27.3	21.1	24.2	Gravimetric Method
Ammonia (NH_3)	µg/m³	400	3.7	4.3	6.5	4.5	7.6	7.1	4.7	7.6	6.2	Indophenol Blue Method
Benzene (C_6H_6)	µg/m³	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	Solvent Extraction followed by GC Analysis
Benzo(a) Pyrene in particulate phase	ng/m³	1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	Solvent Extraction followed by GC Analysis
Arsenic as As	ng/m³	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	AAS/ICP Method
Nickel as Ni	ng/m³	20	4.6	3.2	4.8	3.2	2.8	3.6	4.4	2.8	3.4	AAS/ICP Method
Lead as Pb	µg/m³	1	0.028	0.037	0.026	0.045	0.048	0.031	0.025	0.029	0.047	AAS/ICP Method
Carbon Monoxide	µg/m³	2000	581	462	447	378	513	452	393	427	386	NDIR Spectroscopy Method
Ozone	µg/m³	100	6.2	5.7	7.1	8.1	11.4	8.2	8.7	14.0	15.5	UV photometric method

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ISSUED TO:
M/s. Bharat Aluminium Company Limited,
KORBA (C.G.)

Report Number :- VLL/VLS/22/03396/003
Issue Date :- 2022/06/04
Your Ref :- 8500003497
and date :- 2019/02/16

Sample Particulars

AMBIENT AIR QUALITY MONITORING AT GAP & BAKE OVEN ROAD (BALCO)

Analysis starting date :- 2022-05-06

Analysis Completion date :- 2022-06-03

Tests required: Sulphur Dioxide (SO_2), Nitrogen Dioxide (NOx), Particulate Matter (PM10), Particulate Matter (PM2.5), Ammonia (NH3), Benzene (C_6H_6), Benzo (a) Pyrene in particulate phase, Heavy metals in particulate phase for Arsenic, Nickel & Lead.

TEST RESULTS

Parameters	Units	Limits	AAQ Location : GAP & BAKE OVEN								
Sampling Date			2022-05-05	2022-05-07	2022-05-11	2022-05-13	2022-05-17	2022-05-19	2022-05-23	2022-05-25	Method
Sulphur Dioxide (SO_2)	µg/m³	80	27.9	32.9	23.8	28.4	39.7	21.6	33.8	37.2	Improved West and Gaeke Method
Nitrogen Dioxide (NO_2)	µg/m³	80	15.3	24.5	14.6	16.7	11.7	12.8	10.8	17.2	Modified Jacob & Hochheiser Method
Particulate Matter (PM10)	µg/m³	100	67.2	64.8	72.3	69.3	70.9	68.5	62.4	74.7	Gravimetric Method
Particulate Matter (PM2.5)	µg/m³	60	25.4	22.9	29.1	27.3	26.3	24.1	20.2	28.3	Gravimetric Method
Ammonia (NH_3)	µg/m³	400	4.3	6.8	4.0	6.9	7.7	6.9	4.3	7.2	Indophenol Blue Method
Benzene (C_6H_6)	µg/m³	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	Solvent Extraction followed by GC Analysis
Benzo(a) Pyrene in particulate phase	ng/m³	1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	Solvent Extraction followed by GC Analysis
Arsenic as As	ng/m³	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	AAS/ICP Method
Nickel as Ni	ng/m³	20	2.7	3.9	5.1	2.1	4.7	3.5	2.8	3.3	AAS/ICP Method
Lead as Pb	µg/m³	1	0.018	0.032	0.038	0.042	0.029	0.026	0.039	0.034	AAS/ICP Method
Carbon Monoxide	µg/m³	2000	342	567	493	263	313	468	237	496	NDIR Spectroscopy Method
Ozone	µg/m³	100	8.0	10.0	7.2	10.7	6.4	5.5	9.4	11.6	UV photometric method

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Report Number :- VLL/VLS/22/01794/003
Issue Date :- 2022/05/05
Your Ref :- 8500003497
and date :- 2019/02/16

Sample Particulars

AMBIENT AIR QUALITY MONITORING AT GAP & BAKE OVEN ROAD (BALCO)

Analysis starting date :- 2022-04-02

Analysis Completion date :- 2022-05-04

Tests required: Sulphur Dioxide (SO_2), Nitrogen Dioxide (NOx), Particulate Matter (PM10), Particulate Matter (PM2.5), Ammonia (NH_3), Benzene (C_6H_6), Benzo (a) Pyrene in particulate phase, Heavy metals in particulate phase for Arsenic, Nickel & Lead.

TEST RESULTS

Parameters	Units	Limits	AAQ Location : GAP & BAKE OVEN RAOD									
Sampling Date			2022-04-01	2022-04-07	2022-04-09	2022-04-13	2022-04-15	2022-04-19	2022-04-21	2022-04-25	2022-04-27	Method
Sulphur Dioxide (SO_2)	$\mu g/m^3$	80	33.2	27.1	36.5	33.1	28.7	34.5	30.2	29.4	35.8	Improved West and Gaeke Method
Nitrogen Dioxide (NO_x)	$\mu g/m^3$	80	13.9	22.5	17.4	16.3	18.5	22.6	13.7	11.8	14.3	Modified Jacob & Hochheiser Method
Particulate Matter (PM10)	$\mu g/m^3$	100	64.4	66.3	64.2	61.3	58.4	63.2	64.9	64.8	67.1	Gravimetric Method
Particulate Matter (PM2.5)	$\mu g/m^3$	60	23.8	21.4	25.9	28.3	20.7	22.6	27.4	24.7	26.3	Gravimetric Method
Ammonia (NH_3)	$\mu g/m^3$	400	6.9	4.2	5.8	7.7	6.5	4.9	3.5	3.8	5.1	Indophenol Blue Method
Benzene (C_6H_6)	$\mu g/m^3$	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	Solvent Extraction followed by GC Analysis
Benzo(a) Pyrene in particulate phase	ng/m^3	1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	Solvent Extraction followed by GC Analysis
Arsenic as As	ng/m^3	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	AAS/ICP Method
Nickel as Ni	ng/m^3	20	3.8	4.6	5.1	2.8	4.2	3.9	3.3	2.7	2.9	AAS/ICP Method
Lead as Pb	$\mu g/m^3$	1	0.036	0.033	0.027	0.043	0.047	0.034	0.026	0.035	0.039	AAS/ICP Method
Carbon Monoxide	$\mu g/m^3$	2000	503	471	529	246	417	339	373	498	419	NDIR Spectroscopy Method
Ozone	$\mu g/m^3$	100	6.9	11.3	12.8	7.4	9.6	6.9	9.4	7.9	8.1	UV photometric method

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ISSUED TO:	Report No.:	VLL/VLS/22/09838/006
M/s. Bharat Aluminium Company Limited,	Issue Date:	2022-10-05
KORBA (C.G.)	P.O.No:	8500005780
	P.O. Date:	2022-06-29

AMBIENT AIR QUALITY MONITORING AT COAL GATE (BALCO)

Analysis starting date :- 2022-09-02

Analysis Completion date :- 2022-10-04

Tests required: Sulphur Dioxide (SO_2), Nitrogen Dioxide (NOx), Particulate Matter (PM10), Particulate Matter (PM2.5), Ammonia (NH3), Benzene (C_6H_6), Benzo (a) Pyrene in particulate phase, Heavy metals in particulate phase for Arsenic, Nickel & Lead.

TEST RESULTS

Parameters	Units	Limits	AAQ Location : COAL GATE									
Sampling Date			2022-09-01	2022-09-08	2022-09-10	2022-09-14	2022-09-16	2022-09-20	2022-09-22	2022-09-26	2022-09-29	Method
Sulphur Dioxide (SO_2)	µg/m³	80	23.5	32.6	27.1	38.4	26.0	24.0	34.2	24.9	30.8	Improved West and Gaeke Method
Nitrogen Dioxide (NO_x)	µg/m³	80	12.9	17.1	18.2	14.8	23.1	18.6	16.9	19.3	15.8	Modified Jacob & Hochheiser Method
Particulate Matter (PM10)	µg/m³	100	59.2	57.2	58.2	57.6	59.2	59.2	56.1	55.5	58.6	Gravimetric Method
Particulate Matter (PM2.5)	µg/m³	60	30.5	23.3	26.1	32.8	27.6	25.8	29.1	27.6	24.9	Gravimetric Method
Ammonia (NH_3)	µg/m³	400	2.9	2.7	3.8	4.0	3.4	3.7	5.5	3.6	3.5	Indophenol Blue Method
Benzene (C_6H_6)	µg/m³	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	Solvent Extraction followed by GC Analysis
Benzo(a) Pyrene in particulate phase	ng/m³	1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	Solvent Extraction followed by GC Analysis
Arsenic as As	ng/m³	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	AAS/ICP Method
Nickel as Ni	ng/m³	20	2.5	4.7	3.9	3.5	1.4	2.7	1.9	2.3	2.9	AAS/ICP Method
Lead as Pb	µg/m³	1	0.028	0.021	0.039	0.035	0.027	0.025	0.017	0.021	0.026	AAS/ICP Method
Carbon Monoxide	µg/m³	2000	349	662	387	461	245	582	376	443	229	NDIR Spectroscopy Method
Ozone	µg/m³	100	8.3	7.2	15.3	7.7	14.5	9.3	8.5	13.5	12.3	UV photometric method

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M/s. Bharat Aluminium Company Limited,	Issue Date:	2022-09-05
KORBA (C.G.)	P.O.No:	8500005780
	P.O. Date:	2022-06-29

Sample Particulars — AMBIENT AIR QUALITY MONITORING AT COAL GATE (BALCO)

Analysis starting date :- 2022-08-06 — Analysis Completion date :- 2022-09-04

Tests required: Sulphur Dioxide (SO_2), Nitrogen Dioxide (NOx), Particulate Matter (PM10), Particulate Matter (PM2.5), Ammonia (NH_3), Benzene (C_6H_6), Benzo (a) Pyrene in particulate phase, Heavy metals in particulate phase for Arsenic, Nickel & Lead.

TEST RESULTS

Parameters	Units	Limits	AAQ Location : COAL GATE									
Sampling Date			2022-08-05	2022-08-07	2022-08-11	2022-08-13	2022-08-17	2022-08-19	2022-08-23	2022-08-25	2022-08-29	Method
Sulphur Dioxide (SO_2)	µg/m³	80	32.6	25.1	17.2	35.7	23.2	29.9	35.1	23.9	27.7	Improved West and Gaeke Method
Nitrogen Dioxide (NO_x)	µg/m³	80	13.4	18.1	28.2	22.5	13.4	8.0	21.2	12.4	20.9	Modified Jacob & Hochheiser Method
Particulate Matter (PM10)	µg/m³	100	62.8	57.3	59.7	62.2	63.4	57.3	52.8	60.2	60.7	Gravimetric Method
Particulate Matter (PM2.5)	µg/m³	60	23.7	25.9	21.9	27.6	22.7	32.3	23.9	29.1	20.8	Gravimetric Method
Ammonia (NH_3)	µg/m³	400	3.4	5.1	9.1	5.0	3.7	3.0	5.3	4.8	3.1	Indophenol Blue Method
Benzene (C_6H_6)	µg/m³	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	Solvent Extraction followed by GC Analysis
Benzo(a) Pyrene in particulate phase	ng/m³	1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	Solvent Extraction followed by GC Analysis
Arsenic as As	ng/m³	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	AAS/ICP Method
Nickel as Ni	ng/m³	20	2.9	3.6	3.7	2.6	2.7	1.9	3.5	2.8	3.9	AAS/ICP Method
Lead as Pb	µg/m³	1	0.036	0.038	0.024	0.042	0.039	0.028	0.044	0.031	0.027	AAS/ICP Method
Carbon Monoxide	µg/m³	2000	524	474	512	339	509	436	339	283	481	NDIR Spectroscopy Method
Ozone	µg/m³	100	9.2	6.9	15.6	11.0	12.1	4.4	8.3	12.2	9.4	UV photometric method

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KORBA (C.G.)

Report Number :- VLL/VLS/22/05859/006
Issue Date :- 2022/08/05
Your Ref :- 8500005780
and date :- 2022/06/29

Sample Particulars — AMBIENT AIR QUALITY MONITORING AT COAL GATE (BALCO)

Analysis starting date :- 2022-07-08 — Analysis Completion date :- 2022-08-04

Tests required: Sulphur Dioxide (SO_2), Nitrogen Dioxide (NOx), Particulate Matter (PM10), Particulate Matter (PM2.5), Ammonia (NH_3), Benzene (C_6H_6), Benzo (a) Pyrene in particulate phase, Heavy metals in particulate phase for Arsenic, Nickel & Lead,Carbon monoxide,Ozone

TEST RESULTS

Parameters	Units	Limits	AAQ Location : COAL GATE								
Sampling Date			2022-07-07	2022-07-09	2022-07-13	2022-07-15	2022-07-19	2022-07-21	2022-07-25	2022-07-27	Method
Sulphur Dioxide (SO_2)	$\mu g/m^3$	80	21.3	20.1	33.9	20.6	21.7	30.3	25.4	31.7	Improved West and Gaeke Method
Nitrogen Dioxide (NO_x)	$\mu g/m^3$	80	16.8	15.7	12.9	20.4	14.8	11.3	15.9	26.3	Modified Jacob & Hochheiser Method
Particulate Matter (PM10)	$\mu g/m^3$	100	50.7	45.9	48.4	53.2	47.1	51.3	48.3	47.0	Gravimetric Method
Particulate Matter (PM2.5)	$\mu g/m^3$	60	21.7	16.0	20.7	23.1	19.4	20.5	18.4	19.4	Gravimetric Method
Ammonia (NH_3)	$\mu g/m^3$	400	7.1	5.6	4.1	11.0	14.0	6.8	8.7	6.1	Indophenol Blue Method
Benzene (C_6H_6)	$\mu g/m^3$	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	Solvent Extraction followed by GC Analysis
Benzo(a) Pyrene in particulate phase	ng/m^3	1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	Solvent Extraction followed by GC Analysis
Arsenic as As	ng/m^3	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	AAS/ICP Method
Nickel as Ni	ng/m^3	20	2.2	2.9	6.4	3.8	4.3	3.7	2.2	3.6	AAS/ICP Method
Lead as Pb	$\mu g/m^3$	1	0.024	0.019	0.036	0.025	0.037	0.029	0.041	0.032	AAS/ICP Method
Carbon Monoxide	$\mu g/m^3$	2000	362	557	598	461	257	348	412	507	NDIR Spectroscopy Method
Ozone	$\mu g/m^3$	100	19.6	10.8	7.3	5.1	8.8	6.0	7.6	11.8	UV photometric method

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Report Number :- VLL/VLS/22/04951/006
Issue Date :- 2022/07/05
Your Ref :- 8500003497
and date :- 2019/02/16

Sample Particulars

AMBIENT AIR QUALITY MONITORING AT COAL GATE (BALCO)

Analysis starting date :- 2022-06-02

Analysis Completion date :- 2022-07-04

Tests required: Sulphur Dioxide (SO_2), Nitrogen Dioxide (NOx), Particulate Matter (PM10), Particulate Matter (PM2.5), Ammonia (NH3), Benzene (C_6H_6), Benzo (a) Pyrene in particulate phase, Heavy metals in particulate phase for Arsenic, Nickel & Lead.

TEST RESULTS

Parameters	Units	Limits	AAQ Location : Coal Gate									
Sampling Date			2022-06-01	2022-06-03	2022-06-08	2022-06-10	2022-06-14	2022-06-16	2022-06-20	2022-06-22	2022-06-27	Method
Sulphur Dioxide (SO_2)	$\mu g/m^3$	80	39.2	20.3	33.6	27.6	24.9	28.2	25.7	22.7	35.6	Improved West and Gaeke Method
Nitrogen Dioxide (NO_x)	$\mu g/m^3$	80	21.7	17.5	31.2	14.3	15.9	11.4	11.9	11.7	11.5	Modified Jacob & Hochheiser Method
Particulate Matter (PM10)	$\mu g/m^3$	100	78.1	68.1	65.0	56.8	69.7	59.1	53.4	66.5	51.7	Gravimetric Method
Particulate Matter (PM2.5)	$\mu g/m^3$	60	32.8	27.4	32.1	28.6	30.2	28.6	25.7	29.2	22.5	Gravimetric Method
Ammonia (NH_3)	$\mu g/m^3$	400	4.1	3.8	4.4	5.7	6.2	8.9	5.1	4.8	5.7	Indophenol Blue Method
Benzene (C_6H_6)	$\mu g/m^3$	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	Solvent Extraction followed by GC Analysis
Benzo(a) Pyrene in particulate phase	ng/m^3	1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	Solvent Extraction followed by GC Analysis
Arsenic as As	ng/m^3	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	AAS/ICP Method
Nickel as Ni	ng/m^3	20	2.5	3.8	3.3	2.9	5.1	3.7	2.6	4.2	3.6	AAS/ICP Method
Lead as Pb	$\mu g/m^3$	1	0.031	0.039	0.025	0.027	0.016	0.036	0.042	0.028	0.034	AAS/ICP Method
Carbon Monoxide	$\mu g/m^3$	2000	243	662	587	462	337	328	292	358	423	NDIR Spectroscopy Method
Ozone	$\mu g/m^3$	100	15.6	9.6	12.8	10.4	11.4	9.4	9.0	12.3	20.0	UV photometric method

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M/s. Bharat Aluminium
Company Limited,
KORBA (C.G.)

Report Number :- VLL/VLS/22/03396/006
Issue Date :- 2022/06/04
Your Ref :- 8500003497
and date :- 2019/02/16

Sample Particulars — AMBIENT AIR QUALITY MONITORING AT COAL GATE (BALCO)

Analysis starting date :- 2022-05-06 — Analysis Completion date :- 2022-06-03

Tests required: Sulphur Dioxide (SO_2), Nitrogen Dioxide (NOx), Particulate Matter (PM10), Particulate Matter (PM2.5), Ammonia (NH_3), Benzene (C_6H_6), Benzo (a) Pyrene in particulate phase, Heavy metals in particulate phase for Arsenic, Nickel & Lead.

TEST RESULTS

Parameters	Units	Limits	AAQ Location : COAL GATE								
Sampling Date			2022-05-05	2022-05-07	2022-05-11	2022-05-13	2022-05-17	2022-05-19	2022-05-23	2022-05-25	Method
Sulphur Dioxide (SO_2)	$\mu g/m^3$	80	25.0	37.8	21.9	30.6	37.2	34.6	23.8	27.2	Improved West and Gaeke Method
Nitrogen Dioxide (NO_x)	$\mu g/m^3$	80	17.7	20.6	22.6	24.1	14.6	8.0	12.9	15.9	Modified Jacob & Hochheiser Method
Particulate Matter (PM10)	$\mu g/m^3$	100	72.3	68.7	61.9	73.9	64.3	58.9	71.7	68.2	Gravimetric Method
Particulate Matter (PM2.5)	$\mu g/m^3$	60	27.1	24.9	22.3	26.9	21.7	19.3	25.8	23.6	Gravimetric Method
Ammonia (NH_3)	$\mu g/m^3$	400	3.9	5.0	4.6	6.0	6.3	9.2	6.7	8.1	Indophenol Blue Method
Benzene (C_6H_6)	$\mu g/m^3$	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	Solvent Extraction followed by GC Analysis
Benzo(a) Pyrene in particulate phase	ng/m^3	1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	Solvent Extraction followed by GC Analysis
Arsenic as As	ng/m^3	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	AAS/ICP Method
Nickel as Ni	ng/m^3	20	3.6	3.8	2.9	5.7	4.6	2.6	3.5	2.9	AAS/ICP Method
Lead as Pb	$\mu g/m^3$	1	0.034	0.028	0.031	0.041	0.029	0.022	0.056	0.047	AAS/ICP Method
Carbon Monoxide	$\mu g/m^3$	2000	469	587	521	339	541	628	473	516	NDIR Spectroscopy Method
Ozone	$\mu g/m^3$	100	13.4	10.9	8.2	11.3	8.6	8.5	12.1	9.4	UV photometric method

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ISSUED TO:
M/s. Bharat Aluminium Company Limited, KORBA (C.G.)

Report Number :- VLL/VLS/22/01794/006
Issue Date :- 2022/05/05
Your Ref :- 8500003497
and date :- 2019/02/16

Sample Particulars

AMBIENT AIR QUALITY MONITORING AT COAL GATE (BALCO)

Analysis starting date :- 2022-04-02

Analysis Completion date :- 2022-05-04

Tests required: Sulphur Dioxide (SO_2), Nitrogen Dioxide (NOx), Particulate Matter (PM10), Particulate Matter (PM2.5), Ammonia (NH3), Benzene (C_6H_6), Benzo (a) Pyrene in particulate phase, Heavy metals in particulate phase for Arsenic, Nickel & Lead.

TEST RESULTS

Parameters	Units	Limits	AAQ Location : Coal Gate									
Sampling Date			2022-04-01	2022-04-07	2022-04-09	2022-04-13	2022-04-15	2022-04-19	2022-04-21	2022-04-25	2022-04-27	Method
Sulphur Dioxide (SO_2)	µg/m³	80	19.4	36.4	25.5	29.7	31.7	22.9	30.5	23.6	28.7	Improved West and Gaeke Method
Nitrogen Dioxide (NO_x)	µg/m³	80	9.4	15.2	10.9	13.4	8.4	11.9	15.3	12.7	12.6	Modified Jacob & Hochheiser Method
Particulate Matter (PM10)	µg/m³	100	64.2	66.9	57.4	53.6	63.8	70.5	60.4	68.2	73.7	Gravimetric Method
Particulate Matter (PM2.5)	µg/m³	60	21.7	25.7	19.6	17.4	22.9	26.7	24.1	19.4	29.3	Gravimetric Method
Ammonia (NH_3)	µg/m³	400	4.9	8.1	6.6	7.5	3.4	4.8	6.2	5.9	7.1	Indophenol Blue Method
Benzene (C_6H_6)	µg/m³	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	Solvent Extraction followe by GC Analysis
Benzo(a) Pyrene in particulate phase	ng/m³	1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	Solvent Extraction followe by GC Analysis
Arsenic as As	ng/m³	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	AAS/ICP Method
Nickel as Ni	ng/m³	20	3.6	3.8	2.2	2.9	3.1	4.6	2.2	3.9	3.7	AAS/ICP Method
Lead as Pb	µg/m³	1	0.018	0.026	0.028	0.034	0.027	0.041	0.039	0.024	0.025	AAS/ICP Method
Carbon Monoxide	µg/m³	2000	357	281	431	269	546	557	412	592	263	NDIR Spectroscopy Metho
Ozone	µg/m³	100	8.4	6.6	12.4	8.9	10.4	9.6	7.5	6.9	5.7	UV photometric method

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ISSUED TO:		
M/s. Bharat Aluminium Company Limited, KORBA (C.G.)	Report No.:	VLL/VLS/22/08103/PL-F
	Issue Date:	2022-09-05
	P.O.No:	8500005780
	P.O. Date:	2022-06-29

FUGITIVE EMISSION MONITORING AT POT LINE - 1

Registration Date: 2022-08-05 **Sampling Date:** 2022-08-04
Analysis starting date : 2022-08-05 **Analysis Completion date:** 2022-08-14

Test Required :- SPM, Fluoride;

TEST RESULTS

S. No.	Parameter	Units	POT LINE -1			
			Section 1	Section 2	Section 7	Section 8
			2022-08-04	2022-08-04	2022-08-04	2022-08-04
1	SPM	ug/Nm3	569	583	581	572
2	Fluoride	mg/Nm3	0.497	0.503	0.509	0.469

Remarks: Instrument Used – APM 460 BL Respirable Dust Sampler.

