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HINDUSTAN ZINC
Zinc & Silver of India

Reg. A/D

HZL/RDC/EC-CR/2022-23/H2 **Date: 24.05.2023**

To,

The Deputy Director (S) /Scientist -C
Ministry of Environment, Forest & Climate Change,
Integrated Regional Office, A-209&218,Aranya Bhawan,
Jhalana Institutional Area Jaipur-302004

File no: IV/ENV/R/IND-115/758/2009

Sub: Six Monthly Environmental compliance report for the Integrated Project at Dariba, HZL (Zinc Smelter (5,00,000 TPA), Lead Smelter (1,25,000 TPA), Captive Power Plant (255 MW) and expansion of Rajpura Dariba Mine (9,00,000 to 1,08,000 TPA) along with Beneficiation Plant (9,00,000 to 12,00,000 TPA) at Village Dariba, Tehsil -Railmagra, Dis. Rajsamand from October'22 to March'23.

Ref:

1. EC Letter No. J-11011/380/2008-IA II (I) dated 4.11.2009
2. Amendment in EC No. J-11011/380/2008-IA II (I) dated 20.12.2011.
3. Expansion EC Letter No. J-11015/380/2008-IA II (I) dated 26.7.2018 (RD Mine 0.9 MTPA to 1.08 MTPA)

Sir,

With reference to aforesaid subject and cited references, it is to inform that we are herewith submitting six monthly Compliance report for the conditions stipulated in the Environment Clearances of Integrated Project at Dariba, HZL (Zinc Smelter (5,00,000 TPA), Lead Smelter (1,25,000 TPA), Captive Power Plant (255 MW) and expansion of Rajpura Dariba Mine (9,00,000 to 1,08,000 TPA) along with Beneficiation Plant (9,00,000 to 12,00,000 TPA) for the period from **October'22 to March'23** along with monitoring data report for your kind consideration.

- The copy of above compliance report is also being sent in soft format through email to (rocz.lko-mef@gov.in; m_env@rediffmail.com) for your kind perusal. Also copy of Dariba Smelting complex EC Compliance has been uploaded on company website https://www.hzlindia.com/sustainability/environment-compliance/

We trust that the measures taken towards environmental safeguards comply with the stipulated environmental conditions. We look forward to your further guidance which shall certainly help us in our endeavor to further improve our Environmental Management Practices.

Hope the above is in line with statutory requirements.

Thanking you,

For Hindustan Zinc Limited

Yours faithfully,

(Rajendra Agrawal)
Head Smelter
Dariba Smelter Complex

Enclosures: Six monthly EC compliance report with Annexure:

Annexure I	:	Stack Monitoring Report
Annexure II	:	Average Ambient Air Quality Monitoring Results (RDM)
Annexure III	:	Ambient Air Quality Monitoring Results (DSC)
Annexure IV	:	Ambient Air Quality Monitoring Report (Outside Plant)
Annexure V	:	Continuous Ambient Air Quality Monitoring Results
Annexure VI	:	Work Zone Environment Monitoring Results
Annexure VII	:	Fugitive Emission Monitoring Results
Annexure VIII	:	Treated Effluent (ETP Outlet) Quality Report
Annexure IX	:	Average Ground Water Monitoring Results (Around Tailing Dam Area)
Annexure X	:	Average Surface & Ground Water Monitoring Results (Around RD Mine & Tailing Dam Area)
Annexure XI	:	Ambient Noise Monitoring Report
Annexure XII	:	Average Sulphur and ash content in coal
Annexure XIII	:	Expenditures made in Environmental control measure
Annexure XIV	:	Funds earmarked towards Environmental control measure

Cc:

1) The Member Secretary,
Rajasthan State Pollution Control Board,
4th Institutional Area, Jhalana Doongari,
Jaipur-302004

2) In-charge (Zonal officer)
Central Pollution Control Board
Vithal Market, Paryavaran Parisar , E-5, Arera Colony,
Bhopal, – 462 016 (MP)

3) Group Incharge (Mines)
Rajasthan State Pollution Control Board,
4th, Institutional Area, Jhalana Doongari, Jaipur-302004

4) The Regional office
Rajasthan State Pollution Control Board,
Old Excise building, Kalalwati, Rajnagar
Rajsamand- 313324

5) Office Copy

HINDUSTAN ZINC

Zinc & Silver of India

Six Monthly Compliance Report

to

Environmental Clearance Conditions

of

Dariba Integrated Project,

M/s Hindustan Zinc Limited,

Dariba – 313 211, Rajsamand,

Rajasthan

For the period: October-2022 to March-2023

(1. EC Letter No. J-11011/380/2008-IA II (I) dated 4.11.2009;

2. Amendment in EC No. J-11011/380/2008-IA II (I) dated 20.12.2011;

3. Expansion EC Letter No. J-11015/380/2008-IA II (I) dated 26.7.2018 (RD Mine 0.9 MTPA to 1.08 MTPA)

May, 2023

Introduction:

S. No	Particulars	Details
1	Name of Project	• M/s Hindustan Zinc Limited, Dariba Integrated Project
2	Address of Project	• M/s Hindustan Zinc Limited, Dariba Integrated Project, Village Dariba, Tehsil- Railmagra, District- Rajsamand, Rajasthan, 313211
3	Environment Clearance Letter no & Date	• EC Letter No. J-11011/380/2008-IA II (I) dated 4.11.2009; • Amendment in EC No. J-11011/380/2008-IA II (I) dated 20.12.2011: • Expansion EC Letter No. J-11015/380/2008-IA II (I) dated 26.7.2018 (RD Mine 0.9 MTPA to 1.08 MTPA)
4	Regional Office File No.	• IV/ENV/R/Ind-115/758/2009 • IV/ENV/R/Ind- 115/994/2019
5	Status of Project	• Operational

Rajpura Dariba Complex of Hindustan Zinc Limited, located in Railmagra Tehsil of District Rajsamand in Rajasthan, includes Rajpura Lead Zinc Dariba Mine and Dariba Lead Zinc Smelter Complex. Rajpura Dariba deposit extends over a lease area of 1142.21 ha with estimated in-situ ore Resources & Reserves stands at 60 million tons approx. Rajpura Dariba Mine consists of mining of Lead-Zinc ore and its beneficiation to produce Lead & Zinc Concentrate which are being sent to Smelters where metals are extracted. Dariba Smelter Complex is Zinc and Lead Smelting complex consisting of two different smelting streams viz., hydrometallurgical (Roast-Leach Electrowinning) Zinc Smelter and Lead Smelter based on Pyro-route for smelting & electro refining. The power requirements of the plants are met through 170 MW (2x85MW) coal based captive power plants.

S. No.	Unit	Capacity	Year of Commissioning	Production in FY 2022-23
1	Lead & Zinc Ore mining	1.08 Million MT	1983	1740463 MT
2	Lead & Zinc Ore Beneficiation	1.2 Million MT	1983	940219 MT
3	Zinc Smelter	Zn: 2.50.000 MT	March 2010	250000 MT
4	Lead Smelter	Pb: 1.25.000 MT	July 2011	112715 MT
5	CPP	CPP: 170 MW	Unit 1- Feb'10 Unit 2- June'10	Unit 1- 490 MU Unit 2- 453 MU

Details of Consents to Operate & Hazardous Waste Authorization (HWA) granted to units are given below:

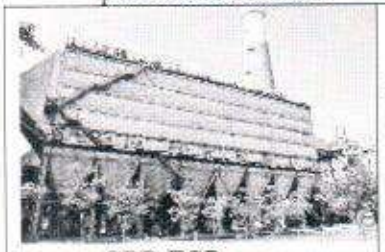
Unit Name	CTO/HWA Ref. No.	Status	Application No. & Date
CTO Details			
Lead & Zinc Ore mining	F(Mines)/Rajsamand(Railmagra)/1724(1)/2018-2019/7163-7167 dated 28.02.2023	Valid till 29/2/2028	
Lead & Zinc Ore Beneficiation	F(Mines)/Rajsamand(Railmagra)/6460(1)/2019-20/6027-6030 dated 18.3.2020	Valid till 28/2/2023	Applied for renewal on 22/10/2022 via application I.D. 323229
Zinc Smelter	F(HDF)/Rajsamand(Railmagra)/6461(1)/2020-2021/4691-4693	Valid till 31/10/2023	
Lead Smelter	F(HDF)/Rajsamand(Railmagra)/6461(1)/2020-2021/4945-4947	Valid till 31/08/2024	
CPP	F(HDF)/Rajsamand(Railmagra)/6461(1)/2020-2021/5140-5142	Valid till 31/10/2023	
HWA Details			
Dariba Smelter Complex	F(HSW)/Rajsamand(Railmagra)/3(1)/2015-2016/5475-5477	Valid till 31/03/2025	
RD Mine & Beneficiation Plant	F(HSW)/Rajsamand(Railmagra)/5(1)/2016-2017/4038-4040 dated 18.11.2021	Valid till 17.11.2026	

COMPLIANCE STATUS

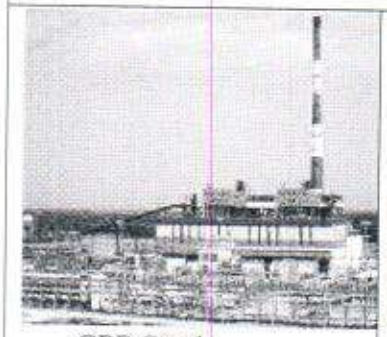
- Environment Clearance Letter No. J-11011/380/2008-IA II (I) dated 4.11.2009
- Amendment in EC No. J-11011/380/2008-IA II (I) dated 20.12.2011.
- Expansion EC Letter No. J-11015/380/2008-IA II (I) dated 26.7.2018 (RD Mine 0.9 MTPA to 1.08 MTPA)
- Period of Compliance: October 2022 to March 2023

A.	EC Specific Conditions	Status of Compliance
i)	No construction work related to expansion at the proposed project site shall be started without obtaining prior clearances / approvals for the linked mining component from the Indian Bureau of Mines (IBM) and State Govt. of Rajasthan. A copy of the mining lease approval from the Indian Bureau of Mines (IBM) and State Govt. of Rajasthan shall be submitted to the Ministry and its Regional Office at Lucknow before initiating any construction work at site related to mining.	• Noted for compliance • Project is under operational stage and as of now no construction work related to expansion is under progress.
ii)	The project proponent shall obtain 'Consent to Establish' and 'Consent to Operate' from the Rajasthan State Pollution Control Board (RSPCB) and effectively implement all the conditions stipulated therein.	• Complied, 'Consent to Establish' and 'Consent to operate' have been obtained from the Rajasthan State Pollution Control Board (RSPCB) vide letter no. F(Tech)/Rajsamand (Railmagra)/2/1/2009-2010/3666 dated 12/11/2009 and all the conditions stipulated therein are being implemented.
iii)	The environmental clearance is subject to approval of the State Land use Department, Government of Rajasthan for diversion of agricultural land for non-agricultural use.	• Complied, Approval of the State Land Use department, GoR was already obtained and submitted to RO, MOEF&CC with Six monthly compliance report. Letter Attached in Six monthly compliance report (HZL/RDC/EC-CR/2021-22/H2) dated 26.05.2022.

iv)	The project proponent shall develop fodder plots in the non-mineralized area in lieu of use of grazing land. Monitoring of land use pattern shall be carried out once in three years by digital processing of the area using multi-data computer compatible tape.	• Complied, the monitoring of land use using satellite imagery was done for the Mine Lease Area in August 2018. Final report is submitted along with reply letter vide. HZL/DSC/ENV/ EC/2018/01 Date: 04.12.2018. Report enclosed in Six monthly compliance report (HZL/RDC/EC-CR/2021-22/H2) dated 26.05.2022. Satellite imagery LULC is to be carried out once in 5 years.
v)	The gaseous emissions from various process units shall confirm to the standards prescribed by the concerned authorities from time to time. The State Board may specify more stringent standards for the relevant parameters keeping in view the nature of the industry and its size and location. At no time the emissions level shall 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.	Complied. • Various mechanisms adopted for controlling of all gaseous emissions coming from the plants. • Gaseous Emissions Monitoring is being done on a regular basis and results are well within standards prescribed by the concerned authorities. The same is also evidenced from the various third-party (NABET Approved) analytical reports which are enclosed as **Annexure No. I**
vi)	High efficiency electrostatic precipitators (ESPs) of not less than 99.87 % efficiency shall be provided to captive power plant to limit particulate matter within 50 mg/Nm3. The height of the stacks shall be as per the standards prescribed under the Environment (Protection) Act, 1986. Low NOx burners shall be provided to control NOx emissions. NOx emissions shall be restricted to 750 mg/Nm3 by using low NOx burners. On-line stack emission monitoring equipments for continuous monitoring of SO2, NOx, SPM and O2 shall be provided to the stacks of captive power plant and sulphuric acid plant and all the pollution control measures shall be inter-locked. The company shall install fume extractors and bag filters to control the emissions from all melting and casting units. Off gas from the	Complied. • High Efficiency ESPs, (99.95%) provided to Captive Power Plant (CPP) are designed for particulate matter concentration less than 50 mg/Nm3 at outlet. • The height of the stacks is as per the standards prescribed under the Environment (Protection) Act, 1986. The height of the Acid Plant, CPP and TGT plant stack is 100 m, 165 m, and 105 m respectively. • Continuous on-line stack emission monitoring equipment for SO2, NOx and SPM has been provided to the stack of captive power plant and for SO2 to the Sulphuric acid plants respectively in Zinc and Lead Smelter • Off gas from the Sulphuric acid plant, blast and fuming furnace plant, copper recovery plant of lead plant are treated in the calcine based scrubbing plant where the SO2 is

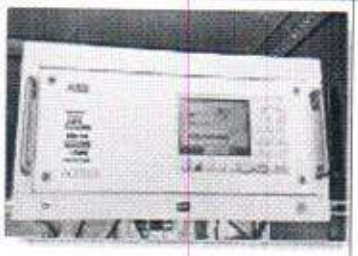
	Sulphuric acid plant, blast and fuming furnace plant, copper recovery plant shall be treated in the calcine based scrubbing plant where the SO2 shall be removed before letting out to the atmosphere. Adequate stack height shall be provided for proper dispersion of pollutants like SO2, NOx etc.	recovered before letting out to the atmosphere. • Opacity meters have been installed for continuous monitoring of particulate matter (PM) at stack of CPP, Zinc dust and Zinc dross Stack. • Adequate numbers of air pollution control devices have been installed at all the material transfer points & silos. • Calibration of all instruments are being done on regular basis. • Photographs of ESP, Stacks, CEMS, CAQQMS, display at main gate, Sampling port are enclosed.  CPP ESP  Roaster Hot ESP  Acid Plant Hot ESP  SKS Plant Hot ESP  CAAQMs  Display at Main Gate

Port hole in stack



CPP Stack

8 Field ESP with 165 mt Stack height



Existing SO2 Analyzer

SO2 ppm Reading in HMI

Online Server Reading

vii)	As reflected in the EIA/EMP, Double Conversion Double Adsorption (DCDA) plant for Sulphuric acid recovery from SO2 shall be provided. The company shall ensure that SO2 emissions from the Zinc and lead smelter plant are taken to existing	• Complied. • Double Conversion Double Adsorption (DCDA) plant for Sulphuric acid recovery from SO2 has been provided. • SO2 emissions from the Zinc and Lead Plant Smelter are taken to respective Sulphuric

	Sulphuric acid plant properly and converted to Sulphuric acid. The stack from the Sulphuric acid plant shall be provided with on-line stack emission monitoring equipment for continuous monitoring of SO2.	acid plant properly and converted to Sulphuric acid. • The stack from the Sulphuric acid plant provided with on-line stack emission monitoring equipment for continuous monitoring of SO2.  DCDA Gas Conditioning Plant (GCP) with 100 mt Stack Height  TGT Plant Scrubber
viii)	SO2 emissions shall be controlled less than 1.5 kg/ton of Sulphuric acid (H2SO4) produced. Acid mist emissions from the stack shall conform to the statutory limit of 50 mg/Nm3 by providing candle filter system and reports submitted to the Ministry including its Regional Office at Lucknow, CPCB and RSPCB.	• Complied, SO2 Emission levels are well within the prescribed limit. • SO2 Emission level from stack are maintained below 1.5 kg/Ton of 100 percent concentrated acid produced from acid plant. Table is incorporated in the point below.

Months	Acid Plant (Zn Smelter) Roaster-1	Acid Plant (Zn Smelter) Roaster-2	TGT Stack (Pb Stack)
	SO_2 (Kg/T of H_2SO_4 Production)		

Oct'22	0.80	1.09	0.22
Nov'22	0.81	1.03	0.29
Dec'22	0.85	1.10	0.32
Jan'23	0.86	1.04	0.11
Feb'23	0.79	1.03	0.11
Mar'23	0.73	0.99	0.12

- All Monitoring Reports are enclosed as **Annexure I**

ix) The critical parameters such as SPM, RSPM, NOx, SO2 and acid mist in the ambient air within the impact zone, peak particle velocity at 300 m distance or within the nearest habitation, whichever is closer shall be monitored periodically. Further, quality of discharged water shall also be monitored [(TDS, DO, pH and Total Suspended Solids (TSS)]. The monitored data shall be uploaded on the website of the company as well as displayed on a display board at the project site at a suitable location near the main gate of the Company in public domain. Analysis reports for the ambient, stack and fugitive emission shall be submitted to the Ministry's Regional Office at Lucknow, CPCB and RSPCB.

Complied

- Third Party Periodical monitoring of various parameters i.e. PM10, PM2.5, NOx and SO2 is being done in the ambient air within the impact zone.
- Four nos. of Continuous Ambient Air Quality Monitoring Stations (CAAQMS) have been established
- Third party monitoring of Ambient air quality carried out by M/s Eko Pro Engineers, which is NABL and MoEF&CC accredited laboratory.

Parameters (µg/ m3)	Observed Value			
	Near Main Gate	Near Storm Water Pond	Near CPP Area	Near SLF Area
PM10	82.44	78.84	78.30	82.40
PM2.5	44.70	40.19	39.71	40.33
SO2	15.65	16.78	14.79	15.14
NO2	27.78	31.52	26.48	26.43
CO	0.95	0.90	0.88	0.87
Pb	<0.1	<0.1	<0.1	<0.1
Ni	<15	<15	<15	<15
As	<5	<5	<5	<5

- Average Ambient Air Quality Monitoring results for mine are enclosed herewith as **Annexure II** and for DSC as **Annexure III**.
- Eight nos. of AAQMS have been established at buffer zone for ambient air quality monitoring are enclosed as **Annexure IV.**
- Zero liquid discharge is being maintained by ETP of capacity of 9000 KLD, RO of 8850 KLD and MEE of 600 KLD capacity.
- The monitored data has been displayed on display

		board at the project site and on the Company website along with Six Monthly Environment Compliance report. Link of the report is https://www.hzlindia.com/sustainability/environment-compliance/ • Six Monthly Environment Compliance report along with all Analysis reports for the ambient, stack and fugitive emission are enclosed and being submitted to the Regional Office, MOEF&CC Lucknow, CPCB and RSPCB.
x)	Ash content in the coal shall not exceed 35 %. Sulphur content in coal shall be restricted to 1.5% to contain SO2 emissions.	• Complied, Ash and Sulphur content in coal are being analyzed on regular basis and are well within the limit of 35% and 1.5% respectively. • Monitoring report are enclosed as **Annexure XII.**
xi)	The company shall install continuous air quality monitoring stations. Data monitored shall be submitted to the Ministry and CPCB/SPCB once in six months.	• Four nos. of Continuous Ambient Air Quality Monitoring Stations (CAAQMS) have been installed.

Locations	Parameters (µg/m3)	Months					
		Oct'22	Nov'22	Dec'22	Jan'23	Feb'23	Mar'23
Near to Main Gate (South West)	PM	71.05	71.98	74.51	67.25	64.71	67.53
	SO2	35.78	35.12	34.64	14.87	5.96	9.12
	NOX	36.37	34.4	34.83	10.50	9.80	14.38
	CO	0.43	0.53	0.59	0.80	1.02	0.81
Near to SWP (North West)	PM	74.75	74.91	75.03	46.79	46.42	47.26
	SO2	36.02	34.9	34.84	12.42	12.28	5.43
	NOX	35.61	34.52	35.20	8.57	11.94	9.12
	CO	0.50	0.97	1.05	0.93	1.06	0.54
Near to CPP (North East)	PM	75.65	77.77	71.86	55.29	63.43	56.38
	SO2	37.22	35.02	28.02	9.74	13.22	5.02
	NOX	34.97	36.9	31.88	29.19	29.98	41.22
	CO	0.61	1.03	0.92	1.14	1.34	0.88
SLF (South East)	PM	80.18	75.95	79.61	70.77	75.39	60.88
	SO2	29.7	17.27	26.11	12.25	13.74	10.31
	NOX	31.79	25.73	31.95	22.88	22.37	14.53
	CO	0.56	0.31	0.74	1.13	1.21	1.25

• Six Monthly Environment Compliance report along with all CAAQMS monitoring data in different locations are enclosed as **Annexure V** and being submitted to the Regional Office. MOEF&CC Lucknow, CPCB and RSPCB.

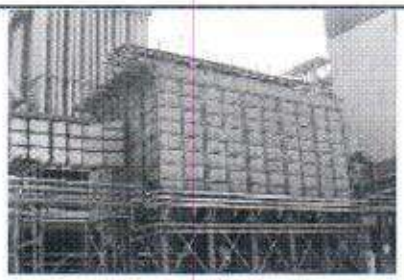
xii)	Fugitive dust emissions in the Zinc, Lead and Copper concentrate handling area and at various transfer points shall be minimized by provision of dust suppression system. The trucks carrying concentrate shall be fully covered. The Company shall improve overall housekeeping by asphalting the internal roads and to reduce the generation of fugitive dust from vehicle movements.	Complied. • Fugitive dust emissions in the Zinc and Lead concentrate handling area and at various transfer points is mitigated by provision of dust suppression system and bag filters. • Water Sprinkling System already installed in the Raw Material Handling of the Zinc Plant, Captive Power Plant and Lead Plant. • Mechanized road sweepers are deployed for regular cleaning on the roads to reduce fugitive dust from vehicle movement. • The trucks carrying concentrate are covered with tarpaulin before dispatched to Smelter from Mines. • All roads in the plant and up to the connection to public road are concreted or black topped.
		 Water Sprinkling on road  Mechanized Road sweeper
		 Water Sprinkling System  Dust Suppression System
xiii)	Fugitive emissions, acid mist vapours, fumes and SO2 shall be controlled and work environment monitored for prevailing contaminants regularly. Bag filters shall be provided to calcine handling plant, zinc dust plant, melting	Complied. • To minimize fugitive emissions, 8-10% moisture is provided in the Zn & Pb Concentrate coming from the mines. • Bag Filters have been provided to calcine handling

	plant, dross milling plant, each coal transfer point, crushers and fly ash silos to control dust emissions. Bag filters shall be provided in fume extraction and melting and casting operations of smelter. SPM emissions from crusher house in beneficiation plant shall be controlled. Covered coal conveyors with water sprinkling system using wastewater to avoid dust emissions. Coal storage area shall be provided with water sprinkling system to arrest dust. Dust extraction system shall be provided to mineral handling area, loading and unloading areas including all the transfer points. Black top paved roads shall be made within the mine boundary. The trucks carrying concentrate shall be fully covered. Asphalting/concreting of roads and water spray all around the critical areas prone to air pollution and having high levels of SPM and RPM shall be ensured.	system, zinc dust plant, coal transfer points, crusher and fly ash silos to control dust emissions. • Details of the bag filters have been provided along with six monthly compliance report vide letter no. HZL/DSC/Env/2011/2/2 dated 23.11.2011 and again attached in Six monthly compliance report (HZL/RDC/EC-CR/2021-22/H2) dated 26.05.2022. • Covered Coal Conveyors with water sprinkling system have been installed at CPP to avoid dust emissions. Coal storage area is provided with water sprinkling system to arrest dust. • All Internal roads and up to the public road are concreted/asphalted to reduce the dust emission. The trucks carrying concentrate are covered with tarpaulin and water is sprayed regularly on roads. • Average Work Zone Environment Monitoring Results are furnished herewith as **Annexure VI.** • SPM emissions from crusher house in beneficiation plant are controlled by the wet scrubbing system. • Dust extraction system provided to mineral handling area, loading and unloading areas including all the mineral transfer points.