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M/s. Bharat Aluminium Company Limited,	Issue Date:	2022-10-05
KORBA (C.G.)	P.O.No:	8500005780
	P.O. Date:	2022-06-29

FUGITIVE EMISSION MONITORING AT POT LINE - 1

Registration Date: 2022-09-14 **Sampling Date:** 2022-09-13
Analysis starting date : 2022-09-14 **Analysis Completion date:** 2022-09-30

Test Required :- SPM, Fluoride;

TEST RESULTS

S. No.	Parameter	Units	POT LINE -1			
			Section 1	Section 2	Section 7	Section 8
			2022-09-13	2022-09-13	2022-09-13	2022-09-13
1	SPM	ug/Nm3	559	573	578	584
2	Fluoride	mg/Nm3	0.502	0.429	0.527	0.531

Remarks: Instrument Used – APM 460 BL Respirable Dust Sampler.

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Registration No.: VLL/VLS/22/058590/PL- F
Issue Date: 2022-08-04
Your reference: P.O.No. 8500005780
And Date: 2022-06-29

Sample Particular:- FUGITIVE EMISSION MONITORING (Pot Line - 1)

Registration Date :- 2022-07-07
Sampling Date :- 2022-07-06
Analysis starting date :- 2022-07-07
Analysis Completion date :- 2022-07-18

Test Required :- SPM, Fluoride.;

TEST RESULTS

S No.	Parameter	Units	POT LINE -1			
			Section 1	Section 2	Section 7	Section 8
			2022-07-06	2022-07-06	2022-07-06	2022-07-06
1	SPM	ug/Nm3	549	558	563	572
2	Fluoride	mg/Nm3	0.485	0.492	0.449	0.514

Remarks: Instrument Used – APM 460 BL Respirable Dust Sampler.

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Registration No.: VLL/VLS/22/04951/PL- F
Issue Date: 2022-07-04
Your reference: P.O.No. 8500003497
And Date: 2019-02-16

Sample Particular:- FUGITIVE EMISSION MONITORING (Pot Line - 1)

Registration Date :- 2022-06-07
Sampling Date :- 2022-06-07
Analysis starting date :- 2022-06-08
Analysis Completion date :- 2022-06-25

Test Required :- SPM, Fluoride.;

TEST RESULTS

S No.	Parameter	Units	POT LINE -1			
			Section 1	Section 2	Section 7	Section 8
			2022-06-07	2022-06-07	2022-06-07	2022-06-07
1	SPM	ug/Nm3	588	569	574	581
2	Fluoride	mg/Nm3	0.528	0.487	0.497	0.501

Remarks: Instrument Used – APM 460 BL Respirable Dust Sampler.

ENVIRONMENT LABORATORY Vimta REGD. No.- D.L.-33004/99

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ISSUED TO:
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Registration No.: VLL/VLS/22/03396/PL- F
Issue Date: 2022-06-04
Your reference: P.O.No. 8500003497
And Date: 2019-02-16

Sample Particular:- FUGITIVE EMISSION MONITORING (Pot Line - 1)

Registration Date :- 2022-05-08
Sampling Date :- 2022-05-08
Analysis starting date :- 2022-05-08
Analysis Completion date :- 2022-05-25

Test Required :- SPM, Fluoride.;

TEST RESULTS

S No.	Parameter	Units	POT LINE -1			
			Section 1	Section 2	Section 7	Section 8
			2022-05-08	2022-05-15	2022-05-15	2022-05-08
1	SPM	ug/Nm3	573	532	557	571
2	Fluoride	mg/Nm3	0.452	0.469	0.515	0.528

Remarks: Instrument Used – APM 460 BL Respirable Dust Sampler.

ENVIRONMENT LABORATORY Vimta REGD. No:- D.L.-33004/99

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Registration No.: VLL/VLS/22/01794/PL- F
Issue Date: 2022-05-05
Your reference: P.O.No. 8500003497
And Date: 2019-02-16

Sample Particular:- FUGITIVE EMISSION MONITORING (Pot Line - 1&2)

Registration Date :- 2022-04-04 Sampling Date :- 2022-04-04

Analysis starting date :- 2022-04-05 Analysis Completion date :- 2022-04-30

Test Required :- TSPM, Total Fluoride.;

TEST RESULTS

S No.	Parameter	Units	Limits	POT LINE -1			
				Section 1	Section 2	Section 7	Section 8
				2022-04-04	2022-04-25	2022-04-04	2022-04-25
1	TSPM	ug/m3	600	548	573	529	552
2	T Fluoride	ug/m3	2000	396	492	504	496

Remarks: Instrument Used – APM 460 BL Respirable Dust Sampler.

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ISSUED TO:	Report No.:	VLL/VLS/22/09838/Forage
M/s. Bharat Aluminium Company Limited,	Issue Date:	2022-10-05
KORBA (C.G.)	P.O.No:	8500005780
	P.O. Date:	2022-06-29

FORAGE FLUORIDE

Registration Date: 2022-09-09 **Sampling Date:** 2022-09-08
Analysis starting date: 2022-09-09 **Analysis Completion date:** 2022-09-25

Test Required :- Fluoride;

TEST RESULTS

S. No.	Location	Unit	Norms	Results
1	In Side of the plant	PPM	80	35
2	Near Parsabhata	PPM	80	27
3	Near Lal ghat	PPM	80	37
4	Near check post	PPM	80	30
5	Near Sharma petrol pump	PPM	80	24
6	Bhadrapara	PPM	80	20
7	Risdi	PPM	80	18
8	Rampur	PPM	80	20
9	Manikpur	PPM	80	19
10	jambahar	PPM	80	18
11	Rumgarha	PPM	80	19
12	Gerwan	PPM	80	13

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ISSUED TO: M/s. Bharat Aluminium Company Limited KORBA (C.G.)		Registration No.: VLL/VLS/22/05859/Forage	
		Issue Date:	2022-08-04
		Your reference:	P.O.No. 8500005780
		And Date:	2022-06-29

Sample Particular:- FLUORIDE IN VEGETATION SAMPLES

Registration Date :- 2022-07-12 | Sampling Date :- 2022-07-07

Analysis starting date :- 2022-07-12 | Analysis Completion date :- 2022-07-22

Test Required :- Fluoride;

TEST RESULTS

Sr. No.	Location	Unit	Norms	Results
1	In Side of the plant	PPM	80	31
2	Near Parsabhata	PPM	80	27
3	Near Lal ghat	PPM	80	35
4	Near check post	PPM	80	34
5	Near Sharma petrol pump	PPM	80	26
6	Bhadrapara	PPM	80	25
7	Risdi	PPM	80	24
8	Rampur	PPM	80	21
9	Manikpur	PPM	80	18
10	jambahar	PPM	80	17
11	Rumgarha	PPM	80	13
12	Gerwan	PPM	80	12

ENVIRONMENT LABORATORY Vimta VIMTA LABS REGD.No- DL 33004/99 Sr. No.-5

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		Issue Date:	2022-07-04
		Your reference:	P.O.No. 8500003497
		And Date:	2019-02-16

Sample Particular:- FLUORIDE IN VEGETATION SAMPLES

Registration Date :- 2022-06-12 | Sampling Date :- 2022-06-12

Analysis starting date :- 2022-06-13 | Analysis Completion date :- 2022-06-27

Test Required :- Fluoride;

TEST RESULTS

Sr. No.	Location	Unit	Norms	Results
1	In Side of the plant	PPM	80	32
2	Near Parsabhata	PPM	80	25
3	Near Lal ghat	PPM	80	34
4	Near check post	PPM	80	31
5	Near Sharma petrol pump	PPM	80	24
6	Bhadrapara	PPM	80	23
7	Risdi	PPM	80	21
8	Rampur	PPM	80	20
9	Manikpur	PPM	80	19
10	jambahar	PPM	80	15
11	Rumgarha	PPM	80	14
12	Gerwan	PPM	80	11

ENVIRONMENT LABORATORY VIMTA LABS REGD. NO.- D.L.-33004/99 VIMTA

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ISSUED TO: M/s. Bharat Aluminium Company Limited KORBA (C.G.)	Registration No.: VLL/VLS/22/03396/Rodding- F
	Issue Date: 2022-06-04
	Your reference: P.O.No. 8500003497
	And Date: 2019-02-16

Sample Particular:- FLUORIDE IN VEGETATION SAMPLES

Registration Date :- 2022-05-12 | Sampling Date :- 2022-05-12

Analysis starting date :- 2022-05-12 | Analysis Completion date :- 2022-05-27

Test Required :- Fluoride;

TEST RESULTS

Sr. No.	Location	Unit	Norms	Results
1	In Side of the plant	PPM	80	35
2	Near Parsabhata	PPM	80	29
3	Near Lal ghat	PPM	80	38
4	Near check post	PPM	80	33
5	Near Sharma petrol pump	PPM	80	27
6	Bhadrapara	PPM	80	25
7	Risdi	PPM	80	23
8	Rampur	PPM	80	24
9	Manikpur	PPM	80	21
10	jambahar	PPM	80	16
11	Rumgarha	PPM	80	18
12	Gerwan	PPM	80	10

ENVIRONMENT LABORATORY
Vimta VIMTA LABS REGD. No:- D.L.-3300/99

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		Issue Date:	2022-05-05
		Your reference:	P.O.No. 8500003497
		And Date:	2019-02-16

Sample Particular:- FLUORIDE IN VEGETATION SAMPLES

Registration Date :- 2022-04-08	Sampling Date :- 2022-04-08
Analysis starting date :- 2022-04-09	Analysis Completion date :- 2022-04-24

Test Required :- Fluoride;

TEST RESULTS

Sr. No.	Location	Unit	Norms	Results
1	In Side of the plant	PPM	80	35
2	Near Parsabhata	PPM	80	26
3	Near Lal ghat	PPM	80	35
4	Near check post	PPM	80	31
5	Near Sharma petrol pump	PPM	80	29
6	Bhadrapara	PPM	80	27
7	Risdi	PPM	80	25
8	Rampur	PPM	80	22
9	Manikpur	PPM	80	19
10	jambahar	PPM	80	16
11	Rumgarha	PPM	80	15
12	Gerwan.	PPM	80	11

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ISSUED TO:

M/s. Bharat Aluminum Company Limited,
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Report Number	:	VLL/VLS/22/09838/001
Issued Date	:	2022-10-03
Po. Date	:	8500005780
P.O. Date	:	2022-06-29

SAMPLE PARTICULARS : **GROUND WATER SAMPLES (BALCO PLANT)**

Sample Registration Date	:	2022-09-15	Sampling Date	:	2022-09-12
Analysis Starting Date	:	2022-09-15	Analysis Completion Date	:	2022-09-30
Test Required	:	Water Analysis as per IS 10500 : 2012			

SAMPLE COLLECTED BY VIMTA LABS LTD.

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500: 2012	*Rogabahari village Bore Well*	*Rogabahari village Dug well*	*Bailgiri village Bore well*	*Bailgiri village Dug well*
1	pH value	-	6.5-8.5 (NR)	6.88	6.85	6.78	7.08
2	Color	Hazen	5(15)	Colorless	Colorless	Colorless	Colorless
3	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5	Turbidity	NTU	1(5)	1	2	2	3
6	Total dissolved solids at 180°C	mg/l	500(2000)	450	305	498	526
7	Total Hardness as $CaCO_3$	mg/l	200(600)	190	142	292	236
8	Total Alkalinity as $CaCO_3$	mg/l	200(600)	130	134	150	197
9	Calcium as Ca	mg/l	75(200)	66.4	29.6	98.4	82.4
10	Magnesium as Mg	mg/l	30(100)	5.8	16.5	11.2	31.5
11	Free Residual chlorine	mg/l	0.2(1.0)	<0.2	0.2	<0.2	<0.2
12	Boron	mg/l	0.5(1.0)	0.18	0.07	0.23	0.09
13	Chlorides as Cl	mg/l	250(1000)	276.2	127.6	214.8	268.2
14	Sulphate as SO_4	mg/l	200(400)	33.6	24.1	38.6	49.4
15	Fluorides as F	mg/l	1.0(1.5)	0.147	0.175	0.387	0.236
16	Nitrates as NO_3	mg/l	45(NR)	2.8	1.4	3.7	6.2
17	Phenolic Compounds as C_6H_5OH	mg/l	0.001(0.002)	<0.001	<0.001	<0.001	<0.001
18	Cyanides	mg/l	0.05(NR)	<0.02	<0.02	<0.02	<0.02

Method of Testing: As per APHA 23rd edition and IS: 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

Name and Designation of Authorized Signatory

ENVIRONMENT LABORATORY Vimta VIMTA LABS REGD. No- DL 33004/99 Sr. No.-6 VIMTA

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ISSUED TO:

M/s. Bharat Aluminum Company Limited,
BALCO
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Chhattisgarh

Report Number	:	VLL/VLS/22/09838/001
Issued Date	:	2022-10-03
Po. Date	:	8500005780
P.O. Date	:	2022-06-29

SAMPLE PARTICULARS : **GROUND WATER SAMPLES (BALCO PLANT)**

Sample Registration Date	:	2022-09-15	Sampling Date	:	2022-09-12
Analysis Starting Date	:	2022-09-15	Analysis Completion Date	:	2022-09-30
Test Required	:	Water Analysis as per IS 10500 : 2012			

SAMPLE COLLECTED BY VIMTA LABS LTD.

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Rogabahari village Bore Well*	*Rogabahari village Dug well*	*Bailgiri village Bore well*	*Bailgiri village Dug well*
19	Anionic detergents as MBAS	mg/l	0.2(1.0)	<0.02	<0.02	<0.02	<0.02
20	Mineral oil	mg/l	0.5(NR)	Absent	Absent	Absent	Absent
21	Cadmium as Cd	mg/l	0.003(NR)	<0.003	<0.003	<0.003	<0.003
22	Total Arsenic as As	mg/l	0.01(0.05)	<0.01	<0.01	<0.01	<0.01
23	Copper as Cu	mg/l	0.05(1.5)	0.013	<0.01	0.015	0.017
24	Lead as Pb	mg/l	0.01(NR)	<0.01	<0.01	<0.01	<0.01
25	Manganese as Mn	mg/l	0.1(0.3)	0.02	<0.01	0.02	0.02
26	Molybdenum as Mo	mg/l	0.07(NR)	<0.01	<0.01	<0.01	<0.01
27	Nickel as Ni	mg/l	0.02(NR)	<0.01	<0.01	<0.01	<0.01
28	Iron as Fe	mg/l	0.3(NR)	0.16	0.07	0.11	0.07
29	Total Chromium as Cr	mg/l	0.05(NR)	<0.01	<0.01	<0.01	<0.01
30	Selenium as Se	mg/l	0.05(NR)	<0.01	<0.01	<0.01	<0.01
31	Zinc as Zn	mg/l	5.0(15)	0.20	0.18	0.19	0.22
32	Aluminum as Al	mg/l	0.03(0.2)	0.08	0.06	0.09	0.05
33	Mercury as Hg	mg/l	0.001(NR)	<0.001	<0.001	<0.001	<0.001
34	Sulphide as H2S	mg/l	0.05(NR)	<0.05	<0.05	<0.05	<0.05
35	Chloramines as Cl2	mg/l	4.0(NR)	<0.05	<0.05	<0.05	<0.05
36	Ammonia (as total ammonia-N	mg/l	0.5(NR)	<0.05	<0.05	<0.05	<0.05
37	Barium as Ba	mg/l	0.7(NR)	0.025	0.031	0.024	0.032
38	Silver as Ag	mg/l	0.1(NR)	<0.01	<0.01	<0.01	<0.01

Method of Testing: As per APHA 23rd edition and IS 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

Name and Designation of Authorized Signatory

ENVIRONMENT LABORATORY Vimta VIMTA LABS REGD. No. DL 33004/99 Sr. No.-5 VIMTA

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ISSUED TO:

M/s. Bharat Aluminum Company Limited,
BALCO
KORBA
Chhattisgarh

Report Number	:	VLL/VLS/22/09838/001
Issued Date	:	2022-10-03
Po. Date	:	8500005780
P.O. Date	:	2022-06-29

SAMPLE PARTICULARS : **GROUND WATER SAMPLES (BALCO PLANT)**

Sample Registration Date	:	2022-09-15	Sampling Date	:	2022-09-12
Analysis Starting Date	:	2022-09-15	Analysis Completion Date	:	2022-09-30
Test Required	:	Wator Analysis as per IS 10500 : 2012			
SAMPLE COLLECTED BY VIMTA LABS LTD.					

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Rogabahari village Bore Well*	*Rogabahari village Dug well*	*Bailgiri village Bore well*	*Bailgiri village Dug well*
39	Polychlorinated biphenyls	mg/l	0.0005(NR)	Absent	Absent	Absent	Absent
40	Polynuclear aromatic hydrocarbon as PAH	mg/l	0.0001(NR)	<0.0001	<0.0001	<0.0001	<0.0001
41	Bromoform	mg/l	0.1(NR)	<0.0001	<0.0001	<0.0001	<0.0001
42	Dibromochloromethane	mg/l	0.1(NR)	<0.01	<0.01	<0.01	<0.01
43	Bromodichloromethane	mg/l	0.06(NR)	<0.01	<0.01	<0.01	<0.01
44	Chloroform	mg/l	0.2(NR)	<0.001	<0.001	<0.001	<0.001
(A)	**Pesticides**						
45	Alachlor	µg/l	20	<0.01	<0.01	<0.01	<0.01
46	Atrazine	µg/l	2	<0.01	<0.01	<0.01	<0.01
47	Aldrin	µg/l	0.03	<0.01	<0.01	<0.01	<0.01
48	Alpha HCH	µg/l	0.01	<0.01	<0.01	<0.01	<0.01
49	Beta HCH	µg/l	0.04	<0.01	<0.01	<0.01	<0.01
50	Butachlor	µg/l	125	<0.01	<0.01	<0.01	<0.01
51	Chlorpyriphos	µg/l	30	<0.01	<0.01	<0.01	<0.01
52	Delta HCH	µg/l	0.04	<0.01	<0.01	<0.01	<0.01
53	2,4-Dichlorophenoxyacetic acid	µg/l	30	<0.01	<0.01	<0.01	<0.01
54	DDT	µg/l	1	<0.01	<0.01	<0.01	<0.01
55	Endosulfan (alpha, beta and Sulphate)	µg/l	0.4	<0.01	<0.01	<0.01	<0.01
56	Ethion	µg/l	3	<0.01	<0.01	<0.01	<0.01
57	Gamma HCH	µg/l	2	<0.01	<0.01	<0.01	<0.01
58	Isoproturon	µg/l	9	<0.01	<0.01	<0.01	<0.01

Method of Testing: As per APHA 23rd edition and IS 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

Name and Designation of Authorized Signatory

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KORBA
Chhattisgarh

Report Number	:	VLL/VLS/22/09838/001
Issued Date	:	2022-10-03
Po. Date	:	8500005780
P.O. Date	:	2022-06-29

SAMPLE PARTICULARS : **GROUND WATER SAMPLES (BALCO PLANT)**

Sample Registration Date	:	2022-09-15	Sampling Date	:	2022-09-12
Analysis Starting Date	:	2022-09-15	Analysis Completion Date	:	2022-09-30
Test Required	:	Water Analysis as per IS 10500 : 2012			
SAMPLE COLLECTED BY VIMTA LABS LTD.					

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Rogabahari village Bore Well*	*Rogabahari village Dug well*	*Bailgiri village Bore well*	*Bailgiri village Dug well*
59	Malathion	µg/l	190	BDL	BDL	BDL	BDL
60	Methyl parathion	µg/l	0.3	BDL	BDL	BDL	BDL
61	Monocrotophos	µg/l	1	BDL	BDL	BDL	BDL
62	Phorate	µg/l	2	BDL	BDL	BDL	BDL
63	E.coli	Per 100 ml	Absent	Absent	Absent	Absent	Absent
64	Total Coliforms	MPN/100ml	Absent	Absent	Absent	Absent	Absent
(B)	**Radioactive**						
65	Alpha emitters	Bq/l	0.1(NR)	BDL	BDL	BDL	BDL
66	Beta emitters	Bq/l	1.0(NR)	BDL	BDL	BDL	BDL

Method of Testing: As per APHA 23rd edition and IS 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

-END OF THE REPORTS-

Name and Designation of Authorized Signatory
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Report Number	:	VLL/VLS/22/09838/001
Issued Date	:	2022-10-03
Po. Date	:	8500005780
P.O. Date	:	2022-06-29

SAMPLE PARTICULARS : GROUND WATER SAMPLES (BALCO PLANT)

Sample Registration Date	:	2022-09-15	Sampling Date	:	2022-09-12
Analysis Starting Date	:	2022-09-15	Analysis Completion Date	:	2022-09-30
Test Required	:	Water Analysis as per IS 10500 : 2012			

SAMPLE COLLECTED BY VIMTA LABS LTD

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Parsabhata village Bore Well*	*Parsabhata village Dug well*	*Karma Talkies Bore well*	*Bhadrapada village Dug well*
1	pH value	-	6.5-8.5 (NR)	6.72	7.07	7.13	6.65
2	Color	Hazen	5(15)	Colorless	Colorless	Colorless	Colorless
3	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5	Turbidity	NTU	1(5)	2	2	3	3
6	Total dissolved solids at 180°C	mg/l	500(2000)	479	487	478	535
7	Total Hardness as $CaCO_3$	mg/l	200(600)	257	312	284	290
8	Total Alkalinity as $CaCO_3$	mg/l	200(600)	126	130	72	235
9	Calcium as Ca	mg/l	75(200)	64.0	62.4	66.5	70.4
10	Magnesium as Mg	mg/l	30(100)	23.6	37.9	28.5	27.6
11	Free Residual chlorine	mg/l	0.2(1.0)	<0.2	<0.2	<0.2	<0.2
12	Boron	mg/l	0.5(1.0)	0.05	0.13	0.08	0.09
13	Chlorides as Cl	mg/l	250(1000)	296.8	85.7	224.8	371.5
14	Sulphate as SO_4	mg/l	200(400)	53.7	27.1	49.7	58.6
15	Fluorides as F	mg/l	1.0(1.5)	0.242	0.318	0.381	0.269
16	Nitrates as NO_3	mg/l	45(NR)	4.5	2.4	3.5	4.6
17	Phenolic Compounds as C_6H_5OH	mg/l	0.001(0.002)	<0.001	<0.001	<0.001	<0.001
18	Cyanides	mg/l	0.05(NR)	<0.02	<0.02	<0.02	<0.02

Method of Testing: As per APHA 23rd edition and IS: 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

Name and Designation of Authorized Signatory

ENVIRONMENT LABORATORY Vimta VIMTA LABS REGD. No- DL 33004/99 VIMTA

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ISSUED TO:

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BALCO
KORBA
Chhattisgarh

Report Number	:	VLL/VLS/22/09838/001
Issued Date	:	2022-10-03
Po. Date	:	8500005780
P.O. Date	:	2022-06-29

SAMPLE PARTICULARS : **GROUND WATER SAMPLES (BALCO PLANT)**

Sample Registration Date	:	2022-09-15	Sampling Date	:	2022-09-12
Analysis Starting Date	:	2022-09-15	Analysis Completion Date	:	2022-09-30
Test Required	:	Water Analysis as per IS 10500 : 2012			
SAMPLE COLLECTED BY VIMTA LABS LTD					

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Parsabhata village Bore Well*	*Parsabhata village Dug well*	*Karma Talkies Bore well*	*Bhadrapada village Dug well*
19	Anionic detergents as MBAS	mg/l	0.2(1.0)	<0.02	<0.02	<0.02	<0.02
20	Mineral oil	mg/l	0.5(NR)	Absent	Absent	Absent	Absent
21	Cadmium as Cd	mg/l	0.003(NR)	<0.003	<0.003	<0.003	<0.003
22	Total Arsenic as As	mg/l	0.01(0.05)	<0.01	<0.01	<0.01	<0.01
23	Copper as Cu	mg/l	0.05(1.5)	0.012	0.02	0.027	0.011
24	Lead as Pb	mg/l	0.01(NR)	<0.01	<0.01	<0.01	<0.01
25	Manganese as Mn	mg/l	0.1(0.3)	0.02	0.02	0.03	0.015
26	Molybdenum as Mo	mg/l	0.07(NR)	<0.01	<0.01	<0.01	<0.01
27	Nickel as Ni	mg/l	0.02(NR)	<0.01	<0.01	<0.01	<0.01
28	Iron as Fe	mg/l	0.3(NR)	0.11	0.09	0.10	0.11
29	Total Chromium as Cr	mg/l	0.05(NR)	<0.01	<0.01	<0.01	<0.01
30	Selenium as Se	mg/l	0.05(NR)	<0.01	<0.01	<0.01	<0.01
31	Zinc as Zn	mg/l	5.0(15)	0.20	0.09	0.13	0.11
32	Aluminum as Al	mg/l	0.03(0.2)	0.05	0.07	0.06	0.07
33	Mercury as Hg	mg/l	0.001(NR)	<0.001	<0.001	<0.001	<0.001
34	Sulphide as H2S	mg/l	0.05(NR)	<0.05	<0.05	<0.05	<0.05
35	Chloramines as Cl2	mg/l	4.0(NR)	<0.05	<0.05	<0.05	<0.05
36	Ammonia (as total ammonia-N	mg/l	0.5(NR)	<0.05	<0.05	<0.05	<0.05
37	Barium as Ba	mg/l	0.7(NR)	0.025	0.029	0.031	0.023
38	Silver as Ag	mg/l	0.1(NR)	<0.01	<0.01	<0.01	<0.01

Method of Testing: As per APHA 23rd edition and IS 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

Name and Designation of Authorized Signatory

ENVIRONMENT LABORATORY VIMTA LABS REGD. No. DL 3300/99 VIMTA

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KORBA
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Report Number	:	VLL/VLS/22/09838/001
Issued Date	:	2022-10-03
Po. Date	:	8500005780
P.O. Date	:	2022-06-29

SAMPLE PARTICULARS : **GROUND WATER SAMPLES (BALCO PLANT)**

Sample Registration Date	:	2022-09-15	Sampling Date	:	2022 09 12
Analysis Starting Date	:	2022-09-15	Analysis Completion Date	:	2022-09-30
Test Required	:	Water Analysis as per IS 10500 : 2012			
SAMPLE COLLECTED BY VIMTA LABS LTD					

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Parsabhata village Bore Well*	*Parsabhata village Dug well*	*Karma Talkies Bore well*	*Bhadrapada village Dug well*
39	Polychlorinated biphenyls	mg/l	0.0005(NR)	Absent	Absent	Absent	Absent
40	Polynuclear aromatic hydrocarbon as PAH	mg/l	0.0001(NR)	<0.0001	<0.0001	<0.0001	<0.0001
41	Bromoform	mg/l	0.1(NR)	<0.0001	<0.0001	<0.0001	<0.0001
42	Dibromochloromethane	mg/l	0.1(NR)	<0.01	<0.01	<0.01	<0.01
43	Bromodichloromethane	mg/l	0.06(NR)	<0.01	<0.01	<0.01	<0.01
44	Chloroform	mg/l	0.2(NR)	<0.001	<0.001	<0.001	<0.001
(A)	**Pesticides**						
45	Alachlor	µg/l	20	<0.01	<0.01	<0.01	<0.01
46	Atrazine	µg/l	2	<0.01	<0.01	<0.01	<0.01
47	Aldrin	µg/l	0.03	<0.01	<0.01	<0.01	<0.01
48	Alpha HCH	µg/l	0.01	<0.01	<0.01	<0.01	<0.01
49	Beta HCH	µg/l	0.04	<0.01	<0.01	<0.01	<0.01
50	Butachlor	µg/l	125	<0.01	<0.01	<0.01	<0.01
51	Chlorpyriphos	µg/l	30	<0.01	<0.01	<0.01	<0.01
52	Delta HCH	µg/l	0.04	<0.01	<0.01	<0.01	<0.01
53	2,4-Dichlorophenoxyacetic acid	µg/l	30	<0.01	<0.01	<0.01	<0.01
54	DDT	µg/l	1	<0.01	<0.01	<0.01	<0.01
55	Endosulfan (alpha, beta and Sulphate)	µg/l	0.4	<0.01	<0.01	<0.01	<0.01
56	Ethion	µg/l	3	<0.01	<0.01	<0.01	<0.01
57	Gamma HCH	µg/l	2	<0.01	<0.01	<0.01	<0.01
58	Isoproturon	µg/l	9	<0.01	<0.01	<0.01	<0.01

Method of Testing: As per APHA 23rd edition and IS 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

Name and Designation of Authorized Signatory

ENVIRONMENT LABORATORY Vimta VIMTA LABS REGD. No- DL 3300/99 Sr. No.-5 VIMTA

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KORBA
Chhattisgarh

Report Number	:	VLL/VLS/22/09838/001
Issued Date	:	2022-10-03
Po. Date	:	8500005780
P.O. Date	:	2022-06-29

SAMPLE PARTICULARS : **GROUND WATER SAMPLES (BALCO PLANT)**

Sample Registration Date	:	2022-09-15	Sampling Date	:	2022 09 12
Analysis Starting Date	:	2022-09-15	Analysis Completion Date	:	2022-09-30
Test Required	:	Water Analysis as per IS 10500 : 2012			

SAMPLE COLLECTED BY VIMTA LABS LTD

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Parsabhata village Bore Well*	*Parsabhata village Dug well*	*Karma Talkies Bore well*	*Bhadrapada village Dug well*
59	Malathion	µg/l	190	BDL	BDL	BDL	BDL
60	Methyl parathion	µg/l	0.3	BDL	BDL	BDL	BDL
61	Monocrotophos	µg/l	1	BDL	BDL	BDL	BDL
62	Phorate	µg/l	2	BDL	BDL	BDL	BDL
63	E.coli	Per 100 ml	Absent	Absent	Absent	Absent	Absent
64	Total Coliforms	MPN/100ml	Absent	Absent	Absent	Absent	Absent
(B)	**Radioactive**						
65	Alpha emitters	Bq/l	0.1(NR)	BDL	BDL	BDL	BDL
66	Beta emitters	Bq/l	1.0(NR)	BDL	BDL	BDL	BDL

Method of Testing: As per APHA 23rd edition and IS: 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

Name and Designation of Authorized Signatory

ENVIRONMENT LABORATORY Vimta VIMTA LABS REGD. No- DL 33004/99 Sr. No.-5 VIMTA

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ISSUED TO:

M/s. Bharat Aluminum Company Limited,
KORBA (C.G)

Report Number	:	VLL/VLS/22/08103/001
Issued Date	:	2022-09-02
Po. Date	:	8500005780
P.O. Date	:	2022-06-29

SAMPLE PARTICULARS : GROUND WATER SAMPLES (BALCO PLANT)

Sample Registration Date	:	2022-08-16	Sampling Date	:	2022-08-13
Analysis Starting Date	:	2022-08-16	Analysis Completion Date	:	2022-08-30
Test Required	:	Water Analysis as per IS 10500 : 2012			

SAMPLE COLLECTED BY VIMTA LABS LTD

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Parsabhata village Bore Well*	*Parsabhata village Dug well*	*Karma Talkies Bore well*	*Bhadrapada village Dug well*
1	pH value	-	6.5-8.5 (NR)	6.80	6.39	6.68	7.15
2	Color	Hazen	5(15)	Colorless	Colorless	Colorless	Colorless
3	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Odour		Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5	Turbidity	NTU	1(5)	3	3	4	2
6	Total dissolved solids at 180°C	mg/l	500(2000)	495	257	389	378
7	Total Hardness as $CaCO_3$	mg/l	200(600)	178	210	235	214
8	Total Alkalinity as $CaCO_3$	mg/l	200(600)	182	205	118	193
9	Calcium as Ca	mg/l	75(200)	44.0	42.0	65.1	43.6
10	Magnesium as Mg	mg/l	30(100)	16.5	24.3	17.6	25.5
11	Free Residual chlorine	mg/l	0.2(1.0)	<0.2	0.2	<0.2	0.2
12	Boron	mg/l	0.5(1.0)	0.09	0.07	0.13	0.06
13	Chlorides as Cl	mg/l	250(1000)	365.8	69.7	120.8	98.5
14	Sulphate as SO_4	mg/l	200(400)	37.8	23.4	28.2	45.0
15	Fluorides as F	mg/l	1.0(1.5)	0.211	0.252	0.225	0.294
16	Nitrates as NO_3	mg/l	45(NR)	3.5	1.2	2.6	3.9
17	Phenolic Compounds as C_6H_5OH	mg/l	0.001(0.002)	<0.001	<0.001	<0.001	<0.001
18	Cyanides	mg/l	0.05(NR)	<0.02	<0.02	<0.02	<0.02

Method of Testing: As per APHA 23rd edition and IS: 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

Name and Designation of Authorized Signatory

ENVIRONMENT LABORATORY Vimta VIMTA LABS REGD. No- DL 33004/99 Sr. No.-5

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ISSUED TO:

M/s. Bharat Aluminum Company Limited,
KORBA (C.G)

Report Number : VLL/VLS/22/08103/001
Issued Date : 2022-09-02
Po. Date : 8500005780
P.O. Date : 2022-06-29

SAMPLE PARTICULARS : GROUND WATER SAMPLES (BALCO PLANT)

Sample Registration Date	: 2022-08-16	Sampling Date	: 2022-08-13
Analysis Starting Date	: 2022-08-16	Analysis Completion Date	: 2022-08-30
Test Required	: Water Analysis as per IS 10500 : 2012		
SAMPLE COLLECTED BY VIMTA LABS LTD			

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Parsabhata village Bore Well*	*Parsabhata village Dug well*	*Karma Talkies Bore well*	*Bhadrapada village Bore well*
19	Anionic detergents as MBAS	mg/l	0.2(1.0)	<0.02	<0.02	<0.02	<0.02
20	Mineral oil	mg/l	0.5(NR)	Absent	Absent	Absent	Absent
21	Cadmium as Cd	mg/l	0.003(NR)	<0.003	<0.003	<0.003	<0.003
22	Total Arsenic as As	mg/l	0.01(0.05)	<0.01	<0.01	<0.01	<0.01
23	Copper as Cu	mg/l	0.05(1.5)	<0.01	0.013	0.011	<0.01
24	Lead as Pb	mg/l	0.01(NR)	<0.01	<0.01	<0.01	<0.01
25	Manganese as Mn	mg/l	0.1(0.3)	0.02	0.01	0.01	<0.01
26	Molybdenum as Mo	mg/l	0.07(NR)	<0.01	<0.01	<0.01	<0.01
27	Nickel as Ni	mg/l	0.02(NR)	<0.01	<0.01	<0.01	<0.01
28	Iron as Fe	mg/l	0.3(NR)	0.08	0.12	0.06	0.09
29	Total Chromium as Cr	mg/l	0.05(NR)	<0.01	<0.01	<0.01	<0.01
30	Selenium as Se	mg/l	0.05(NR)	<0.01	<0.01	<0.01	<0.01
31	Zinc as Zn	mg/l	5.0(15)	0.21	0.09	0.12	0.11
32	Aluminum as Al	mg/l	0.03(0.2)	0.05	0.07	0.04	0.06
33	Mercury as Hg	mg/l	0.001(NR)	<0.001	<0.001	<0.001	<0.001
34	Sulphide as H2S	mg/l	0.05(NR)	<0.05	<0.05	<0.05	<0.05
35	Chloramines as Cl2	mg/l	4.0(NR)	<0.05	<0.05	<0.05	<0.05
36	Ammonia (as total ammonia-N	mg/l	0.5(NR)	<0.05	<0.05	<0.05	<0.05
37	Barium as Ba	mg/l	0.7(NR)	0.025	0.031	0.029	0.027
38	Silver as Ag	mg/l	0.1(NR)	<0.01	<0.01	<0.01	<0.01

Method of Testing: As per APHA 23rd edition and IS 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

Name and Designation of Authorized Signatory

ENVIRONMENT LABORATORY Vimta VIMTA LABS Regd. No. DL-33000/2001 Sr. No.-5

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Report Number	:	VLL/VLS/22/08103/001
Issued Date	:	2022-09-02
Po. Date	:	8500005780
P.O. Date	:	2022-06-29

SAMPLE PARTICULARS : **GROUND WATER SAMPLES (BALCO PLANT)**

Sample Registration Date	:	2022-08-16	Sampling Date	:	2022-08-13
Analysis Starting Date	:	2022-08-16	Analysis Completion Date	:	2022-08-30
Test Required	:	Water Analysis as per IS 10500 : 2012			
SAMPLE COLLECTED BY VIMTA LABS LTD					

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Parsabhata village Bore Well*	*Parsabhata village Dug well*	*Karma Talkies Bore well*	*Bhadrapada village Bore well*
39	Polychlorinated biphenyls	mg/l	0.0005(NR)	Absent	Absent	Absent	Absent
40	Polynuclear aromatic hydrocarbon as PAH	mg/l	0.0001(NR)	<0.0001	<0.0001	<0.0001	<0.0001
41	Bromoform	mg/l	0.1(NR)	<0.0001	<0.0001	<0.0001	<0.0001
42	Dibromochloromethane	mg/l	0.1(NR)	<0.01	<0.01	<0.01	<0.01
43	Bromodichloromethane	mg/l	0.06(NR)	<0.01	<0.01	<0.01	<0.01
44	Chloroform	mg/l	0.2(NR)	<0.001	<0.001	<0.001	<0.001
(A)	**Pesticides**						
45	Alachlor	µg/l	20	<0.01	<0.01	<0.01	<0.01
46	Atrazine	µg/l	2	<0.01	<0.01	<0.01	<0.01
47	Aldrin	µg/l	0.03	<0.01	<0.01	<0.01	<0.01
48	Alpha HCH	µg/l	0.01	<0.01	<0.01	<0.01	<0.01
49	Beta HCH	µg/l	0.04	<0.01	<0.01	<0.01	<0.01
50	Butachlor	µg/l	125	<0.01	<0.01	<0.01	<0.01
51	Chlorpyriphos	µg/l	30	<0.01	<0.01	<0.01	<0.01
52	Delta HCH	µg/l	0.04	<0.01	<0.01	<0.01	<0.01
53	2,4-Dichlorophenoxyacetic acid	µg/l	30	<0.01	<0.01	<0.01	<0.01
54	DDT	µg/l	1	<0.01	<0.01	<0.01	<0.01
55	Endosulfan (alpha, beta and Sulphate)	µg/l	0.4	<0.01	<0.01	<0.01	<0.01
56	Ethion	µg/l	3	<0.01	<0.01	<0.01	<0.01
57	Gamma HCH	µg/l	2	<0.01	<0.01	<0.01	<0.01
58	Isoproturon	µg/l	9	<0.01	<0.01	<0.01	<0.01

Method of Testing: As per APHA 23rd edition and IS 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

Name and Designation of Authorized Signatory

ENVIRONMENT LABORATORY Vimta VIMTA LABS REGD. No. DL 33004/99 Sr. No.-5

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Report Number	:	VLL/VLS/22/08103/001
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Po. Date	:	8500005780
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SAMPLE PARTICULARS : **GROUND WATER SAMPLES (BALCO PLANT)**

Sample Registration Date	:	2022-08-16	Sampling Date	:	2022-08-13
Analysis Starting Date	:	2022 08 16	Analysis Completion Date	:	2022-08-30
Test Required	:	Water Analysis as per IS 10500 : 2012			
SAMPLE COLLECTED BY VIMTA LABS LTD					

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Parsabhata village Bore Well*	*Parsabhata village Dug well*	*Karma Talkies Bore well*	*Bhadrapada village Bore well*
59	Malathion	µg/l	190	BDL	BDL	BDL	BDL
60	Methyl parathion	µg/l	0.3	BDL	BDL	BDL	BDL
61	Monocrotophos	µg/l	1	BDL	BDL	BDL	BDL
62	Phorato	µg/l	?	BDL	BDL	BDL	BDL
63	E.coli	Per 100 ml	Absent	Absent	Absent	Absent	Absent
64	Total Coliforms	MPN/100ml	Absent	Absent	Absent	Absent	Absent
(B)	**Radioactive**						
65	Alpha emitters	Bq/l	0.1(NR)	BDL	BDL	BDL	BDL
66	Beta emitters	Bq/l	1.0(NR)	BDL	BDL	BDL	BDL

Method of Testing: As per APHA 23rd edition and IS: 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

Name and Designation of Authorized Signatory

ENVIRONMENT LABORATORY Vimta VIMTA LABS REGD. No- DL 33004/99 Sr. No.-5

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Report Number	:	VLL/VLS/22/08103/001
Issued Date	:	2022-09-02
Po. Date	:	8500005780
P.O. Date	:	2022-06-29

SAMPLE PARTICULARS : **GROUND WATER SAMPLES (BALCO PLANT)**

Sample Registration Date	: 2022-08-16	Sampling Date	:	2022-08-13
Analysis Starting Date	: 2022-08-16	Analysis Completion Date	:	2022-08-30
Test Required	: Water Analysis as per IS 10500 : 2012			

SAMPLE COLLECTED BY VIMTA LABS LTD.

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Rogabahari village Bore Well*	*Rogabahari village Dug well*	*Bailgiri village Bore well*	*Bailgiri village Dug well*
1	pH value	-	6.5-8.5 (NR)	6.93	6.76	6.72	6.96
2	Color	Hazen	5(15)	Colorless	Colorless	Colorless	Colorless
3	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5	Turbidity	NTU	1(5)	2	3	3	2
6	Total dissolved solids at 180°C	mg/l	500(2000)	482	326	487	494
7	Total Hardness as $CaCO_3$	mg/l	200(600)	194	136	236	250
8	Total Alkalinity as $CaCO_3$	mg/l	200(600)	116	130	238	172
9	Calcium as Ca	mg/l	75(200)	36.8	30.4	40.8	42.0
10	Magnesium as Mg	mg/l	30(100)	24.8	14.6	56.8	35.23
11	Free Residual chlorine	mg/l	0.2(1.0)	<0.2	0.2	<0.2	0.2
12	Boron	mg/l	0.5(1.0)	0.16	0.09	0.11	0.06
13	Chlorides as Cl	mg/l	250(1000)	181.3	68.9	124.8	315.2
14	Sulphate as SO_4	mg/l	200(400)	30.0	26.6	34.3	36.8
15	Fluorides as F	mg/l	1.0(1.5)	0.266	0.224	0.326	0.291
16	Nitrates as NO_3	mg/l	45(NR)	3.2	2.1	4.3	5.2
17	Phenolic Compounds as C_6H_5OH	mg/l	0.001(0.002)	<0.001	<0.001	<0.001	<0.001
18	Cyanides	mg/l	0.05(NR)	<0.02	<0.02	<0.02	<0.02

Method of Testing: As per APHA 23rd edition and IS: 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

Name and Designation of Authorized Signatory

ENVIRONMENT LABORATORY Vimta VIMTA LABS REGD No- DL 3300/99 Sr. No.-5

Dr. Subba Reddy Mallampati
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KORBA (C.G)

Report Number : VLL/VLS/22/08103/001
Issued Date : 2022-09-02
Po. Date : 8500005780
P.O. Date : 2022-06-29

SAMPLE PARTICULARS : **GROUND WATER SAMPLES (BALCO PLANT)**

Sample Registration Date	: 2022-08-16	Sampling Date	: 2022-08-13
Analysis Starting Date	: 2022-08-16	Analysis Completion Date	: 2022-08-30
Test Required	: Water Analysis as per IS 10500 : 2012		
SAMPLE COLLECTED BY VIMTA LABS LTD.			

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Rogabahari village Bore Well*	*Rogabahari village Dug well*	*Bailgiri village Bore well*	*Bailgiri village Dug well*
19	Anionic detergents as MBAS	mg/l	0.2(1.0)	<0.02	<0.02	<0.02	<0.02
20	Mineral oil	mg/l	0.5(NR)	Absent	Absent	Absent	Absent
21	Cadmium as Cd	mg/l	0.003(NR)	<0.003	<0.003	<0.003	<0.003
22	Total Arsenic as As	mg/l	0.01(0.05)	<0.01	<0.01	<0.01	<0.01
23	Copper as Cu	mg/l	0.05(1.5)	0.019	<0.01	0.014	<0.01
24	Lead as Pb	mg/l	0.01(NR)	<0.01	<0.01	<0.01	<0.01
25	Manganese as Mn	mg/l	0.1(0.3)	0.01	<0.01	0.026	0.038
26	Molybdenum as Mo	mg/l	0.07(NR)	<0.01	<0.01	<0.01	<0.01
27	Nickel as Ni	mg/l	0.02(NR)	<0.01	<0.01	<0.01	<0.01
28	Iron as Fe	mg/l	0.3(NR)	0.14	0.08	0.12	0.09
29	Total Chromium as Cr	mg/l	0.05(NR)	<0.01	<0.01	<0.01	<0.01
30	Selenium as Se	mg/l	0.05(NR)	<0.01	<0.01	<0.01	<0.01
31	Zinc as Zn	mg/l	5.0(15)	0.16	0.23	0.21	0.19
32	Aluminum as Al	mg/l	0.03(0.2)	0.05	0.04	0.06	0.03
33	Mercury as Hg	mg/l	0.001(NR)	<0.001	<0.001	<0.001	<0.001
34	Sulphide as H2S	mg/l	0.05(NR)	<0.05	<0.05	<0.05	<0.05
35	Chloramines as Cl2	mg/l	4.0(NR)	<0.05	<0.05	<0.05	<0.05
36	Ammonia (as total ammonia-N	mg/l	0.5(NR)	<0.05	<0.05	<0.05	<0.05
37	Barium as Ba	mg/l	0.7(NR)	0.034	0.023	0.029	0.046
38	Silver as Ag	mg/l	0.1(NR)	<0.01	<0.01	<0.01	<0.01

Method of Testing: As per APHA 23rd edition and IS 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

Name and Designation of Authorized Signatory

ENVIRONMENT LABORATORY Vimta VIMTA LABS REGD. No- DL 33004/99 Sr. No.-5

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Report Number	:	VLL/VLS/22/08103/001
Issued Date	:	2022-09-02
Po. Date	:	8500005780
P.O. Date	:	2022-06-29

SAMPLE PARTICULARS : **GROUND WATER SAMPLES (BALCO PLANT)**

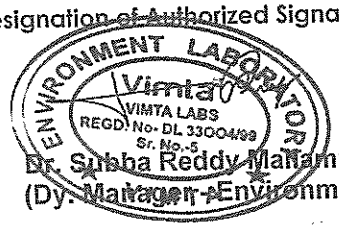
Sample Registration Date	:	2022-08-16	Sampling Date	:	2022-08-13
Analysis Starting Date	:	2022-08-16	Analysis Completion Date	:	2022-08-30
Test Required	:	Water Analysis as per IS 10500 : 2012			
SAMPLE COLLECTED BY VIMTA LABS LTD.					