Covered Conveyor

Bag Filter Silo

Bag filter, Cyclone at Coal Crusher

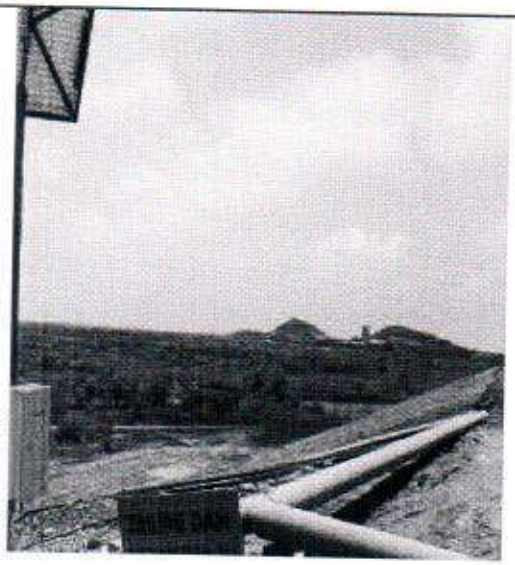
		 Dust Extraction system	 Tarpaulin Covered truck
xiv)	The project proponent shall carry out conditioning of the ore with water to mitigate fugitive dust emission, without affecting flow of ore in the ore processing and handling areas. Water sprinkling shall be done to minimize the dust during transportation.	Complied. • Ore conditioning is carried out to maintain 8-10% moisture as a mitigative measure against fugitive dust. • Regular water sprinkling on fine ore stock points and at discharge points of conveyors carrying the crushed ore is done.	
xv)	Secondary fugitive emissions (particularly below 5 micron) from all the sources including Roaster plant shall be controlled, regularly monitored along with ambient dust in dry day and still air condition on 24 hour basis and data submitted to the Regional Office of the Ministry at Lucknow, RSPCB and CPCB. It shall be ensured that the ambient air quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.	• Complied, Fugitive emission monitoring results is furnished herewith as **Annexure VII**.	
sxvi)	Vehicular emissions shall be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operation and in transportation of mineral. The vehicles carrying the mineral shall be covered with a tarpaulin and shall not be overloaded.	Complied • Mining equipment's and vehicle emissions are kept under control by regular preventive maintenance and condition monitoring at the in-house workshop. • During transportation of minerals, vehicles are covered with tarpaulin.	
xvii)	Total water requirement for the proposed smelter complex including the mining and beneficiation plants from Matrikundia dam, Gosunda dam and	• Closed circuit cooling system with cooling towers has been provided to captive power plant. Cooling tower blow down and boiler blow down from CPP is being recycled in	

Locations	**Parameters (µg/ m3)**
	TSPM
Raw Material Handling (RMH)- Zinc Plant	475.31
Roaster Plant	430.35
Calcine Handling	444.95
Coal Handling Plant (CPP)	417.89
Fly Ash Handling	440.72
Raw Material Handling- Lead Plant	481.68
Near SKS Primary	419.01

	Mansiwakal dam shall not exceed 42,050 m 3 /day as per the agreements signed with Govt. of Rajasthan. As proposed, water requirement shall not exceed 184 liter/ton of Sulphuric acid produced. No ground water shall be used. Closed circuit cooling system with cooling towers shall be provided to captive power plant. All the effluent generated from gas cleaning plant, sulphuric acid plant, anode and cathode washing, lead smelter, DM plant, cooling towers and power plant shall be neutralized and metallic elements present shall be precipitated and removed. Effluents from the proposed smelters, acid plant and other associated services shall be treated in effluent treatment plant (ETP). Zinc sulphate solution from the scrubbing process shall be treated in the leaching section of the Zinc smelter. Cooling tower blow down and boiler blow down from CPP shall be neutralized and reused in dust suppression, green belt development etc. The treated effluent shall confirm to the prescribed standards and recycled in the process i.e. in gas cleaning plant, preparation of lime milk, dust suppression and green belt development. The effluents from sulphuric acid plant, scrubber, and general floor washings of electro-refinery plant shall also be sent to ETP for further treatment followed by two-stage Reverse Osmosis (RO) Plant. Sewage shall be treated in septic tank followed by soak pit. The rejects from the RO plant shall be evaporated in a solar evaporation pond to be constructed within smelter premises. 'Zero' discharge shall be maintained and no effluent shall be discharged outside the premises. Sewage generated shall be treated in septic tank followed by soak pit.	ETP and recycled water again used in process. • Effluents generated from the smelter, acid plant and other associated services are treated in Effluent Treatment Plant (ETP) followed by two-stage Reverse Osmosis (RO) Plant and Multiple Effect Evaporator (MEE). The treated effluents conform to the prescribed standards and recycle in the process. Domestic Sewage is treated in STP and recycled water used in green belt development and process. • Third party analysis of the treated effluent is being conducted by third party which is NABL and MOEF&CC accredited laboratory. • The values of all parameters are well within limit of prescribed standard. Analysis reports are enclosed herewith as **Annexure VIII**.
xviii)	The mine seepage water shall be collected in underground sumps and	Complied

Parameters (in mg/L)	ETP Outlet
pH	6.87
TSS	20.90
Oil & Grease	<4.00
COD	52.80
BOD (3 days at 270C)	11.85
Sulphide (as S)	<1.00
Chloride (as cl)	295.02
Sulphates (as SO4)	162.80
Fluoride (as F)	1.06
Copper (as Cu)	0.02
Zinc (as Zn)	0.53
Cadmium (as Cd)	<0.001
Chromium (as Cr+6)	<0.05
Chromium (total)	<0.005
Lead (as Pb)	0.02
Cyanide (as CN)	Absent
Nickel (as Ni)	<0.005
Iron (as Fe)	0.32
Phosphate (as P)	0.50
Free available chlorine	<0.2

	reused/recycled in mining and beneficiation process to minimize the fresh water consumption. Decanted water from the tailings dam shall be recycled in the beneficiation plant to ensure 'zero' discharge. Tailings from beneficiation plant after recovery of Lead and Zinc concentrates shall be sent to tailing thickener for dewatering. Water recovered from tailing thickener shall be recycled to beneficiation plant for use in the process. Tailing thickener underflow shall be partly used as backfill for mines and remaining part shall be disposed to tailing dam. Water in the tailing dam shall be allowed to settle out and pumped to the water reservoir for reuse in the process.	• Underground water from the mine is pumped to beneficiation plant for reuse and tailing dam water is also recycled to beneficiation plant for reuse. • Zero discharge is being maintained.
xix)	Acid mine water, if any, has to be treated and use in plantation and existing mining activity after conforming to the standard prescribed by the competent authority.	• Not applicable as, no acid mine water is generated from mining activity.
xx)	Sewage treatment plant shall be installed for the colony. ETP shall also be provided for the mine workshop for the wastewater generated.	Complied. • Sewage treatment plant of 500 KLD and 400 KLD capacity are installed for the colony and the treated water is being used for horticulture purpose. • Wastewater from the workshop is collected in the settling pit after passing through oil and grease trap system and water is regularly recycled.
xxi)	The effluent from the ore beneficiation plant shall be treated to conform to the prescribed standards and the tailings slurry shall be transported through a closed pipeline to the tailing dam. The decanted water from the tailing dam shall be re-circulated and there shall be 'zero' discharge from the tailing dam. Acid mine water, if any, shall be neutralized and reused within the plant.	Complied • The tailing slurry is pumped through pipeline to tailing dam and decanted water is pumped back to beneficiation plant for reuse in the process. • Zero discharge is maintained. • No acid mine water is generated through mines.

		 Taling dam pipeline
xxii)	Detailed hydrological study shall be carried out and implementation of recommendations of the detailed hydrological study shall be ensured.	Complied. • Detailed hydrological and hydro-geological study has been carried out by M/s Hydro-Geosurvey Consultants Private Limited, Jodhpur and the recommendations have been implemented. • Report is attached in Six monthly compliance report (HZL/RDC/EC-CR/2021-22/H2) dated 26.05.2022.
xxiii)	The project proponent shall ensure that no natural water course and/or water resources shall be obstructed due to any mining operations.	• Complied, Due to underground mining activity no water course has been obstructed.
xxiv)	The project authority shall implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.	Complied. • Suitable rainwater harvesting structures have been constructed to harvest rainwater and recharge the ground water in CPP, residential colonies, schools & in mines premises. • Copy of the compliance report submitted to CGWA has been submitted along with six monthly compliance reports vide letter no. HZL/DSC/Env/2011/2/2 dated 23.11.2011. Report is again in Six monthly compliance report (HZL/RDC/EC-CR/2021-22/H2) dated 26.05.2022.
xxv)	Regular monitoring of ground water level and quality shall be carried out in	• Complied. Six no's of Piezometer have been installed for monitoring of ground water level and

	and around the project area (mine lease, beneficiation plant and tailing dam) by establishing a network of existing wells and installing new piezometers during the operation. The periodic monitoring [(at least four times in a year- pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January); once in each season)] shall be carried out in consultation with the State Ground Water Board/Central Ground Water Authority and the data thus collected may be sent regularly to the Ministry of Environment and Forests and its Regional Office Lucknow, the Central Ground Water Authority and the Regional Director, Central Ground Water Board. If at any stage, it is observed that the groundwater table is getting depleted due to the mining activity; necessary corrective measures shall be carried out.	quality around the tailing dam and monthly monitoring is being carried out. • Average Ground Water Monitoring Results for October'22 to March'23 are furnished herewith as **Annexure IX.**

Parameters	PW1	PW2	PW3	PW4	PW5	PW6
	All figures in ppm except pH					
pH	7.32	7.53	7.48	7.47	7.52	7.73
Suspended Solids	17.5	25.5	14.5	19.5	23.0	12.0
Lead	BDL	BDL	BDL	BDL	BDL	BDL
Zinc	0.04	0.07	0.065	0.08	0.065	0.165
Copper	BDL	BDL	BDL	BDL	BDL	BDL
Iron	0.095	0.11	0.075	0.08	0.1	0.08
Cadmium	BDL	BDL	BDL	BDL	BDL	BDL
Nickel	0.02	0.02	BDL	BDL	BDL	BDL
Cobalt	BDL	0.01	BDL	BDL	BDL	BDL
Depth of well from surface (ft.)	145	145	150	140	145	150
Water level in well from surface (ft.)	2.42	3.24	5.01	6.34	1.48	19.61

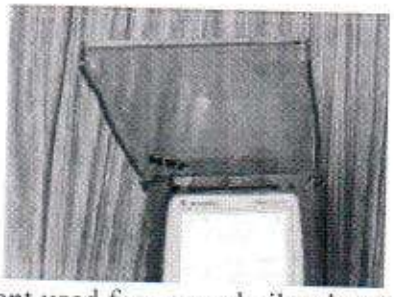
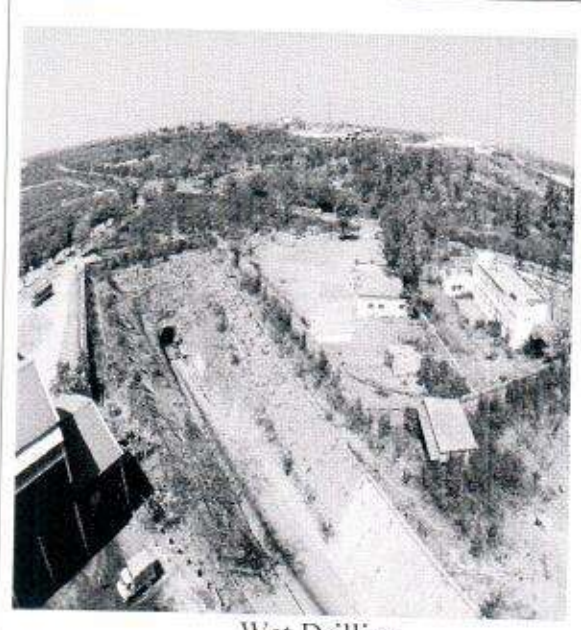
xxvi)	Groundwater and surface water in and around the mine shall be regularly monitored at strategic locations for heavy metals such as Ni, Co, Cu, Pb, Zn and Cd. Data should be reviewed and analyzed time to time to detect changes in the quality of ground water and surface water, if any. The monitoring stations shall be established in consultation with the Regional Director, Central Ground Water Board and the Rajasthan Pollution Control Board.	• Complied, Ground water and surface water monitoring is being carried out on monthly basis for analysis of heavy metals. • Average Surface & Ground Water Monitoring Results (around RD Mine & Tailing Dam Area) for October'22 to March'23 is furnished herewith as **Annexure X.**

Parameters	Mine Water	Tailing Dam	Garland Drain	Sumer Singh Well	Nahar Singh Well
	All figures in ppm except pH				
pH	7.14	7.22	7.34	7.71	7.45
Suspended Solids	25.00	26.33	27.33	6.50	10.17
Lead	BDL	BDL	BDL	BDL	BDL
Zinc	1.29	0.68	0.52	BDL	BDL
Copper	0.122	0.082	0.072	BDL	BDL
Iron	0.062	0.085	0.087	BDL	BDL
Cadmium	BDL	BDL	BDL	BDL	BDL
Nickle	0.108	0.057	0.05	BDL	BDL
Cobalt	BDL	BDL	BDL	BDL	BDL

xxvii)	The project proponent shall obtain necessary prior permission of the	• Complied, Groundwater intersection Permission have been obtained from CGWA vide letter No.

	competent authorities for draw of requisite quantity of water required for the project.	CGWA/NOC/MIN/ORIG/2022/14264 Dated 07/01/2022
xxviii)	Suitable rainwater harvesting measures on long term basis shall be planned and implemented in consultation with the Regional Director, Central Ground Water Board.	• Complied, Suitable rain water harvesting structures have been constructed in consultation with CGWB to harvest rain water and recharge the underground water on long term basis. • Photos of GWH Structure  Pond Deepening – Mahenduriya Pond  Mahenduriya Pond after Pond Deepening  Recharge Well  Storm Water Ponds # 3 & # 4
xxix)	Catch drains and siltation ponds of appropriate size shall be constructed around the mineral and over burden dumps to prevent run off of water and flow of sediments directly into the Banas River and other water bodies. The water so collected shall be utilized for watering the mine area, roads, green belt development etc. The drains shall be regularly desilted particularly after the monsoon and maintained properly.	Complied • Garland drains have been constructed around the waste dump area along with a collection sump to prevent run off of water and flow of sediments directly into the Banas River and other water bodies. • Collected water is being utilized for watering the mine area, roads, green belt development etc. • The drains are regularly desilted particularly after the monsoon and maintained properly.
xxx)	Garland drains, settling tanks and check dams of appropriate size, gradient and length shall be constructed around the mineral and over burden dumps to	Complied. • Garland drains have been constructed around the waste dump area along with a collection sump to prevent run off of water and flow of sediments

	prevent run off of water and flow of sediments directly into the Banas River and other water bodies and sump capacity shall be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity shall also provide adequate retention period to allow proper settling of silt material. Sedimentation pits shall be constructed at the corners of the garland drains and desilted at regular intervals.	directly into the Banas River and other water bodies. • Collection sump capacity was designed keeping all safety measures and adequate retention period to allow proper settling of silt material. • The drains are regularly desilted particularly after the monsoon and maintained properly.
xxxi)	Underground mining shall be carried out using Vertical Retreat Mining (VRM) and Blast Hot Stopping (BHS) with back filling. Concentration and separation of Lead and Zinc minerals shall be carried out in the beneficiation plant.	Complied • Underground mining is being carried out by using Vertical Retreat Mining (VRM) and Blast Hot Stopping (BHS) with backfilling. • Lead Zinc mineral is being concentrated and separated in the Beneficiation Plant.  Underground RD mines
xxxii)	Controlled blasting practice shall be adopted. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders shall be implemented.	Complied • Controlled blasting is adopted. Same practice will be continued. • Various mitigative measures for control of ground vibrations have being adopted. • Being Underground mine there is no fly rocks and boulders generation. • Photos of Ground Vibrations control and monitoring

		 Instrument used for ground vibration monitoring
xxxiii)	Wet drilling blasting method and provision for the control air emissions during blasting using dust collectors etc. shall be used.	• Complied, Wet drilling Controlled blasting is being adopted to control air emissions and same practice will be regularly followed.  Wet Drilling
xxxiv)	Blast vibration shall be assessed from proposed operation. Ground subsidence and mine stability shall also be monitored on regular basis.	Complied • Wet drilling Controlled blasting is being adopted in mining and the same practice will be regularly followed. • Blast vibrations, Ground subsidence and mine stability are being continuously observed.
xxxv)	Regular monitoring of subsidence movement on the surface over working area and impact on water bodies/vegetation/ structures/	Complied • Regular subsidence-monitoring is carried out on surface on top of mining area, till date no

	surrounding shall be continued till movement ceases completely. In case of observation of any high rate of subsidence movement, appropriate measures shall be taken to avoid loss of life and material. Cracks shall be effectively plugged with ballast and clayey soil/suitable material.	subsidence is recorded. • Measurements show negligible disturbance of less than 1 mm. • All underground voids are promptly filled with cemented fill material.
xxxvi)	All the mine entries shall be above the highest flood level to avoid any anticipated flooding of mine from the surface water during the rainy season.	Complied • Presently all the mine entries are above the highest flood level. HFL is 488.4 mRL. Main shaft collar & Auxiliary shaft collar are at 501 mRL and 496 mRL respectively.
xxxvii)	In areas where subsidence is anticipated in shallow mineral occurrence, such areas be identified and provided with garland drains to ensure draining of water and avoid ingress of the same in to the underground mine.	• Complied, In area where any subsidence is anticipated, the areas are fenced along with garland drains to ensure draining of water and avoid ingress of the water in underground mine.
xxxviii)	The project authorities shall check the possibility of existence of fault(s) before deciding about the thickness of safe barrier required to be maintained between the working face and the water bodies, if any, in consultation with the Director General Mines & Safety (DGMS). De-pillaring shall also be carried out after taking prior approval of the DGMS.	Complied • The stipulation is being complied with as per the DGMS guidelines. • De pillaring, if required, is done with due approval from DGMS.
xxxix)	All the fly ash shall be utilized as per Fly Ash Notification, 1999 subsequently amended in 2003. Fly ash shall be provided to cement / brick manufacturing units for further use in making Pozollona Portland Cement (PPC).	Complied • All the Fly Ash is utilized as per the Fly ash Notification and is being provided to cement manufacture for formation of PPC cement. • Fly Ash return for financial year 2022-23 has been submitted in vide letter No. HZL/DSC/ENV/FLY ASH Return/2022-23 Dated -19.04.2023.
xl)	Mine waste shall be dumped in mine voids. Overburden due to mine expansion shall be dumped at a designated place. Waste rocks generated due to mining activity shall be utilized	Complied • Mine waste is used for height rising of the tailing dam and construction of roads. • Tailings generated from Beneficiation plant being

	in construction and enhancement of tailing dam. In beneficiation plant, existing tailing dam shall be used for disposal of tailings.	disposed of in tailing dam.
xli)	The solid waste generated in the form Jarosite shall be stabilized as Jarofix and disposed off in Jarofix disposal yard inside the plant premises. Cobalt cake, cooler cake, anode mud, enrichment cake, ETP sludge and spent catalyst etc. shall be disposed off in secured landfill (SLF). Waste/used oil shall be sold to registered recyclers.	Complied • Major waste Jarosite is being generated during extraction of zinc ore concentrate by hydrometallurgy operations (hydro plant). • Jarosite is mixed with 2% lime and 12-14% cement which results stable material called Jarofix which is being disposed in HDPE lined Jarofix Disposal Yard in systematic way. • The above technology supplied by M/s CEZ, Canada. • The advantage of Jarofix is having much improved density and physic-mechanical properties and reduce reachability of the heavy metals. • The design of HDPE lined Jarofix Disposal yard is approved by RSPCB. • Anode mud is being recycled back into the process and surplus, if any is sold to registered recycler. • Fly Ash generated from Power plant is being provided to cement manufacture. Bottom ash is being provided to bricks manufacturer. • Cooler Cake and ETP sludge after stabilization is being disposed into SLF. • Piezometers are provided at down/up stream of Secured land fill and Jarofix. • Regular third-party monitoring of the ground water collected from piezometers by M/s Eko Pro, which is MOEF&CC accredited laboratory. • Waste/used oil is being sold to registered recyclers.

		 Used Oil Storage  Organic Waste Converter  Secured Landfill  Jarofix Yard
xlii)	ETP Sludge in the form of cake shall be disposed to the captive SLF. Jarosite shall be treated by mixing lime and cement to produce Jarofix, a stable product. After stabilization, Jarofix shall be disposed in dedicated disposal yard. Cooler cake and part of lead silver residue shall be neutralized and stabilized before disposal in SLF. Anode mud, cobalt cake and purification cake shall be recycled back in the process and, if surplus, shall be sold to authorized recyclers or disposed in SLF after neutralization. Spent catalyst shall be disposed in SLF after neutralization. Lead smelter slag after fuming shall be stored in designated area and alternatives shall be explored for usage in road construction and cement manufacturing.	Complied. • ETP Sludge in the form of cake and Cooler Cake are disposed to the captive SLF after stabilization. • Jarosite after stabilization with lime and cement is being disposed in HDPE Lined Jarofix Disposal Yard. • Other hazardous wastes like Anode Mud, Purification Cake are being sold to authorized recyclers.
xliii)	Column Leachate Studies of the stock piles of Run-of the-mine (ROM) ore, crushed ore, tailings, Jarofix shall be carried out to ascertain the pollution potential as per details given below: Temperature fluctuation and sunlight	Complied. • Report on Column Leachate Studies of the stockpiles of Run-of the-mine (ROM) ore, crushed ore, tailings, Jarofix, carried out by IIT Kharagpur is submitted along with EC compliance report for Apr'12 to Sep'12 period vide letter HZL

	exposure under confined and unconfined conditions. Buried conditions Air circulation Dry – wet conditions in both confined and unconfined situations Temperature episodes and leachate release conditions Leachate environmental residence study The leachate shall be measured for heavy metals for cations viz. As, St, Ni, Cu, Sb, Cr, Hg, Fe, Al, Pb, Zn, Au and Ag and anions viz. Sulfate, Chloride, Fluorine, Carbonate, Bicarbonate, Phosphate. The primary and secondary organics (Poly Aromatic Hydrocarbons) shall also be monitored in Jarofix and fresh tailings. Reports prepared shall be submitted to the Ministry within 6 months of operation of the plant.	/DSC/ENV/2012/8/24.11.2012. (Report is again attached in Six monthly compliance report (HZL/RDC/EC-CR/2021-22/H2) dated 26.05.2022.) • Monitoring of Primary and Secondary organics (Poly Aromatic Hydrocarbons) and various anions and cations in Jarofix/Jarosite and Fresh tailings. Report is again attached in Six monthly compliance report (HZL/RDC/EC-CR/2021-22/H2) dated 26.05.2022.
xliv)	The tailing dam shall be provided with HDPE lining. Tailing dam stability, risk assessment and disaster risk mitigation & planning studies shall be conducted in the likely affected zone.	Complied. • HDPE lining is being provided in tailing dam. • Tailing Dam and SLF stability, risk assessment and disaster risk mitigation & planning studies are conducted, and report is again attached in Six monthly compliance report (HZL/RDC/EC-CR/2021-22/H2) dated 26.05.2022
xlv)	A complete hazards and risk assessment, and mitigation studies of the areas where hazardous substances are stored shall be carried out by approved agencies having qualified personnel. All plants identifiable hazardous areas like Sulfuric acid plants shall be color coded in "Red" and shall be made safe from any eventual spill or leakage. Regular inspection of the site shall be carried out.	Complied. • HAZOP study has been carried out by M/s Safety Consultancy Services, Mumbai. • Recommendations of the report are implemented. • Sulphuric Acid Plant has been color coded in "Red" and made safe from any eventual spill or leakage. • Regular site inspection is being carried out for all sites. Hazard and risk assessment are being carried out regularly and report is attached in Six monthly compliance report (HZL/RDC/EC-CR/2021-22/H2) dated 26.05.2022

xlvi)	In the mine sites, proper delineation of the confined and unconfined aquifers, permanent surface water bodies (having more than 1 ft standing water for at least 240 days in a year) within the lease hold area and within 3 kms radius of any potential mine site have to be shown in a map. Action plan shall be prepared for the protection of aquifers in the mine area during process of mining and submitted to the Ministry and its Regional Office at Lucknow.	• Complied. No such surface water body exist having more than 1 ft standing water for at least 240 days in a year within the lease hold area and within 3 kms radius of any potential mine site.
xlvii)	The top soil, if any, shall temporarily be stored at earmarked site(s) only and it shall not be kept unutilized for long. The topsoil shall be used for land reclamation and plantation.	• Not applicable as mine is underground, therefore, no topsoil is not generated.
xlviii)	The over burden generated during the mining operation shall be stacked at earmarked dump site(s) only and it shall not be kept active for a long period of time and its phase-wise stabilization shall be carried out. There shall be one external over burden dump. Proper terracing of the OB dump shall be carried out so that the overall slope of the dump shall be maintained to 28°. The over burden dump shall be scientifically vegetated with suitable native species to prevent erosion and surface run off. Monitoring and management of rehabilitated areas shall continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment & Forests and its Regional Office located at Lucknow on six monthly basis.	Complied. • One external overburden dump at mine site with 10-meter height and overall slope of 28° is maintained. Two nos. of inactive dumps are rehabilitated with plantation. • Strengthening of Green cover on the inactive dump is being ensure.
xlix)	Pre-placement medical examination and periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers shall be	Complied • Medical examination of all the workers engaged is carried out and records are maintained as per the rules. • The main tests include in PME are Audiometry,

	drawn and followed accordingly.	Lung function & X- Ray.
l)	As proposed, plantation shall be raised in an area of 33 % ha. Including a 7.5 m wide green belt in the safety zone around the mining lease, over burden dump, around beneficiation plant, around tailing dam, roads etc. as per Central Pollution Control Board guidelines by planting the native species around the periphery of plant and township, canopy based green belt shall be developed in consultation with the local DFO/Agriculture Department. The density of the trees shall be around 1,500 plants per ha.	Complied • 33% of acquired area has been covered under plantation and the same is being maintained. • Native plant species with long life are being planted as per CPCB guidelines and consultation with DFO. • SO2 resistant plant species are being selected for plantation. • The density of the trees is around 1500 plants per ha. • Gap filling plantation is being carried out yearly to maintain the >95% survival rate of the plantation.  Panoramic View of Industrial Area with Green Belt  Plantation Near Main Gate  Plantation CPP Boundary Wall  Plantation near Community Centre  Plantation opposite Residential Colony

		 Plantation – In front of CDSS	 Plantation – Parking Area
li)	Action plan for the mining, management of over burden (removal, storage, disposal etc.), reclamation of the mined-out area etc. shall be submitted to the Ministry and its Regional Office at Lucknow. A final mine closure plan along with details of Corpus Fund shall be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval.	Noted for Compliance. • Presently, Mining is in operational stage and have sufficient Reserves and Resources for the long term mine life. • Progressive Mine Closure Plan is part of Approved Mine Plan and all the measures are under implementation as per approved plan. • Approved Final Mine closure along with sufficient corpus fund will be submitted to Regional Office, MOEF&CC, Lucknow, 5 years in advance of mine closure.	
lii)	Conservation Plan for Schedule-I animals as per Wildlife Protection Act, 1972, if found in the study area shall be prepared and implemented on priority before commission the project for the conservation of wild fauna in consultation with the State Forest & Wildlife Department.	Complied. • No schedule-I animals are found in the core and buffer zone. • Being responsible company, various conservation measures for flora and fauna are being implemented in and around the project area.	
liii)	Regular medical examination and health monitoring of all the employees for Lead (Pb) and Cadmium (Cd) shall be carried out and if cases of presence of Lead (Pb) and Cadmium (Cd) are detected, necessary compensation shall be arranged under the existing laws. A competent occupational health physician shall be appointed to carry out medical surveillance. Occupational health of all the workers shall be monitored for relevant parameters and records maintained for at least 40 years from the	Complied. • A full-fledged occupation health center with qualified doctor is established in the project site. • All personnel working in the Lead plant undergo test for Lead and Cadmium in Blood, to ensure early detection and rehabilitation if required. • The records are being maintained as stipulated.	

	beginning of the employment or 15 years after the retirement or cessation of employment whichever is later.	
liv)	All the recommendations made in Charter for Corporate Responsibility for Environment Protection (CREP) for Zinc smelters shall be implemented.	Complied • SO2 levels are ensured below the limit of 1.5 kg/ton Sulphuric acid produced and acid mist lower than 50 mg/Nm3. • Compliance of recommendations made in Charter for Corporate Responsibility for Environment Protection (CREP) for Zinc smelter submitted with Six monthly compliance report (HZL/RDC/EC-CR/2021-22/H2) dated 26.05.2022
lv)	Overall proper housekeeping shall be ensured in all the plant areas viz. Zinc and Lead smelter, Beneficiation plant, Captive power plant and other processing plant areas. The Company shall improve overall housekeeping by asphalting the internal roads and to reduce the generation of fugitive dust from vehicle movements.	Complied • Internal roads have been concreted/ asphalted to reduce the dust emission. • The roads are being swept through road sweepers and cleaned with water.
lvi)	Adequate funds shall be earmarked towards capital cost and recurring expenditure per annum and a break up shall be submitted to the Ministry covering all aspects of the environment pollution control measures including extensive tree plantation on the mine and plant sites with an objective to achieve 33 % green cover within 3 years of project completion and recurring expenditure/annum for adequate pollution control measures with on-line motoring systems, ETPs, SWTPs, sound and vibration control, social forestry, rain water harvesting, occupational health, employment of environmental cadre personnel for continuous improvement etc.	Complied • Adequate funds are allocated for capital and revenue expenditures and no fund is diverted to other jobs/places. • Environmental control measure expenditure breakup for FY2022-23 and Funds earmarked towards environmental control measures for FY2023-24 has been attached as Annexure XIII and Annexure XIV.

S.No	Description (Funds earmarked towards environmental control measures for FY 2023-24)	Total Amount (Rs. In Lakhs)
1	Green Belt Development, Maintenance of old plantation & landscaping	719.2
2	Environment Monitoring	179.8
3	Storm water ponds operations and maintenance & Monsoon management	76.0
4	Environmental training, awareness and publicity	29.3

		5	Hazardous Waste Management	2040.9
		6	O&M of Organic waste Convertor	3.0
		7	Environmental Audit & IMS	11.0
		8	Returns, Fees for Award & CTO	187.0
		9	Pollution control measures	122.0
			Grand Total	**3368.2**
lvii)	Rehabilitation and Resettlement Plan for the project affected population including tribals, if applicable, as per the policy of the State Govt. in consultation with the State Govt. of Rajasthan shall be implemented. Compensation paid in any case shall not be less than the norms prescribed under the National Resettlement and Rehabilitation Policy, 2007.	• Noted for compliance, as of now no Rehabilitation and Resettlement Plan applicable for this project.		
lviii)	All the safety norms stipulated by the Director General, Mine & Safety (DGMS) shall be implemented.	• Compliance of all safety norms stipulated by DGMS is being implemented.		
lix)	All the recommendations made in the Charter on Corporate Responsibility for Environment Protection (CREP) for the Smelters, thermal power plants and mining shall be implemented.	Complied • SO2 levels are ensured below the limit of 1.5 kg/ton Sulphuric acid produced and acid mist lower than 50 mg/Nm3. • Compliance of recommendations made in Charter for Corporate Responsibility for Environment Protection (CREP) for Zinc smelters, Thermal Power Plants and mining was submitted with six monthly compliance report (HZL/RDC/EC-CR/2021-22/H2) dated 26.05.2022		
lx)	The company shall comply with the commitments made during public hearing / consultation meeting held.	• Complied, all commitments made during Public Hearing/consultations are being complied.		
lxi)	No change in mining technology and scope of working shall be carried out without prior approval of the Ministry.	• Noted for compliance, No further expansion or modification of the plant and change in mining technology will be carried out without prior approval of the Ministry.		
lxii)	The company shall provide housing for construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water,	• Noted for compliance, No any major construction is going on the site. However, various labors are residing on the colony area. Basic facilities are provided.		

	medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	
B.	EC General Conditions	Status of Compliance
i)	The project authorities must strictly adhere to the stipulations made by the Rajasthan State Pollution Control Board (RSPCB) and the State Government.	• Complied. Consent to operates have been obtained from the Rajasthan State Pollution Control Board (RSPCB) and all the conditions stipulated therein are being implemented.
ii)	No expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests.	• Noted for Compliance. No further expansion or modification of the plant and change in mining technology will be carried out without prior approval of the Ministry.
iii)	Adequate number of ambient air quality-monitoring stations shall 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 Rajasthan State Pollution Control Board. Data on ambient air quality and stack emission shall be regularly submitted to this Ministry including its Regional Office at Lucknow and the State Pollution Control Board/Central Pollution Control Board once in six months.	Complied. • Third Party Periodical monitoring of various parameters i.e. PM10, PM2.5, NOx and SO2 are being done in the ambient air within the impact zone. • Ambient Air Quality Monitoring Stations (AAQMS) have been established. • Third party monitoring of Ambient air quality carried out by Third party, which is NABL and MoEF&CC accredited laboratory.

Parameters (µg/ m3)	Observed Value			
	Near Main Gate	Near Storm Water pond	Near CPP Area	Near SLF Area
PM10	82.44	78.84	78.30	82.40
PM2.5	44.70	40.19	39.71	40.33
SO2	15.65	16.78	14.79	15.14
NO2	27.78	31.52	26.48	26.43
CO	0.95	0.90	0.88	0.87
Pb	<0.10	<0.10	<0.10	<0.10
Ni	<15.00	<15.00	<15.00	<15.00
As	<5.00	<5.00	<5.00	<5.00

• Average Ambient Air Quality Monitoring results for mine are enclosed herewith as **Annexure II** and

		for DSC as **Annexure III.** • Eight nos. of AAQMS have been established at buffer zone for ambient air quality monitoring are enclosed as **Annexure IV.** • Zero discharge is being maintained. • The monitored data have been displayed on display board at the project site and also on Company website along with Six Monthly Environment Compliance report. Link of the report is https://www.hzlindia.com/sustainability/environment-compliance/ • Six Monthly Environment Compliance report along with all Analysis reports for the ambient, stack and fugitive emission are enclosed and being submitted to the Regional Office, MOEF&CC Lucknow, CPCB and RSPCB.
iv)	Industrial wastewater shall be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May, 1993 and 31st December, 1993 or as amended form time to time. The treated wastewater should be recycled in the plant as well as utilization for plantation purposes.	Complied • Industrial waste water is properly collected, treated in the ETP (capacity 9000KLD) followed by double stage RO (capacity 8850 KLD) and MEE 600 KLD capacity so as to confirm treated water quality as per the prescribed standards and recycled back in the plant as well as utilized for plantation purposes. • Details of ETP plant has been submitted along with six monthly compliance report vide letter no. HZL/DSC/Env/2011/2/2 dated 23.11.2011. • Zero Discharge is being maintained.
v)	The project authorities must strictly comply with the rules and regulations with regard to handling and disposal of hazardous wastes in accordance with the Hazardous Wastes (Management and Handling) Rules, 2003. Authorization from the State Pollution Control Board must be obtained for collection, storage, treatment and disposal of hazardous wastes.	Complied • Hazardous waste Authorization under Hazardous Waste and other Waste (Management and Handling & Transboundary) Rules, 2016 has been obtained from RSPCB. • Hazardous Wastes are properly collected and stored in dedicated area before handed over to authorized vendor. • Jarosite is mixed with 4% lime and 12-14% cement which results stable material called Jarofix which is being disposed in HDPE lined Jarofix Disposal Yard in systematic way.

		• Anod mud is being reuse/ sold to registered recycler. • Fly Ash generated from Power plant is being provided to cement manufacture. Bottom ash is being provided to bricks manufacture • Cooler Cake and ETP sludge after stabilization is being disposed into SLF. • Waste/used oil is being sold to registered recycler.
vi)	The overall noise levels in and around the plant area shall be kept well within the standards (85 dBA) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA Rules, 1989 viz. 75 dBA (daytime) and 70 dBA (nighttime).	Complied • Noise control measures including acoustic hoods, silencers, enclosures etc. have been provided on all sources of noise generation. • Noise levels in and around the plant area are being monitored regularly and utmost care is taken to ensure that noise level remains below the norms. Average noise monitoring report is furnished herewith as **Annexure XI.**
vii)	Occupational Health Surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.	Complied • A full-fledged occupation health center with qualified doctor is established in the project site. • All personnel working in the Lead plant undergo test for Lead and Cadmium in Blood, to ensure early detection and rehabilitation if required. • The records are being maintained as stipulated.
viii)	The project proponent shall also comply with all the environmental protection measures and safeguards recommended in the EIA/EMP/risk analysis and DMP report.	Complied • Environmental protection measures and safeguards recommended in the EIA/EMP/risk analysis and DMP report are being implemented. • For emission control, ESP, Bag houses, Venturi, cyclone and gas wash tower have been installed with adequate stacks height for proper dispersion of emission. • For Effluent. Control, zero discharge is being maintained through ETP, Double stage RO and MEE plants. • For Hazardous waste management, best available technology being used for waste minimization and disposal of Hazardous waste is being done as per Authorization conditions.

<table>
<tr>
<td>ix)</td>
<td>As proposed, Rs. 230.00 Crores and Rs. 1.20 Crores shall be earmarked towards total capital cost and recurring cost/annum for environmental pollution control measures 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.</td>
<td>Complied
• Adequate funds are allocated for capital and revenue expenditures and no fund is diverted to other jobs/places.
• Environmental control measure expenditure breakup for FY2022-23 and Funds earmarked towards environmental control measures for FY2023-24 has already been submitted as Annexure- XIII & XIV.
<table>
<tr><th>S. No.</th><th>Description (Expenditure towards environmental control measures for FY 2023-24)</th><th>Total Amount (Rs. In Lakhs)</th></tr>
<tr><td>1</td><td>Green Belt Development, Maintenance of old plantation & landscaping</td><td>719.2</td></tr>
<tr><td>2</td><td>Environment Monitoring</td><td>179.8</td></tr>
<tr><td>3</td><td>Storm water ponds operations and maintenance & Monsoon management</td><td>76.0</td></tr>
<tr><td>4</td><td>Environmental training, awareness, and publicity</td><td>29.3</td></tr>
<tr><td>5</td><td>Hazardous Waste Management</td><td>2040.9</td></tr>
<tr><td>6</td><td>O&M of Organic waste Convertor</td><td>3.0</td></tr>
<tr><td>7</td><td>Environmental Audit & IMS</td><td>11.0</td></tr>
<tr><td>8</td><td>Returns, Fees for Award & CTO</td><td>187.0</td></tr>
<tr><td>9</td><td>Pollution control measures</td><td>122.0</td></tr>
<tr><td></td><td>Grand Total</td><td>3368.2</td></tr>
</table>
</td>
</tr>
<tr>
<td>x)</td>
<td>A copy of clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parishad/ Municipal Corporation, Urban Local Body and the local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal. The clearance letter shall also be put on the web site of the company by the proponent.</td>
<td>• Complied and communicated to Regional Office, MoEF vide letter no: HZL/RDM/Env/2009/898 dated 20.11.2009.</td>
</tr>
<tr>
<td>xi)</td>
<td>The project proponent shall upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the MOEF at Lucknow, the respective Zonal Office of CPCB and the RSPCB.</td>
<td>Complied
• Status of compliance of the stipulated environment clearance conditions, including results of monitored data are being furnished regularly to the Regional Office, MOEF&CC, CPCB and RSPCB.
• Critical environmental parameters are being displayed near the main gate and company website along with six monthly compliance reports. Link of</td>
</tr>
</table>

	The criteria pollutant levels namely; SPM, RSPM, SO2, NOx (ambient levels as well as stack emissions) or critical sectoral parameters, indicated for the projects shall be monitored and displayed at a convenient location near the main gate of the company in the public domain.	the report is https://www.hzlindia.com/sustainability/environment-compliance/
xii)	The project proponent shall also submit six monthly reports on the status of the compliance of the stipulated environmental conditions including results of monitored data (both in hard copies as well as by e-mail) to the Regional Office of MOEF, the respective Zonal Office of CPCB and the RSPCB. The Regional Office of this Ministry at Lucknow / CPCB / RSPCB shall monitor the stipulated conditions.	Complied • The monitored data has been displayed on the display board at the project site and on the Company website along with Six Monthly Environment Compliance report. Link of the report is https://www.hzlindia.com/sustainability/environment-compliance/ • Six Monthly Environment Compliance report along with all Analysis reports for the ambient, stack and fugitive emission are enclosed and being submitted to the Regional Office, MOEF&CC Lucknow, CPCB and RSPCB.
xiii)	The environmental statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental conditions and shall also be sent to the respective Regional Offices of the MOEF by e-mail.	Complied • Environmental Statement (Form-V) of Financial Year 2021-22 is submitted on date 22.09.2022 via letter number: HZL/DSC/ENV/ES/2022/1 for Zinc, HZL/DSC/ENV/ES/2022/2 for Lead. & HZL/DSC/ENV/ES/2022/3 for CPP. • Environmental Statement (Form-V) of Financial Year 2021-22 is displayed on the Company website along with Six Monthly Environment Compliance report. Link of the Form V is https://www.hzlindia.com/sustainability/environment-compliance/
xiv)	The Project Proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the RSPCB and may also be seen at Website of the Ministry of Environment and Forests at http://envfor.nic.in. This shall be advertised within seven days from the	• Complied, Press advertisement published in local newspapers (hindi) i.e. Rajasthan Patrika & Dainik Bhasker (Rajsamand edition) on 08.11.09 and has been communicated to Regional Office, MoEF vide letter no: HZL/RDM/Env/2009/898 dated 20.11.2009.

	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.	
xv)	Project authorities shall 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.
Environment Clearance Letter no.: J-11015/380/2008-IA II (I) dated 26.7.2018 for Expansion of Lead Zinc Ore production from 0.9 MTPA to 1.08 MTPA		
1.	The environmental clearance will not be operational till such time the project proponent complies with all the statutory requirements and Judgement of Hon'ble Supreme Court dated 2nd August 2017 in Writ Petition (Civil) No: 114 of 2014 in the matter of Common Cause versus Union of India and Ors, if any, applicable to this project.	• Noted and Complied.
2.	The Department of Mines and Geology, Government of Rajasthan shall ensure that mining operations shall not commence till the entire compensation levied, if any, for illegal mining paid by the Project Proponent through their respective department of Mines and Geology in strict compliance of Judgement of Hon'ble Supreme Court dated 2nd August 2017 in Writ Petition (Civil) No: 114 of 2014 in the matter of Common Cause versus Union of India and Ors.	• Noted and Complied.
3.	All other specific and general conditions mentioned in the Ministry's EC Letter No: J-11015/380/2008-IA-II(M) dated 4.11.2009 shall remain the same.	• Noted and Complied.

Annexure I

Hindustan Zinc Limited
Dariba Smelter Complex
Dariba, Dist. Rajsamand, Rajasthan.

SO_2 Continuous Monitoring Report (October'22-March'23)

Month Location	Parameters	Prescribed Limits	Oct'22	Nov'22	Dec'22	Jan'23	Feb'23	Mar'23
Acid Plant* (Zinc Smelter) Roaster-1	SO_2 (Kg/T of H_2SO_4 Production)	1.5	0.80	0.81	0.85	0.86	0.79	0.73
Acid Plant* (Zinc Smelter) Roaster-2	SO_2 (Kg/T of H_2SO_4 Production)	1.5	1.09	1.03	1.10	1.04	1.03	0.99
TGT Stack (Lead Plant)	SO2 (Kg/T of H2SO4 Production)	1.5	0.19	0.20	0.14	0.11	0.11	0.12

(Vivek Kumar)
Head Environment
Dariba Smelter Complex

EKO PRO

EKO PRO ENGINEERS PVT. LTD.