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Rogabahari village Bore Well*	*Rogabahari village Dug well*	*Bailgiri village Bore well*	*Bailgiri village Dug well*
39	Polychlorinated biphenyls	mg/l	0.0005(NR)	Absent	Absent	Absent	Absent
40	Polynuclear aromatic hydrocarbon as PAH	mg/l	0.0001(NR)	<0.0001	<0.0001	<0.0001	<0.0001
41	Bromoform	mg/l	0.1(NR)	<0.0001	<0.0001	<0.0001	<0.0001
42	Dibromochloromethane	mg/l	0.1(NR)	<0.01	<0.01	<0.01	<0.01
43	Bromodichloromethane	mg/l	0.06(NR)	<0.01	<0.01	<0.01	<0.01
44	Chloroform	mg/l	0.2(NR)	<0.001	<0.001	<0.001	<0.001
(A)	**Pesticides**						
45	Alachlor	µg/l	20	<0.01	<0.01	<0.01	<0.01
46	Atrazine	µg/l	2	<0.01	<0.01	<0.01	<0.01
47	Aldrin	µg/l	0.03	<0.01	<0.01	<0.01	<0.01
48	Alpha HCH	µg/l	0.01	<0.01	<0.01	<0.01	<0.01
49	Beta HCH	µg/l	0.04	<0.01	<0.01	<0.01	<0.01
50	Butachlor	µg/l	125	<0.01	<0.01	<0.01	<0.01
51	Chlorpyriphos	µg/l	30	<0.01	<0.01	<0.01	<0.01
52	Delta HCH	µg/l	0.04	<0.01	<0.01	<0.01	<0.01
53	2,4-Dichlorophenoxyacetic acid	µg/l	30	<0.01	<0.01	<0.01	<0.01
54	DDT	µg/l	1	<0.01	<0.01	<0.01	<0.01
55	Endosulfan (alpha, beta and Sulphate)	µg/l	0.4	<0.01	<0.01	<0.01	<0.01
56	Ethion	µg/l	3	<0.01	<0.01	<0.01	<0.01
57	Gamma HCH	µg/l	2	<0.01	<0.01	<0.01	<0.01
58	Isoproturon	µg/l	9	<0.01	<0.01	<0.01	<0.01

Method of Testing: As per APHA 23rd edition and IS 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

Name and Designation of Authorized Signatory



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ISSUED TO:
M/s. Bharat Aluminum Company Limited,
KORBA (C.G)

Report Number	:	VLL/VLS/22/08103/001
Issued Date	:	2022-09-02
Po. Date	:	8500005780
P.O. Date	:	2022-06-29

SAMPLE PARTICULARS : **GROUND WATER SAMPLES (BALCO PLANT)**

Sample Registration Date	:	2022-08-16	Sampling Date	:	2022-08-13
Analysis Starting Date	:	2022-08-16	Analysis Completion Date	:	2022-08-30
Test Required	:	Water Analysis as per IS 10500 : 2012			
SAMPLE COLLECTED BY VIMTA LABS LTD.					

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Rogabahari village Bore Well*	*Rogabahari village Dug well*	*Bailgiri village Bore well*	*Bailgiri village Dug well*
59	Malathion	µg/l	190	BDL	BDL	BDL	BDL
60	Methyl parathion	µg/l	0.3	BDL	BDL	BDL	BDL
61	Monocrotophos	µg/l	1	BDL	BDL	BDL	BDL
62	Phorate	µg/l	2	BDL	BDL	BDL	BDL
63	E.coli	Per 100 ml	Absent	Absent	Absent	Absent	Absent
64	Total Coliforms	MPN/100ml	Absent	Absent	Absent	Absent	Absent
(B)	**Radioactive**						
65	Alpha emitters	Bq/l	0.1(NR)	BDL	BDL	BDL	BDL
66	Beta emitters	Bq/l	1.0(NR)	BDL	BDL	BDL	BDL

Method of Testing: As per APHA 23rd edition and IS 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

-END OF THE REPORTS-

Name and Designation of Authorized Signatory

ENVIRONMENT LABORATORY
Vimta
VIMTA LABS
REGD. No.-DL-33004/99
Sr. No.-6
VIMTA

Dr. Subba Reddy Mallampati
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ISSUED TO:

M/s. Bharat Aluminum Company Limited,
BALCO
KORBA
Chhattisgarh

Report Number	:	VLL/VLS/22/05859/001
Issued Date	:	2022-08-01
Po. Date	:	8500005780
P.O. Date	:	2022-06-29

SAMPLE PARTICULARS : GROUND WATER SAMPLES (BALCO PLANT)

Sample Registration Date	:	2022-07-07	Sampling Date	:	2022-07-05
Analysis Starting Date	:	2022-07-08	Analysis Completion Date	:	2022-07-30
Test Required	:	Water Analysis as per IS 10500 : 2012			

SAMPLE COLLECTED BY VIMTA LABS LTD.

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Rogabahari village Bore Well*	*Rogabahari village Dug well*	*Bailgiri village Bore well*	*Bailgiri village Dug well*
1	pH value	-	6.5-8.5 (NR)	6.75	6.81	7.42	7.36
2	Color	Hazen	5(15)	Colorless	Colorless	Colorless	Colorless
3	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5	Turbidity	NTU	1(5)	3	1	2	3
6	Total dissolved solids at 180°C	mg/l	500(2000)	421	296	534	673
7	Total Hardness as $CaCO_3$	mg/l	200(600)	172.0	113.0	272.5	204.0
8	Total Alkalinity as $CaCO_3$	mg/l	200(600)	135.0	124.0	175.0	180.0
9	Calcium as Ca	mg/l	75(200)	48.6	26.4	67.2	36.7
10	Magnesium as Mg	mg/l	30(100)	12.3	11.4	25.4	27.2
11	Free Residual chlorine	mg/l	0.2(1.0)	<0.2	0.2	<0.2	0.2
12	Boron	mg/l	0.5(1.0)	0.23	0.07	0.15	0.09
13	Chlorides as Cl	mg/l	250(1000)	112.2	61.8	131.5	210.5
14	Sulphate as SO_4	mg/l	200(400)	24.6	13.8	46.2	32.5
15	Fluorides as F	mg/l	1.0(1.5)	0.183	0.134	0.217	0.158
16	Nitrates as NO_3	mg/l	45(NR)	3.2	1.5	2.6	3.7
17	Phenolic Compounds as C_6H_5OH	mg/l	0.001(0.002)	<0.001	<0.001	<0.001	<0.001
18	Cyanides	mg/l	0.05(NR)	<0.02	<0.02	<0.02	<0.02

Method of Testing: As per APHA 23rd edition and IS: 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

Name and Designation of Authorized Signatory

ENVIRONMENT LABORATORY Vimta VIMTA LABS REGD. No- DL 33004/99 Sr. No.-5

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ISSUED TO:
M/s. Bharat Aluminum Company Limited,
BALCO
KORBA
Chhattisgarh

Report Number	:	VLL/VLS/22/05859/001
Issued Date	:	2022-08-01
Po. Date	:	8500005780
P.O. Date	:	2022-06-29

SAMPLE PARTICULARS : **GROUND WATER SAMPLES (BALCO PLANT)**

Sample Registration Date	:	2022-07-07	Sampling Date	:	2022-07-05
Analysis Starting Date	:	2022-07-08	Analysis Completion Date	:	2022-07-30
Test Required	:	Water Analysis as per IS 10500 : 2012			
SAMPLE COLLECTED BY VIMTA LABS LTD.					

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Rogabahari village Bore Well*	*Rogabahari village Dug well*	*Bailgiri village Bore well*	*Bailgiri village Dug well*
19	Anionic detergents as MBAS	mg/l	0.2(1.0)	<0.02	<0.02	<0.02	<0.02
20	Mineral oil	mg/l	0.5(NR)	Absent	Absent	Absent	Absent
21	Cadmium as Cd	mg/l	0.003(NR)	<0.003	<0.003	<0.003	<0.003
22	Total Arsenic as As	mg/l	0.01(0.05)	<0.01	<0.01	<0.01	<0.01
23	Copper as Cu	mg/l	0.05(1.5)	0.023	<0.01	<0.01	<0.01
24	Lead as Pb	mg/l	0.01(NR)	<0.01	<0.01	<0.01	<0.01
25	Manganese as Mn	mg/l	0.1(0.3)	0.02	<0.01	0.03	0.01
26	Molybdenum as Mo	mg/l	0.07(NR)	<0.01	<0.01	<0.01	<0.01
27	Nickel as Ni	mg/l	0.02(NR)	<0.01	<0.01	<0.01	<0.01
28	Iron as Fe	mg/l	0.3(NR)	0.12	0.06	0.17	0.15
29	Total Chromium as Cr	mg/l	0.05(NR)	<0.01	<0.01	<0.01	<0.01
30	Selenium as Se	mg/l	0.05(NR)	<0.01	<0.01	<0.01	<0.01
31	Zinc as Zn	mg/l	5.0(15)	0.23	0.18	0.18	0.24
32	Aluminum as Al	mg/l	0.03(0.2)	0.06	0.03	0.07	0.09
33	Mercury as Hg	mg/l	0.001(NR)	<0.001	<0.001	<0.001	<0.001
34	Sulphide as H2S	mg/l	0.05(NR)	<0.05	<0.05	<0.05	<0.05
35	Chloramines as Cl2	mg/l	4.0(NR)	<0.05	<0.05	<0.05	<0.05
36	Ammonia (as total ammonia-N	mg/l	0.5(NR)	<0.05	<0.05	<0.05	<0.05
37	Barium as Ba	mg/l	0.7(NR)	0.026	0.015	0.043	0.057
38	Silver as Ag	mg/l	0.1(NR)	<0.01	<0.01	<0.01	<0.01

Method of Testing: As per APHA 23rd edition and IS 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

Name and Designation of Authorized Signatory

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ISSUED TO:

M/s. Bharat Aluminum Company Limited,
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Chhattisgarh

Report Number	:	VLL/VLS/22/05859/001
Issued Date	:	2022-08-01
Po. Date	:	8500005780
P.O. Date	:	2022-06-29

SAMPLE PARTICULARS : **GROUND WATER SAMPLES (BALCO PLANT)**

Sample Registration Date	:	2022-07-07	Sampling Date	:	2022-07-05
Analysis Starting Date	:	2022-07-08	Analysis Completion Date	:	2022-07-30
Test Required	:	Water Analysis as per IS 10500 : 2012			

SAMPLE COLLECTED BY VIMTA LABS LTD.

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Rogabahari village Bore Well*	*Rogabahari village Dug well*	*Bailgiri village Bore well*	*Bailgiri village Dug well*
39	Polychlorinated biphenyls	mg/l	0.0005(NR)	Absent	Absent	Absent	Absent
40	Polynuclear aromatic hydrocarbon as PAH	mg/l	0.0001(NR)	<0.0001	<0.0001	<0.0001	<0.0001
41	Bromoform	mg/l	0.1(NR)	<0.0001	<0.0001	<0.0001	<0.0001
42	Dibromochloromethane	mg/l	0.1(NR)	<0.01	<0.01	<0.01	<0.01
43	Bromodichloromethane	mg/l	0.06(NR)	<0.01	<0.01	<0.01	<0.01
44	Chloroform	mg/l	0.2(NR)	<0.001	<0.001	<0.001	<0.001
(A)	**Pesticides**						
45	Alachlor	µg/l	20	<0.01	<0.01	<0.01	<0.01
46	Atrazine	µg/l	2	<0.01	<0.01	<0.01	<0.01
47	Aldrin	µg/l	0.03	<0.01	<0.01	<0.01	<0.01
48	Alpha HCH	µg/l	0.01	<0.01	<0.01	<0.01	<0.01
49	Beta HCH	µg/l	0.04	<0.01	<0.01	<0.01	<0.01
50	Butachlor	µg/l	125	<0.01	<0.01	<0.01	<0.01
51	Chlorpyriphos	µg/l	30	<0.01	<0.01	<0.01	<0.01
52	Delta HCH	µg/l	0.04	<0.01	<0.01	<0.01	<0.01
53	2,4-Dichlorophenoxyacetic acid	µg/l	30	<0.01	<0.01	<0.01	<0.01
54	DDT	µg/l	1	<0.01	<0.01	<0.01	<0.01
55	Endosulfan (alpha, beta and Sulphate)	µg/l	0.4	<0.01	<0.01	<0.01	<0.01
56	Ethion	µg/l	3	<0.01	<0.01	<0.01	<0.01
57	Gamma HCH	µg/l	2	<0.01	<0.01	<0.01	<0.01
58	Isoproturon	µg/l	9	<0.01	<0.01	<0.01	<0.01

Method of Testing: As per APHA 23rd edition and IS 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

Name and Designation of Authorized Signatory

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M/s. Bharat Aluminum Company Limited,
BALCO
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Report Number	:	**VLL/VLS/22/05859/001**
Issued Date	:	**2022-08-01**
Po. Date	:	**8500005780**
P.O. Date	:	**2022-06-29**

SAMPLE PARTICULARS : **GROUND WATER SAMPLES (BALCO PLANT)**

Sample Registration Date	:	2022-07-07	Sampling Date	:	2022-07-05
Analysis Starting Date	:	2022-07-08	Analysis Completion Date	:	2022-07-30
Test Required	:	Water Analysis as per IS 10500 : 2012			
SAMPLE COLLECTED BY VIMTA LABS LTD.					

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Rogabahari village Bore Well*	*Rogabahari village Dug well*	*Bailgiri village Bore well*	*Bailgiri village Dug well*
59	Malathion	µg/l	190	BDL	BDL	BDL	BDL
60	Methyl parathion	µg/l	0.3	BDL	BDL	BDL	BDL
61	Monocrotophos	µg/l	1	BDL	BDL	BDL	BDL
62	Phorate	µg/l	2	BDL	BDL	BDL	BDL
63	E.coli	Per 100 ml	Absent	Absent	Absent	Absent	Absent
64	Total Coliforms	MPN/100ml	Absent	Absent	Absent	Absent	Absent
(B)	**Radioactive**						
65	Alpha emitters	Bq/l	0.1(NR)	BDL	BDL	BDL	BDL
66	Beta emitters	Bq/l	1.0(NR)	BDL	BDL	BDL	BDL

Method of Testing: As per APHA 23rd edition and IS 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

-END OF THE REPORTS-

Name and Designation of Authorized Signatory

ENVIRONMENT LABORATORY Vimta VIMTA LABS REGD. No.- DL 33004/99 Sr. No.-6

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ISSUED TO:

M/s. Bharat Aluminum Company Limited,
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KORBA
Chhattisgarh

Report Number	:	VLL/VLS/22/05859/001
Issued Date	:	2022-08-01
Po. Date	:	8500005780
P.O. Date	:	2022-06-29

SAMPLE PARTICULARS : GROUND WATER SAMPLES (BALCO PLANT)

Sample Registration Date	:	2022-07-07	Sampling Date	:	2022-07-05
Analysis Starting Date	:	2022-07-08	Analysis Completion Date	:	2022-07-30
Test Required	:	Water Analysis as per IS 10500 : 2012			

SAMPLE COLLECTED BY VIMTA LABS LTD

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Parsabhata village Bore Well*	*Parsabhata village Dug well*	*Karma Talkies Bore well*	*Bhadrapada village Dug well*
1	pH value	-	6.5-8.5 (NR)	6.92	7.68	7.15	6.67
2	Color	Hazen	5(15)	Colorless	Colorless	Colorless	Colorless
3	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5	Turbidity	NTU	1(5)	3	2	4	3
6	Total dissolved solids at 180°C	mg/l	500(2000)	412	268	210	347
7	Total Hardness as $CaCO_3$	mg/l	200(600)	311.0	137.0	105.0	195.0
8	Total Alkalinity as $CaCO_3$	mg/l	200(600)	206	125	95	163
9	Calcium as Ca	mg/l	75(200)	87.5	29.6	25.2	49.4
10	Magnesium as Mg	mg/l	30(100)	22.5	15.3	10.2	17.3
11	Free Residual chlorine	mg/l	0.2(1.0)	<0.2	0.2	<0.2	0.2
12	Boron	mg/l	0.5(1.0)	0.12	0.05	0.08	0.09
13	Chlorides as Cl	mg/l	250(1000)	58.4	45.1	39.5	65.2
14	Sulphate as SO_4	mg/l	200(400)	21.7	16.5	13.4	17.7
15	Fluorides as F	mg/l	1.0(1.5)	0.215	0.236	0.158	0.262
16	Nitrates as NO_3	mg/l	45(NR)	2.4	1.8	1.2	2.2
17	Phenolic Compounds as C_6H_5OH	mg/l	0.001(0.002)	<0.001	<0.001	<0.001	<0.001
18	Cyanides	mg/l	0.05(NR)	<0.02	<0.02	<0.02	<0.02

Method of Testing: As per APHA 23rd edition and IS: 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

Name and Designation of Authorized Signatory

ENVIRONMENT LABORATORY Vimta VIMTA LABS REGD. No.-DL 33004/99 Sr. No.-5

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BALCO
KORBA
Chhattisgarh

Report Number	:	VLL/VLS/22/05859/001
Issued Date	:	2022-08-01
Po. Date	:	8500005780
P.O. Date	:	2022-06-29

SAMPLE PARTICULARS : GROUND WATER SAMPLES (BALCO PLANT)

Sample Registration Date	:	2022-07-07	Sampling Date	:	2022-07-05
Analysis Starting Date	:	2022-07-08	Analysis Completion Date	:	2022-07-30
Test Required	:	Water Analysis as per IS 10500 : 2012			
SAMPLE COLLECTED BY VIMTA LABS LTD					

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Parsabhata village Bore Well*	*Parsabhata village Dug well*	*Karma Talkies Bore well*	*Bhadrapada village Bore well*
19	Anionic detergents as MBAS	mg/l	0.2(1.0)	<0.02	<0.02	<0.02	<0.02
20	Mineral oil	mg/l	0.5(NR)	Absent	Absent	Absent	Absent
21	Cadmium as Cd	mg/l	0.003(NR)	<0.003	<0.003	<0.003	<0.003
22	Total Arsenic as As	mg/l	0.01(0.05)	<0.01	<0.01	<0.01	<0.01
23	Copper as Cu	mg/l	0.05(1.5)	0.01	<0.01	0.01	<0.01
24	Lead as Pb	mg/l	0.01(NR)	<0.01	<0.01	<0.01	<0.01
25	Manganese as Mn	mg/l	0.1(0.3)	0.03	0.01	0.02	0.01
26	Molybdenum as Mo	mg/l	0.07(NR)	<0.01	<0.01	<0.01	<0.01
27	Nickel as Ni	mg/l	0.02(NR)	<0.01	<0.01	<0.01	<0.01
28	Iron as Fe	mg/l	0.3(NR)	0.11	0.17	0.09	0.07
29	Total Chromium as Cr	mg/l	0.05(NR)	<0.01	<0.01	<0.01	<0.01
30	Selenium as Se	mg/l	0.05(NR)	<0.01	<0.01	<0.01	<0.01
31	Zinc as Zn	mg/l	5.0(15)	0.27	0.12	0.14	0.08
32	Aluminum as Al	mg/l	0.03(0.2)	0.09	0.05	0.07	0.05
33	Mercury as Hg	mg/l	0.001(NR)	<0.001	<0.001	<0.001	<0.001
34	Sulphide as H2S	mg/l	0.05(NR)	<0.05	<0.05	<0.05	<0.05
35	Chloramines as Cl2	mg/l	4.0(NR)	<0.05	<0.05	<0.05	<0.05
36	Ammonia (as total ammonia-N	mg/l	0.5(NR)	<0.05	<0.05	<0.05	<0.05
37	Barium as Ba	mg/l	0.7(NR)	0.036	0.025	0.047	0.019
38	Silver as Ag	mg/l	0.1(NR)	<0.01	<0.01	<0.01	<0.01

Method of Testing: As per APHA 23rd edition and IS 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

Name and Designation of Authorized Signatory

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Report Number	:	VLL/VLS/22/05859/001
Issued Date	:	2022-08-01
Po. Date	:	8500005780
P.O. Date	:	2022-06-29

SAMPLE PARTICULARS : GROUND WATER SAMPLES (BALCO PLANT)

Sample Registration Date	:	2022-07-07	Sampling Date	:	2022-07-05
Analysis Starting Date	:	2022-07-08	Analysis Completion Date	:	2022-07-30
Test Required	:	Water Analysis as per IS 10500 : 2012			
SAMPLE COLLECTED BY VIMTA LABS LTD					

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Parsabhata village Bore Well*	*Parsabhata village Dug well*	*Karma Talkies Bore well*	*Bhadrapada village Bore well*
39	Polychlorinated biphenyls	mg/l	0.0005(NR)	Absent	Absent	Absent	Absent
40	Polynuclear aromatic hydrocarbon as PAH	mg/l	0.0001(NR)	<0.0001	<0.0001	<0.0001	<0.0001
41	Bromoform	mg/l	0.1(NR)	<0.0001	<0.0001	<0.0001	<0.0001
42	Dibromochloromethane	mg/l	0.1(NR)	<0.01	<0.01	<0.01	<0.01
43	Bromodichloromethane	mg/l	0.06(NR)	<0.01	<0.01	<0.01	<0.01
44	Chloroform	mg/l	0.2(NR)	<0.001	<0.001	<0.001	<0.001
(A)	**Pesticides**						
45	Alachlor	µg/l	20	<0.01	<0.01	<0.01	<0.01
46	Atrazine	µg/l	2	<0.01	<0.01	<0.01	<0.01
47	Aldrin	µg/l	0.03	<0.01	<0.01	<0.01	<0.01
48	Alpha HCH	µg/l	0.01	<0.01	<0.01	<0.01	<0.01
49	Beta HCH	µg/l	0.04	<0.01	<0.01	<0.01	<0.01
50	Butachlor	µg/l	125	<0.01	<0.01	<0.01	<0.01
51	Chlorpyriphos	µg/l	30	<0.01	<0.01	<0.01	<0.01
52	Delta HCH	µg/l	0.04	<0.01	<0.01	<0.01	<0.01
53	2,4-Dichlorophenoxyacetic acid	µg/l	30	<0.01	<0.01	<0.01	<0.01
54	DDT	µg/l	1	<0.01	<0.01	<0.01	<0.01
55	Endosulfan (alpha, beta and Sulphate)	µg/l	0.4	<0.01	<0.01	<0.01	<0.01
56	Ethion	µg/l	3	<0.01	<0.01	<0.01	<0.01
57	Gamma HCH	µg/l	2	<0.01	<0.01	<0.01	<0.01
58	Isoproturon	µg/l	9	<0.01	<0.01	<0.01	<0.01

Method of Testing: As per APHA 23rd edition and IS 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

Name and Designation of Authorized Signatory

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Report Number	:	VLL/VLS/22/05859/001
Issued Date	:	2022-08-01
Po. Date	:	8500005780
P.O. Date	:	2022-06-29

SAMPLE PARTICULARS : **GROUND WATER SAMPLES (BALCO PLANT)**

Sample Registration Date	:	2022-07-07	Sampling Date	:	2022-07-05
Analysis Starting Date	:	2022 07 08	Analysis Completion Date	:	2022 07 30
Test Required	:	Water Analysis as per IS 10500 : 2012			
SAMPLE COLLECTED BY VIMTA LABS LTD					

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Parsabhata village Bore Well*	*Parsabhata village Dug well*	*Karma Talkies Bore well*	*Bhadrapada village Bore well*
59	Malathion	µg/l	190	BDL	BDL	BDL	BDL
60	Methyl parathion	µg/l	0.3	BDL	BDL	BDL	BDL
61	Monocrotophos	µg/l	1	BDL	BDL	BDL	BDL
62	Phorate	µg/l	2	BDL	BDL	BDL	BDL
63	E.coli	Per 100 ml	Absent	Absent	Absent	Absent	Absent
64	Total Coliforms	MPN/100ml	Absent	Absent	Absent	Absent	Absent
(B)	**Radioactive**						
65	Alpha emitters	Bq/l	0.1(NR)	BDL	BDL	BDL	BDL
66	Beta emitters	Bq/l	1.0(NR)	BDL	BDL	BDL	BDL

Method of Testing: As per APHA 23rd edition and IS: 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

Name and Designation of Authorized Signatory

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Sr. No.-8

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KORBA
Chhattisgarh

Report Number	:	**VLL/VLS/22/04951/001**
Issued Date	:	2022-07-04
Your Ref	:	8500003497
P.O. Date	:	2019-02-16

SAMPLE PARTICULARS : GROUND WATER SAMPLES (BALCO PLANT)

Sample Registration Date	:	2022-06-17	Sampling Date	:	2022-06-16
Analysis Starting Date	:	2022-06-17	Analysis Completion Date	:	2022-06-30
Test Required	:	Water Analysis as per IS 10500 : 2012			
SAMPLE COLLECTED BY VIMTA LABS LTD					