Environmental Consultants and Analytical Laboratory
(An ISO 9001:2015 Certified Company)

TEST REPORT

Stack Emission Analysis

Test Report No. : EKO/039/271222 Issue Date : 31/12/2022

Issued To : **HINDUSTAN ZINC LIMITED**
Dariba Smelter Complex
Post - Dariba, District - Rajpura Dariba Mines
Udaipur-Rajasthan

Sample Description	:	Stack Emission
Sample Drawn on	:	24/12/2022
Sample Drawn by	:	EPEPL (Mr. Umesh Kumar)
Sample Received on	:	27/12/2022
Time of Sampling (minutes)	:	30.0
Sampling Location	:	NA
Sampling Plan & Procedure	:	SOP-SE/09
Analysis Duration	:	27/12/2022 To 31/12/2022
Source of Emission	:	Stack Attached To Zinc Smelter Roaster (R-4)**
Capacity	:	–
Operating Load	:	Normal
Normal Operation Schedule	:	As per requirement
Type of Stack	:	MS
Diameter of Stack (meter)	:	2.5
Height of Stack from Ground Level (meter)	:	100.0
Height of Stack from Roof Level (meter)	:	–
Height of Sampling Location (meter)	:	–
Type of Fuel Used	:	–
Fuel Consumed per hour	:	–
Ambient Temperature (°C)	:	18.0
Stack Temperature (°C)	:	58.0
Average Velocity of Fuel Emission (m/sec)	:	6.2
Average Flow Rate (lpm)	:	28.7
Control Measures (if any)	:	Nil
Remark (if any)	:	** Acid Plant Attached with DCDA

RESULTS

S.No.	Parameters	Test Methods	Results	Units	Limits as per Consent
1	Sulphur Dioxide (as SO_2)	IS: 11255 (P-2)	420.9	mg/Nm^3	950.0
2	Acid Mist (as H2SO4)	USEPA Method 8	33.5	mg/Nm^3	50.0

Notes :

1. The results given above are related to the tested sample, for various parameters, as observed at the time of Sampling. The customer asked for the above tests only.
2. This test report will not be generated again, either wholly or in part, without prior written permission of the Laboratory.
3. The test report will not be used for any publicity/legal purpose.
4. The test samples will be disposed off after 15 days from the date of issue of test report, unless until specified by the customer.
5. Responsibility of the Laboratory is limited to the invoiced amount only.

** End of Report **

For EKO PRO ENGINEERS PVT. LTD.
PURNIMA CHAUHAN
TECHNICAL MANAGER
(Authorised Signatory)

EKO PRO

Contact : +91 - 9810243870

EKO PRO ENGINEERS PVT. LTD.

Environmental Consultants and Analytical Laboratory

(An ISO 9001:2015 Certified Company)

TEST REPORT

Stack Emission Analysis

Test Report No. : EKO/035/271222

Issue Date : 31/12/2022

Issued To	:	**HINDUSTAN ZINC LIMITED** Dariba Smelter Complex Post - Dariba, District - Rajpura Dariba Mines Udaipur-Rajasthan
Sample Description	:	Stack Emission
Sample Drawn on	:	24/12/2022
Sample Drawn by	:	EPEPL (Mr. Umesh Kunar)
Sample Received on	:	27/12/2022
Time of Sampling (minutes)	:	30.0
Sampling Location	:	NA
Sampling Plan & Procedure	:	SOP-SE/09
Analysis Duration	:	27/12/2022 To 31/12/2022
Source of Emission	:	Stack Attached To Zinc Smelter Roaster (R-5)**
Capacity	:	--
Operating Load	:	Normal
Normal Operation Schedule	:	As per requirement
Type of Stack	:	MS
Diameter of Stack (meter)	:	2.5
Height of Stack from Ground Level (meter)	:	100.0
Height of Stack from Roof Level (meter)	:	--
Height of Sampling Location (meter)	:	--
Type of Fuel Used	:	--
Fuel Consumed per hour	:	--
Ambient Temperature (°C)	:	18.0
Stack Temperature (°C)	:	82.0
Average Velocity of Fuel Emission (m/sec)	:	6.4
Average Flow Rate (lpm)	:	19.2
Control Measures (if any)	:	Nil
Remark (if any)	:	** Acid Plant Attached with DCDA

RESULTS

S.No.	Parameters	Test Methods	Results	Units	Limits as per Consent
1	Sulphur Dioxide (as SO_2)	IS: 11255 (P-2)	392.8	mg/Nm^3	950.0
2	Acid Mist (as H2SO4)	USEPA Method 8	32.7	mg/Nm^3	50.0

Notes :

1. The results given above are related to the tested sample, for various parameters, as observed at the time of Sampling. The customer asked for the above tests only.
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** End of Report **

For EKO PRO ENGINEERS PVT. LTD.

PURNIMA CHAUHAN

TECHNICAL MANAGER

(Authorised Signatory)

Contact : +91 - 9810293870

EKO PRO ENGINEERS PVT. LTD.
Environmental Consultants and Analytical Laboratory
(An ISO 9001:2015 Certified Company)

TEST REPORT

Stack Emission Analysis

Test Report No. : EKO/033/271222 | Issue Date :31/12/2022

Issued To	:	HINDUSTAN ZINC LIMITED Dariba Smelter Complex Post - Dariba, District - Rajpura Dariba Mines Udaipur-Rajasthan
Sample Description	:	Stack Emission
Sample Drawn on	:	23/12/2022
Sample Drawn by	:	EPEPL (Mr.Umesh Kumar)
Sample Received on	:	27/12/2022
Time of Sampling (minutes)	:	30.0
Sampling Location	:	NA
Sampling Plan & Procedure	:	SOP-SE/09
Analysis Duration	:	27/12/2022 To 31/12/2022
Source of Emission	:	Stack Attached To Zinc Dross
Capacity	:	--
Operating Load	:	Normal
Normal Operation Schedule	:	As per requirement
Type of Stack	:	MS
Diameter of Stack (meter)	:	1.3
Height of Stack from Ground Level (meter)	:	30.0
Height of Stack from Roof Level (meter)	:	--
Height of Sampling Location (meter)	:	--
Type of Fuel Used	:	--
Fuel Consumed per hour	:	--
Ambient Temperature (°C)	:	18.0
Stack Temperature (°C)	:	48.0
Average Velocity of Fuel Emission (m/sec)	:	6.0
Average Flow Rate (lpm)	:	22.4
Control Measures (if any)	:	Nil
Remark (if any)	:	NA

RESULTS

S.No.	Parameters	Test Methods	Results	Units	Limits as per Consent
1	Particulate Matter (as PM)	IS: 11255 (P-1)	24.9	mg/Nm^3	50.0

Notes :

1. The results given above are related to the tested sample, for various parameters, as observed at the time of Sampling. The customer asked for the above tests only.
2. This test report will not be generated again, either wholly or in part, without prior written permission of the Laboratory.
3. The test report will not be used for any publicity/legal purpose.
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** End of Report **

For EKO PRO ENGINEERS PVT. LTD.
PURNIMA CHAUHAN
TECHNICAL MANAGER
(Authorised Signatory)

Contact : +91 - 9810243870

EKO PRO ENGINEERS PVT. LTD.
Environmental Consultants and Analytical Laboratory
(An ISO 9001:2015 Certified Company)

TEST REPORT

Stack Emission Analysis

Test Report No. : EKO/034/271222 | Issue Date :31/12/2022

Issued To : HINDUSTAN ZINC LIMITED
Dariba Smelter Complex
Post - Dariba, District - Rajpura Dariba Mines
Udaipur-Rajasthan

Sample Description	:	Stack Emission
Sample Drawn on	:	23/12/2022
Sample Drawn by	:	EPEPL (Mr.Umesh Kumar)
Sample Received on	:	27/12/2022
Time of Sampling (minutes)	:	30.0
Sampling Location	:	NA
Sampling Plan & Procedure	:	SOP-SE/09
Analysis Duration	:	27/12/2022 To 31/12/2022
Source of Emission	:	Stack Attached To Zinc Dust Plant with Bag House
Capacity	:	--
Operating Load	:	Normal
Normal Operation Schedule	:	As per requirement
Type of Stack	:	MS
Diameter of Stack (meter)	:	0.5
Height of Stack from Ground Level (meter)	:	30.0
Height of Stack from Roof Level (meter)	:	--
Height of Sampling Location (meter)	:	--
Type of Fuel Used	:	--
Fuel Consumed per hour	:	--
Ambient Temperature (°C)	:	18.0
Stack Temperature (°C)	:	72.0
Average Velocity of Fuel Emission (m/sec)	:	23.9
Average Flow Rate (lpm)	:	21.4
Control Measures (if any)	:	Nil
Remark (if any)	:	NA

RESULTS

S.No.	Parameters	Test Methods	Results	Units	Limits as per Consent
1	Particulate Matter (as PM)	IS: 11255 (P-1)	35.2	mg/Nm^3	50.0

Notes :

1. The results given above are related to the tested sample, for various parameters, as observed at the time of Sampling. The customer asked for the above tests only.
2. This test report will not be generated again, either wholly or in part, without prior written permission of the Laboratory.
3. The test report will not be used for any publicity/legal purpose.
4. The test samples will be disposed off after 15 days from the date of issue of test report, unless until specified by the customer.
5. Responsibility of the Laboratory is limited to the invoiced amount only.

** End of Report **

For EKO PRO ENGINEERS PVT. LTD.
PURNIMA CHAUHAN
TECHNICAL MANAGER
(Authorised Signatory)

EKO PRO

Contact: +91 - 9510240870

EKO PRO ENGINEERS PVT. LTD.

Environmental Consultants and Analytical Laboratory
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Office & Laboratory : 32/41, South Side of G. T. Road, UPSIDC Industrial Area, Ghaziabad - 201 009 (Delhi-NCR) INDIA
Contact No.: 9711159570, 9810240837, 9510240875 Email: [illegible] Website: [illegible]

TEST REPORT

Stack Emission Analysis

Test Report No. : EKO/027/271222 — Issue Date : 31/12/2022

Issued To	:	**HINDUSTAN ZINC LIMITED** Dariba Smelter Complex Post - Dariba, District - Rajpura Dariba Mines Udaipur-Rajasthan
Sample Description	:	Stack Emission
Sample Drawn on	:	22/12/2022
Sample Drawn by	:	EPEPL (Mr. Umesh Kumar)
Sample Received on	:	27/12/2022
Time of Sampling (minutes)	:	30.0
Sampling Location	:	NA
Sampling Plan & Procedure	:	SOP-SE/09
Analysis Duration	:	27/12/2022 To 31/12/2022
Source of Emission	:	Stack Attached To Lead Electro Refinery Plant (Pyro)**
Capacity	:	--
Operating Load	:	Normal
Normal Operation Schedule	:	As per requirement
Type of Stack	:	MS
Diameter of Stack (meter)	:	2.0
Height of Stack from Ground Level (meter)	:	40.0
Height of Stack from Roof Level (meter)	:	--
Height of Sampling Location (meter)	:	--
Type of Fuel Used	:	--
Fuel Consumed per hour	:	--
Ambient Temperature (°C)	:	18.0
Stack Temperature (°C)	:	124.0
Average Velocity of Fuel Emission (m/sec)	:	5.8
Average Flow Rate (lpm)	:	21.9
Control Measures (if any)	:	Nil
Remark (if any)	:	**South Lead Plant Attached to Bag Filter

RESULTS

S.No.	Parameters	Test Methods	Results	Units	Limits as per Consent
1	Particulate Matter (as PM)	IS 11255 (P-1)	32.8	mg/Nm^3	50.0
2	Lead (as Pb)	USEPA (P-12)	3.11	mg/Nm^3	10.0

Notes :

1. The results given above are related to the tested sample, for various parameters, as observed at the time of Sampling. The customer asked for the above tests only.
2. This test report will not be generated again, either wholly or in part, without prior written permission of the Laboratory.
3. The test report will not be used for any publicity/legal purpose.
4. The test samples will be disposed off after 15 days from the date of issue of test report, unless until specified by the customer.
5. Responsibility of the Laboratory is limited to the invoiced amount only.

** End of Report **

For EKO PRO ENGINEERS PVT. LTD.
PURNIMA CHAUHAN
TECHNICAL MANAGER
(Authorised Signatory)

EKO PRO ENGINEERS PVT. LTD.
Environmental Consultants and Analytical Laboratory
(An ISO 9001:2015 Certified Company)

TEST REPORT

Stack Emission Analysis

Test Report No. : EKO/028/271222 Issue Date : 31/12/2022

Issued To : HINDUSTAN ZINC LIMITED
Dariba Smelter Complex
Post - Dariba, District - Rajpura Dariba Mines
Udaipur-Rajasthan

Sample Description	: Stack Emission
Sample Drawn on	: 22/12/2022
Sample Drawn by	: EPEPL (Mr. Umesh Kumar)
Sample Received on	: 27/12/2022
Time of Sampling (minutes)	: 30.0
Sampling Location	: NA
Sampling Plan & Procedure	: SOP-SE/09
Analysis Duration	: 27/12/2022 To 31/12/2022
Source of Emission	: Stack Attached To Lead Electro Refinery Plant (Pyro)**
Capacity	: –
Operating Load	: Normal
Normal Operation Schedule	: As per requirement
Type of Stack	: MS
Diameter of Stack (meter)	: 2.0
Height of Stack from Ground Level (meter)	: 40.0
Height of Stack from Roof Level (meter)	: –
Height of Sampling Location (meter)	: –
Type of Fuel Used	: –
Fuel Consumed per hour	: –
Ambient Temperature (°C)	: 18.0
Stack Temperature (°C)	: 142.0
Average Velocity of Fuel Emission (m/sec)	: 6.1
Average Flow Rate (lpm)	: 19.2
Control Measures (if any)	: Nil
Remark (if any)	: **North Lead Plant Attached to Bag Filter

RESULTS

S.No.	Parameters	Test Methods	Results	Units	Limits as per Consent
1	Particulate Matter (as PM)	IS: 11255 (P-1)	40.9	mg/Nm^3	50.0
2	Lead (as Pb)	USEPA (P-12)	2.86	mg/Nm^3	10.0

Notes :

1. The results given above are related to the tested sample, for various parameters, as observed at the time of Sampling. The customer asked for the above tests only.
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**** End of Report ****

For EKO PRO ENGINEERS PVT. LTD.
PURNIMA CHAUHAN
TECHNICAL MANAGER
(Authorised Signatory)

EKO PRO

Contact : +91-9810243670

EKO PRO ENGINEERS PVT. LTD.

Environmental Consultants and Analytical Laboratory
(An ISO 9001:2015 Certified Company)

Office & Laboratory : 32/41, South Side of G. T. Road, UPSIDC Industrial Area, Ghaziabad - 201 009 (Delhi-NCR), INDIA
Contact No. : 9711592210, 9810240837, 9810240878 E-mail : emas@ekopro.in, ekopros.engineers@gmail.com, website : www.ekopro.in

TEST REPORT

Stack Emission Analysis

Test Report No. : EKO/032/271222 Issue Date : 31/12/2022

Issued To : **HINDUSTAN ZINC LIMITED**
Dariba Smelter Complex
Post - Dariba, District - Rajpura Dariba Mines
Udaipur-Rajasthan

Sample Description	:	Stack Emission
Sample Drawn on	:	23/12/2022
Sample Drawn by	:	EPEPL (Mr. Umesh Kumar)
Sample Received on	:	27/12/2022
Time of Sampling (minutes)	:	30.0
Sampling Location	:	NA
Sampling Plan & Procedure	:	SOP-SE/09
Analysis Duration	:	27/12/2022 To 31/12/2022
Source of Emission	:	Stack Attached To Lead Secondary Plant with Bag House (Blast Furnace)**
Capacity	:	–
Operating Load	:	Normal
Normal Operation Schedule	:	As per requirement
Type of Stack	:	MS
Diameter of Stack (meter)	:	2.2
Height of Stack from Ground Level (meter)	:	75.0
Height of Stack from Roof Level (meter)	:	–
Height of Sampling Location (meter)	:	–
Type of Fuel Used	:	–
Fuel Consumed per hour	:	–
Ambient Temperature (°C)	:	18.0
Stack Temperature (°C)	:	67.0
Average Velocity of Fuel Emission (m/sec)	:	8.1
Average Flow Rate (lpm)	:	22.7
Control Measures (if any)	:	Nil
Remark (if any)	:	NA

RESULTS

S.No.	Parameters	Test Methods	Results	Units	Limits as per Consent
1	Particulate Matter (as PM)	IS: 11255 (P-1)	36.9	mg/Nm^3	50.0
2	Lead (as Pb)	USEPA (P-12)	4.18	mg/Nm^3	10.0

Notes :

1. The results given above are related to the tested sample, for various parameters, as observed at the time of Sampling. The customer asked for the above tests only.
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3. The test report will not be used for any publicity/legal purpose.
4. The test samples will be disposed off after 15 days from the date of issue of test report, unless until specified by the customer.
5. Responsibility of the Laboratory is limited to the invoiced amount only.

** End of Report **

For EKO PRO ENGINEERS PVT. LTD.
PURNIMA CHAUHAN
TECHNICAL MANAGER
(Authorised Signatory)

Contact : +91 - 9810243870

EKO PRO ENGINEERS PVT. LTD.

Environmental Consultants and Analytical Laboratory
(An ISO 9001:2015 Certified Company)

Office & Laboratory : 32/41, South Side G.T. Road, UPSIDC Industrial Area, Ghaziabad - 201 009 (Delhi-NCR) INDIA
Contact No.: 0120-4132114, 9810240637, 9810240670 E-mail: info@ekoproengineers.com, website : www.ekopro.in

TEST REPORT

Stack Emission Analysis

Test Report No. : EKO/036/271222 | Issue Date : 31/12/2022

Issued To : HINDUSTAN ZINC LIMITED
Dariba Smelter Complex
Post - Dariba, District - Rajpura Dariba Mines
Udaipur-Rajasthan

Sample Description	:	Stack Emission
Sample Drawn on	:	24/12/2022
Sample Drawn by	:	EPEPL (Mr.Umesh Kumar)
Sample Received on	:	27/12/2022
Time of Sampling (minutes)	:	30.0
Sampling Location	:	NA
Sampling Plan & Procedure	:	SOP-SE/09
Analysis Duration	:	27/12/2022 To 31/12/2022
Source of Emission	:	Stack Attached To Lead Electro Refinery Plant (M&C)**
Capacity	:	--
Operating Load	:	Normal
Normal Operation Schedule	:	As per requirement
Type of Stack	:	MS
Diameter of Stack (meter)	:	2.0
Height of Stack from Ground Level (meter)	:	40.0
Height of Stack from Roof Level (meter)	:	--
Height of Sampling Location (meter)	:	--
Type of Fuel Used	:	--
Fuel Consumed per hour	:	--
Ambient Temperature (°C)	:	18.0
Stack Temperature (°C)	:	142.0
Average Velocity of Fuel Emission (m/sec)	:	6.5
Average Flow Rate (lpm)	:	20.5
Control Measures (if any)	:	Nil
Remark (if any)	:	**North Lead Plant Attached to Bag Filter

RESULTS

S.No.	Parameters	Test Methods	Results	Units	Limits as per Consent
1	Particulate Matter (as PM)	IS: 11255 (P-1)	33.9	mg/Nm^3	50.0
2	Lead (as Pb)	USEPA (P-12)	3.81	mg/Nm^3	10.0

Notes :

1. The results given above are related to the tested sample, for various parameters, as observed at the time of Sampling. The customer asked for the above tests only.
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5. Responsibility of the Laboratory is limited to the invoiced amount only.

**** End of Report ****

For EKO PRO ENGINEERS PVT. LTD.
PURNIMA CHAUHAN
TECHNICAL MANAGER
(Authorised Signatory)

EKO PRO

EKO PRO ENGINEERS PVT. LTD.

Environmental Consultants and Analytical Laboratory

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Office & Laboratory : 32/41, South Side of G. T. Road, UPSIDC Industrial Area, Ghaziabad - 201 009 (Delhi-NCR) INDIA
Contact No.: 9711159210, 9810246837, 9810240675 Email : email@ekopro.in, ekoproengineers@gmail.com, website : www.ekopro.in

TEST REPORT

Stack Emission Analysis

Test Report No. : EKO/037/271222

Issue Date : 31/12/2022

Issued To	:	HINDUSTAN ZINC LIMITED Dariba Smelter Complex Post - Dariba, District - Rajpura Dariba Mines Udaipur-Rajasthan
Sample Description	:	Stack Emission
Sample Drawn on	:	24/12/2022
Sample Drawn by	:	EPEPL (Mr. Umesh Kumar)
Sample Received on	:	2712/2022
Time of Sampling (minutes)	:	30.0
Sampling Location	:	NA
Sampling Plan & Procedure	:	SOP-SE/09
Analysis Duration	:	27/12/2022 To 31/12/2022
Source of Emission	:	Stack Attached To Lead Electro Refinery Plant (M&C)**
Capacity	:	--
Operating Load	:	Normal
Normal Operation Schedule	:	As per requirement
Type of Stack	:	MS
Diameter of Stack (meter)	:	2.0
Height of Stack from Ground Level (meter)	:	40.0
Height of Stack from Roof Level (meter)	:	--
Height of Sampling Location (meter)	:	--
Type of Fuel Used	:	--
Fuel Consumed per hour	:	--
Ambient Temperature (°C)	:	18.0
Stack Temperature (°C)	:	114.0
Average Velocity of Fuel Emission (m/sec)	:	6.5
Average Flow Rate (lpm)	:	21.7
Control Measures (if any)	:	Nil
Remark (if any)	:	**South Lead Plant Attached to Bag Filter

RESULTS

S.No.	Parameters	Test Methods	Results	Units	Limits as per Consent
1	Particulate Matter (as PM)	IS: 11255 (P-1)	42.5	mg/Nm^3	50.0
2	Lead (as Pb)	USEPA (P-12)	4.92	mg/Nm^3	10.0

Notes :

1. The results given above are related to the tested sample, for various parameters, as observed at the time of Sampling. The customer asked for the above tests only.
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3. The test report will not be used for any publicity/legal purpose.
4. The test samples will be disposed off after 15 days from the date of issue of test report, unless until specified by the customer.
5. Responsibility of the Laboratory is limited to the invoiced amount only.

**** End of Report ****

For EKO PRO ENGINEERS PVT. LTD

PURNIMA CHAUHAN

TECHNICAL MANAGER

(Authorised Signatory)

EKO PRO

Contact : +91 - 9610243870

EKO PRO ENGINEERS PVT. LTD.