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Rogabahari village Bore Well*	*Rogabahari village Dug well*	*Bailgiri village Bore well*	*Bailgiri village Dug well*
1	pH value	-	6.5-8.5 (NR)	6.73	6.72	6.59	7.18
2	Color	Hazen	5(15)	Colorless	Colorless	Colorless	Colorless
3	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5	Turbidity	NTU	1(5)	2	2	1	2
6	Total dissolved solids at 180°C	mg/l	500(2000)	474	296	470	465
7	Total Hardness as $CaCO_3$	mg/l	200(600)	211.3	120.0	270.5	236.0
8	Total Alkalinity as $CaCO_3$	mg/l	200(600)	148	116	170	210
9	Calcium as Ca	mg/l	75(200)	59.7	28.0	63.4	43.2
10	Magnesium as Mg	mg/l	30(100)	15.1	12.2	27.2	31.1
11	Free Residual chlorine	mg/l	0.2(1.0)	<0.2	<0.2	<0.2	<0.2
12	Boron	mg/l	0.5(1.0)	0.23	0.07	0.15	0.09
13	Chlorides as Cl	mg/l	250(1000)	129.6	66.7	126.5	235.3
14	Sulphate as SO_4	mg/l	200(400)	35.5	17.8	43.5	48.4
15	Fluorides as F	mg/l	1.0(1.5)	0.135	0.188	0.289	1.64
16	Nitrates as NO_3	mg/l	45(NR)	3.38	2.78	2.84	2.49
17	Phenolic Compounds as C_6H_5OH	mg/l	0.001(0.002)	<0.001	<0.001	<0.001	<0.001
18	Cyanides	mg/l	0.05(NR)	<0.02	<0.02	<0.02	<0.02

Method of Testing: As per APHA 23rd edition and IS: 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

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ISSUED TO:

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KORBA
Chhattisgarh

Report Number	:	VLL/VLS/22/04951/001
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SAMPLE PARTICULARS : **GROUND WATER SAMPLES (BALCO PLANT)**

Sample Registration Date	:	2022-06-17	Sampling Date	:	2022-06-16
Analysis Starting Date	:	2022-06-17	Analysis Completion Date	:	2022-06-30
Test Required	:	Water Analysis as per IS 10500 : 2012			
SAMPLE COLLECTED BY VIMTA LABS LTD					

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Rogabahari village Bore Well*	*Rogabahari village Dug well*	*Bailgiri village Bore well*	*Bailgiri village Dug well*
19	Anionic detergents as MBAS	mg/l	0.2(1.0)	<0.02	<0.02	<0.02	<0.02
20	Mineral oil	mg/l	0.5(NR)	Absent	Absent	Absent	Absent
21	Cadmium as Cd	mg/l	0.003(NR)	<0.003	<0.003	<0.003	<0.003
22	Total Arsenic as As	mg/l	0.01(0.05)	<0.01	<0.01	<0.01	<0.01
23	Copper as Cu	mg/l	0.05(1.5)	<0.01	<0.01	<0.01	<0.01
24	Lead as Pb	mg/l	0.01(NR)	<0.01	<0.01	<0.01	<0.01
25	Manganese as Mn	mg/l	0.1(0.3)	0.02	<0.01	0.01	<0.01
26	Molybdenum as Mo	mg/l	0.07(NR)	<0.01	<0.01	<0.01	<0.01
27	Nickel as Ni	mg/l	0.02(NR)	<0.01	<0.01	<0.01	<0.01
28	Iron as Fe	mg/l	0.3(NR)	0.11	0.09	0.12	0.11
29	Total Chromium as Cr	mg/l	0.05(NR)	<0.01	<0.01	<0.01	<0.01
30	Selenium as Se	mg/l	0.05(NR)	<0.01	<0.01	<0.01	<0.01
31	Zinc as Zn	mg/l	5.0(15)	0.16	0.09	0.12	0.21
32	Aluminum as Al	mg/l	0.03(0.2)	0.06	0.05	0.05	0.05
33	Mercury as Hg	mg/l	0.001(NR)	<0.001	<0.001	<0.001	<0.001
34	Sulphide as H2S	mg/l	0.05(NR)	<0.05	<0.05	<0.05	<0.05
35	Chloramines as Cl2	mg/l	4.0(NR)	<0.05	<0.05	<0.05	<0.05
36	Ammonia (as total ammonia-N	mg/l	0.5(NR)	<0.05	<0.05	<0.05	<0.05
37	Barium as Ba	mg/l	0.7(NR)	0.018	0.026	0.012	0.031
38	Silver as Ag	mg/l	0.1(NR)	<0.01	<0.01	<0.01	<0.01

Method of Testing: As per APHA 23rd edition and IS 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

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Sample Registration Date	:	2022-06-17	Sampling Date	:	2022-06-16
Analysis Starting Date	:	2022-06-17	Analysis Completion Date	:	2022-06-30
Test Required	:	Water Analysis as per IS 10500 : 2012			
SAMPLE COLLECTED BY VIMTA LABS LTD					

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Rogabahari village Bore Well*	*Rogabahari village Dug well*	*Bailgiri village Bore well*	*Bailgiri village Dug well*
39	Polychlorinated biphenyls	mg/l	0.0005(NR)	Absent	Absent	Absent	Absent
40	Polynuclear aromatic hydrocarbon as PAH	mg/l	0.0001(NR)	<0.0001	<0.0001	<0.0001	<0.0001
41	Bromoform	mg/l	0.1(NR)	<0.0001	<0.0001	<0.0001	<0.0001
42	Dibromochloromethane	mg/l	0.1(NR)	<0.01	<0.01	<0.01	<0.01
43	Bromodichloromethane	mg/l	0.06(NR)	<0.01	<0.01	<0.01	<0.01
44	Chloroform	mg/l	0.2(NR)	<0.001	<0.001	<0.001	<0.001
(A)	**Pesticides**						
45	Alachlor	µg/l	20	<0.01	<0.01	<0.01	<0.01
46	Atrazine	µg/l	2	<0.01	<0.01	<0.01	<0.01
47	Aldrin	µg/l	0.03	<0.01	<0.01	<0.01	<0.01
48	Alpha HCH	µg/l	0.01	<0.01	<0.01	<0.01	<0.01
49	Beta HCH	µg/l	0.04	<0.01	<0.01	<0.01	<0.01
50	Butachlor	µg/l	125	<0.01	<0.01	<0.01	<0.01
51	Chlorpyriphos	µg/l	30	<0.01	<0.01	<0.01	<0.01
52	Delta HCH	µg/l	0.04	<0.01	<0.01	<0.01	<0.01
53	2,4-Dichlorophenoxyacetic acid	µg/l	30	<0.01	<0.01	<0.01	<0.01
54	DDT	µg/l	1	<0.01	<0.01	<0.01	<0.01
55	Endosulfan (alpha, beta and Sulphate)	µg/l	0.4	<0.01	<0.01	<0.01	<0.01
56	Ethion	µg/l	3	<0.01	<0.01	<0.01	<0.01
57	Gamma HCH	µg/l	2	<0.01	<0.01	<0.01	<0.01
58	Isoproturon	µg/l	9	<0.01	<0.01	<0.01	<0.01

Method of Testing: As per APHA 23rd edition and IS 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

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Analysis Starting Date	:	2022 06-17	Analysis Completion Date	:	2022-06-30
Test Required	:	Water Analysis as per IS 10500 : 2012			
SAMPLE COLLECTED BY VIMTA LABS LTD					

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Rogabahari village Bore Well*	*Rogabahari village Dug well*	*Bailgiri village Bore well*	*Bailgiri village Dug well*
59	Malathion	µg/l	190	BDL	BDL	BDL	BDL
60	Methyl parathion	µg/l	0.3	BDL	BDL	BDL	BDL
61	Monocrotophos	µg/l	1	BDL	BDL	BDL	BDL
62	Phorate	µg/l	2	BDL	BDL	BDL	BDL
63	E.coli	Per 100 ml	Absent	Absent	Absent	Absent	Absent
64	Total Coliforms	MPN/100ml	Absent	Absent	Absent	Absent	Absent
(B)	**Radioactive**						
65	Alpha emitters	Bq/l	0.1(NR)	BDL	BDL	BDL	BDL
66	Beta emitters	Bq/l	1.0(NR)	BDL	BDL	BDL	BDL

Method of Testing: As per APHA 23rd edition and IS 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

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RECD. No: D.L.C.
Sr. No - 6

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Test Required	:	Water Analysis as per IS 10500 : 2012			

SAMPLE COLLECTED BY VIMTA LABS LTD

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Parsabhata village Bore Well*	*Parsabhata village Dug well*	*Karma Talkies Bore well*	*Bhadrapada village Dug well*
1	pH value	-	6.5-8.5 (NR)	6.98	7.17	7.37	7.47
2	Color	Hazen	5(15)	Colorless	Colorless	Colorless	Colorless
3	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5	Turbidity	NTU	1(5)	3	2	2	3
6	Total dissolved solids at 180°C	mg/l	500(2000)	427	357	192	392
7	Total Hardness as $CaCO_3$	mg/l	200(600)	396.0	190.0	101.8	208.0
8	Total Alkalinity as $CaCO_3$	mg/l	200(600)	246	160	85	178
9	Calcium as Ca	mg/l	75(200)	79.2	38.4	26.3	52.8
10	Magnesium as Mg	mg/l	30(100)	48.1	22.8	8.7	18.5
11	Free Residual chlorine	mg/l	0.2(1.0)	<0.2	<0.2	<0.2	<0.2
12	Boron	mg/l	0.5(1.0)	0.16	0.06	0.19	0.11
13	Chlorides as Cl	mg/l	250(1000)	410.2	63.4	38.3	71.8
14	Sulphate as SO_4	mg/l	200(400)	62.4	26.4	14.1	19.9
15	Fluorides as F	mg/l	1.0(1.5)	0.409	0.436	0.267	0.288
16	Nitrates as NO_3	mg/l	45(NR)	3.9	2.6	1.5	2.8
17	Phenolic Compounds as C_6H_5OH	mg/l	0.001(0.002)	<0.001	<0.001	<0.001	<0.001
18	Cyanides	mg/l	0.05(NR)	<0.02	<0.02	<0.02	<0.02

Method of Testing: As per APHA 23rd edition and IS: 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

ENVIRONMENT LABORATORY
Vimta VIMTA LABS
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Test Required	:	Water Analysis as per IS 10500 : 2012			
SAMPLE COLLECTED BY VIMTA LABS LTD					

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Parsabhata village Bore Well*	*Parsabhata village Dug well*	*Karma Talkies Bore well*	*Bhadrapada village Bore well*
19	Anionic detergents as MBAS	mg/l	0.2(1.0)	<0.02	<0.02	<0.02	<0.02
20	Mineral oil	mg/l	0.5(NR)	Absent	Absent	Absent	Absent
21	Cadmium as Cd	mg/l	0.003(NR)	<0.003	<0.003	<0.003	<0.003
22	Total Arsenic as As	mg/l	0.01(0.05)	<0.01	<0.01	<0.01	<0.01
23	Copper as Cu	mg/l	0.05(1.5)	0.01	<0.01	<0.01	<0.01
24	Lead as Pb	mg/l	0.01(NR)	<0.01	<0.01	<0.01	<0.01
25	Manganese as Mn	mg/l	0.1(0.3)	0.02	<0.01	0.01	<0.01
26	Molybdenum as Mo	mg/l	0.07(NR)	<0.01	<0.01	<0.01	<0.01
27	Nickel as Ni	mg/l	0.02(NR)	<0.01	<0.01	<0.01	<0.01
28	Iron as Fe	mg/l	0.3(NR)	0.13	0.16	0.08	0.11
29	Total Chromium as Cr	mg/l	0.05(NR)	<0.01	<0.01	<0.01	<0.01
30	Selenium as Se	mg/l	0.05(NR)	<0.01	<0.01	<0.01	<0.01
31	Zinc as Zn	mg/l	5.0(15)	0.24	0.15	0.08	0.13
32	Aluminum as Al	mg/l	0.03(0.2)	0.11	0.09	0.14	0.08
33	Mercury as Hg	mg/l	0.001(NR)	<0.001	<0.001	<0.001	<0.001
34	Sulphide as H2S	mg/l	0.05(NR)	<0.05	<0.05	<0.05	<0.05
35	Chloramines as Cl2	mg/l	4.0(NR)	<0.05	<0.05	<0.05	<0.05
36	Ammonia (as total ammonia-N	mg/l	0.5(NR)	<0.05	<0.05	<0.05	<0.05
37	Barium as Ba	mg/l	0.7(NR)	0.047	0.036	0.018	0.029
38	Silver as Ag	mg/l	0.1(NR)	<0.01	<0.01	<0.01	<0.01

Method of Testing: As per APHA 23rd edition and IS 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

ENVIRONMENT LABORATORY
Vimta VIMTA LABS REGD. No.-

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Test Required	:	Water Analysis as per IS 10500 : 2012			
SAMPLE COLLECTED BY VIMTA LABS LTD					

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Parsabhata village Bore Well*	*Parsabhata village Dug well*	*Karma Talkies Bore well*	*Bhadrapada village Bore well*
39	Polychlorinated biphenyls	mg/l	0.0005(NR)	Absent	Absent	Absent	Absent
40	Polynuclear aromatic hydrocarbon as PAH	mg/l	0.0001(NR)	<0.0001	<0.0001	<0.0001	<0.0001
41	Bromoform	mg/l	0.1(NR)	<0.0001	<0.0001	<0.0001	<0.0001
42	Dibromochloromethane	mg/l	0.1(NR)	<0.01	<0.01	<0.01	<0.01
43	Bromodichloromethane	mg/l	0.06(NR)	<0.01	<0.01	<0.01	<0.01
44	Chloroform	mg/l	0.2(NR)	<0.001	<0.001	<0.001	<0.001
(A)	**Pesticides**						
45	Alachlor	µg/l	20	<0.01	<0.01	<0.01	<0.01
46	Atrazine	µg/l	2	<0.01	<0.01	<0.01	<0.01
47	Aldrin	µg/l	0.03	<0.01	<0.01	<0.01	<0.01
48	Alpha HCH	µg/l	0.01	<0.01	<0.01	<0.01	<0.01
49	Beta HCH	µg/l	0.04	<0.01	<0.01	<0.01	<0.01
50	Butachlor	µg/l	125	<0.01	<0.01	<0.01	<0.01
51	Chlorpyriphos	µg/l	30	<0.01	<0.01	<0.01	<0.01
52	Delta HCH	µg/l	0.04	<0.01	<0.01	<0.01	<0.01
53	2,4-Dichlorophenoxyacetic acid	µg/l	30	<0.01	<0.01	<0.01	<0.01
54	DDT	µg/l	1	<0.01	<0.01	<0.01	<0.01
55	Endosulfan (alpha, beta and Sulphate)	µg/l	0.4	<0.01	<0.01	<0.01	<0.01
56	Ethion	µg/l	3	<0.01	<0.01	<0.01	<0.01
57	Gamma HCH	µg/l	2	<0.01	<0.01	<0.01	<0.01
58	Isoproturon	µg/l	9	<0.01	<0.01	<0.01	<0.01

Method of Testing: As per APHA 23rd edition and IS 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

ENVIRONMENT LABORATORY Vimta VIMTA LABS CO. No:- D.L-33004/99

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Test Required	:	Water Analysis as per IS 10500 : 2012			
SAMPLE COLLECTED BY VIMTA LABS LTD					

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Parsabhata village Bore Well*	*Parsabhata village Dug well*	*Karma Talkies Bore well*	*Bhadrapada village Bore well*
59	Malathion	µg/l	190	BDL	BDL	BDL	BDL
60	Methyl parathion	µg/l	0.3	BDL	BDL	BDL	BDL
61	Monocrotophos	µg/l	1	BDL	BDL	BDL	BDL
62	Phorate	µg/l	2	BDL	BDL	BDL	BDL
63	E.coli	Per 100 ml	Absent	Absent	Absent	Absent	Absent
64	Total Coliforms	MPN/100ml	Absent	Absent	Absent	Absent	Absent
(B)	**Radioactive**						
65	Alpha emitters	Bq/l	0.1(NR)	BDL	BDL	BDL	BDL
66	Beta emitters	Bq/l	1.0(NR)	BDL	BDL	BDL	BDL

Method of Testing: As per APHA 23rd edition and IS: 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

ENVIRONMENT LABORATORY
Vimta VIMTA LABS
REGD. No:- D.L.-33010/99
VIMTA

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ISSUED TO:

M/s. Bharat Aluminum Company Limited,
BALCO
KORBA
Chhattisgarh

Report Number	:	**VLL/VLS/22/03396/001**
Issued Date	:	2022-06-02
Your Ref	:	8500003497
P.O. Date	:	2019-02-16

SAMPLE PARTICULARS : GROUND WATER SAMPLES (BALCO PLANT)

Sample Registration Date	:	2022-05-12	Sampling Date	:	2022-05-09
Analysis Starting Date	:	2022-05-13	Analysis Completion Date	:	2022-05-30
Test Required	:	Water Analysis as per IS 10500 : 2012			

SAMPLE COLLECTED BY VIMTA LABS LTD

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Parsabhata village Bore Well*	*Parsabhata village Dug well*	*Karma Talkies Bore well*	*Bhadrapada village Dug well*
1	pH value	-	6.5-8.5 (NR)	6.98	7.26	6.89	7.36
2	Color	Hazen	5(15)	Colorless	Colorless	Colorless	Colorless
3	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5	Turbidity	NTU	1(5)	2	2	3	4
6	Total dissolved solids at 180°C	mg/l	500(2000)	475	412	521	384
7	Total Hardness as $CaCO_3$	mg/l	200(600)	278.1	221.9	312.7	209.7
8	Total Alkalinity as $CaCO_3$	mg/l	200(600)	259	198	272	182
9	Calcium as Ca	mg/l	75(200)	67.4	53.5	71.6	45.7
10	Magnesium as Mg	mg/l	30(100)	26.5	21.6	32.5	23.2
11	Free Residual chlorine	mg/l	0.2(1.0)	<0.2	0.2	<0.2	<0.2
12	Boron	mg/l	0.5(1.0)	0.11	0.09	0.24	0.07
13	Chlorides as Cl	mg/l	250(1000)	98.9	68.7	129.5	68.2
14	Sulphate as SO_4	mg/l	200(400)	39.7	22.5	44.8	16.7
15	Fluorides as F	mg/l	1.0(1.5)	0.532	0.084	0.315	0.114
16	Nitrates as NO_3	mg/l	45(NR)	2.4	3.5	5.3	3.1
17	Phenolic Compounds as C_6H_5OH	mg/l	0.001(0.002)	<0.001	<0.001	<0.001	<0.001
18	Cyanides	mg/l	0.05(NR)	<0.02	<0.02	<0.02	<0.02

Method of Testing: As per APHA 23rd edition and IS: 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

ENVIRONMENT LABORATORY
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BALCO
KORBA
Chhattisgarh

Report Number : **VLL/VLS/22/03396/001**
Issued Date : 2022-06-02
Your Ref : 8500003497
P.O. Date : 2019-02-16

SAMPLE PARTICULARS : **GROUND WATER SAMPLES (BALCO PLANT)**

Sample Registration Date	:	2022-05-12	Sampling Date	:	2022-05-09
Analysis Starting Date	:	2022-05-13	Analysis Completion Date	:	2022-05-30
Test Required	:	Water Analysis as per IS 10500 : 2012			
SAMPLE COLLECTED BY VIMTA LABS LTD					

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Parsabhata village Bore Well*	*Parsabhata village Dug well*	*Karma Talkies Bore well*	*Bhadrapada village Bore well*
19	Anionic detergents as MBAS	mg/l	0.2(1.0)	<0.02	<0.02	<0.02	<0.02
20	Mineral oil	mg/l	0.5(NR)	Absent	Absent	Absent	Absent
21	Cadmium as Cd	mg/l	0.003(NR)	<0.003	<0.003	<0.003	<0.003
22	Total Arsenic as As	mg/l	0.01(0.05)	<0.01	<0.01	<0.01	<0.01
23	Copper as Cu	mg/l	0.05(1.5)	<0.01	<0.01	<0.01	<0.01
24	Lead as Pb	mg/l	0.01(NR)	<0.01	<0.01	<0.01	<0.01
25	Manganese as Mn	mg/l	0.1(0.3)	0.01	0.01	0.02	0.01
26	Molybdenum as Mo	mg/l	0.07(NR)	<0.01	<0.01	<0.01	<0.01
27	Nickel as Ni	mg/l	0.02(NR)	<0.01	<0.01	<0.01	<0.01
28	Iron as Fe	mg/l	0.3(NR)	0.06	0.08	0.12	0.09
29	Total Chromium as Cr	mg/l	0.05(NR)	<0.01	<0.01	<0.01	<0.01
30	Selenium as Se	mg/l	0.05(NR)	<0.01	<0.01	<0.01	<0.01
31	Zinc as Zn	mg/l	5.0(15)	0.12	0.13	0.17	0.19
32	Aluminum as Al	mg/l	0.03(0.2)	0.08	0.06	0.06	0.07
33	Mercury as Hg	mg/l	0.001(NR)	<0.001	<0.001	<0.001	<0.001
34	Sulphide as H2S	mg/l	0.05(NR)	<0.05	<0.05	<0.05	<0.05
35	Chloramines as Cl2	mg/l	4.0(NR)	<0.05	<0.05	<0.05	<0.05
36	Ammonia (as total ammonia-N	mg/l	0.5(NR)	<0.05	<0.05	<0.05	<0.05
37	Barium as Ba	mg/l	0.7(NR)	0.021	0.018	0.036	0.027
38	Silver as Ag	mg/l	0.1(NR)	<0.01	<0.01	<0.01	<0.01

Method of Testing: As per APHA 23rd edition and IS 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

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Chhattisgarh

Report Number	:	**VLL/VLS/22/03396/001**
Issued Date	:	2022-06-02
Your Ref	:	8500003497
P.O. Date	:	2019-02-16

SAMPLE PARTICULARS : **GROUND WATER SAMPLES (BALCO PLANT)**

Sample Registration Date	:	2022-05-12	Sampling Date	:	2022 05 09
Analysis Starting Date	:	2022-05-13	Analysis Completion Date	:	2022-05-30
Test Required	:	Water Analysis as per IS 10500 : 2012			
SAMPLE COLLECTED BY VIMTA LABS LTD					

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Parsabhata village Bore Well*	*Parsabhata village Dug well*	*Karma Talkies Bore well*	*Bhadrapada village Bore well*
39	Polychlorinated biphenyls	mg/l	0.0005(NR)	Absent	Absent	Absent	Absent
40	Polynuclear aromatic hydrocarbon as PAH	mg/l	0.0001(NR)	<0.0001	<0.0001	<0.0001	<0.0001
41	Bromoform	mg/l	0.1(NR)	<0.0001	<0.0001	<0.0001	<0.0001
42	Dibromochloromethane	mg/l	0.1(NR)	<0.01	<0.01	<0.01	<0.01
43	Bromodichloromethane	mg/l	0.06(NR)	<0.01	<0.01	<0.01	<0.01
44	Chloroform	mg/l	0.2(NR)	<0.001	<0.001	<0.001	<0.001
(A)	**Pesticides**						
45	Alachlor	µg/l	20	<0.01	<0.01	<0.01	<0.01
46	Atrazine	µg/l	2	<0.01	<0.01	<0.01	<0.01
47	Aldrin	µg/l	0.03	<0.01	<0.01	<0.01	<0.01
48	Alpha HCH	µg/l	0.01	<0.01	<0.01	<0.01	<0.01
49	Beta HCH	µg/l	0.04	<0.01	<0.01	<0.01	<0.01
50	Butachlor	µg/l	125	<0.01	<0.01	<0.01	<0.01
51	Chlorpyriphos	µg/l	30	<0.01	<0.01	<0.01	<0.01
52	Delta HCH	µg/l	0.04	<0.01	<0.01	<0.01	<0.01
53	2,4-Dichlorophenoxyacetic acid	µg/l	30	<0.01	<0.01	<0.01	<0.01
54	DDT	µg/l	1	<0.01	<0.01	<0.01	<0.01
55	Endosulfan (alpha, beta and Sulphate)	µg/l	0.4	<0.01	<0.01	<0.01	<0.01
56	Ethion	µg/l	3	<0.01	<0.01	<0.01	<0.01
57	Gamma HCH	µg/l	2	<0.01	<0.01	<0.01	<0.01
58	Isoproturon	µg/l	9	<0.01	<0.01	<0.01	<0.01

Method of Testing: As per APHA 23rd edition and IS 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

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Report Number	:	**VLL/VLS/22/03396/001**
Issued Date	:	2022-06-02
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SAMPLE PARTICULARS : **GROUND WATER SAMPLES (BALCO PLANT)**

Sample Registration Date	:	2022-05-12	Sampling Date	:	2022-05-09
Analysis Starting Date	:	2022-05-13	Analysis Completion Date	:	2022-05-30
Test Required	:	Water Analysis as per IS 10500 : 2012			
SAMPLE COLLECTED BY VIMTA LABS LTD					

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Parsabhata village Bore Well*	*Parsabhata village Dug well*	*Karma Talkies Bore well*	*Bhadrapada village Bore well*
59	Malathion	µg/l	190	BDL	BDL	BDL	BDL
60	Methyl parathion	µg/l	0.3	BDL	BDL	BDL	BDL
61	Monocrotophos	µg/l	1	BDL	BDL	BDL	BDL
62	Phorate	µg/l	2	BDL	BDL	BDL	BDL
63	E.coli	Per 100 ml	Absent	Absent	Absent	Absent	Absent
64	Total Coliforms	MPN/100ml	Absent	Absent	Absent	Absent	Absent
(B)	**Radioactive**						
65	Alpha emitters	Bq/l	0.1(NR)	BDL	BDL	BDL	BDL
66	Beta emitters	Bq/l	1.0(NR)	BDL	BDL	BDL	BDL

Method of Testing: As per APHA 23rd edition and IS: 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500:.2012 Drinking Water specification

ENVIRONMENT LABORATORY
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Chhattisgarh

Report Number	:	**VLL/VLS/22/03396/001**
Issued Date	:	2022-06-02
Your Ref	:	8500003497
P.O. Date	:	2019-02-16

SAMPLE PARTICULARS : **GROUND WATER SAMPLES (BALCO PLANT)**

Sample Registration Date	:	2022-05-10	Sampling Date	:	2022-05-09
Analysis Starting Date	:	2022-05-11	Analysis Completion Date	:	2022-05-30
Test Required	:	Water Analysis as per IS 10500 . 2012			

SAMPLE COLLECTED BY VIMTA LABS LTD

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Rogabahari village Bore Well*	*Rogabahari village Dug well*	*Bailgiri village Bore well*	*Bailgiri village Dug well*
1	pH value	-	6.5-8.5 (NR)	7.14	6.97	7.25	7.11
2	Color	Hazen	5(15)	Colorless	Colorless	Colorless	Colorless
3	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5	Turbidity	NTU	1(5)	2	2	2	2
6	Total dissolved solids at 180°C	mg/l	500(2000)	429	419	467	450
7	Total Hardness as $CaCO_3$	mg/l	200(600)	277.2	187.9	274.9	213.7
8	Total Alkalinity as $CaCO_3$	mg/l	200(600)	256	178	204	215
9	Calcium as Ca	mg/l	75(200)	62.5	44.7	58.6	46.3
10	Magnesium as Mg	mg/l	30(100)	29.4	18.5	31.2	23.8
11	Free Residual chlorine	mg/l	0.2(1.0)	<0.2	<0.2	<0.2	<0.2
12	Boron	mg/l	0.5(1.0)	0.18	0.09	0.24	0.11
13	Chlorides as Cl	mg/l	250(1000)	116.8	89.7	133.8	74.5
14	Sulphate as SO_4	mg/l	200(400)	32.8	18.7	41.3	19.6
15	Fluorides as F	mg/l	1.0(1.5)	0.224	0.197	0.321	0.234
16	Nitrates as NO_3	mg/l	45(NR)	3.6	2.8	3.7	1.8
17	Phenolic Compounds as C_6H_5OH	mg/l	0.001(0.002)	<0.001	<0.001	<0.001	<0.001
18	Cyanides	mg/l	0.05(NR)	<0.02	<0.02	<0.02	<0.02

Method of Testing: As per APHA 23rd edition and IS: 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

ENVIRONMENT LABORATORY
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KORBA
Chhattisgarh

Report Number : **VLL/VLS/22/03396/001**
Issued Date : 2022-06-02
Your Ref : 8500003497
P.O. Date : 2019-02-16

SAMPLE PARTICULARS : **GROUND WATER SAMPLES (BALCO PLANT)**

Sample Registration Date	:	2022-05-10	Sampling Date	:	2022-05-09
Analysis Starting Date	:	2022-05-11	Analysis Completion Date	:	2022-05-30
Test Required	:	Water Analysis as per IS 10500 : 2012			
SAMPLE COLLECTED BY VIMTA LABS LTD					

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Rogabahari village Bore Well*	*Rogabahari village Dug well*	*Bailgiri village Bore well*	*Bailgiri village Dug well*
19	Anionic detergents as MBAS	mg/l	0.2(1.0)	<0.02	<0.02	<0.02	<0.02
20	Mineral oil	mg/l	0.5(NR)	Absent	Absent	Absent	Absent
21	Cadmium as Cd	mg/l	0.003(NR)	<0.003	<0.003	<0.003	<0.003
22	Total Arsenic as As	mg/l	0.01(0.05)	<0.01	<0.01	<0.01	<0.01
23	Copper as Cu	mg/l	0.05(1.5)	<0.01	<0.01	<0.01	<0.01
24	Lead as Pb	mg/l	0.01(NR)	<0.01	<0.01	<0.01	<0.01
25	Manganese as Mn	mg/l	0.1(0.3)	0.03	<0.01	0.02	0.01
26	Molybdenum as Mo	mg/l	0.07(NR)	<0.01	<0.01	<0.01	<0.01
27	Nickel as Ni	mg/l	0.02(NR)	<0.01	<0.01	<0.01	<0.01
28	Iron as Fe	mg/l	0.3(NR)	0.13	0.06	0.12	0.12
29	Total Chromium as Cr	mg/l	0.05(NR)	<0.01	<0.01	<0.01	<0.01
30	Selenium as Se	mg/l	0.05(NR)	<0.01	<0.01	<0.01	<0.01
31	Zinc as Zn	mg/l	5.0(15)	0.23	0.14	0.12	0.21
32	Aluminum as Al	mg/l	0.03(0.2)	0.03	0.05	0.04	0.05
33	Mercury as Hg	mg/l	0.001(NR)	<0.001	<0.001	<0.001	<0.001
34	Sulphide as H2S	mg/l	0.05(NR)	<0.05	<0.05	<0.05	<0.05
35	Chloramines as Cl2	mg/l	4.0(NR)	<0.05	<0.05	<0.05	<0.05
36	Ammonia (as total ammonia-N	mg/l	0.5(NR)	<0.05	<0.05	<0.05	<0.05
37	Barium as Ba	mg/l	0.7(NR)	0.021	0.034	0.018	0.029
38	Silver as Ag	mg/l	0.1(NR)	<0.01	<0.01	<0.01	<0.01

Method of Testing: As per APHA 23rd edition and IS 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

ENVIRONMENT LABORATORY
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Report Number	:	**VLL/VLS/Z2/03396/001**
Issued Date	:	2022-06-02
Your Ref	:	8500003497
P.O. Date	:	2019-02-16

SAMPLE PARTICULARS : **GROUND WATER SAMPLES (BALCO PLANT)**

Sample Registration Date	:	2022-05-10	Sampling Date	:	2022-05-09
Analysis Starting Date	:	2022-05-11	Analysis Completion Date	:	2022-05-30
Test Required	:	Water Analysis as per IS 10500 : 2012			
SAMPLE COLLECTED BY VIMTA LABS LTD					

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Rogabahari village Bore Well*	*Rogabahari village Dug well*	*Bailgiri village Bore well*	*Bailgiri village Dug well*
39	Polychlorinated biphenyls	mg/l	0.0005(NR)	Absent	Absent	Absent	Absent
40	Polynuclear aromatic hydrocarbon as PAH	mg/l	0.0001(NR)	<0.0001	<0.0001	<0.0001	<0.0001
41	Bromoform	mg/l	0.1(NR)	<0.0001	<0.0001	<0.0001	<0.0001
42	Dibromochloromethane	mg/l	0.1(NR)	<0.01	<0.01	<0.01	<0.01
43	Bromodichloromethane	mg/l	0.06(NR)	<0.01	<0.01	<0.01	<0.01
44	Chloroform	mg/l	0.2(NR)	<0.001	<0.001	<0.001	<0.001
(A)	**Pesticides**						
45	Alachlor	µg/l	20	<0.01	<0.01	<0.01	<0.01
46	Atrazine	µg/l	2	<0.01	<0.01	<0.01	<0.01
47	Aldrin	µg/l	0.03	<0.01	<0.01	<0.01	<0.01
48	Alpha HCH	µg/l	0.01	<0.01	<0.01	<0.01	<0.01
49	Beta HCH	µg/l	0.04	<0.01	<0.01	<0.01	<0.01
50	Butachlor	µg/l	125	<0.01	<0.01	<0.01	<0.01
51	Chlorpyriphos	µg/l	30	<0.01	<0.01	<0.01	<0.01
52	Delta HCH	µg/l	0.04	<0.01	<0.01	<0.01	<0.01
53	2,4-Dichlorophenoxyacetic acid	µg/l	30	<0.01	<0.01	<0.01	<0.01
54	DDT	µg/l	1	<0.01	<0.01	<0.01	<0.01
55	Endosulfan (alpha, beta and Sulphate)	µg/l	0.4	<0.01	<0.01	<0.01	<0.01
56	Ethion	µg/l	3	<0.01	<0.01	<0.01	<0.01
57	Gamma HCH	µg/l	2	<0.01	<0.01	<0.01	<0.01
58	Isoproturon	µg/l	9	<0.01	<0.01	<0.01	<0.01

Method of Testing: As per APHA 23rd edition and IS 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

ENVIRONMENT LABORATORY
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KORBA
Chhattisgarh

Report Number	:	**VLL/VLS/22/03396/001**
Issued Date	:	2022-06-02
Your Ref	:	8500003497
P.O. Date	:	2019-02-16

SAMPLE PARTICULARS : **GROUND WATER SAMPLES (BALCO PLANT)**

Sample Registration Date	:	2022-05-10	Sampling Date	:	2022-05-09
Analysis Starting Date	:	2022-05-11	Analysis Completion Date	:	2022-05-30
Test Required	:	Water Analysis as per IS 10500 : 2012			
SAMPLE COLLECTED BY VIMTA LABS LTD					

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Rogabahari village Bore Well*	*Rogabahari village Dug well*	*Bailgiri village Bore well*	*Bailgiri village Dug well*
59	Malathion	µg/l	190	BDL	BDL	BDL	BDL
60	Methyl parathion	µg/l	0.3	BDL	BDL	BDL	BDL
61	Monocrotophos	µg/l	1	BDL	BDL	BDL	BDL
62	Phorate	µg/l	2	BDL	BDL	BDL	BDL
63	E.coli	Per 100 ml	Absent	Absent	Absent	Absent	Absent
64	Total Coliforms	MPN/100ml	Absent	Absent	Absent	Absent	Absent
(B)	**Radioactive**						
65	Alpha emitters	Bq/l	0.1(NR)	BDL	BDL	BDL	BDL
66	Beta emitters	Bq/l	1.0(NR)	BDL	BDL	BDL	BDL

Method of Testing: As per APHA 23rd edition and IS 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

ENVIRONMENT LABORATORY Vimta REGD. No.: D.L.-33004/99 Sr No. 1

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KORBA
Chhattisgarh

Report Number	:	**VLL/VLS/22/01794/001**
Issued Date	:	2022-05-05
Your Ref	:	8500003497
P.O. Date	:	2019-02-16

SAMPLE PARTICULARS : GROUND WATER SAMPLES (BALCO PLANT)

Sample Registration Date	:	2022-04-11	Sampling Date	:	2022-04-08
Analysis Starting Date	:	2022-04-12	Analysis Completion Date	:	2022-04-30
Test Required	:	Water Analysis as per IS 10500 : 2012			

SAMPLE COLLECTED BY VIMTA LABS LTD

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Parsabhata village Bore Well*	*Parsabhata village Dug well*	*Karma Talkies Bore well*	*Bhadrapada village Dug well*
1	pH value	-	6.5-8.5 (NR)	6.74	7.39	6.92	7.41
2	Color	Hazen	5(15)	Colorless	Colorless	Colorless	Colorless
3	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5	Turbidity	NTU	1(5)	2	2	3	4
6	Total dissolved solids at 180°C	mg/l	500(2000)	489	258	392	325
7	Total Hardness as $CaCO_3$	mg/l	200(600)	308.4	228.4	277.6	238.4
8	Total Alkalinity as $CaCO_3$	mg/l	200(600)	267	207	238	215
9	Calcium as Ca	mg/l	75(200)	71.5	46.1	62.3	53.4
10	Magnesium as Mg	mg/l	30(100)	32	27.5	29.6	25.5
11	Free Residual chlorine	mg/l	0.2(1.0)	<0.2	0.2	<0.2	<0.2
12	Boron	mg/l	0.5(1.0)	0.09	0.07	0.13	0.08
13	Chlorides as Cl	mg/l	250(1000)	127.2	83.6	119.3	105.6
14	Sulphate as SO_4	mg/l	200(400)	44.8	26.8	34.4	19.8
15	Fluorides as F	mg/l	1.0(1.5)	0.248	0.14	0.24	0.09
16	Nitrates as NO_3	mg/l	45(NR)	3.9	5.1	4.9	3.7
17	Phenolic Compounds as C_6H_5OH	mg/l	0.001(0.002)	<0.001	<0.001	<0.001	<0.001
18	Cyanides	mg/l	0.05(NR)	<0.02	<0.02	<0.02	<0.02

Method of Testing: As per APHA 23rd edition and IS: 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

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KORBA
Chhattisgarh.

Report Number : **VLL/VLS/22/01794/001**
Issued Date : 2022-05-05
Your Ref : 8500003497
P.O. Date : 2019-02-16

SAMPLE PARTICULARS : **GROUND WATER SAMPLES (BALCO PLANT)**

Sample Registration Date	:	2022-04-11	Sampling Date	:	2022-04-08
Analysis Starting Date	:	2022-04-12	Analysis Completion Date	:	2022-04-30
Test Required	:	Water Analysis as per IS 10500 : 2012			
SAMPLE COLLECTED BY VIMTA LABS LTD					

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Parsabhata village Bore Well*	*Parsabhata village Dug well*	*Karma Talkies Bore well*	*Bhadrapada village Bore well*
19	Anionic detergents as MBAS	mg/l	0.2(1.0)	<0.02	<0.02	<0.02	<0.02
20	Mineral oil	mg/l	0.5(NR)	Absent	Absent	Absent	Absent
21	Cadmium as Cd	mg/l	0.003(NR)	<0.003	<0.003	<0.003	<0.003
22	Total Arsenic as As	mg/l	0.01(0.05)	<0.01	<0.01	<0.01	<0.01
23	Copper as Cu	mg/l	0.05(1.5)	0.01	<0.01	<0.01	0.01
24	Lead as Pb	mg/l	0.01(NR)	<0.01	<0.01	<0.01	<0.01
25	Manganese as Mn	mg/l	0.1(0.3)	0.02	<0.01	0.01	0.01
26	Molybdenum as Mo	mg/l	0.07(NR)	<0.01	<0.01	<0.01	<0.01
27	Nickel as Ni	mg/l	0.02(NR)	<0.01	<0.01	<0.01	<0.01
28	Iron as Fe	mg/l	0.3(NR)	0.09	0.14	0.17	0.12
29	Total Chromium as Cr	mg/l	0.05(NR)	<0.01	<0.01	<0.01	<0.01
30	Selenium as Se	mg/l	0.05(NR)	<0.01	<0.01	<0.01	<0.01
31	Zinc as Zn	mg/l	5.0(15)	0.25	0.12	0.08	0.13
32	Aluminum as Al	mg/l	0.03(0.2)	0.05	0.08	0.04	0.09
33	Mercury as Hg	mg/l	0.001(NR)	<0.001	<0.001	<0.001	<0.001
34	Sulphide as H2S	mg/l	0.05(NR)	<0.05	<0.05	<0.05	<0.05
35	Chloramines as Cl2	mg/l	4.0(NR)	<0.05	<0.05	<0.05	<0.05
36	Ammonia (as total ammonia-N	mg/l	0.5(NR)	<0.05	<0.05	<0.05	<0.05
37	Barium as Ba	mg/l	0.7(NR)	0.036	0.024	0.047	0.039
38	Silver as Ag	mg/l	0.1(NR)	<0.01	<0.01	<0.01	<0.01

Method of Testing: As per APHA 23rd edition and IS 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

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SAMPLE PARTICULARS : **GROUND WATER SAMPLES (BALCO PLANT)**

Sample Registration Date	:	2022-04-11	Sampling Date	:	2022-04-08
Analysis Starting Date	:	2022-04-12	Analysis Completion Date	:	2022-04-30
Test Required	:	Water Analysis as per IS 10500 : 2012			
SAMPLE COLLECTED BY VIMTA LABS LTD					

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Parsabhata village Bore Well*	*Parsabhata village Dug well*	*Karma Talkies Bore well*	*Bhadrapada village Bore well*
39	Polychlorinated biphenyls	mg/l	0.0005(NR)	Absent	Absent	Absent	Absent
40	Polynuclear aromatic hydrocarbon as PAH	mg/l	0.0001(NR)	<0.0001	<0.0001	<0.0001	<0.0001
41	Bromoform	mg/l	0.1(NR)	<0.0001	<0.0001	<0.0001	<0.0001
42	Dibromochloromethane	mg/l	0.1(NR)	<0.01	<0.01	<0.01	<0.01
43	Bromodichloromethane	mg/l	0.06(NR)	<0.01	<0.01	<0.01	<0.01
44	Chloroform	mg/l	0.2(NR)	<0.001	<0.001	<0.001	<0.001
(A)	**Pesticides**						
45	Alachlor	µg/l	20	<0.01	<0.01	<0.01	<0.01
46	Atrazine	µg/l	2	<0.01	<0.01	<0.01	<0.01
47	Aldrin	µg/l	0.03	<0.01	<0.01	<0.01	<0.01
48	Alpha HCH	µg/l	0.01	<0.01	<0.01	<0.01	<0.01
49	Beta HCH	µg/l	0.04	<0.01	<0.01	<0.01	<0.01
50	Butachlor	µg/l	125	<0.01	<0.01	<0.01	<0.01
51	Chlorpyriphos	µg/l	30	<0.01	<0.01	<0.01	<0.01
52	Delta HCH	µg/l	0.04	<0.01	<0.01	<0.01	<0.01
53	2,4-Dichlorophenoxyacetic acid	µg/l	30	<0.01	<0.01	<0.01	<0.01
54	DDT	µg/l	1	<0.01	<0.01	<0.01	<0.01
55	Endosulfan (alpha, beta and Sulphate)	µg/l	0.4	<0.01	<0.01	<0.01	<0.01
56	Ethion	µg/l	3	<0.01	<0.01	<0.01	<0.01
57	Gamma HCH	µg/l	2	<0.01	<0.01	<0.01	<0.01
58	Isoproturon	µg/l	9	<0.01	<0.01	<0.01	<0.01

Method of Testing: As per APHA 23rd edition and IS 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

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SAMPLE PARTICULARS : **GROUND WATER SAMPLES (BALCO PLANT)**

Sample Registration Date	:	2022-04-11	Sampling Date	:	2022-04-08
Analysis Starting Date	:	2022-04-12	Analysis Completion Date	:	2022-04-30
Test Required	:	Water Analysis as per IS 10500 : 2012			
SAMPLE COLLECTED BY VIMTA LABS LTD					

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Parsabhata village Bore Well*	*Parsabhata village Dug well*	*Karma Talkies Bore well*	*Bhadrapada village Bore well*
59	Malathion	µg/l	190	BDL	BDL	BDL	BDL
60	Methyl parathion	µg/l	0.3	BDL	BDL	BDL	BDL
61	Monocrotophos	µg/l	1	BDL	BDL	BDL	BDL
62	Phorate	µg/l	2	BDL	BDL	BDL	BDL
63	E.coli	Per 100 ml	Absent	Absent	Absent	Absent	Absent
64	Total Coliforms	MPN/100ml	Absent	Absent	Absent	Absent	Absent
(B)	**Radioactive**						
65	Alpha emitters	Bq/l	0.1(NR)	BDL	BDL	BDL	BDL
66	Beta emitters	Bq/l	1.0(NR)	BDL	BDL	BDL	BDL

Method of Testing: As per APHA 23rd edition and IS: 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

ENVIRONMENT LABORATORY
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Report Number	:	**VLL/VLS/22/01794/001**
Issued Date	:	2022-05-05
Your Ref	:	8500003497
P.O. Date	:	2019-02-16

SAMPLE PARTICULARS : **GROUND WATER SAMPLES (BALCO PLANT)**

Sample Registration Date	:	2022-04-11	Sampling Date	:	2022-04-08
Analysis Starting Date	:	2022-04-12	Analysis Completion Date	:	2022-04-30
Test Required	:	Water Analysis as per IS 10500 . 2012			

SAMPLE COLLECTED BY VIMTA LABS LTD

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Rogabahari village Bore Well*	*Rogabahari village Dug well*	*Bailgiri village Bore well*	*Bailgiri village Dug well*
1	pH value	-	6.5-8.5 (NR)	6.97	6.84	7.12	7.26
2	Color	Hazen	5(15)	Colorless	Colorless	Colorless	Colorless
3	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5	Turbidity	NTU	1(5)	2	4	3	2
6	Total dissolved solids at 180°C	mg/l	500(2000)	439	235	398	381
7	Total Hardness as $CaCO_3$	mg/l	200(600)	246.8	178.6	310.9	231.9
8	Total Alkalinity as $CaCO_3$	mg/l	200(600)	245	164	225	210
9	Calcium as Ca	mg/l	75(200)	54.6	42.8	67.4	49.3
10	Magnesium as Mg	mg/l	30(100)	26.8	17.4	34.6	26.4
11	Free Residual chlorine	mg/l	0.2(1.0)	<0.2	<0.2	<0.2	<0.2
12	Boron	mg/l	0.5(1.0)	0.23	0.11	0.18	0.08
13	Chlorides as Cl	mg/l	250(1000)	98.6	76.7	155.2	95.8
14	Sulphate as SO_4	mg/l	200(400)	29.6	19.8	38.2	21.7
15	Fluorides as F	mg/l	1.0(1.5)	0.126	0.091	0.347	0.483
16	Nitrates as NO_3	mg/l	45(NR)	2.8	3.6	4.3	2.4
17	Phenolic Compounds as C_6H_5OH	mg/l	0.001(0.002)	<0.001	<0.001	<0.001	<0.001
18	Cyanides	mg/l	0.05(NR)	<0.02	<0.02	<0.02	<0.02

Method of Testing: As per APHA 23rd edition and IS: 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

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Report Number : **VLL/VLS/22/01794/001**
Issued Date : 2022-05-05
Your Ref : 8500003497
P.O. Date : 2019-02-16

SAMPLE PARTICULARS : **GROUND WATER SAMPLES (BALCO PLANT)**

Sample Registration Date	:	2022-04-11	Sampling Date	:	2022-04-08
Analysis Starting Date	:	2022-04-12	Analysis Completion Date	:	2022-04-30
Test Required	:	Water Analysis as per IS 10500 : 2012			
SAMPLE COLLECTED BY VIMTA LABS LTD					