Environmental Consultants and Analytical Laboratory
(An ISO 9001:2015 Certified Company)

TEST REPORT

Stack Emission Analysis

Test Report No. : EKO/030/271222

Issue Date : 31/12/2022

Issued To	:	**HINDUSTAN ZINC LIMITED** Dariba Smelter Complex Post - Dariba, District - Rajpura Dariba Mines Udaipur-Rajasthan
Sample Description	:	Stack Emission
Sample Drawn on	:	22/12/2022
Sample Drawn by	:	EPEPL (Mr. Umesh Kumar)
Sample Received on	:	27/12/2022
Time of Sampling (minutes)	:	30.0
Sampling Location	:	NA
Sampling Plan & Procedure	:	SOP-SE/09
Analysis Duration	:	27/12/2022 To 31/12/2022
Source of Emission	:	Stack Attached To Lead Primary Plant with Bag House (SKS Furnace)
Capacity	:	–
Operating Load	:	Normal
Normal Operation Schedule	:	As per requirement
Type of Stack	:	MS
Diameter of Stack (meter)	:	2.0
Height of Stack from Ground Level (meter)	:	75.0
Height of Stack from Roof Level (meter)	:	–
Height of Sampling Location (meter)	:	–
Type of Fuel Used	:	–
Fuel Consumed per hour	:	–
Ambient Temperature (°C)	:	18.0
Stack Temperature (°C)	:	65.0
Average Velocity of Fuel Emission (m/sec)	:	7.4
Average Flow Rate (lpm)	:	22.1
Control Measures (if any)	:	Nil
Remark (if any)	:	NA

RESULTS

S.No.	Parameters	Test Methods	Results	Units	Limits as per Consent
1	Particulate Matter (as PM)	IS: 11255 (P-1)	43.9	mg/Nm^3	50.0
2	Lead (as Pb)	USEPA (P-12)	4.18	mg/Nm^3	10.0

Notes :

1. The results given above are related to the tested sample, for various parameters, as observed at the time of Sampling. The customer asked for the above tests only.
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5. Responsibility of the Laboratory is limited to the invoiced amount only.

** End of Report **

For EKO PRO ENGINEERS PVT. LTD.
PURNIMA CHAUHAN
TECHNICAL MANAGER
(Authorised Signatory)

EKO PRO ENGINEERS PVT. LTD.
Environmental Consultants and Analytical Laboratory
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TEST REPORT

Stack Emission Analysis

Test Report No. : EKO/031/271222 **Issue Date : 31/12/2022**

Issued To : **HINDUSTAN ZINC LIMITED**
Dariba Smelter Complex
Post - Dariba, District - Rajpura Dariba Mines
Udaipur-Rajasthan

Sample Description	: Stack Emission
Sample Drawn on	: 23/12/2022
Sample Drawn by	: EPEPL (Mr. Umesh Kumar)
Sample Received on	: 27/12/2022
Time of Sampling (minutes)	: 30.0
Sampling Location	: NA
Sampling Plan & Procedure	: SOP-SE/09
Analysis Duration	: 27/12/2022 To 31/12/2022
Source of Emission	: Stack Attached To TGT Lead Plant**
Capacity	: –
Operating Load	: Normal
Normal Operation Schedule	: As per requirement
Type of Stack	: MS
Diameter of Stack (meter)	: 2.0
Height of Stack from Ground Level (meter)	: 100.0
Height of Stack from Roof Level (meter)	: –
Height of Sampling Location (meter)	: –
Type of Fuel Used	: –
Fuel Consumed per hour	: –
Ambient Temperature (°C)	: 18.0
Stack Temperature (°C)	: 74.0
Average Velocity of Fuel Emission (m/sec)	: 6.9
Average Flow Rate (lpm)	: 18.2
Control Measures (if any)	: Nil
Remark (if any)	: ** Attached to Blast Furnace, Acid Plant, CDT Input

RESULTS

S.No.	Parameters	Test Methods	Results	Units	Limits as per Consent
1	Sulphur Dioxide (as SO_2)	IS: 11255 (P-2)	239.8	mg/Nm^3	950.0
2	Acid Mist (as H2SO4)	USEPA Method 8	32.4	mg/Nm^3	50.0

Notes :

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5. Responsibility of the Laboratory is limited to the invoiced amount only.

**** End of Report ****

For EKO PRO ENGINEERS PVT. LTD.
PURSHOTTAM CHAUHAN
TECHNICAL MANAGER
(Authorised Signatory)

EKO PRO

Contact : +91 - 9810243870

EKO PRO ENGINEERS PVT. LTD.
Environmental Consultants and Analytical Laboratory
(An ISO 9001:2015 Certified Company)

TEST REPORT

Stack Emission Analysis

Test Report No. : EKO/030/271222

Issue Date : 31/12/2022

Issued To : **HINDUSTAN ZINC LIMITED**
Dariba Smelter Complex
Post - Dariba, District - Rajpura Dariba Mines
Udaipur-Rajasthan

Sample Description	: Stack Emission
Sample Drawn on	: 22/12/2022
Sample Drawn by	: EPEPL (Mr. Umesh Kumar)
Sample Received on	: 27/12/2022
Time of Sampling (minutes)	: 30.0
Sampling Location	: NA
Sampling Plan & Procedure	: SOP-SE/09
Analysis Duration	: 27/12/2022 To 31/12/2022
Source of Emission	: Stack Attached To Lead Primary Plant with Bag House (SKS Furnace)
Capacity	: --
Operating Load	: Normal
Normal Operation Schedule	: As per requirement
Type of Stack	: MS
Diameter of Stack (meter)	: 2.0
Height of Stack from Ground Level (meter)	: 75.0
Height of Stack from Roof Level (meter)	: --
Height of Sampling Location (meter)	: --
Type of Fuel Used	: --
Fuel Consumed per hour	: --
Ambient Temperature (°C)	: 18.0
Stack Temperature (°C)	: 65.0
Average Velocity of Fuel Emission (m/sec)	: 7.4
Average Flow Rate (lpm)	: 22.1
Control Measures (if any)	: Nil
Remark (if any)	: NA

RESULTS

S.No.	Parameters	Test Methods	Results	Units	Limits as per Consent
1	Particulate Matter (as PM)	IS: 11255 (P-1)	43.9	mg/Nm^3	50.0
2	Lead (as Pb)	USEPA (P-12)	4.18	mg/Nm^3	10.0

Notes :

1. The results given above are related to the tested sample, for various parameters, as observed at the time of Sampling. The customer asked for the above tests only.
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**** End of Report ****

For EKO PRO ENGINEERS PVT. LTD.
PURNIMA CHAUHAN
TECHNICAL MANAGER
(Authorised Signatory)

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Environmental Consultants and Analytical Laboratory

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TEST REPORT

Stack Emission Analysis

Test Report No. : EKO/029/271222 Issue Date : 31/12/2022

Issued To	:	**HINDUSTAN ZINC LIMITED** Dariba Smelter Complex Post - Dariba, District - Rajpura Dariba Mines Udaipur-Rajasthan
Sample Description	:	Stack Emission
Sample Drawn on	:	22/12/2022
Sample Drawn by	:	EPEPL (Mr. Umesh Kumar)
Sample Received on	:	27/12/2022
Time of Sampling (minutes)	:	30.0
Sampling Location	:	NA
Sampling Plan & Procedure	:	SOP-SE/09
Analysis Duration	:	27/12/2022 To 31/12/2022
Source of Emission	:	Stack Attached To Coal Crusher
Capacity	:	–
Operating Load	:	Normal
Normal Operation Schedule	:	As per requirement
Type of Stack	:	MS
Diameter of Stack (meter)	:	1.3
Height of Stack from Ground Level (meter)	:	–
Height of Stack from Roof Level (meter)	:	–
Height of Sampling Location (meter)	:	–
Type of Fuel Used	:	–
Fuel Consumed per hour	:	–
Ambient Temperature (°C)	:	18.0
Stack Temperature (°C)	:	86.0
Average Velocity of Fuel Emission (m/sec)	:	7.9
Average Flow Rate (lpm)	:	22.7
Control Measures (if any)	:	Nil
Remark (if any)	:	NA

RESULTS

S.No.	Parameters	Test Methods	Results	Units	Limits as per Consent
1	Particulate Matter (as PM)	IS: 11255 (P-1)	34.2	mg/Nm^3	50.0

Notes :

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** End of Report **

For EKO PRO ENGINEERS PVT. LTD.

PURNIMA CHAUHAN

TECHNICAL MANAGER

(Authorised Signatory)

EKO PRO

Contact : +91 - 9810243870

EKO PRO ENGINEERS PVT. LTD.

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Office & Laboratory : 32/41, South Side of G. T. Road, UPSIDC Industrial Area, Ghaziabad - 201 009 (Delhi-NCR) INDIA
Contact No. : 0120-4156210, 9810240832, 9810240878 Email : ekoproengineers@gmail.com, website : www.ekopro.in

TEST REPORT

Stack Emission Analysis

Test Report No. : EKO/038/271222 Issue Date : 31/12/2022

Issued To	:	HINDUSTAN ZINC LIMITED Dariba Smelter Complex Post - Dariba, District - Rajpura Dariba Mines Udaipur-Rajasthan
Sample Description	:	Stack Emission
Sample Drawn on	:	24/12/2022
Sample Drawn by	:	EPEPL (Mr. Umesh Kumar)
Sample Received on	:	27/12/2022
Time of Sampling (minutes)	:	30.0
Sampling Location	:	NA
Sampling Plan & Procedure	:	SOP-SE/09
Analysis Duration	:	27/12/2022 To 31/12/2022
Source of Emission	:	Stack Attached To Common Stack of CPP 2 x 85 MW**
Capacity	:	–
Operating Load	:	Normal
Normal Operation Schedule	:	As per requirement
Type of Stack	:	MS
Diameter of Stack (meter)	:	4.0
Height of Stack from Ground Level (meter)	:	165.0
Height of Stack from Roof Level (meter)	:	–
Height of Sampling Location (meter)	:	–
Type of Fuel Used	:	–
Fuel Consumed per hour	:	–
Ambient Temperature (°C)	:	18.0
Stack Temperature (°C)	:	130.0
Average Velocity of Fuel Emission (m/sec)	:	22.5
Average Flow Rate (lpm)	:	20.9
Control Measures (if any)	:	Nil
Remark (if any)	:	**(At Dust Opening Point) attached with ESP

RESULTS

S.No.	Parameters	Test Methods	Results	Units	Limits as per Consent
1	Particulate Matter (as PM)	IS: 11255 (P-1)	32.9	mg/Nm^3	50.0
2	Sulphur Dioxide (as SO_2)	IS: 11255 (P-2)	1290.7	mg/Nm^3	600.0
3	Oxide of Nitrogen (as Nox)	IS: 11255 (P-7)	210.5	mg/Nm^3	300.0
4	Hg and its Compounds	APHA Method 822	<0.005	mg/Nm^3	0.03

Notes :

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5. Responsibility of the Laboratory is limited to the invoiced amount only.

** End of Report **

For EKO PRO ENGINEERS PVT. LTD.
PURNIMA CHAUHAN
TECHNICAL MANAGER
(Authorised Signatory)

TEST REPORT

VIBRANT
"Experience the unimaginable"

TC-11227

Sample Number : VTL/S/08
Name & Address of the Party : M/s Hindustan Zinc Ltd.
Dariba Smelter Complex, Post- Dariba,District - Rajpura Dariba Udaipur Rajasthan

Report No. : VTL/S/2303270006/A
Format No : 7.8 F-03
Party Reference No : NIL
Report Date : 30/03/2023
Period of Analysis : 27/03/2023-30/03/2023
Receipt Date : 27/03/2023

Sample Description : Stack Emission Monitoring

General Information:-

Sampling Location	:	Zinc Dross
Sample Collected By	:	VTL Team
Date of Sampling	:	23/03/2023
Sampling duration (Minutes)	:	38 min. (10:00 to 10:38 hrs.)
Stack attached to	:	Bag Filter
Make of stack	:	Iron
Diameter of stack(m)	:	1.3 m
Height of stack(m)	:	30 m
Instrument calibration status	:	Calibrated
Meteorological Condition	:	Clear Sky
Ambient Temperature - Ta (°C)	:	24°C
Temperature of Stack Gases - Ts (°C)	:	25
Velocity of Stack Gases (m/sec.)	:	6.12
Flow rate of PM (LPM)	:	26
Flow rate of Gas (LPM)	:	--
Sampling condition	:	OK
Protocol used	:	IS 11255 & USEPA

S.No.	Parameters	Test Method	Results	Units	Limits
1	Particulate Matter (PM)	IS: 11255 (P-1) : 1985, RA 2019	27.30	mg/Nm3	50.0

*BLQ= Below Limit Of Quantification, **LOQ= Limit Of Quantification

End of Report

Checked by

RK Yadav
Lab Incharge
Authorized Signatory

Terms & conditions P1O

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VIBRANT
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TEST REPORT

TC-11227

Sample Number : VTL/S/07

Name & Address of the Party : M/s Hindustan Zinc Ltd.
Dariba Smelter Complex, Post- Dariba,District - Rajpura Dariba Udaipur Rajasthan

Report No. : VTL/S/2303270007/A
Format No : 7.8 F-03
Party Reference No : NIL
Report Date : 30/03/2023
Period of Analysis : 27/03/2023-30/03/2023
Receipt Date : 27/03/2023

Sample Description : Stack Emission Monitoring

General Information:-

Sampling Location	:	Zinc Dust Plant With Bag House
Sample Collected By	:	VTL Team
Date of Sampling	:	22/03/2023
Sampling duration (Minutes)	:	26 min. (15:30 to 15:56 hrs.)
Stack attached to	:	Bag Filter
Make of stack	:	Iron
Diameter of stack(m)	:	0.5 m
Height of stack(m)	:	30 m
Instrument calibration status	:	Calibrated
Meteorological Condition	:	Clear Sky
Ambient Temperature - Ta (°C)	:	28°C
Temperature of Stack Gases - Ts (°C)	:	67
Velocity of Stack Gases (m/sec.)	:	23.56
Flow rate of PM (LPM)	:	39
Flow rate of Gas (LPM)	:	--
Sampling condition	:	OK
Protocol used	:	IS 11255 & USEPA

S.No.	Parameters	Test Method	Results	Units	Limits
1	Particulate Matter (PM)	IS: 11255 (P-1) : 1985, RA 2019	36.92	mg/Nm3	50.0

*BLQ= Below Limit Of Quantification, **LOQ= Limit Of Quantification

End of Report

Checked by

VIBRANT TECHNO LAB PRIVATE LIMITED JAIPUR

AK Yadav
Lab Incharge
Authorized Signatory

Page No. 1/1

Term & conditions PTO

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TEST REPORT

TC-11227

Sample Number : VTL/S/08

Name & Address of the Party : M/s Hindustan Zinc Ltd.
Dariba Smelter Complex, Post- Dariba,District - Rajpura Dariba Udaipur Rajasthan

Report No. : VTL/S/2303270008/A
Format No : 7.8 F-03
Party Reference No : NIL
Report Date : 30/03/2023
Period of Analysis : 27/03/2023-30/03/2023
Receipt Date : 27/03/2023

Sample Description : Stack Emission Monitoring

General Information:-

Sampling Location	:	Zinc Smelter Roaster (R-5)
Sample Collected By	:	VTL Team
Date of Sampling	:	23/03/2023
Sampling duration (Minutes)	:	52 min. (10:30 to 11:22 hrs.)
Stack attached to	:	Bag Filter
Make of stack	:	Iron
Diameter of stack(m)	:	2.5 m
Height of stack(m)	:	100 m
Instrument calibration status	:	Calibrated
Meteorological Condition	:	Clear Sky
Ambient Temperature - Ta (°C)	:	24°C
Temperature of Stack Gases - Ts (°C)	:	79
Velocity of Stack Gases (m/sec.)	:	6.65
Flow rate of PM (LPM)	:	24
Flow rate of Gas (LPM)	:	--
Sampling condition	:	OK
Protocol used	:	IS 11255 & USEPA

S.No.	Parameters	Test Method	Results	Units	Limits
1	Sulphur Dioxide (SO2)	IS: 11255(P- 2): 1985, RA 2019	386.13	mg/Nm3	950.0
2	Acid Mist (H2SO4)	USEPA 8, 1983	33.30	mg/Nm3	50.0

*BLQ= Below Limit Of Quantification, **LOQ= Limit Of Quantification

End of Report

Checked by

VIBRANT TECHNO LAB PRIVATE LIMITED JAIPUR

RK Yadav
Lab Incharge
Authorized Signatory

Page No. 1/1

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TEST REPORT

TC-11227

Sample Number : VTL/S/11

Name & Address of the Party : M/s Hindustan Zinc Ltd.
Dariba Smelter Complex, Post- Dariba,District - Rajpura Dariba Udaipur Rajasthan

Report No. : VTL/S/2303270011/A
Format No : 7.8 F-03
Party Reference No : NIL
Report Date : 30/03/2023
Period of Analysis : 27/03/2023-30/03/2023
Receipt Date : 27/03/2023

Sample Description : Stack Emission Monitoring

General Information:-

Sampling Location	:	Zinc Smelter (R-4)
Sample Collected By	:	VTL Team
Date of Sampling	:	23/03/2023
Sampling duration (Minutes)	:	38 min. (14:00 to 14:38 hrs.)
Stack attached to	:	Bag Filter
Make of stack	:	Iron
Diameter of stack(m)	:	2.5 m
Height of stack(m)	:	100 m
Instrument calibration status	:	Calibrated
Meteorological Condition	:	Clear Sky
Ambient Temperature - Ta (°C)	:	30°C
Temperature of Stack Gases - Ts (°C)	:	75
Velocity of Stack Gases (m/sec.)	:	7.15
Flow rate of PM (LPM)	:	26
Flow rate of Gas (LPM)	:	--
Sampling condition	:	OK
Protocol used	:	IS 11255 & USEPA

S.No.	Parameters	Test Method	Results	Units	Limits
1	Sulphur Dioxide (SO2)	IS: 11255(P- 2): 1985, RA.2019	403.63	mg/Nm3	950.0
2	Acid Mist (H2SO4)	USEPA 8, 1983	35.66	mg/Nm3	50.0

*BLQ= Below Limit Of Quantification, **LOQ= Limit Of Quantification

End of Report

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RK Yadav
(In Incharge)
Authorized Signatory

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TEST REPORT

TC-11227

Sample Number : VTL/S/013

Name & Address of the Party : M/s Hindustan Zinc Ltd.
Dariba Smelter Complex, Post- Dariba,District - Rajpura Dariba Udaipur Rajasthan

Report No. : VTL/S/2303270013/A
Format No : 7.8 F-03
Party Reference No : NIL
Report Date : 30/03/2023
Period of Analysis : 27/03/2023-30/03/2023
Receipt Date : 27/03/2023

Sample Description : Stack Emission Monitoring

General Information:-

Sampling Location	:	Lead Primary Plant With Bag House (SKS Furnace)
Sample Collected By	:	VTL Team
Date of Sampling	:	25/03/2023
Sampling duration (Minutes)	:	39 min. (11:00 to 11:39 hrs.)
Stack attached to	:	Bag House
Make of stack	:	Iron
Diameter of stack(m)	:	2.0 m
Height of stack(m)	:	75 m
Instrument calibration status	:	Calibrated
Meteorological Condition	:	Clear Sky
Ambient Temperature - Ta (°C)	:	28°C
Temperature of Stack Gases - Ts (°C)	:	63
Velocity of Stack Gases (m/sec.)	:	6.77
Flow rate of PM (LPM)	:	26
Flow rate of Gas (LPM)	:	–
Sampling condition	:	OK
Protocol used	:	IS 11255 & USEPA

S.No.	Parameters	Test Method	Results	Units	Limits
1	Particulate Matter (PM)	IS: 11255 (P-1) : 1985, RA 2019	30.06	mg/Nm3	50.0
2	Lead (Pb)	USEPA-29:2017	3.21	mg/Nm3	10.0

*BLQ= Below Limit Of Quantification, **LOQ= Limit Of Quantification

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TC-11227

Sample Number : VTL/S/01

Name & Address of the Party : M/s Hindustan Zinc Ltd.
Dariba Smelter Complex, Post- Dariba,District - Rajpura Dariba Udaipur Rajasthan

Report No. : VTL/S/2303270001/A
Format No : 7.6 F-03
Party Reference No : NIL
Report Date : 30/03/2023
Period of Analysis : 27/03/2023-30/03/2023
Receipt Date : 27/03/2023

Sample Description : Stack Emission Monitoring

General Information:-

Sampling Location	:	Lead Electro Refinery (Pyro) South Side
Sample Collected By	:	VTL Team
Date of Sampling	:	25/03/2023
Sampling duration (Minutes)	:	38 min. (10:25 to 11:03 hrs.)
Stack attached to	:	Bag Filter
Make of stack	:	Iron
Diameter of stack(m)	:	2 m
Height of stack(m)	:	40 m
Instrument calibration status	:	Calibrated
Meteorological Condition	:	Clear Sky
Ambient Temperature - Ta (°C)	:	25°C
Temperature of Stack Gases - Ts (°C)	:	125
Velocity of Stack Gases (m/sec.)	:	7.94
Flow rate of PM (LPM)	:	26
Flow rate of Gas (LPM)	:	--
Sampling condition	:	OK
Protocol used	:	IS 11255 & USEPA

S.No.	Parameters	Test Method	Results	Units	Limits
1	Particulate Matter (PM)	IS: 11255 (P-1) : 1985, RA 2019	33.48	mg/Nm3	50.0
2	Lead (Pb)	USEPA-29:2017	3.70	mg/Nm3	10.0

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TC-11227

Sample Number : VTL/S/02

Name & Address of the Party : M/s Hindustan Zinc Ltd.
Dariba Smelter Complex, Post- Dariba District - Rajpura Dariba Udaipur Rajasthan

Report No. : VTL/S/2303270002/A
Format No : 7.8 F-03
Party Reference No : NIL
Report Date : 30/03/2023
Period of Analysis : 27/03/2023-30/03/2023
Receipt Date : 27/03/2023

Sample Description : Stack Emission Monitoring

General Information:-

Sampling Location	:	Lead Electro Refinery (Pyro) North Side
Sample Collected By	:	VTL Team
Date of Sampling	:	25/03/2023
Sampling duration (Minutes)	:	40 min. (12:00 to 12:40 hrs.)
Stack attached to	:	Bag Filter
Make of stack	:	Iron
Diameter of stack(m)	:	2 m
Height of stack(m)	:	40 m
Instrument calibration status	:	Calibrated
Meteorological Condition	:	Clear Sky
Ambient Temperature - Ta (°C)	:	27°C
Temperature of Stack Gases - Ts (°C)	:	115
Velocity of Stack Gases (m/sec.)	:	7.61
Flow rate of PM (LPM)	:	25
Flow rate of Gas (LPM)	:	--
Sampling condition	:	OK
Protocol used	:	IS 11255 & USEPA

S.No.	Parameters	Test Method	Results	Units	Limits
1	Particulate Matter (PM)	IS: 11255 (P-1) : 1985, RA 2019	27.56	mg/Nm3	50.0
2	Lead (Pb)	USEPA-29:2017	2.52	mg/Nm3	10.0

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TC-11227

Sample Number : VTL/S/04

Name & Address of the Party : M/s Hindustan Zinc Ltd.
Dariba Smelter Complex, Post- Dariba,District - Rajpura Dariba Udaipur Rajasthan

Report No. : VTL/S/2303270004/A
Format No : 7.8 F-03
Party Reference No : NIL
Report Date : 30/03/2023
Period of Analysis : 27/03/2023-30/03/2023
Receipt Date : 27/03/2023