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Rogabahari village Bore Well*	*Rogabahari village Dug well*	*Bailgiri village Bore well*	*Bailgiri village Dug well*
19	Anionic detergents as MBAS	mg/l	0.2(1.0)	<0.02	<0.02	<0.02	<0.02
20	Mineral oil	mg/l	0.5(NR)	Absent	Absent	Absent	Absent
21	Cadmium as Cd	mg/l	0.003(NR)	<0.003	<0.003	<0.003	<0.003
22	Total Arsenic as As	mg/l	0.01(0.05)	<0.01	<0.01	<0.01	<0.01
23	Copper as Cu	mg/l	0.05(1.5)	0.01	<0.01	0.01	<0.01
24	Lead as Pb	mg/l	0.01(NR)	<0.01	<0.01	<0.01	<0.01
25	Manganese as Mn	mg/l	0.1(0.3)	0.02	<0.01	0.01	0.01
26	Molybdenum as Mo	mg/l	0.07(NR)	<0.01	<0.01	<0.01	<0.01
27	Nickel as Ni	mg/l	0.02(NR)	<0.01	<0.01	<0.01	<0.01
28	Iron as Fe	mg/l	0.3(NR)	0.15	0.09	0.23	0.16
29	Total Chromium as Cr	mg/l	0:05(NR)	<0.01	<0.01	<0.01	<0.01
30	Selenium as Se	mg/l	0.05(NR)	<0.01	<0.01	<0.01	<0.01
31	Zinc as Zn	mg/l	5.0(15)	0.12	0.08	0.19	0.11
32	Aluminum as Al	mg/l	0.03(0.2)	0.09	0.12	0.08	0.14
33	Mercury as Hg	mg/l	0.001(NR)	<0.001	<0.001	<0.001	<0.001
34	Sulphide as H2S	mg/l	0.05(NR)	<0.05	<0.05	<0.05	<0.05
35	Chloramines as Cl2	mg/l	4.0(NR)	<0.05	<0.05	<0.05	<0.05
36	Ammonia (as total ammonia-N	mg/l	0.5(NR)	<0.05	<0.05	<0.05	<0.05
37	Barium as Ba	mg/l	0.7(NR)	0.019	0.026	0.032	0.018
38	Silver as Ag	mg/l	0.1(NR)	<0.01	<0.01	<0.01	<0.01

Method of Testing: As per APHA 23rd edition and IS 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

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Your Ref	:	8500003497
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SAMPLE PARTICULARS : **GROUND WATER SAMPLES (BALCO PLANT)**

Sample Registration Date	:	2022-04-11	Sampling Date	:	2022-04-08
Analysis Starting Date	:	2022-04-12	Analysis Completion Date	:	2022-04-30
Test Required	:	Water Analysis as per IS 10500 : 2012			
SAMPLE COLLECTED BY VIMTA LABS LTD					

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Rogabahari village Bore Well*	*Rogabahari village Dug well*	*Bailgiri village Bore well*	*Bailgiri village Dug well*
39	Polychlorinated biphenyls	mg/l	0.0005(NR)	Absent	Absent	Absent	Absent
40	Polynuclear aromatic hydrocarbon as PAH	mg/l	0.0001(NR)	<0.0001	<0.0001	<0.0001	<0.0001
41	Bromoform	mg/l	0.1(NR)	<0.0001	<0.0001	<0.0001	<0.0001
42	Dibromochloromethane	mg/l	0.1(NR)	<0.01	<0.01	<0.01	<0.01
43	Bromodichloromethane	mg/l	0.06(NR)	<0.01	<0.01	<0.01	<0.01
44	Chloroform	mg/l	0.2(NR)	<0.001	<0.001	<0.001	<0.001
(A)	**Pesticides**						
45	Alachlor	µg/l	20	<0.01	<0.01	<0.01	<0.01
46	Atrazine	µg/l	2	<0.01	<0.01	<0.01	<0.01
47	Aldrin	µg/l	0.03	<0.01	<0.01	<0.01	<0.01
48	Alpha HCH	µg/l	0.01	<0.01	<0.01	<0.01	<0.01
49	Beta HCH	µg/l	0.04	<0.01	<0.01	<0.01	<0.01
50	Butachlor	µg/l	125	<0.01	<0.01	<0.01	<0.01
51	Chlorpyriphos	µg/l	30	<0.01	<0.01	<0.01	<0.01
52	Delta HCH	µg/l	0.04	<0.01	<0.01	<0.01	<0.01
53	2,4-Dichlorophenoxyacetic acid	µg/l	30	<0.01	<0.01	<0.01	<0.01
54	DDT	µg/l	1	<0.01	<0.01	<0.01	<0.01
55	Endosulfan (alpha, beta and Sulphate)	µg/l	0.4	<0.01	<0.01	<0.01	<0.01
56	Ethion	µg/l	3	<0.01	<0.01	<0.01	<0.01
57	Gamma HCH	µg/l	2	<0.01	<0.01	<0.01	<0.01
58	Isoproturon	µg/l	9	<0.01	<0.01	<0.01	<0.01

Method of Testing: As per APHA 23rd edition and IS 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

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ISSUED TO:

M/s. Bharat Aluminum Company Limited,
BALCO
KORBA
Chhattisgarh

Report Number	:	VLL/VLS/22/01794/001
Issued Date	:	2022-05-05
Your Ref	:	8500003497
P.O. Date	:	2019-02-16

SAMPLE PARTICULARS : **GROUND WATER SAMPLES (BALCO PLANT)**

Sample Registration Date	:	2022-04-11	Sampling Date	:	2022-04-08
Analysis Starting Date	:	2022-04-12	Analysis Completion Date	:	2022-04-30
Test Required	:	Water Analysis as per IS 10500 : 2012			
SAMPLE COLLECTED BY VIMTA LABS LTD					

TEST REPORT

Sr. No.	Parameters	UOM	Limit IS 10500 : 2012	*Rogabahari village Bore Well*	*Rogabahari village Dug well*	*Bailgiri village Bore well*	*Bailgiri village Dug well*
59	Malathion	µg/l	190	BDL	BDL	BDL	BDL
60	Methyl parathion	µg/l	0.3	BDL	BDL	BDL	BDL
61	Monocrotophos	µg/l	1	BDL	BDL	BDL	BDL
62	Phorate	µg/l	2	BDL	BDL	BDL	BDL
63	E.coli	Per 100 ml	Absent	Absent	Absent	Absent	Absent
64	Total Coliforms	MPN/100ml	Absent	Absent	Absent	Absent	Absent
(B)	**Radioactive**						
65	Alpha emitters	Bq/l	0.1(NR)	BDL	BDL	BDL	BDL
66	Beta emitters	Bq/l	1.0(NR)	BDL	BDL	BDL	BDL

Method of Testing: As per APHA 23rd edition and IS 3025
Instrument Used: ICP-OES (Perkin-Elmer) & ICP-MS (agilent)
Analysis as per IS 10500: 2012 Drinking Water specification

ENVIRONMENT LABORATORY Vimta VIMTA LABS REGD. No:- D.L.-33004/99 No - 5

Dr. Subba Reddy Mallampati
Group Leader - Environment

REPORT ON

"MONITORING AND EVALUATION OF PLANTATION"

AT

Bharat Aluminium Company Limited
BALCO Nagar, Dist.: Korba (C.G.)

March–2021

"NAV AASTHA JAN VIKAS SEVA SAMITI"

8/5, "JASMATI BHAWAN", NEAR OLD KATTHA FACTORY,
GODHANPUR, AMBIKAPUR – 497001
CONTACT–#99261-54460#94255-80401
WEBSITE – www.navaastha.in Email –najvss@gmail.com

WHO WE ARE?

NAV AASTHA JAN VIKAS SEVA SAMITI is a registered NGO under societies registration act. 1973 of Indian constitution, registered on 07thApril 2005 at Raipur (C.G.).The working area of the organization is whole Chhattisgarh. Our main focus is towards the Environment, Forest and Biodiversity conservation, youth development and women and child empowerment in the state.

We have been working continuously in betterment of the people of Chhattisgarh *(chhattisgarhiya)* in educational, Social and many more sectors by the help of schemes of govt. The organization works under many schemes of the respectable govt. like – **Green India Mission** (GIM), **Bio-diversity Program, Integrated Watershed Management Program** (IWMP), **SGSY**, **SHG** forming, **JFMC capacity building** and many more. We are also engaged in **Monitoring and Evaluation** of plantations of government entities as well as private entities.

"New challenges new innovations……"

CENTRAL POLLUTION CONTROL BOARD

The **Central Pollution Control Board (CPCB)**, statutory organization, was constituted in September, 1974 under the Water (Prevention and Control of Pollution) Act, 1974. Further, CPCB was entrusted with the powers and functions under the Air (Prevention and Control of Pollution) Act, 1981.

It serves as a field formation and also provides technical services to the Ministry of Environment and Forests of the provisions of the Environment (Protection) Act, 1986. Principal Functions of the CPCB, as spelt out in the Water (Prevention and Control of Pollution) Act, 1974, and the Air (Prevention and Control of Pollution) Act, 1981, (i) to promote cleanliness of streams and wells in different areas of the States by prevention, control and abatement of water pollution, and (ii) to improve the quality of air and to prevent, control or abate air pollution in the country.

Air Quality Monitoring is an important part of the air quality management. The **National Air Monitoring Programme** (NAMP) has been established with objectives to determine the present air quality status and trends and to control and regulate pollution from industries and other source to meet the air quality standards. It also provides background air quality data needed for industrial sitting and towns planning.

Besides this, CPCB has an automatic monitoring station at ITO Intersection in New Delhi. At this station Resizable Suspended Particulate Matter (RSPM), Carbon Monoxide (CO), Ozone(O3), Sulphur Dioxide(SO2), Nitrogen Dioxide(NO2) and Suspended Particulate Matter (SPM) are being monitored regularly. This information on Air Quality at ITO is updated every week.

Plantation Details: M/s Bharat Aluminium Co. Ltd (BALCO) Korba(CG)

Year	BALCO PLANT & TOWNSHIP		BCPP		Total saplings including BALCO & BCPP	No of saplings Survived	Percentage Survived Percentage %	Location	Species
	No of Sapling planted BALCO	Area in Acre	No of sapling planted BCPP	BCPP Area in Acre					
2002-03	55000	54	10000	10	65000	51745	79.61	Plant boundary wall plantation sites, inside township, BCPP township, plant and ash dyke area and roadside of plant and township.	Sagwan, Karanj Sarai, Nilgiri, subabul, Gulmohar, Mango and Fruit bearing saplings
2003-04	30000	29	10000	10	40000	33252	83.13		
2004-05	11000	10	21000	21	32000	25335	79.17		
2005-06	57000	56	10000	10	67000	53278	79.52		
2006-07	130000	128	5000	5	135000	106782	79.10		
2007-08	35000	32	5000	5	40000	33600	84.00		
2008-09	13000	12	1000	1	14000	11276	80.54	BCPP plant and township plantation area	Sagwan, Karanj Sarai, Nilgiri, Subabul, Gulmohar, Mango and Fruit bearing saplings

2009-10	53500	52.5	1500	1	55000	40100	72.91	Township and Hariyar Chhattisgarh plantation programme (Roadside plantation in Devpahri road)	Sagwan, Karanj Sarai, Nilgiri, subabul, Gulmohar, Mango and fruit bearing saplings
2010-11	54850	54	150	0	55000	39870	72.49	Hariyar Chhattisgarh plantation program, BCPP	Sagwan, Karanj, Sarai, Nilgiri, subabul, Gulmohar, Mango and fruit bearing saplings
2011-12	20000	18.5	0	0	20000	16875	84.38	Near Stadium, Joggers park	Ashoka, Sagwan, Karanj, Gulmohar
2012-13	5600	5	0	0	5600	4826	86.18	Near Kali Mandir	Karanj, Gulmohar
2013-14	4150	4	650	0.65	4800	4025	83.25	Inside Plant, BCPP Ash Dykes, DPS School	Karanj, Neem Gulmohar,Guava
2014-15	35700	34	0		35700	30638	85.82	Lalghat plantation area, Inside Roads	Karanj, Sagwan, mix Fruit plants
2015-16	30000	28	0		30000	25434	84.78	Near township office, ash dykes, cooling tower inside / outside, ETP, boundary wall 1200 MW, Behind alumina plant	Karanj, Sagwan, mix fruits bearing plants
2016-17	30000	28	0		30000	25500	85.00	Balco Plant and around township	Karanj, Satwan, Gulmohar, Guvava, Jamun, Sehtut, Sagwan

2017-18	5000	4	0		5000	4100	82.00	In and around plant and township	Karanj, Gulmohar, Guvava, Jamun, Sehtut, Sagwan, Mango, Jamun
2018-19	5000	4	0		5000	4000	80.00	In and around plant and township	Karanj, Satwan, Gulmohar, Guvava, Jamun, Sehtut, Sagwan, Mango, Jamun, Black Sirus, Neem
2019-20	15000	13	0		15000	12900	86.00	Near ash dyke, township and plant premises	Karanj, Satwan, Mango, Gulmohar, Bamboo, Amla, Neem
2020-21	10000	9	0		10000	8420	84.20	Ash dyke 3 Band at STP area	Karanj, Satwan, Mango, Gulmohar, Bamboo, Amla, Neem
Total*	**599800**	**575**	**64300**	**65**	**664100**	**531956**	**80.10**		

***Above details is for overall plantation carried out at Balco nagar Korba location which include statutory compliance for plantation for individual units of M/s BALCO Korba.**

Plantation Details

S.No	Industry/ Mines Name	Total area of industry/Mines in Acres	Actual plantation carried out by industry/mines(in acres)	Remarks
1	Integrated Aluminium and Power complex	948	575	As per EC/CTE/CTO condition the targeted plantation has been completed in all units of BALCO Korba.
2	Township	650		
3	Ash pond	375		
Total Land		1973		
4	Balco 270 MW Power plant	196 (Including Ash Dykes)	65	

CONCLUSION

The Survival percentage of plantation done by "**Bharat Aluminium Company Limited, BALCO Nagar, Dist.: Korba (C.G.)**" is about 80.10*%w*hich is **Outstanding** performance by the company.

It is observe that there is luxuriant growth of the plants with large canopy area. All the plantation work of the company is satisfactory and specifically the maintenance done at the site is praiseworthy. We hope this will continue in future for developing greenery all around plant and township.

The official staff of the company was so co-operative, enthusiastic and helpful towards the work.

GRADING OF PROJECT ON A SCALE OF 1TO10

Overall Grading of the Project	**Outstanding (8-10)**	**Very Good (5-8)**	**Good (3-5)**	**Poor (<3)**
	8.1			

Note: As informed by BALCO that they are initiating additional plantation of around 1,00,000 saplings in the area of approx. 88 Acres (Ash dykes, Open area, etc.) during FY 2021-22.

ON SITE PHOTOGRAPHS

Shot on OnePlus
By Vijay Kumar Gupta

Annexure VII

GREENBELT DEVELOPMENT-BALCO

Name of the Species Planted

Dalbergia latifolia (**sheeshm**), Mangifera Indica (**Mango**), Jamarindus Indica, Dehonix Regia(**Gulmohar**), Madhuca Indica (**Mahuwa**), Emblica Officinalis (**Amala**), Syzygium Cumini (**Jamun**), Azadirachta Indica (**Neem**), Grevillea Rebusta (**Silver oak**) **Karanj**, (**Amaltash**), Ficus Religiosa (**Pipal**), Leucaena Leucoophala (**Subabul**) etc.

YEAR	BALCO		BCPP		MINES		Total	
	No of sapling	***Area in Acres***	***No of sapling***	***Area in Acres***	***No of sapling***	***Area in Acres***	***No of sapling***	***Area in Acres***
2002-03	55000	53.6	10000	10	21000	21	86,000	65
2003-04	30000	29	10000	10	45000	44	85000	83
2004-05	11000	11	21000	21	30000	29	62000	61
2005-06	57000	55.6	10000	10	50000	49	117000	115
2006-07	400000	127.4	5000	5	150000	147	285000	279
2007-08	35000	34.7	5000	5	110000	108	150000	147
2008-09	13000	12.94	1000	1	160000	157	174000	171
2009-10	53500	52.53	1500	1	150000	147	205000	228
2010-11	50000	49	150	0	305000	299	360000	353
2011-12	20000	20	-	-	201000	198	231000	228
2012-13	5600	6	-	-	305000	248	310850	254
2013-14	4150	4.15	650	0.65	175000	144	179800	149
2014-15	35700	35.6	-	-	148000	147	183700	182.6
2015-16	30000	30	-	-	72500	72	102500	102
2016-17	30000	30			57000	57	87000	87
2017-18	5000	5	-	-	87500	87.5	92500	92.5
2018-19	5000	5	-	-	78000	78	83000	83
2019-20	15000	15			114500	114.5	129500	129.5
2020-21	10000	10	-	-	70000	70	80000	80
2021-22	15725	15	-	-	-	-	15725	15
2022-23 (YTD)	64022	72.1	-	-	-	-	64022	72.1

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ISSUED TO
M/s. Bharat Aluminium Company Limited,
KORBA Chhattisgarh

Registration No.: VLL/VLS/22/01794/002

Issue Date: 5/5/2022
Your reference: P.O.No. 8500003497
And Date: 16/02/2019

Sample Particulars: AMBIEANT NOISE MONITORING 2.7 LTPA SMELTER

Tests required: Sound Level

SAMPLES COLLECTED BY VIMTA LABS LTD **LAB REF.: EC**

TEST RESULTS

S. No	Location	Unit	Norms in dB(Day)	12/4/2022 9.00AM to 17.00 PM	Norms in dB(Night)	12/4/2022 10.00PM to 6.00AM
1	Pot room road side near lounge room (SEC-8)	dB	75	65.3	70	53.5
2	Cast house 1 outside of main gate	dB	75	64.9	70	52.1
3	Cast house 2 outside of main gate	dB	75	67.2	70	54.8
4	Cast house 3 outside of main gate	dB	75	64.3	70	54.7
5	Rectifier road side	dB	75	66.1	70	54.3
6	GAP ground floor road side	dB	75	65.4	70	55.4
7	Rodding shop parking area	dB	75	64.8	70	52.6
8	Bake oven in front of FTP	dB	75	63.9	70	53.2

ENVIRONMENT LABORATORY
Vimta VIMTA LABS LTD
REGD. No. D.L.-33004/99

Dr. Subba Reddy Mallampati
Group Leader - Environment

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ISSUED TO
M/s. Bharat Aluminium Company Limited,
KORBA Chhattisgarh

Registration No.: VLL/VLS/22/03396/002

Issue Date: 4/6/2022
Your reference: P.O.No. 8500003497
And Date: 16/02/2019

Sample Particulars: AMBIEANT NOISE MONITORING 2.7 LTPA SMELTER

Tests required: Sound Level

SAMPLES COLLECTED BY VIMTA LABS LTD **LAB REF.: EC**

TEST RESULTS

S. No	Location	Unit	Norms in dB(Day)	10/5/2022 9.00AM to 17.00 PM	Norms in dB(Night)	10/5/2022 10.00PM to 6.00AM
1	Pot room road side near lounge room (SEC-8)	dB	75	62.4	70	51.5
2	Cast house 1 outside of main gate	dB	75	59.7	70	53.1
3	Cast house 2 outside of main gate	dB	75	56.7	70	50.6
4	Cast house 3 outside of main gate	dB	75	63.8	70	53.7
5	Rectifier road side	dB	75	65.2	70	54.2
6	GAP ground floor road side	dB	75	64.1	70	54.7
7	Rodding shop parking area	dB	75	63.8	70	53.7
8	Bake oven in front of FTP	dB	75	54.6	70	48.2

ENVIRONMENT LABORATORY
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Dr. Subba Reddy Mallampati
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VIMTA

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ISSUED TO
M/s. Bharat Aluminium Company Limited,
KORBA Chhattisgarh

Registration No.: VLL/VLS/22/04951/002

Issue Date: 4/7/2022
Your reference: P.O.No. 8500003497
And Date: 16/02/2019

Sample Particulars: AMBIEANT NOISE MONITORING 2.7 LTPA SMELTER

Tests required: Sound Level

SAMPLES COLLECTED BY VIMTA LABS LTD

LAB REF.: EC

TEST RESULTS

S. No	Location	Unit	Norms in dB(Day)	12/6/2022 9.00AM to 17.00 PM	Norms in dB(Night)	12/6/2022 10.00PM to 6.00AM
1	Pot room road side near lounge room (SEC-8)	dB	75	58.4	70	50.5
2	Cast house 1 outside of main gate	dB	75	57.3	70	52.9
3	Cast house 2 outside of main gate	dB	75	54.2	70	49.7
4	Cast house 3 outside of main gate	dB	75	58.2	70	50.2
5	Rectifier road side	dB	75	61.4	70	52.4
6	GAP ground floor road side	dB	75	56.3	70	50.2
7	Rodding shop parking area	dB	75	60.3	70	52.8
8	Bake oven in front of FTP	dB	75	55.4	70	49.5

ENVIRONMENT LABORATORY Vimta VIMTA LABS VIMTA

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ISSUED TO
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KORBA Chhattisgarh

Registration No.: VLL/VLS/22/05859/002

Issue Date: 4/8/2022
Your reference: P.O.No. 8500005780
And Date: 29/6/2022

Sample Particulars: AMBIEANT NOISE MONITORING 2.7 LTPA SMELTER

Tests required: Sound Level

SAMPLES COLLECTED BY VIMTA LABS LTD

LAB REF.: EC

TEST RESULTS

S. No	Location	Unit	Norms in dB(Day)	15/7/2022 6.00AM to 10.00 PM	Norms in dB(Night)	15/7/2022 10.00 PM to 6.00 AM
1	Pot room road side near lounge room (SEC-8)	dB	75	55.3	70	50.8
2	Cast house 1 outside of main gate	dB	75	54.6	70	51.7
3	Cast house 2 outside of main gate	dB	75	54.7	70	50.6
4	Cast house 3 outside of main gate	dB	75	52.4	70	51.4
5	Rectifier road side	dB	75	59.6	70	51.7
6	GAP ground floor road side	dB	75	57.1	70	50.3
7	Rodding shop parking area	dB	75	58.3	70	51.8
8	Bake oven in front of FTP	dB	75	58.5	70	51.4

ENVIRONMENT LABORATORY Vimta VIMTA LABS REGD. No. DL 3300(NZ) Sr. No.-5

Dr. Subba Reddy Mallampati
Dy. Manager – Environment

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ISSUED TO
M/s. Bharat Aluminium Company Limited
KORBA (C.G)

Report Number: VLL/VLS/22/09838/002
Issue Date: 2022-10-04
P.O. No: 8500005780
P.O. Date: 2022-06-29

AMBIEANT NOISE MONITORING AT 2.7 LTPA SMELTER

Tests required: Sound Level

SAMPLES COLLECTED BY VIMTA LABS LTD — LAB REF.: EC

TEST RESULTS

S. No	Location	Unit	Norms in dB(Day)	2022-09-12 6:00 to 22.00	Norms in dB(Night)	2022-09-12 22.00 to 6.00
1	Pot room road side near lounge room (SEC-8)	dB	75	56.4	70	53.1
2	Cast house 1 outside of main gate	dB	75	56.9	70	54.5
3	Cast house 2 outside of main gate	dB	75	55.2	70	52.9
4	Cast house 3 outside of main gate	dB	75	54.9	70	52.6
5	Rectifier road side	dB	75	57.3	70	53.2
6	GAP ground floor road side	dB	75	56.1	70	53.5
7	Rodding shop parking area	dB	75	61.4	70	52.1
8	Bake oven in front of FTP	dB	75	59.3	70	52.4

ENVIRONMENT LABORATORY Vimta VIMTA LABS REGD. No- DL 3300/99 Sr. No.-5

Dr. Subba Reddy Mallampati
Dy. Manager - Environment

Sensitivity: Internal (C3)

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ISSUED TO
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KORBA (C.G)

Report Number: VLL/VLS/22/08103/002
Issue Date: 2022-09-04
P.O. No: 8500005780
P.O. Date: 2022-06-29

AMBIEANT NOISE MONITORING AT 2.7 LTPA SMELTER

Tests required: Sound Level

SAMPLES COLLECTED BY VIMTA LABS LTD

LAB REF.: EC

TEST RESULTS

S. No	Location	Unit	Norms in dB(Day)	2022-08-09 6:00 to 22.00	Norms in dB(Night)	2022-08-09 22.00 to 6.00
1	Pot room road side near lounge room (SEC-8)	dB	75	55.8	70	52.3
2	Cast house 1 outside of main gate	dB	75	56.3	70	54.8
3	Cast house 2 outside of main gate	dB	75	54.9	70	52.6
4	Cast house 3 outside of main gate	dB	75	54.3	70	51.8
5	Rectifier road side	dB	75	56.9	70	52.2
6	GAP ground floor road side	dB	75	55.3	70	52.9
7	Rodding shop parking area	dB	75	60.6	70	51.2
8	Bake oven in front of FTP	dB	75	58.7	70	50.6

ENVIRONMENT LABORATORY
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REGD. No- DL 33004/99
Sr. No.-5

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ISSUED TO

M/s. Bharat Aluminium Company Limited,
KORBA chhattisgarh

Report Number: VLL/VLS/22/01794/001

Issue Date : 5/5/2022
Your Ref : 8500003497
and Date : 16/2/2019

Sample Particulars: AMBIENT NOISE MONITORING PLANT 1

Tests required: Sound Level

SAMPLES COLLECTED BY VIMTA LABS LTD **LAB REF.: EC**

TEST RESULTS

S. No	Location	Unit	Norms In dB(Day)	20/4/2022 9.00AM to 17.00 PM	Norms In dB(Night)	20/4/2022 10.00PM to 6.00AM
1	Time office(Fab.)	dB	75	56.3	70	45.8
2	Gate Smelter Store	dB	75	54.2	70	46.5
3	MRSDS	dB	75	55.4	70	47.3
4	Petrol Pump	dB	75	52.1	70	46.1
5	Garrage	dB	75	53.8	70	47.2
6	Alumina Canteen	dB	75	53.7	70	46.5
7	Work Shop	dB	75	54.2	70	47.2
8	Engg. Building	dB	75	54.3	70	46.3
9	Bauxite Yard	dB	75	53.6	70	47.6
10	Plant Lab.	dB	75	55.1	70	47.8
11	Alumina Gate	dB	75	55.3	70	45.9
12	Parsabhata Main Gate	dB	75	55.8	70	48.6
13	Bailgiri Basti	dB	75	54.2	70	46.3
14	Lalghat Area	dB	75	55.3	70	47.8

ENVIRONMENT LABORATORY
REGD. No: D.L.-33004/99

Dr. Subba Reddy Mallampati
Group Leader - Environment

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ISSUED TO

M/s. Bharat Aluminium Company Limited,
KORBA chhattisgarh

Report Number: VLL/VLS/22/03396/001

Issue Date : 4/6/2022
Your Ref : 8500003497
and Date : 16/2/2019

Sample Particulars: AMBIENT NOISE MONITORING PLANT 1

Tests required: Sound Level

SAMPLES COLLECTED BY VIMTA LABS LTD **LAB REF.: EC**

TEST RESULTS

S. No	Location	Unit	Norms In dB(Day)	14/5/2022 9.00AM to 17.00 PM	Norms In dB(Night)	14/5/2022 10.00PM to 6.00AM
1	Time office(Fab.)	dB	75	53.2	70	44.9
2	Gate Smelter Store	dB	75	52.1	70	45.8
3	MRSDS	dB	75	53.6	70	46.3
4	Petrol Pump	dB	75	53.2	70	45.7
5	Garrage	dB	75	54.6	70	46.3
6	Alumina Canteen	dB	75	52.4	70	45.8
7	Work Shop	dB	75	50.3	70	45.3
8	Engg. Building	dB	75	55.3	70	45.6
9	Bauxite Yard	dB	75	53.6	70	43.6
10	Plant Lab.	dB	75	54.9	70	45.8
11	Alumina Gate	dB	75	53.2	70	46.1
12	Parsabhata Main Gate	dB	75	54.7	70	47.2
13	Bailgiri Basti	dB	75	53.9	70	46.8
14	Lalghat Area	dB	75	54.9	70	47.5

ENVIRONMENT LABORATO
Vimta VIMTA LABS
Sr. No. 6
VIMTA

Dr. Subba Reddy Mallamadati
Group Leader - Environment

Vimta Labs Limited
Registered Office
142, IDA Phase II, Cherlapally
Hyderabad-500 051,Telangana, India
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Vimta
Driven by Quality. Inspired by Science.

ISSUED TO

M/s. Bharat Aluminium Company Limited,
KORBA chhattisgarh

Report Number: VLL/VLS/22/04951/001

Issue Date : 4/7/2022
Your Ref : 8500003497
and Date : 16/2/2019

Sample Particulars: AMBIENT NOISE MONITORING PLANT 1

Tests required: Sound Level

SAMPLES COLLECTED BY VIMTA LABS LTD

LAB REF.: EC

TEST RESULTS

S. No	Location	Unit	Norms in dB(Day)	11/6/2022 9.00AM to 17.00 PM	Norms in dB(Night)	11/6/2022 10.00PM to 6.00AM
1	Time office(Fab.)	dB	75	52.9	70	43.6
2	Gate Smelter Store	dB	75	52.8	70	45.2
3	MRSDS	dB	75	54.1	70	45.9
4	Petrol Pump	dB	75	53.8	70	45.4
5	Garrage	dB	75	53.6	70	45.8
6	Alumina Canteen	dB	75	52.8	70	45.3
7	Work Shop	dB	75	51.4	70	45.1
8	Engg. Building	dB	75	54.9	70	44.8
9	Bauxite Yard	dB	75	53.5	70	44.2
10	Plant Lab.	dB	75	54.2	70	46.2
11	Alumina Gate	dB	75	54.1	70	47.8
12	Parsabhata Main Gate	dB	75	53.7	70	48.2
13	Bailgiri Basti	dB	75	52.7	70	47.3
14	Lalghat Area	dB	75	53.5	70	48.1

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ISSUED TO

M/s. Bharat Aluminium Company Limited,
KORBA chhattisgarh

Report Number: VLL/VLS/22/05859/001

Issue Date : 4/8/2022
Your Ref : 8500005780
and Date : 29/6/2022

Sample Particulars: AMBIENT NOISE MONITORING PLANT 1

Tests required: Sound Level

SAMPLES COLLECTED BY VIMTA LABS LTD

LAB REF.: EC

TEST RESULTS

S. No	Location	Unit	Norms in dB(Day)	19/7/2022 6.00 AM to 10.00 PM	Norms in dB(Night)	19/7/2022 10.00 PM to 6.00 AM
1	Time office(Fab.)	dB	75	51.4	70	44.6
2	Gate Smelter Store	dB	75	52.1	70	45.7
3	MRSDS	dB	75	53.4	70	46.3
4	Petrol Pump	dB	75	52.8	70	45.8
5	Garrage	dB	75	52.4	70	45.2
6	Alumina Canteen	dB	75	52.5	70	45.6
7	Work Shop	dB	75	52.7	70	45.2
8	Engg. Building	dB	75	53.2	70	44.7
9	Bauxite Yard	dB	75	53.8	70	44.5
10	Plant Lab.	dB	75	53.6	70	46.3
11	Alumina Gate	dB	75	53.5	70	46.5
12	Parsabhata Main Gate	dB	75	50.3	70	47.4
13	Bailgiri Basti	dB	75	51.5	70	47.2
14	Lalghat Area	dB	75	52.7	70	47.5

ENVIRONMENT LABORATORY Vimta VIMTA LABS REGD. No- DL 93004/99 Sr. No.-5

Dr. Subba Reddy Mallampati
Dy. Manager - Environment

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ISSUED TO
M/s. Bharat Aluminium Company Limited
KORBA (C.G)

Report Number: VLL/VLS/22/09838/001
Issue Date: 2022-10-04
P.O. No: 8500005780
P.O. Date: 2022-06-29

AMBIENT NOISE MONITORING AT PLANT - 1 AREA

Tests required: Sound Level

SAMPLES COLLECTED BY VIMTA LABS LTD LAB REF.: EC

TEST RESULTS

S. No	Location	Unit	Norms in dB(Day)	2022-09-06 6:00 to 22.00	Norms in dB(Night)	2022-09-06 22.00 to 6.00
1	Time office(Fab.)	dB	75	53.2	70	49.9
2	Gate Smelter Store	dB	75	55.3	70	47.6
3	MRSDS	dB	75	55.4	70	50.3
4	Petrol Pump	dB	75	54.9	70	46.5
5	Garrage	dB	75	56.1	70	45.7
6	Alumina Canteen	dB	75	55.9	70	48.3
7	Work Shop	dB	75	54.3	70	47.6
8	Engg. Building	dB	75	55.7	70	45.9
9	Bauxite Yard	dB	75	54.1	70	43.6
10	Plant Lab.	dB	75	54.3	70	45.9
11	Alumina Gate	dB	75	57.9	70	49.5
12	Parsabhata Main Gate	dB	75	54.3	70	49.5

ENVIRONMENT LABORATORY Vimta VIMTA LABS No- DL 33004/99 Sr. No.-5

Dr. Subba Reddy Mallampati
Dy. Manager - Environment

Sensitivity: Internal (C2)

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ISSUED TO
M/s. Bharat Aluminium Company Limited
KORBA (C.G)

Report Number: VLL/VLS/22/08103/001
Issue Date: 2022-09-04
P.O. No: 8500005780
P.O. Date: 2022-06-29

AMBIENT NOISE MONITORING AT PLANT - 1 AREA

Tests required: Sound Level

SAMPLES COLLECTED BY VIMTA LABS LTD — LAB REF.: EC

TEST RESULTS

S. No	Location	Unit	Norms in dB(Day)	2022-08-04 6:00 to 22.00	Norms in dB(Night)	2022-08-04 22.00 to 6.00
1	Time office(Fab.)	dB	75	52.7	70	48.2
2	Gate Smelter Store	dB	75	54.8	70	46.8
3	MRSDS	dB	75	55.2	70	49.2
4	Petrol Pump	dB	75	54.7	70	44.1
5	Garrage	dB	75	56.3	70	45.3
6	Alumina Canteen	dB	75	56.1	70	43.7
7	Work Shop	dB	75	53.8	70	46.1
8	Engg. Building	dB	75	56.2	70	42.9
9	Bauxite Yard	dB	75	52.7	70	42.9
10	Plant Lab.	dB	75	53.8	70	44.3
11	Alumina Gate	dB	75	57.6	70	48.6
12	Parsabhata Main Gate	dB	75	53.4	70	47.3

ENVIRONMENT LABORATORY Vimta VIMTA LABS REGD. No- DL 33 Sr. No.-5

Dr. Subba Reddy Mallampati
Dy. Manager – Environment

vedanta
transforming for good

balco
BHARAT ALUMINIUM COMPANY LIMITED
P.O. - BALCO Nagar, Korba, CG
India - 495684

BALCO/ENV/A-02(A)/2022/116

31st May 2022

To,
The Regional Officer (IRO)
Ministry of Environment, Forest & Climate Change
Integrated Regional Office, Aranya Bhawan
North Block, Sector-19 ,
Nava Raipur, Atal Nagar (CG) 492002

Sub: Half yearly compliance status (October 2021 to March - 2022) for Alumina refinery and Aluminium Smelter Plant (Potline-1)- BALCO Korba (CG)

Dear Sir/Madam,

Please find enclosed herewith, the half yearly compliance report of the Environmental Clearance No. J-11011/34/2003-IA II (I) dated 5th November 2003 for Alumina refinery and Aluminium smelter plant of Bharat Aluminium Company Limited

We hope that the above is in line with the referred Environmental Clearance. In case you require any further information, we will be glad to furnish the same.

Thanking you,

Yours truly,

RK Singh
COO-Metal

Encl: a/a

Copy to:
1. Regional Officer, CECB, KORBA
2. The APCCF, MoEFCC Civil Lines Nagpur

COMPLIANCE STATUS OF ALUMINA REFINERY AND ALUMINIUM SMELTER PLANT BALCO, KORBA (C.G.)

No. J-11011/34/2003-IA II (I) MOEF – 5 Nov. 2003

Duration: October 2021 to March 2022

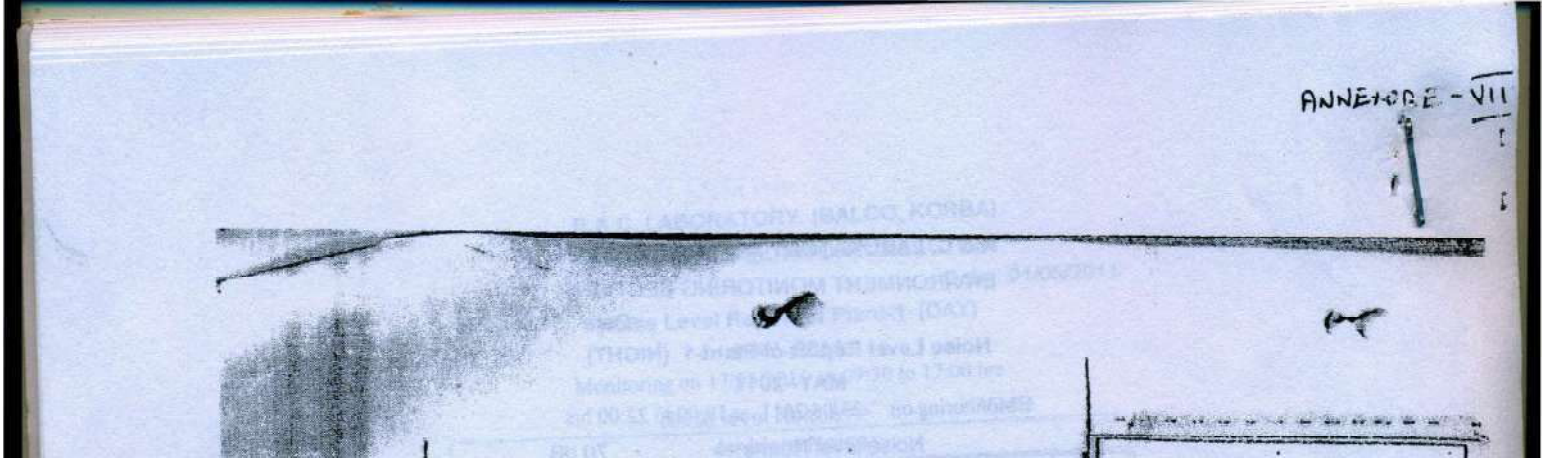
A – SPECIFIC CONDITION

Sr. No	Conditions	Compliance status
i	The gaseous emissions from various process units should conform to the standard prescribed from time to time. The State board may specify more stringent standards for the relevant parameters keeping in view the nature of the industry, its size and location. At no time the emission level should go beyond the prescribed standards, In the event of failure of any pollution control system adopted by the unit, the respective unit should not be restarted until the control; measures are rectified to achieve the desired efficiency. Ambient air quality monitoring stations should be set up in consultation with the Chhattisgarh Environment Conservation Board. Data should be regularly monitored and records maintained and report submitted to the Ministry/CPCB/CECB once in six months.	The gaseous emissions from various process units conform to the standard prescribed from time to time. At no time the emission level go beyond the prescribed standards. Ambient air quality monitoring stations have been set up in consultation with the Chhattisgarh Environment Conservation Board and data is regularly monitored and records are maintained and report are submitted to CECB every month and to the Ministry and CPCB once in every six months. (Copy of stack emission monitoring reports attached as **Annexure – I** and Copy of ambient air monitoring reports attached as **Annexure – II)**
ii	There should be no discharge of process effluent. As reflected in the EIA/EMP report. The proposed refinery and smelter plant shall be designed for zero discharge. In addition, efforts shall be made to reuse wastewater from the existing plant. The domestic wastewater after treatment in Sewage Treatment Plant should be used for green belt development.	The Smelter II has been designed for zero effluent discharge and there is no discharge of process effluent from smelter II. Efforts are made to reuse the wastewater from smelter and in this direction Water used in rectifier for cooling purpose, is recycled. The domestic wastewater is treated in Sewage Treatment Plant and the treated water is being used for gardening purpose.
iii	In plant control measures for checking fugitive emission from spillage/ raw materials handling should be provided. Fluoride emissions should be monitored from the existing pot room, proposed pot and in the forage around the smelter complex. Further dry scrubbing system to control the emissions from the pot lines should be provided. The fluoride emissions shall not exceed 0.8 Kg/t of aluminium produced.	Fume treatment plant along with proper pot covering hoods in place to check fugitive emissions. Fluoride emissions from pot room and forage fluoride around the smelter complex are monitored regularly. (copy of fugitive emission reports attached as **Annexure – III** and copy of forage fluoride monitoring reports attached as **Annexure – IV**) Dry scrubbing system has been provided in the Pre-baked Smelter. Fluoride emissions are well within the norms.

iv	The particulate emissions from the new calciner shall be controlled by installation of electrostatic precipitator. The particulate emissions shall not exceed 150 mg/Nm^3. All the boiler stacks shall be provided with stack height as per the CPCB guidelines. The boiler stacks shall be provided with stack height as per the CPCB guidelines. The boiler and calciner stacks should be equipped with continuous monitoring devise to check SPM emission levels. The NOx emission from boiler land calciner stacks shall be less than 50ppm as guaranteed by the manufacturers. Low NOx burners should be installed to control the NOx emissions.	Alumina plant operation has been stopped and this clause is not applicable.
v	The poly-aromatic hydrocarbons from the carbon plant (anode bake oven) should not exceed 2 mg/Nm^3.	The poly-aromatic hydrocarbons from the carbon plant (anode bake oven) do not exceed 2 mg/Nm^3. (Copy of stack emission monitoring reports attached as **Annexure – I**)
vi	The company should adopt dry disposal (High concentration slurry disposal) system for red mud disposal. The ground water quality should be monitored around the red mud ponds by providing piezometeric holes.	The Alumina plant operation has been stopped since September 2009 and the same has been communicated to the CECB. The existing red mud ponds have been converted into ash dyke for disposal of fly ash generated from power plants as per approval granted in Environment Clearances received for BALCO Power plants. Ground water quality is being monitored regularly around these ponds/dyke and copy of monitoring reports are submitted to CECB and MoEF&CC. (Copy of groundwater quality monitoring reports attached as **Annexure – V**)
vii	The spent pot lining generated from the smelter should be utilized for cement/steel manufacturing alternatively to the disposed off in a secured landfill constructed as per the design of CPCB. The location of the landfill site should be approved by the Chhattisgarh Environment Conservation Board.	For utilizing the spent pot lining generated from the smelter, we have entered into agreement with CECB approved agencies for detoxification as per CPCB guidelines and SPL is sold to these authorized recyclers. We also have captive secured landfills with approved design by CECB.
viii	A green belt of adequate width and density should be developed in an area of 90 acre within and around the plant premises as per the CPCB guidelines.	Plantation is carried out in and around the plant premises on a regular basis. Greenbelt has been development in more than 90 acre area as per the CPCB guidelines to comply with the conditions. CECB approved 3rd party verification has also been completed and report has been submitted to CECB office.

		(Copy of 3rd party verification report attached as **Annexure – VI** and copy of greenbelt details attached as **Annexure – VII**)
ix	Occupational Health Surveillance of the workers should be done on a regular basis and records maintained as per the Factories Act.	Regular PME of employees is being conducted and records are maintained as per the Factories Act.
x	All the recommendations of the Charter for Corporate Responsibility for Environment Protection (CREP) for the Aluminium sector should be strictly implemented.	All the recommendations of the Charter for Corporate Responsibility for Environment Protection (CREP) for the Aluminium sector are being complied with.
General Conditions		
i	The project authorities must strictly adhere to the stipulation made by the Chhattisgarh Environment Conservation Board and the State Government.	Complied with.
ii	No further expansion or modifications in the plant should be carried out without prior approval of the Ministry of Environment and Forests.	No further expansion or modifications in the plant is carried out without prior approval of the Ministry of Environment and Forests.
iii	Adequate ambient air quality-monitoring stations should be established in the downward direction as well as where maximum ground level concentration of SPM, SO2 and NOx are anticipated in consultation with the State Pollution Control Board. Data on ambient air quality, fugitive emission and stack emissions should be regularly submitted to this ministry including its Regional Office at Bhopal and the State Pollution Control Board/Central Pollution Control Board once in six months.	Ambient air quality monitoring stations have been established in consultation with Chhattisgarh Environment Conservation Board. We are regularly submitting the monitoring reports to CPCB/MOEF on half yearly basis. Copy of stack emission monitoring report attached as **Annexure – I,** copy of ambient air quality monitoring reports attached as **Annexure – II** and copy of fugitive emission monitoring reports attached as **Annexure – III** for the period Oct'21 to Mar'22.
iv	Industrial waste water should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May, 1993 December, 1993 or as amended form time to time. The treated wastewater should be utilized for plantation purpose.	All waste water generated is properly collected and treated in the ETP with RO system and the treated water being reused in plant and not discharged outside plant premises.
v	The overall noise levels in and around the plant area should be kept well within the standards (85 dBA) by providing noise control measured including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under Rules, 1989 viz. 75 dBA (day time) and 70 dBA (Night time).	Noise prone equipment have been provided with acoustic enclosures and noise level kept below 85 dBA. Moreover, noise level is being regularly monitored and personal protective equipment like earplugs, ear muffs have been provided to people working in high noise prone areas. The ambient noise also being monitored regularly and all records observed well within the norms Copy of Ambient noise monitoring report attached as **Annexure – VIII**
vi	The project proponent shall also comply with all the environmental protection measures and safeguards recommended in the EIA/EMP report. Further the	All environmental protection measures have been implemented.

	company must undertake socio-economic development-activities in the surrounding villages like community development programmes, educational programmes, drinking water supply and health care etc.	Socio-economic developmental projects like setting up regular Health Camps and Cancer Hospital, watershed development, upgradation of schools, Mother-Child Care Programs have been taken up.
vii	The project authorities will provide adequate funds both recurring and non-recurring to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so provided should not be diverted for any other purposes.	Separate funds are allocated for the implementation of environmental protection measures and not diverted for any other use.
viii	The Regional Office of this Ministry at Bhopal/Central pollution Control Board/State Pollution Control Board will monitor stipulated conditions. A six monthly compliance report and the monitored data along with Statistical interpretation should be submitted to them regularly.	Complied with. Last report was submitted vide: Letter No. BALCO/ENV/A-02(A)/2021/277 Dated 30, Nov 2021. Copy of last submitted report attached as **Annexure – IX.**
ix	The project proponent should inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the State Pollution Control Board/ Committee and may also be seen at Website of the Ministry of Environment and Forests at http:/envfor.nic.in. ; This should be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same should be forwarded to the Regional office.	Complied with. We had advertised in three newspapers. Please refer to **Annexure – X.**
x	The Project Authorities should inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of commencing the land development work.	Complied with.
3.0	The Ministry may revoke or suspend the clearance if implementation of any of the above conditions is not satisfactory.	Noted
4.0	The Ministry reserves the right to stipulated additional conditions if found necessary. The Company in at time bound manner will implement these conditions	Noted

5.0	The above conditions will been forced, inter-alia under the provisions of the water (Prevention& Control of Pollution) Act 1974, the Air (Prevention &Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, Hazardous Wastes (Management and Handling) Rules, 1989/2003 and the Public Liability insurance Act, 1991 along with their amendments and rules.	Noted

ANNEXURE - VII