Sample Description : Stack Emission Monitoring

General Information:-

Sampling Location	:	TGT Lead Plant
Sample Collected By	:	VTL Team
Date of Sampling	:	24/03/2023
Sampling duration (Minutes)	:	27 min. (10:40 to 11:07 hrs.)
Stack attached to	:	Blast Furnace, Acid Plant & CDT Input
Make of stack	:	Iron
Diameter of stack(m)	:	2.0 m
Height of stack(m)	:	100 m
Instrument calibration status	:	Calibrated
Meteorological Condition	:	Clear Sky
Ambient Temperature - Ta (°C)	:	26°C
Temperature of Stack Gases - Ts (°C)	:	46
Velocity of Stack Gases (m/sec.)	:	20.82
Flow rate of PM (LPM)	:	37
Flow rate of Gas (LPM)	:	2.0
Sampling condition	:	OK
Protocol used	:	IS 11255 & USEPA

S.No.	Parameters	Test Method	Results	Units	Limits
1	Sulphur Dioxide (SO2)	IS: 11255(P- 2): 1985, RA.2019	240.60	mg/Nm3	950.0
2	Acid Mist (H2SO4)	USEPA 8, 1983	35.29	mg/Nm3	50.0

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TEST REPORT

TC-11227

Sample Number : VTL/S/05

Name & Address of the Party : M/s Hindustan Zinc Ltd
Dariba Smelter Complex, Post- Dariba,District - Rajpura Dariba Udaipur Rajasthan

Report No. : VTL/S/2303270005/A
Format No : 7.8 F-03
Party Reference No : NIL
Report Date : 30/03/2023
Period of Analysis : 27/03/2023-30/03/2023
Receipt Date : 27/03/2023

Sample Description : Stack Emission Monitoring

General Information:-

Sampling Location	: Led Secondary Plant With Bag House (Blast Furnace)
Sample Collected By	: VTL Team
Date of Sampling	: 24/03/2023
Sampling duration (Minutes)	: 31 min. (12:30 to 13:01 hrs.)
Stack attached to	: Bag Filter
Make of stack	: Iron
Diameter of stack(m)	: 2.2 m
Height of stack(m)	: 75 m
Instrument calibration status	: Calibrated
Meteorological Condition	: Clear Sky
Ambient Temperature - Ta (°C)	: 25°C
Temperature of Stack Gases - Ts (°C)	: 58
Velocity of Stack Gases (m/sec.)	: 8.29
Flow rate of PM (LPM)	: 32
Flow rate of Gas (LPM)	: --
Sampling condition	: OK
Protocol used	: IS 11255 & USEPA

S.No.	Parameters	Test Method	Results	Units	Limits
1	Particulate Matter (PM)	IS: 11255 (P-1) : 1985, RA 2019	36.11	mg/Nm3	50.0
2	Lead (Pb)	USEPA-29:2017	3.82	mg/Nm3	10.0

*BLQ= Below Limit Of Quantification, **LOQ= Limit Of Quantification

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Lab Incharge
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TC-11227

Sample Number : VTL/S/09

Name & Address of the Party : M/s Hindustan Zinc Ltd.
Dariba Smelter Complex, Post- Dariba,District - Rajpura Dariba Udaipur Rajasthan

Report No. : VTL/S/2303270009/A
Format No : 7.8 F-03
Party Reference No : NIL
Report Date : 30/03/2023
Period of Analysis : 27/03/2023-30/03/2023
Receipt Date : 27/03/2023

Sample Description : Stack Emission Monitoring

General Information:-

Sampling Location	:	Lead Electro Refinery lead Plant (M&C) North Side
Sample Collected By	:	VTL Team
Date of Sampling	:	25/03/2023
Sampling duration (Minutes)	:	44 min. (13:00 to 13:44 hrs.)
Stack attached to	:	Bag Filter
Make of stack	:	Iron
Diameter of stack(m)	:	2 m
Height of stack(m)	:	40 m
Instrument calibration status	:	Calibrated
Meteorological Condition	:	Clear Sky
Ambient Temperature - Ta (°C)	:	30°C
Temperature of Stack Gases - Ts (°C)	:	139
Velocity of Stack Gases (m/sec.)	:	7.37
Flow rate of PM (LPM)	:	23
Flow rate of Gas (LPM)	:	--
Sampling condition	:	OK
Protocol used	:	IS 11255 & USEPA

S.No.	Parameters	Test Method	Results	Units	Limits
1	Particulate Matter (PM)	IS: 11255 (P-1) : 1985, RA 2019	32.19	mg/Nm3	50.0
2	Lead (Pb)	USEPA-29:2017	3.63	mg/Nm3	10.0

*BLQ= Below Limit Of Quantification, **LOQ= Limit Of Quantification

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TC-11227

Sample Number : VTL/S/10

Name & Address of the Party : M/s Hindustan Zinc Ltd.
Dariba Smelter Complex, Post- Dariba,District - Rajpura Dariba Udaipur Rajasthan

Report No. : VTL/S/2303270010/A
Format No : 7.8 F-03
Party Reference No : NIL
Report Date : 30/03/2023
Period of Analysis : 27/03/2023-30/03/2023
Receipt Date : 27/03/2023

Sample Description : Stack Emission Monitoring

General Information:-

Sampling Location	:	Lead Electro Refinery lead Plant (M&C)
Sample Collected By	:	VTL Team
Date of Sampling	:	25/03/2023
Sampling duration (Minutes)	:	43 min. (16:00 to 16.43 hrs.)
Stack attached to	:	Bag Filter
Make of stack	:	Iron
Diameter of stack(m)	:	2 m
Height of stack(m)	:	40 m
Instrument calibration status	:	Calibrated
Meteorological Condition	:	Clear Sky
Ambient Temperature - Ta (°C)	:	27°C
Temperature of Stack Gases - Ts (°C)	:	115
Velocity of Stack Gases (m/sec.)	:	7.15
Flow rate of PM (LPM)	:	23
Flow rate of Gas (LPM)	:	--
Sampling condition	:	OK
Protocol used	:	IS 11255 & USEPA

S.No.	Parameters	Test Method	Results	Units	Limits
1	Particulate Matter (PM)	IS: 11255 (P-1) : 1985, RA 2019	44.49	mg/Nm3	50.0
2	Lead (Pb)	USEPA-29 2017	3.41	mg/Nm3	10.0

*BLQ= Below Limit Of Quantification, **LOQ= Limit Of Quantification

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TC-11227

Sample Number : VTL/S/03

Name & Address of the Party : M/s Hindustan Zinc Ltd.
Dariba Smelter Complex, Post- Dariba,District - Rajpura Dariba Udaipur Rajasthan

Report No. : VTL/S/2303270003/A
Format No : 7.8 F-03
Party Reference No : NIL
Report Date : 30/03/2023
Period of Analysis : 27/03/2023-30/03/2023
Receipt Date : 27/03/2023

Sample Description : Stack Emission Monitoring

General Information:-

Sampling Location	:	Coal Crusher
Sample Collected By	:	VTL Team
Date of Sampling	:	25/03/2023
Sampling duration (Minutes)	:	26 min. (16:10 to 16:36 hrs.)
Stack attached to	:	Bag Filter
Make of stack	:	Iron
Diameter of stack(m)	:	1.3 m
Height of stack(m)	:	30 m
Instrument calibration status	:	Calibrated
Meteorological Condition	:	Clear Sky
Ambient Temperature - Ta (°C)	:	29°C
Temperature of Stack Gases - Ts (°C)	:	37
Velocity of Stack Gases (m/sec.)	:	9.50
Flow rate of PM (LPM)	:	39
Flow rate of Gas (LPM)	:	--
Sampling condition	:	OK
Protocol used	:	IS 11255 & USEPA

S.No.	Parameters	Test Method	Results	Units	Limits
1	Particulate Matter (PM)	IS: 11255 (P-1) : 1985, RA 2019	38.67	mg/Nm3	50.0

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TEST REPORT

TC-11227

Sample Number : VTL/S/12

Name & Address of the Party : M/s Hindustan Zinc Ltd.
Dariba Smelter Complex, Post- Dariba,District - Rajpura Dariba Udaipur Rajasthan

Report No. : VTL/S/2303270012/A
Format No : 7.8 F-03
Party Reference No : NIL
Report Date : 30/03/2023
Period of Analysis : 27/03/2023-30/03/2023
Receipt Date : 27/03/2023

Sample Description : Stack Emission Monitoring

General Information:-

Sampling Location	: CPP 2X85 MW
Sample Collected By	: VTL Team
Date of Sampling	: 24/03/2023
Sampling duration (Minutes)	: 18 min. (15:30 to 15:48 hrs.)
Stack attached to	: ESP
Make of stack	: Iron
Diameter of stack(m)	: 4.0 m
Height of stack(m)	: 165 m
Instrument calibration status	: Calibrated
Meteorological Condition	: Clear Sky
Ambient Temperature - Ta (°C)	: 32°C
Temperature of Stack Gases - Ts (°C)	: 120
Velocity of Stack Gases (m/sec.)	: 17.06
Flow rate of PM (LPM)	: 55
Flow rate of Gas (LPM)	: 2.0
Sampling condition	: OK
Protocol used	: IS 11255 & USEPA

S.No.	Parameters	Test Method	Results	Units	Limits
1	Particulate Matter (PM)	IS: 11255 (P-1) : 1985, RA 2019	33.14	mg/Nm3	50
2	Sulphur Dioxide (SO2)	IS: 11255(P- 2): 1985, RA 2019	1083.0	mg/Nm3	600
3	Oxide of Nitrogen (NO2)	IS-11255 (P-7), RA 2017	395.5	mg/Nm3	300
4	Mercury (Hg)	USEPA 29: 1996	0.021	mg/Nm3	0.03

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Annexure II

HINDUSTAN ZINC LIMITED

RAJPURA DARIBA MINE

Average Ambient Air Quality Monitoring Results

Oct – 22

Name of Monitoring Station	PM 10 (µg/m3)	PM 2.5 (µg/m3)	NO2 (µg/m3)	SO2 (µg/m3)	CO (µg/m3)
Near Laboratory	72.79	29.60	11.25	3.83	370
Near DG Set	66.92	29.50	12.20	3.37	370
Near AB - Type Quarter	64.36	27.06	13.48	3.21	350

Nov - 22

Name of Monitoring Station	PM 10 (µg/m3)	PM 2.5 (µg/m3)	NO2 (µg/m3)	SO2 (µg/m3)	CO (µg/m3)
Near Laboratory	74.02	36.92	14.24	5.46	290
Near DG Set	79.01	40.44	13.32	3.43	350
Near AB - Type Quarter	70.14	34.11	12.45	4.09	310

Dec - 22

Name of Monitoring Station	PM 10 (µg/m3)	PM 2.5 (µg/m3)	NO2 (µg/m3)	SO2 (µg/m3)	CO (µg/m3)
Near Laboratory	67.13	29.14	12.52	5.59	390
Near DG Set	73.88	32.22	12.34	5.51	410
Near AB - Type Quarter	69.98	34.57	12.77	5.17	340

Jan - 23

Name of Monitoring Station	PM 10 (µg/m3)	PM 2.5 (µg/m3)	NO2 (µg/m3)	SO2 (µg/m3)	CO (µg/m3)
Near Laboratory	74.25	34.18	14.16	4.51	340
Near DG Set	68.15	29.53	14.90	5.08	380
Near AB - Type Quarter	65.66	30.86	13.82	6.28	310

Feb - 23

Name of Monitoring Station	PM 10 (µg/m3)	PM 2.5 (µg/m3)	NO2 (µg/m3)	SO2 (µg/m3)	CO (µg/m3)
Near Laboratory	81.53	42.65	12.53	3.96	380
Near DG Set	73.05	31.86	12.47	4.04	360
Near AB - Type Quarter	80.61	37.48	14.34	6.55	340

Mar - 23

Name of Monitoring Station	PM 10 (µg/m3)	PM 2.5 (µg/m3)	NO2 (µg/m3)	SO2 (µg/m3)	CO (µg/m3)
Near Laboratory	83.10	35.02	12.67	6.26	330
Near DG Set	80.26	31.84	12.54	3.87	320
Near AB - Type Quarter	76.40	35.20	12.87	6.60	290

(Apurv Gautam)
Team Member - Environment
Rajpura Dariba Mines

EKO PRO ENGINEERS PVT. LTD.
Environmental Consultants and Analytical Laboratory
(An ISO 9001:2015 Certified Company)

TEST REPORT

Ambient Air Quality Monitoring

Test Report No. : EKO/040/27/1222 Issue Date : 31/12/2022

Issued To : HINDUSTAN ZINC LIMITED
Dariba Smelter Complex
Post - Dariba, District - Rajpura Dariba Mines
Udaipur-Rajasthan

Sample Description	:	Ambient Air
Sample Drawn on	:	22/12/2022 To 23/12/2022
Sample Drawn by	:	EPEPL (Mr. Umesh Kumar)
Sample Received on	:	27/12/2022
Sampling Location	:	Near Storm Water Pond (North West)
Sampling Time	:	24.0 Hrs.
Sampling Plan & Procedure	:	SOP-AAQ/15
Analysis Duration	:	27/12/2022 To 31/12/2022
Ambient Temperature (°C)	:	17.0
Average Flow Rate of SPM (m^3/min.)	:	1.15
Average Flow Rate of Gases (lpm)	:	1.0
Weather Conditions	:	Clear
Remark (if any)	:	NA

RESULTS

S. No.	Parameters	Test Methods	Results	Units	Limits as per CPCB Notification, 18th Nov 2009
1	Particulate Matter (PM10)	IS: 5182 (P-23)	80.4	$\mu g/m^3$	100.0
2	Particulate Matter (PM2.5)	EKO/CHEM/SOP/AAQ-01	49.6	$\mu g/m^3$	60.0
3	Sulphur Dioxide (as SO_2)	IS: 5182 (P-2)	25.2	$\mu g/m^3$	80.0
4	Nitrogen Dioxide (as NO_2)	IS: 5182 (P-6)	45.9	$\mu g/m^3$	80.0
5	Carbon Monoxide (as CO)	IS: 5182 (P-10)	1.17	mg/m^3	4.0
6	Lead (as Pb)	IS: 5182 (P-22)	<0.1	$\mu g/m^3$	1.0
7	Nickel (as Ni)	EKO/CHEM/SOP/AAQ-02	<15.0	ng/m^3	20.0
8	Arsenic (as As)	EKO/CHEM/SOP/AAQ-02	<5.0	ng/m^3	6.0
9	Ozone (as O_3)	IS: 5182 (P-9)	<10.0	$\mu g/m^3$	180.0
10	Ammonia (as NH_3)	APHA Method 401	<20.0	$\mu g/m^3$	400.0
11	Benzene (as C_6H_6)	IS: 5182 (P-11)	<1.0	$\mu g/m^3$	5.0
12	Benzo(alpha) Pyrine-Particulate Phase Only	IS: 5182 (P-12)	<1.0	ng/m^3	1.0

Notes :

1. The results given above are related to the tested sample, for various parameters, as observed at the time of at the time of Sampling. The customer asked for the above tests only.
2. This test report will not be generated again, either wholly or in part, without prior written permission of the Laboratory.
3. The test report will not be used for any publicity/legal purpose.
4. The test samples will be disposed off after 15 days from the date of issue of test report, unless until specified by the customer. Sample received for biological tests will be destroyed after 7 days from the date of issue of test report.
5. Responsibility of the Laboratory is limited to the invoiced amount only.

**** End of Report ****

For EKO PRO ENGINEERS PVT. LTD.
PURNIMA CHAUHAN
TECHNICAL MANAGER
(Authorised Signatory)

Contact : +91 - 9810240670

EKO PRO ENGINEERS PVT. LTD.
Environmental Consultants and Analytical Laboratory
(An ISO 9001:2015 Certified Company)

Office & Laboratory : 324/1, South Side of G. T. Road, UPSIDC Industrial Area, Ghaziabad - 201 009 (Delhi-NCR) INDIA
Contact No.: 9711169210, 9810240637, 9810240670 E-mail : email@ekopro.in, ekoproengineers@gmail.com, website : www.ekopro.in

TEST REPORT

Ambient Air Quality Monitoring

Test Report No. : EKO/041/271222 Issue Date : 31/12/2022

Issued To : HINDUSTAN ZINC LIMITED
Dariba Smelter Complex
Post - Dariba, District - Rajpura Dariba Mines
Udaipur-(Rajasthan)

Sample Description	:	Ambient Air
Sample Drawn on	:	22/12/2022 To 23/12/2022
Sample Drawn by	:	EPEPL (Mr.Umesh kumar)
Sample Received on	:	27/12/2022
Sampling Location	:	Near Main Gate (South)
Sampling Time	:	24.0 Hrs.
Sampling Plan & Procedure	:	SOP-AAQ/15
Analysis Duration	:	27/12/2022 To 31/12/2022
Ambient Temperature (°C)	:	17.0
Average Flow Rate of SPM (m^3/min.)	:	1.12
Average Flow Rate of Gases (lpm)	:	1.0
Weather Conditions	:	Clear
Remark (if any)	:	NA

RESULTS

S. No.	Parameters	Test Methods	Results	Units	Limits as per CPCB Notification, 18th Nov 2009
1	Particulate Matter (PM10)	IS: 5182 (P-23)	72.9	$\mu g/m^3$	100.0
2	Particulate Matter (PM2.5)	EK0/CHEM/SOP/AAQ-01	42.8	$\mu g/m^3$	60.0
3	Sulphur Dioxide (as SO_2)	IS: 5182 (P-2)	26.9	$\mu g/m^3$	80.0
4	Nitrogen Dioxide (as NO_2)	IS: 5182 (P-6)	32.5	$\mu g/m^3$	80.0
5	Carbon Monoxide (as CO)	IS: 5182 (P-10)	1.16	mg/m^3	4.0
6	Lead (as Pb)	IS: 5182 (P-22)	<0.1	$\mu g/m^3$	1.0
7	Nickel (as Ni)	EK0/CHEM/SOP/AAQ-02	<15.0	ng/m^3	20.0
8	Arsenic (as As)	EK0/CHEM/SOP/AAQ-02	<5.0	ng/m^3	6.0
9	Ozone (as O_3)	IS: 5182 (P-9)	<10.0	$\mu g/m^3$	180.0
10	Ammonia (as NH_3)	APHA Method 401	<20.0	$\mu g/m^3$	400.0
11	Benzene (as C_6H_6)	IS: 5182 (P-11)	<1.0	$\mu g/m^3$	5.0
12	Benzo(alpha) Pyrine-Particulate Phase Only	IS: 5182 (P-12)	<1.0	ng/m^3	1.0

Notes :

1. The results given above are related to the tested sample, for various parameters, as observed at the time of at the time of Sampling. The customer asked for the above tests only.
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5. Responsibility of the Laboratory is limited to the invoiced amount only.

**** End of Report ****

For EKO PRO ENGINEERS PVT. LTD.
PURNIMA CHAUHAN
TECHNICAL MANAGER
(Authorised Signatory)

Contact : +91 - 9810243870

EKO PRO ENGINEERS PVT. LTD.
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Contact No.: 9711159216, 9810240987, 9810249678 E-mail : ekopro@ekopro.in; ekoproengineers@gmail.com; website: www.ekopro.in

TEST REPORT

Ambient Air Quality Monitoring

Test Report No. : EKO/042/271222 Issue Date : 31/12/2022

Issued To : HINDUSTAN ZINC LIMITED
Dariba Smelter Complex
Post - Dariba, District - Rajpura Dariba Mines
Udaipur (Rajasthan)

Sample Description	: Ambient Air
Sample Drawn on	: 23/12/2022 To 24/12/2022
Sample Drawn by	: EPEPL (Mr. Umesh Kumar)
Sample Received on	: 27/12/2022
Sampling Location	: Near SLF Area
Sampling Time	: 24.0 Hrs.
Sampling Plan & Procedure	: SOP-AAQ/15
Analysis Duration	: 27/12/2022 To 31/12/2022
Ambient Temperature (°C)	: 17.0
Average Flow Rate of SPM (m^3/min.)	: 1.14
Average Flow Rate of Gases (lpm)	: 1.0
Weather Conditions	: Clear
Remark (if any)	: NA

RESULTS

S. No.	Parameters	Test Methods	Results	Units	Limits as per CPCB Notification, 18th Nov 2009
1	Particulate Matter (PM10)	IS: 5182 (P-23)	89.1	µg/m^3	100.0
2	Particulate Matter (PM2.5)	EKO/CHEM/SOP/AAQ-01	52.8	µg/m^3	60.0
3	Sulphur Dioxide (as SO_2)	IS: 5182 (P-2)	22.4	µg/m^3	80.0
4	Nitrogen Dioxide (as NO_2)	IS: 5182 (P-6)	36.9	µg/m^3	80.0
5	Carbon Monoxide (as CO)	IS: 5182 (P-10)	1.24	mg/m^3	4.0
6	Lead (as Pb)	IS: 5182 (P-22)	<0.1	µg/m^3	1.0
7	Nickel (as Ni)	EKO/CHEM/SOP/AAQ-02	<15.0	ng/m^3	20.0
8	Arsenic (as As)	EKO/CHEM/SOP/AAQ-02	<5.0	ng/m^3	6.0
9	Ozone (as O_3)	IS: 5182 (P-9)	<10.0	µg/m^3	180.0
10	Ammonia (as NH_3)	APHA Method 401	<20.0	µg/m^3	400.0
11	Benzene (as C_6H_6)	IS: 5182 (P-11)	<1.0	µg/m^3	5.0
12	Benzo(alpha) Pyrine-Particulate Phase Only	IS: 5182 (P-12)	<1.0	ng/m^3	1.0

Notes :

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** End of Report **

For EKO PRO ENGINEERS PVT. LTD.
PURNIMA CHAUHAN
TECHNICAL MANAGER
(Authorised Signatory)

EKO PRO

Contact : +91 - 9810243670

EKO PRO ENGINEERS PVT. LTD.

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Contact No.: 9711159210, 9810240837, 9810240670 E-mail : emails@ekopro.in, ekoproengineers@gmail.com, website : www.ekopro.in

TEST REPORT

Ambient Air Quality Monitoring

Test **Report No.** : EKO/043/271222 Issue Date : 31/12/2022

Issued To : HINDUSTAN ZINC LIMITED
Dariba Smelter Complex
Post - Dariba, District - Rajpura dariba Mines
Udaipur (Rajasthan)

Sample Description	: Ambient Air
Sample Drawn on	: 23/12/2022 To 24/12/2022
Sample Drawn by	: EPEPL (Mr.Umesh Kumar)
Sample Received on	: 27/12/2022
Sampling Location	: Near CPP Area (North East)
Sampling Time	: 24.0 Hrs.
Sampling Plan & Procedure	: SOP-AAQ/15
Analysis Duration	: 27/12/2022 To 31/12/2022
Ambient Temperature (°C)	: 17.0
Average Flow Rate of SPM (m^3/min.)	: 1.15
Average Flow Rate of Gases (lpm)	: 1.0
Weather Conditions	: Clear
Remark (if any)	: NA

RESULTS

S. No.	Parameters	Test Methods	Results	Units	Limits as per CPCB Notification, 18th Nov 2009
1	Particulate Matter (PM10)	IS: 5182 (P-23)	81.6	$\mu g/m^3$	100.0
2	Particulate Matter (PM2.5)	EKO/CHEM/SOP/AAQ-01	50.9	$\mu g/m^3$	60.0
3	Sulphur Dioxide (as SO_2)	IS: 5182 (P-2)	20.5	$\mu g/m^3$	80.0
4	Nitrogen Dioxide (as NO_2)	IS: 5182 (P-6)	35.9	$\mu g/m^3$	80.0
5	Carbon Monoxide (as CO)	IS: 5182 (P-10)	1.24	mg/m^3	4.0
6	Lead (as Pb)	IS: 5182 (P-22)	<0.1	$\mu g/m^3$	1.0
7	Nickel (as Ni)	EKO/CHEM/SOP/AAQ-02	<15.0	ng/m^3	20.0
8	Arsenic (as As)	EKO/CHEM/SOP/AAQ-02	<5.0	ng/m^3	6.0
9	Ozone (as O_3)	IS: 5182 (P-9)	<10.0	$\mu g/m^3$	180.0
10	Ammonia (as NH_3)	APHA Method 401	<20.0	$\mu g/m^3$	400.0
11	Benzene (as C_6H_6)	IS: 5182 (P-11)	<1.0	$\mu g/m^3$	5.0
12	Benzo(alpha) Pyrine-Particulate Phase Only	IS: 5182 (P-12)	<1.0	ng/m^3	1.0

Notes :

1. The results given above are related to the tested sample, for various parameters, as observed at the time of at the time of Sampling. The customer asked for the above tests only.
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**** End of Report ****

For EKO PRO ENGINEERS PVT. LTD.
PURNIMA CHAUHAN
TECHNICAL MANAGER
(Authorised Signatory)

VIBRANT
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TEST REPORT

TC-11227

Sample Number : VTL/AA/01

M/s Hindustan Zinc Ltd.
Dariba Smelter Complex, Post- Dariba,District - Rajpura Dariba Udaipur Rajasthan

Name & Address of the Party :

Report No. : VTL/A/2303270001/A
Format No : 7.8 F-02
Party Reference No : NIL
Report Date : 30/03/2023
Period of Analysis : 27/03/2023-30/03/2023
Receipt Date : 27/03/2023

Sample Description : AMBIENT AIR QUALITY MONITORING

General Information:-

Sampling Location	:	Near Storm Water Pond (North - West)
Sample Collected By	:	VTL Team
Sampling Equipment used	:	RDS/FPS
Instrument Code	:	VTL/RDS/FPS/01
Coordinates	:	--
Meteorological condition during monitoring	:	Clear Sky
Date of Monitoring	:	22/03/2023 To 23/03/2023
Time of Monitoring	:	15:00 to 15:00 Hrs.
Ambient Temperature (°C)	:	Min:18° Max 31°
Surrounding Activity	:	Human, Vehicular & Plant Act.
Scope of Monitoring	:	Regulatory Requirment
Method of Sampling	:	IS :5182
Sampling Duration	:	24 Hrs.
Parameter Required	:	As per work order

S.No.	Parameters	Test Method	Results	Units	NAAQS 2009
1	Particulate Matter (as PM10)	IS:5182 (P- 23)-2006, RA. 2017	77.27	µg/m³	100
2	Particulate Matter (as PM2.5)	IS:5182 (P- 24)-2019	30.77	µg/m³	60
3	Nitrogen Dioxide (as NO2)	IS:5182 (P- 6)-2006, RA.2018	17.13	µg/m³	80
4	Sulphur Dioxide (as SO2)	IS:5182 (P- 2)-2001, RA. 2018	8.36	µg/m³	80
5	Lead (as Pb)	IS 5182 (P-22) : 2004, RA.2019	0.11	µg/m³	1
6	Arsenic (as As)	Methods of air sampling and analysis,3rd ed.,1988, Method No.302	*BLQ (**LOQ 0.15)	ng/m³	6
7	Nickel (as Ni)	USEPA compendium IO-3.2,1999	*BLQ (**LOQ 5.0)	ng/m³	20
8	Ammonia (as NH3)	Methods of air sampling and analysis,3rd ed.,1988, Method No. 401	13.19	µg/m³	400
9	Benzene (as C6H6)	IS 5182 (P-11)-2006, RA.2017	*BLQ (**LOQ 1.0)	µg/m³	5
10	Benzo (alpha) Pyrene-Particulate Phase Only	IS.5182 (P-12):2004, RA.2019	*BLQ (**LOQ 0.2)	ng/m³	1

Checked by

VIBRANT TECHNO LAB PRIVATE LIMITED JAIPUR

R K Yadav
Lab Incharge
Authorized Signatory

Term & conditions PTO

Approved & Certified EPA 1986 Recognized, ISO:9001 and OHSAS:45001 Certified

Vibrant Techno Lab Pvt. Ltd.
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www.vibranttechnolab.com

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TEST REPORT

TC-11227

Sample Number : VTL/AA/01

Report No. : VTL/A/2303270001/A

S.No.	Parameters	Test Method	Results	Units	NAAQS 2009
11	Ozone (as O3)	IS 5182 (P-9):1974, RA.2019	9.3	µg/m³	180

*BLQ-Below Limit Of Quantification, **LOQ-Limit Of Quantification

End of Report

Checked by

VIBRANT TECHNO LAB PRIVATE LIMITED JAIPUR

RK Yadav
Lab Incharge
Authorized Signatory

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TEST REPORT

Sample Number : VTL/AA/01

Name & Address of the Party : M/s Hindustan Zinc Ltd.
Dariba Smelter Complex, Post- Dariba,District - Rajpura Dariba Udaipur Rajasthan

Report No. : VTL/A/2303270001/B
Format No : 7.8 F-02
Party Reference No : NIL
Report Date : 30/03/2023
Period of Analysis : 27/03/2023-30/03/2023
Receipt Date : 27/03/2023

Sample Description : AMBIENT AIR QUALITY MONITORING

General Information:-

Sampling Location	:	Near Storm Water Pond (North - West)
Sample Collected By	:	VTL Team
Sampling Equipment used	:	RDS/FPS
Instrument Code	:	VTL/RDS/FPS/01
Coordinates	:	--
Meteorological condition during monitoring	:	Clear Sky
Date of Monitoring	:	22/03/2023 To 23/03/2023
Time of Monitoring	:	15:00 to 15:00 Hrs.
Ambient Temperature (°C)	:	Min.18° Max 31°
Surrounding Activity	:	Human, Vehicular & Plant Act.
Scope of Monitoring	:	Regulatory Requirment
Method of Sampling	:	IS :5182
Sampling Duration	:	24 Hrs.
Parameter Required	:	As per work order

S.No.	Parameters	Test Method	Results	Units	NAAQS 2009
1	Carbon Monoxide (as CO)	Lab SOP no. VTL/STP/02.2022, STP-08	0.63	mg/m³	4

*BLQ-Below Limit Of Quantification, **LOQ-Limit Of Quantification

End of Report

Checked by

VIBRANT TECHNO LAB PRIVATE LIMITED JAIPUR

R.K Yadav
Lab Incharge
Authorized Signatory

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TEST REPORT

TC-11227

Sample Number : VTL/AA/02

M/s Hindustan Zinc Ltd.
Dariba Smelter Complex, Post- Dariba,District - Rajpura Dariba Udaipur Rajasthan

Name & Address of the Party :

Report No. : VTL/A/2303270002/A
Format No : 7.8 F-02
Party Reference No : NIL
Report Date : 30/03/2023
Period of Analysis : 27/03/2023-30/03/2023
Receipt Date : 27/03/2023

Sample Description : AMBIENT AIR QUALITY MONITORING

General Information:-

Sampling Location	:	Near Main Gate (South)
Sample Collected By	:	VTL Team
Sampling Equipment used	:	Combo Samplor
Instrument Code	:	VTL/Combo/01
Coordinates	:	--
Meteorological condition during monitoring	:	Clear Sky
Date of Monitoring	:	22/03/2023 To 23/03/2023
Time of Monitoring	:	15:30 to 15:30 Hrs.
Ambient Temperature (°C)	:	Min.18° Max 31°
Surrounding Activity	:	Human, Vehicular & Plant Act.
Scope of Monitoring	:	Regulatory Requirment
Method of Sampling	:	IS :5182
Sampling Duration	:	24 Hrs.
Parameter Required	:	As per work order

S.No.	Parameters	Test Method	Results	Units	NAAQS 2009
1	Particulate Matter (as PM10)	IS:5182 (P- 23)-2006, RA. 2017	83.27	µg/m³	100
2	Particulate Matter (as PM2.5)	IS:5182 (P- 24)-2019	38.49	µg/m³	60
3	Nitrogen Dioxide (as NO2)	IS:5182 (P- 6)-2006, RA 2018	19.65	µg/m³	80
4	Sulphur Dioxide (as SO2)	IS:5182 (P- 2)-2001, RA. 2018	10.79	µg/m³	80
5	Lead (as Pb)	IS 5182 (P-22) : 2004, RA.2019	0.10	µg/m³	1
6	Arsenic (as As)	Methods of air sampling and analysis,3rd ed.,1988, Method No.302	*BLQ (**LOQ 0.15)	ng/m³	6
7	Nickel (as Ni)	USEPA compendium IO-3.2,1999	*BLQ (**LOQ 5.0)	ng/m³	20
8	Benzene (as C6H6)	IS 5182 (P-11)-2006, RA.2017	*BLQ (**LOQ 1.0)	µg/m³	5
9	Benzo (alpha) Pyrene-Particulate Phase Only	IS:5182 (P-12):2004, RA.2019	*BLQ (**LOQ 0.2)	ng/m³	1
10	Ammonia (as NH3)	Methods of air sampling and analysis,3rd ed.,1988, Method No. 401	14.33	µg/m³	400

Checked by

VIBRANT TECHNO LAB PRIVATE LIMITED JAIPUR

R.K.Yadav
Lab Incharge
Authorized Signatory

Terms & conditions PTO

Approved & Certified EPA 1986 Recognized, ISO:9001 and OHSAS:45001 Certified

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TEST REPORT

TC-11227

Sample Number : VTL/AA/02

Report No. : VTL/A/2303270002/A

S.No.	Parameters	Test Method	Results	Units	NAAQS 2009
11	Ozone (as O3)	IS 5182 (P-9):1974, RA.2019	10.6	µg/m³	180

*BLQ-Below Limit Of Quantification, **LOQ-Limit Of Quantification

End of Report

Checked by

VIBRANT TECHNO LAB PRIVATE LIMITED JAIPUR

K K Yadav
Lab Incharge
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TEST REPORT

Sample Number : VTL/AA/02

Name & Address of the Party : M/s Hindustan Zinc Ltd.
Dariba Smelter Complex, Post- Dariba,District - Rajpura Dariba Udaipur Rajasthan

Report No.	: VTL/A/2303270002/B
Format No	: 7.8 F-02
Party Reference No	: NIL
Report Date	: 30/03/2023
Period of Analysis	: 27/03/2023-30/03/2023
Receipt Date	: 27/03/2023

Sample Description : AMBIENT AIR QUALITY MONITORING

General Information:-

Sampling Location	: Near Main Gate (South)
Sample Collected By	: VTL Team
Sampling Equipment used	: Combo Samplor
Instrument Code	: VTL/Combo/01
Coordinates	: --
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 22/03/2023 To 23/03/2023
Time of Monitoring	: 15:30 to 15:30 Hrs.
Ambient Temperature (°C)	: Min.18° Max 31°
Surrounding Activity	: Human, Vehicular & Plant Act.
Scope of Monitoring	: Regulatory Requirment
Method of Sampling	: IS :5182
Sampling Duration	: 24 Hrs.
Parameter Required	: As per work order

S.No.	Parameters	Test Method	Results	Units	NAAQS 2009
1	Carbon Monoxide (as CO)	Lab SOP no. VTL/STP/02:2022, STP-08	0.66	mg/m³	4

*BLQ-Below Limit Of Quantification, **LOQ-Limit Of Quantification

End of Report

Checked by

VIBRANT TECHNO LAB PRIVATE LIMITED JAIPUR

Rs Yadav
Lab Incharge
Authorized Signatory

Term & conditions PTO

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TEST REPORT

VIBRANT
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TC-11227

Sample Number : VTL/AA/03

Report No.	: VTL/A/2303270003/A
Format No	: 7.8 F-02
Party Reference No	: NIL
Report Date	: 30/03/2023
Period of Analysis	: 27/03/2023-30/03/2023
Receipt Date	: 27/03/2023

Name & Address of the Party : M/s Hindustan Zinc Ltd.
Dariba Smelter Complex, Post- Dariba,District - Rajpura Dariba Udaipur Rajasthan

Sample Description : AMBIENT AIR QUALITY MONITORING

General Information:-

Sampling Location	: Near SLF Area
Sample Collected By	: VTL Team
Sampling Equipment used	: RDS/FPS
Instrument Code	: VTL/RDS/FPS/01
Coordinates	: --
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 23/03/2023 To 24/03/2023
Time of Monitoring	: 15:30 to 15:30 Hrs.
Ambient Temperature (°C)	: Min.19° Max 33°
Surrounding Activity	: Human, Vehicular & Plant Act.
Scope of Monitoring	: Regulatory Requirment
Method of Sampling	: IS :5182
Sampling Duration	: 24 Hrs.
Parameter Required	: As per work order

S.No.	Parameters	Test Method	Results	Units	NAAQS 2009
1	Particulate Matter (as PM10)	IS:5182 (P- 23)-2006, RA. 2017	75.69	µg/m³	100
2	Particulate Matter (as PM2.5)	IS:5182 (P- 24)-2019	27.85	µg/m³	60
3	Nitrogen Dioxide (as NO2)	IS:5182 (P- 6)-2006, RA.2018	15.95	µg/m³	80
4	Sulphur Dioxide (as SO2)	IS:5182 (P- 2)-2001, RA. 2018	7.88	µg/m³	80
5	Lead (as Pb)	IS 5182 (P-22) : 2004, RA.2019	0.09	µg/m³	1
6	Arsenic (as As)	Methods of air sampling and analysis,3rd ed.,1988, Method No.302	*BLQ (**LOQ 0.15)	ng/m³	6
7	Nickel (as Ni)	USEPA compendium IO-3.2,1999	*BLQ (**LOQ 5.0)	ng/m³	20
8	Benzene (as C6H6)	IS 5182 (P-11)-2006, RA.2017	*BLQ (**LOQ 1.0)	µg/m³	5
9	Benzo (alpha) Pyrene-Particulate Phase Only	IS:5182 (P-12):2004, RA.2019	*BLQ (**LOQ 0.2)	ng/m³	1
10	Ammonia (as NH3)	Methods of air sampling and analysis,3rd ed.,1988, Method No. 401	12.01	µg/m³	400

Checked by

VIBRANT TECHNO LAB PRIVATE LIMITED JAIPUR

R. Yadav
Lab Incharge
Authorized Signatory

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0141-2954638
bd@vibranttechnolab.com
www.vibranttechnolab.com

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TEST REPORT

TC-11227

Sample Number : VTL/AA/03

Report No. : VTL/A/2303270003/A

S.No.	Parameters	Test Method	Results	Units	NAAQS 2009
11	Ozone (as O3)	IS 5182 (P-9):1974, RA.2019	8.7	µg/m³	180

*BLQ-Below Limit Of Quantification, **LOQ-Limit Of Quantification

End of Report

Checked by

VIBRANT TECHNO LAB PRIVATE LIMITED JAIPUR

R.K.Yadav
Lab Incharge
Authorized Signatory

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TEST REPORT

Sample Number : VTL/AA/03

Name & Address of the Party : M/s Hindustan Zinc Ltd.
Dariba Smelter Complex, Post- Dariba,District - Rajpura Dariba Udaipur Rajasthan

Report No. : VTL/A/2303270003/B
Format No : 7.8 F-02
Party Reference No : NIL
Report Date : 30/03/2023
Period of Analysis : 27/03/2023-30/03/2023
Receipt Date : 27/03/2023

Sample Description : AMBIENT AIR QUALITY MONITORING

General Information:-

Sampling Location	: Near SLF Area
Sample Collected By	: VTL Team
Sampling Equipment used	: RDS/FPS
Instrument Code	: VTL/RDS/FPS/01
Coordinates	: --
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 23/03/2023 To 24/03/2023
Time of Monitoring	: 15:30 to 15:30 Hrs.
Ambient Temperature (°C)	: Min.19° Max 33°
Surrounding Activity	: Human, Vehicular & Plant Act.
Scope of Monitoring	: Regulatory Requirment
Method of Sampling	: IS :5182
Sampling Duration	: 24 Hrs.
Parameter Required	: As per work order

S.No.	Parameters	Test Method	Results	Units	NAAQS 2009
1	Carbon Monoxide (as CO)	Lab SOP no. VTL/STP/02:2022, STP-06	0.50	mg/m³	4

*BLQ-Below Limit Of Quantification, **LOQ-Limit Of Quantification

End of Report

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RK Yadav
Lab Incharge
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TEST REPORT

TC-11227

Sample Number : VTL/AA/04

Name & Address of the Party : M/s Hindustan Zinc Ltd.
Dariba Smelter Complex, Post- Dariba,District - Rajpura Dariba Udaipur Rajasthan

Report No.	: VTL/A/2303270004/A
Format No	: 7.8 F-02
Party Reference No	: NIL
Report Date	: 30/03/2023
Period of Analysis	: 27/03/2023-30/03/2023
Receipt Date	: 27/03/2023

Sample Description : AMBIENT AIR QUALITY MONITORING

General Information:-

Sampling Location	: Near CPP (North East)
Sample Collected By	: VTL Team
Sampling Equipment used	: Combo Samplor
Instrument Code	: VTL/Combo/01
Coordinates	: --
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 23/03/2023 To 24/03/2023
Time of Monitoring	: 16:00 to 16:00 Hrs.
Ambient Temperature (°C)	: Min.19° Max 33°
Surrounding Activity	: Human, Vehicular & Plant Act.
Scope of Monitoring	: Regulatory Requirment
Method of Sampling	: IS :5182
Sampling Duration	: 24 Hrs.
Parameter Required	: As per work order

S.No.	Parameters	Test Method	Results	Units	NAAQS 2009
1	Particulate Matter (as PM10)	IS:5182 (P- 23)-2006, RA. 2017	74.99	µg/m³	100
2	Particulate Matter (as PM2.5)	IS:5182 (P- 24)-2019	28.51	µg/m³	60
3	Nitrogen Dioxide (as NO2)	IS:5182 (P- 6)-2006, RA.2018	17.06	µg/m³	80
4	Sulphur Dioxide (as SO2)	IS:5182 (P- 2)-2001, RA. 2018	9.08	µg/m³	80
5	Lead (as Pb)	IS 5182 (P-22) : 2004, RA.2019	0.09	µg/m³	1
6	Arsenic (as As)	Methods of air sampling and analysis,3rd ed.,1988, Method No.302	*BLQ (**LOQ 0.15)	ng/m³	6
7	Nickel (as Ni)	USEPA compendium IO-3.2,1999	*BLQ (**LOQ 5.0)	ng/m³	20
8	Benzene (as C6H6)	IS 5182 (P-11)-2006, RA.2017	*BLQ (**LOQ 1.0)	µg/m³	5
9	Benzo (alpha) Pyrene-Particulate Phase Only	IS:5182 (P-12):2004, RA.2019	*BLQ (**LOQ 0.2)	ng/m³	1
10	Ammonia (as NH3)	Methods of air sampling and analysis,3rd ed.,1988, Method No. 401	11.80	µg/m³	400

Checked by

VIBRANT TECHNO LAB PRIVATE LIMITED JAIPUR

R.K. Yadav
Lab Incharge
Authorized Signatory

Page No. 1/2

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TEST REPORT

TC-11227

Sample Number : VTL/AA/04

Report No. : VTL/A/2303270004/A

S.No.	Parameters	Test Method	Results	Units	NAAQS 2009
11	Ozone (as O3)	IS 5182 (P-9):1974, RA 2019	7.98	µg/m³	180

*BLQ-Below Limit Of Quantification, **LOQ-Limit Of Quantification

End of Report

Checked by

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R. Yadav
Lab Incharge
Authorized Signatory

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TEST REPORT

Sample Number : VTL/AA/04

Name & Address of the Party : M/s Hindustan Zinc Ltd, Dariba Smelter Complex, Post- Dariba,District - Rajpura Dariba Udaipur Rajasthan

Report No. : VTL/A/2303270004/B
Format No : 7.8 F-02
Party Reference No : NIL
Report Date : 30/03/2023
Period of Analysis : 27/03/2023-30/03/2023
Receipt Date : 27/03/2023

Sample Description : AMBIENT AIR QUALITY MONITORING

General Information:-

Sampling Location	: Near CPP (North East)
Sample Collected By	: VTL Team
Sampling Equipment used	: Combo Samplor
Instrument Code	: VTL/Combo/01
Coordinates	: --
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 23/03/2023 To 24/03/2023
Time of Monitoring	: 16:00 to 16:00 Hrs.
Ambient Temperature (°C)	: Min.19° Max 33°
Surrounding Activity	: Human, Vehicular & Plant Act.
Scope of Monitoring	: Regulatory Requirment
Method of Sampling	: IS :5182
Sampling Duration	: 24 Hrs.
Parameter Required	: As per work order

S.No.	Parameters	Test Method	Results	Units	NAAQS 2009
1	Carbon Monoxide (as CO)	Lab SOP no. VTL/STP/02:2022, STP-08	0.52	mg/m³	4

*BLQ-Below Limit Of Quantification, **LOQ-Limit Of Quantification

End of Report

Checked by

VIBRANT TECHNO LAB PRIVATE LIMITED JAIPUR

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Annexure IV

HINDUSTAN ZINC LIMITED
DARIBA SMELTER COMPLEX

Ambient Air Quality Monitoring Report (Outside Plant)

(October'22-March'23)

Month / Village	Parameters	Oct'22	Nov'22	Dec'22	Jan'23	Feb'23	Mar'23
Aanjana	PM10	77.51	74.69	70.87	69.87	73.33	71.68
	PM2.5	41.86	40.16	36.36	34.34	36.53	34.64
	SO2	9.58	11.23	10.53	9.46	9.63	8.93
	NOx	10.63	11.56	11.32	10.44	10.62	9.941
	Pb	BDL	BDL	BDL	BDL	BDL	BDL
Makhanpuriya	PM10	67.14	70.48	69.77	58.31	66.82	63.96
	PM2.5	36.17	39.00	38.37	26.17	33.82	31.03
	SO2	7.48	8.822	8.315	7.21	6.622	6.685
	NOx	8.102	9.468	9.822	8.61	7.085	6.96
	Pb	BDL	BDL	BDL	BDL	BDL	BDL
Mahenduriya	PM10	79.32	77.12	73.3	75.46	78.28	75.72
	PM2.5	43.19	41.34	38.91	41.96	39.29	36.78
	SO2	10.7	10.7	10.7	10.7	10.7	10.7
	NOx	11.33	13.43	13.08	11.76	9.827	11.91
	Pb	BDL	BDL	BDL	BDL	BDL	BDL
Ladapacha	PM10	71.06	67.74	65.31	60.13	63.02	60.95
	PM2.5	40.79	36.41	34.68	29.52	30.63	28.17
	SO2	8.767	9.473	8.949	7.918	7.353	5.941
	NOx	10.02	10.09	9.587	8.744	7.504	6.525
	Pb	BDL	BDL	BDL	BDL	BDL	BDL

Annexure IV (Cont.)

Lunera	**PM10**	78.57	76.47	75.62	72.57	79.61	76.28
	PM2.5	42.12	44.39	42.1	40.36	41.42	38.36
	SO2	9.782	10.03	9.677	10.568	8.834	7.869
	NOx	10.48	11.92	10.58	11.86	9.367	8.454
	Pb	BDL	BDL	BDL	BDL	BDL	BDL
Charana	**PM10**	69.61	65.83	63.65	57.13	60.58	58.06
	PM2.5	38.91	34.74	32.54	24.17	28.99	26.41
	SO2	8.582	9.313	7.683	6.581	6.39	5.815
	NOx	9.235	9.43	8.568	7.774	6.49	6.239
	Pb	BDL	BDL	BDL	BDL	BDL	BDL
Kotadi	**PM10**	80.45	79.52	77.2	81.04	83.77	79.98
	PM2.5	44.04	46.19	44.93	45.87	43.03	40.05
	SO2	11.23	11.89	14.11	11.15	9.799	8.892
	NOx	12.48	12.53	15.17	12.02	10.02	9.955
	Pb	BDL	BDL	BDL	BDL	BDL	BDL
Chothpura	**PM10**	70.33	68.62	67.78	61.82	65.44	62.16
	PM2.5	39.25	37.97	35.33	31.53	31.09	29.24
	SO2	7.984	7.614	7.845	6.829	6.158	5.989
	NOx	8.436	6.595	8.776	7.826	6.56	6.635
	Pb	BDL	BDL	BDL	BDL	BDL	BDL

*All readings in ug/m^3

(Vivek Kumar)

Head Environment

Dariba Smelter Complex

Annexure V

HINDUSTAN ZINC LIMITED

DARIBA SMELTER COMPLEX

Continuous Ambient Air Quality Monitoring Results

(October'22-March'23)

Location		Prescribed Limits*	Month					
			Oct'22	Nov'22	Dec'22	Jan'23	Feb'23	Mar'23
Near to Main Gate (South-West)	RSPM	100	71.05	71.98	74.51	67.25	64.71	67.53
	SO2	80	35.78	35.12	34.64	14.87	5.96	9.12
	NOx	80	36.37	34.4	34.83	10.50	9.80	14.38
	CO	2	0.43	0.53	0.59	0.80	1.02	0.81
Near to SWP (North-West)	RSPM	100	74.75	74.91	75.03	46.79	46.42	47.26
	SO2	80	36.02	34.9	34.84	12.42	12.28	5.43
	NOx	80	35.61	34.52	35.20	8.57	11.94	9.12
	CO	2	0.50	0.97	1.05	0.93	1.06	0.54
Near to CPP (North-East)	RSPM	100	75.65	77.77	71.86	55.29	63.43	56.38
	SO2	80	37.22	35.02	28.02	9.74	13.22	5.02
	NOx	80	34.97	36.9	31.88	29.19	29.98	41.22
	CO	2	0.61	1.03	0.92	1.14	1.34	0.88
SLF (South-East)	RSPM	100	80.18	75.95	79.61	70.77	75.39	60.88
	SO2	80	29.7	17.27	26.11	12.25	13.74	10.31
	NOx	80	31.79	25.73	31.95	22.88	22.37	14.53
	CO	2	0.56	0.31	0.74	1.13	1.21	1.25

* National Ambient Air Standards, 2009

* All readings in ug/m^3 , except CO in mg/m3

(**Vivek Kumar**)

Head Environment

Dariba Smelter Complex

Annexure VI

HINDUSTAN ZINC LIMITED

DARIBA SMELTER COMPLEX

Work Zone Environment Monitoring Results

(October'22-March'23)

Month Location	Parameters	Prescribed Standards*	Oct'22	Nov'22	Dec'22	Jan'23	Feb'23	Mar'23
Zinc Plant								
Raw Material Handling (RMH)	**SPM**	**10**	8.59	9.00	8.04	9.24	9.14	9.05
	SO_2	**5**	0.142	0.159	0.156	0.142	0.169	0.113
	Zn	**5**	0.896	1.145	0.924	1.254	1.070	1.00
Zinc Dust Plant	**SPM**	**10**	6.19	7.16	5.52	5.25	7.45	7.03
	SO_2	**5**	0.061	0.078	0.048	0.053	0.072	0.068
	Zn	**5**	0.699	0.804	0.611	0.596	0.789	0.816
Purification Section	**SPM**	**10**	6.17	7.27	5.53	5.265	6.55	6.53
	SO_2	**5**	0.065	0.084	0.053	0.057	0.076	0.074
	Zn	**5**	0.228	0.348	0.182	0.158	0.270	0.337
Cell House	**SPM**	**10**	2.32	2.41	2.41	2.05	2.99	2.29
	SO_2	**5**	0.196	0.204	0.184	0.164	0.201	0.156
	Zn	**5**	0.172	0.177	0.183	0.160	0.276	0.184
Lead Plant								
Raw Material Handling (RMH)	**SPM**	**10**	8.16	8.61	8.80	9.21	8.69	9.11
	SO_2	**5**	0.123	0.127	0.089	0.108	0.109	0.097
	Pb	**0.15**	0.123	0.13	0.130	0.137	0.122	0.124
SKS	**SPM**	**10**	7.01	7.23	7.74	8.00	8.06	7.88
	SO_2	**5**	0.149	0.153	0.100	0.133	0.121	0.109
	Pb	**0.15**	0.084	0.085	0.084	0.075	0.089	0.099
Blast Furnace	**SPM**	**10**	6.77	7.23	7.44	7.13	6.98	7.32
	SO_2	**5**	0.092	0.108	0.104	0.090	0.091	0.085
	Pb	**0.15**	0.092	0.113	0.108	0.098	0.104	0.104
LEP Melting & Casting	**SPM**	**10**	7.14	6.46	7.24	5.74	6.60	6.18
	SO_2	**5**	0.065	0.072	0.079	0.060	0.083	0.062
	Pb	**0.15**	0.070	0.059	0.095	0.055	0.067	0.064

* Time Weighted Average (TWA) .All readings in ppm

* Factory Act. 1948 (Schedule II)

(Vivek Kumar)
Head Environment
Dariba Smelter Complex

Annexure VII

HINDUSTAN ZINC LIMITED
DARIBA SMELTER COMPLEX

Fugitive Emission Monitoring Results

(October'22-March'23)

Location	Parameters (All figures in $\mu g/m^3$)
	TSPM
Prescribed Limit*	-
Raw Material Handling (RMH) - Zinc	475.31
Roaster Plant	430.355
Calcine Handling	444.955
Coal Handling Plant (CPP)	417.89
Fly Ash Handling	440.72
Raw Material Handling (RMH) – Lead Plant	481.68
Near SKS Primary	419.01

Secondary fugitive emissions are monitored on 24 hrs basis at a distance of 10 m from the source.

(**Vivek Kumar**)
Head Environment
Dariba Smelter Complex

Contact : +91 - 9810243870

EKO PRO

EKO PRO ENGINEERS PVT. LTD.

Environmental Consultants and Analytical Laboratory
(An ISO 9001:2015 Certified Company)

TEST REPORT

Effluent Sample Analysis

Test Report No. : EKO/051/271222 **Issue Date : 31/12/2022**

Issued To : HINDUSTAN ZINC LIMITED
Dariba Smelter Complex
Post - Dariba, District - Rajpura Dariba Mines
Udaipur-Rajasthan

Sample Description	:	Effluent After Treatment (ETP Outlet)
Sample Drawn on	:	24/12/2022
Sample Drawn by	:	EPEPL (Mr.Umesh kumar)
Sample Received on	:	27/12/2022
Sampling Location	:	From ETP Plant
Sampling Plan & Procedure	:	SOP-W/66
Sample Quantity	:	2.0 Litre
Environmental Condition	:	Normal
Analysis Duration	:	27/12/2022 To 31/12/2022
Remark (if any)	:	NA

RESULTS

S. No.	Parameters	Test Method	Results	Units	Limits as per CTO
1	pH	IS: 3025 (P-11)	7.24	-	6.5-8.5
2	Total Suspended Solids	IS: 3025 (P-17)	40.0	mg/L	100.0
3	Oil & Grease	IS: 3025 (P-39)	<4.0	mg/L	10.0
4	COD (as O_2)	IS: 3025 (P-58)	85.6	mg/L	250.0
5	BOD (@27°C for 3 days)	IS: 3025 (P-44)	18.0	mg/L	30.0
6	Sulphides (as S)	IS: 3025 (P-29)	<1.0	mg/L	2.0
7	Chloride (as Cl)	IS: 3025 (P-32)	510.7	mg/L	1000.0
8	Sulphate (as SO_4)	IS: 3025 (P-24)	162.8	mg/L	1000.0
9	Fluoride (as F-)	IS: 3025 (P-60)	1.28	mg/L	2.0
10	Copper (as Cu)	EKO/CHEM/SOP-ICPMS/W-01	0.024	mg/L	1.0
11	Zinc (as Zn)	EKO/CHEM/SOP-ICPMS/W-01	0.62	mg/L	1.0
12	Cadmium (as Cd)	EKO/CHEM/SOP-ICPMS/W-01	<0.001	mg/L	2.0
13	Chromium (as Cr^{+6})	IS: 3025 (P-52)	<0.05	mg/L	0.1
14	Chromium Total (as Cr)	EKO/CHEM/SOP-ICPMS/W-01	<0.005	mg/L	0.2
15	Lead (as Pb)	EKO/CHEM/SOP-ICPMS/W-01	0.016	mg/L	0.1
16	Phosphate Dissolved (as P)	IS: 3025 (P-31)	0.76	mg/L	5.0
17	Cyanide (as CN)	APHA 4500 CN K	Absent	mg/L	0.2
18	Nickel (as Ni)	EKO/CHEM/SOP-ICPMS/W-01	<0.005	mg/L	3.0
19	Iron (as Fe)	EKO/CHEM/SOP-ICPMS/W-01	0.31	mg/L	1.0
20	Free Available Chlorine	IS: 3025 (P-26)	<0.2	mg/L	0.5

EKO PRO ENGINEERS PVT. LTD. GHAZIABAD SAVE THE ENVIRONMENT

Contact : +91 - 9810243870

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Environmental Consultants and Analytical Laboratory
(An ISO 9001:2015 Certified Company)

Office & Laboratory : 32/41, South Side of G. T. Road, UPSIDC Industrial Area, Ghaziabad - 201 009 (Delhi-NCR) INDIA.
Contact No.: 9711159210, 9810240837, 9810240873 E-mail : email@ekopro.in, ekoproengineers@gmail.com, website : www.ekopro.in

Test Report No. : EKO/051/271222 **Issue Date : 31/12/2022**

Notes :

1. The results given above are related to the tested sample, as received & mentioned parameters. The customer asked for the above tests only.
2. This test report will not be generated again, either wholly or in part, without prior written permission of the Laboratory.
3. The test report will not be used for any publicity/legal purpose.
4. The test samples will be disposed off after 15 days from the date of issue of test report, unless until specified by the customer. Sample received for biological tests will be destroyed after 7 days from the date of issue of test report.
5. Responsibility of the Laboratory is limited to the invoiced amount only.

****End of Report****

For EKO PRO ENGINEERS PVT. LTD.
PURNIMA CHAUHAN
TECHNICAL MANAGER
(Authorised Signatory)

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TEST REPORT

TC-11227

Sample Number : VTL/WW/02
Name & Address of the Party : M/s Hindustan Zinc Ltd.
Dariba Smelter Complex, Post- Dariba,District - Rajpura Dariba Udaipur Rajasthan

Sample Description : Waste Water
Sampling Location : ETP Plant (Outlet)
Sample Collected By : VTL Team
Preservation : Suitable Preservation
Method of sampling : IS :3025

Report No. : VTL/WW/2303270002/A
Format No : 7.8 F-01
Party Reference No : NIL
Report Date : 30/03/2023
Perlod of Analysis : 27/03/2023-30/03/2023
Receipt Date : 27/03/2023
Sampling Date : 24/03/2023
Sampling Type : Grab
Sample Quantity : 2 Ltr.

S.No.	Test Parameters	Result	Unit	Limits
1	pH	6.50	-	5.5 to 9.0
2	Total Suspended Solids (TSS)	1.80	mg/l	100
3	Oil & Grease	1.00	mg/l	10
4	Biochemical Oxygen Demand (BOD) (3 days @ 27°C)	5.70	mg/l	30
5	Chemical oxygen Demand (COD)	20.00	mg/l	250
6	Lead (as Pb)	*BLQ(**LOQ-0.1)	mg/l	0.1
7	Chromium (as Cr)	*BLQ(**LOQ-0.1)	mg/l	2
8	Copper (as Cu)	*BLQ(**LOQ-0.1)	mg/l	3
9	Zinc (as Zn)	0.44	mg/l	5
10	Nickel (as Ni)	*BLQ(**LOQ-0.1)	mg/l	3
11	Fluoride (as F)	0.83	mg/l	2
12	Sulphide (as S)	0.46	mg/l	2
13	Cadmium (as Cd)	*BLQ(**LOQ-0.1)	mg/l	2.0
14	Iron (as Fe)	0.33	mg/l	1
15	Residual Free Chlorine	*BLQ(**LOQ-0.2)	mg/l	0.5

*BLQ-Below Limit OF Quantification, **LOQ- Limit Of Detection

End of Report

Checked by

VIBRANT TECHNO LAB PRIVATE LIMITED
RK Yadav
JAIPUR Lab Incharge
Authorized Signatory

Page No. 1/1

Term & conditions PTO

Approved & Certified EPA 1986 Recognized, ISO:9001 and OHSAS:45001 Certified

Vibrant Techno Lab Pvt. Ltd.
SC-40, 3rd Floor, Narayan Vihar S. Ajmer Road, Jaipur Raj. 302020
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VIBRANT
"Experience the unimaginable"

TEST REPORT

Sample Number : VTL/WW/02
Name & Address of the Party : M/s Hindustan Zinc Ltd.
Dariba Smelter Complex, Post- Dariba,District - Rajpura Dariba Udaipur Rajasthan

Sample Description : Waste Water
Sampling Location : ETP Plant (Outlet)
Sample Collected By : VTL Team
Preservation : Suitable Preservation
Method of sampling : IS :3025

Report No. : VTL/WW/2303270002/B
Format No : 7.8 F-01
Party Reference No : NIL
Report Date : 30/03/2023
Period of Analysis : 27/03/2023-30/03/2023
Receipt Date : 27/03/2023
Sampling Date : 24/03/2023
Sampling Type : Grab
Sample Quantity : 2 Ltr.

S.No.	Test Parameters	Result	Unit	Limits
1	Hexavalant Chromium (Cr+6)	*BLQ(**LOQ-0.02)	mg/l	0.1
2	Chloride (as Cl)	79.33	mg/l	1000
3	Phosphate (as PO4)	0.24	mg/l	5
4	Sulphate (as SO4)	*BLQ(**LOQ-0.02)	mg/l	--
5	Cyanide (as CN)	*BLQ(**LOQ-0.02)	mg/l	0.2

*BLQ-Below Limit OF Quantification, **LOQ- Limit Of Detection

End of Report

Checked by

VIBRANT TECHNO LAB PRIVATE LIMITED JAIPUR

RK Yadav
Lab Incharge
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ANNEXURE – IX

Piezometer water Quality

Dec - 22 (Tailing dam)

(All figures in ppm except pH)

Parameter	PW 1	PW 2	PW 3	PW 4	PW 5	PW 6
pH	7.36	7.51	7.59	7.85	7.44	7.92
Suspended Solids	18	23	13	10	21	8
Lead	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)
Zinc	BDL(<0.01)	BDL(<0.01)	0.06	0.11	BDL(<0.01)	0.29
Copper	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)
Iron	0.09	0.09	0.05	BDL(<0.01)	0.09	BDL(<0.01)
Cadmium	BDL(<0.001)	BDL(<0.001)	BDL(<0.001)	BDL(<0.001)	BDL(<0.001)	BDL(<0.001)
Nickel	0.02	0.02	BDL(<0.01)	BDL(<0.01)	0.02	BDL(<0.01)
Cobalt	BDL(<0.01)	0.01	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)

Mar - 23 (Tailing dam)

(All figures in ppm except pH)

Parameter	PW 1	PW 2	PW 3	PW 4	PW 5	PW 6
pH	7.27	7.54	7.37	7.09	7.60	7.53
Suspended Solids	17	28	16	29	25	16
Lead	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)
Zinc	0.04	0.07	0.07	0.05	0.04	0.04
Copper	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)
Iron	0.10	0.13	0.10	0.08	0.10	0.08
Cadmium	BDL(<0.001)	BDL(<0.001)	BDL(<0.001)	BDL(<0.001)	BDL(<0.001)	BDL(<0.001)
Nickel	BDL(<0.01)	0.02	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)
Cobalt	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)

Annexure X

Process water Quality results

Oct - 22

Parameter	Mine Water	Tailing Dam Water	Garland Drain Water
pH	7.06	7.14	7.29
Suspended Solids	22	21	26
Lead	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)
Zinc	0.94	0.36	0.42
Copper	0.15	0.04	BDL(<0.01)
Iron	0.14	0.10	0.07
Cadmium	BDL(<0.001)	BDL(<0.001)	BDL(<0.001)
Nickel	0.21	0.03	0.04
Cobalt	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)

(All figures in ppm except pH)

Nov - 22

Parameter	Mine Water	Tailing Dam Water	Garland Drain Water
pH	7.14	7.49	7.47
Suspended Solids	27	25	23
Lead	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)
Zinc	1.38	0.41	0.30
Copper	0.04	0.12	0.06
Iron	0.03	0.16	0.15
Cadmium	BDL(<0.001)	BDL(<0.001)	BDL(<0.001)
Nickel	0.17	0.06	0.04
Cobalt	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)

(All figures in ppm except pH)

Dec - 22

Parameter	Mine Water	Tailing Dam Water	Garland Drain Water
pH	7.29	7.10	7.08
Suspended Solids	31	27	26
Lead	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)
Zinc	1.69	1.02	1.03
Copper	0.24	0.14	0.08
Iron	0.10	0.05	0.08
Cadmium	BDL(<0.001)	BDL(<0.001)	BDL(<0.001)
Nickel	0.03	0.06	0.06
Cobalt	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)

(All figures in ppm except pH)

Jan-23

Parameter	Mine Water	Tailing Dam Water	Garland Drain Water
pH	7.07	7.07	7.19
Suspended Solids	22	28	30
Lead	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)
Zinc	0.53	1.03	0.83
Copper	0.02	0.04	0.03
Iron	0.02	0.07	0.06
Cadmium	BDL(<0.001)	BDL(<0.001)	BDL(<0.001)
Nickel	0.03	0.09	0.08
Cobalt	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)

(All figures in ppm except pH)

Feb-23

Parameter	Mine Water	Tailing Dam Water	Garland Drain Water
pH	7.07	7.34	7.52
Suspended Solids	26	25	31
Lead	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)
Zinc	1.45	0.42	0.27
Copper	0.11	0.09	0.13
Iron	0.05	0.07	0.10
Cadmium	BDL(<0.001)	BDL(<0.001)	BDL(<0.001)
Nickel	0.10	0.07	0.06
Cobalt	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)

(All figures in ppm except pH)

Mar - 23

Parameter	Mine Water	Tailing Dam Water	Garland Drain Water
pH	7.19	7.20	7.46
Suspended Solids	22	32	28
Lead	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)
Zinc	1.74	0.83	0.25
Copper	0.17	0.06	0.06
Iron	0.03	0.06	0.06
Cadmium	BDL(<0.001)	BDL(<0.001)	BDL(<0.001)
Nickel	BDL(<0.01)	0.03	0.02
Cobalt	BDL(<0.01)	BDL(<0.01)	BDL(<0.01)

(All figures in ppm except pH)

Annexure XI

HINDUSTAN ZINC LIMITED
DARIBA SMELTER COMPLEX

Ambient Noise Monitoring Report

(October'22-March'23)

Plant	DARIBA SMELTER COMPLEX			
Location	Boundary Wall near Plantation site (SW)	Near Gate No.2 (SE)	Boundary wall of CPP (NE)	Behind main reservoir (NW)
Prescribed Standards* (70-75)				
October'22-March'23	58.4-68.3	59.2-69.3	58.4-68.5	57.9-68.0

(Vivek Kumar)
Head Environment
Dariba Smelter Complex

Annexure XII

Hindustan Zinc Limited
Dariba Smelter Complex
Dariba, Dist. Rajsamand, Rajasthan.

Average Sulphur and ash content in coal Monitoring Report
(October'22-March'23)

Month	Average Sulphur content %	Average Ash %
October-22	1.38	16.41
November-22	1.46	18.78
December-22	1.45	17.77
January-23	1.08	16.41
February-23	0.71	15.85
March-23	0.56	19.71

(K Kathiresan)
Head CPP
Dariba Smelter Complex

Annexure XIII

HINDUSTAN ZINC LIMITED
DARIBA SMELTER COMPLEX

Expenditure made in environmental control measures
(2022-23)

Sr. No.	Description	Total amount (Rs. in lakhs)
1	Green Belt Development, Maintenance of old plantation & landscaping	172.18
2	Environment Monitoring	187.07
3	Storm water ponds operation and maintenance & Monsoon management	0.15
4	Environmental training, awareness and publicity	1.96
5	Hazardous Waste Management	2782.10
6	O & M of Organic waste Convertor	0.00
7	Environmental Audit	3.91
8	Returns, fees for Award & CTO	29.18
9	Pollution control measure	346.60
	Grand Total	3523.15

Annexure XIV

HINDUSTAN ZINC LIMITED
DARIBA SMELTER COMPLEX

Funds earmarked towards environmental control measures
(2023 -24)

Sr. No.	Description	Total amount (Rs. in lakhs)
1	Green Belt Development, Maintenance of old plantation & landscaping	719.20
2	Environment Monitoring	179.80
3	Storm water ponds operation and maintenance & Monsoon management	76.00
4	Environmental training, awareness and publicity	29.30
5	Hazardous Waste Management	2040.90
6	O & M of Organic waste Convertor	3.00
7	Environmental Audit & IMS	11.00
8	Returns, fees for Award & CTO	187.00
9	Pollution control measure	122.00
	Grand Total	3368.20