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(Reg. A/D)

HINDUSTAN ZINC
Zinc & Silver of India

HZL/DSC/ENV/ES/2025/1

Date 23.09.2025

To,

The Member Secretary
Rajasthan State Pollution Control Board
4, Institutional Area
Jhalana Doongri
Jaipur-302004

File No. OGM/M-53

Sub: Environmental Statement for the year 2024-25 for Zinc Smelter, Dariba, Rajsamand.

Ref: F(HDF)/Rajsamand(Railmagra)/6461(1)/2020-2021/4691-4693 dated 22.01.2021

Sir,

With reference to above subject please find enclosed herewith the Environmental Statement for the financial year 2024-25 for Zinc Smelter, Dariba, Rajsamand.

Thanking You,

For Hindustan Zinc Limited

Yours Faithfully

(Deep kumar Agarwal)
Deputy SBU Director
Dariba Smelter Complex

Cc:

1. Regional Officer, RSPCB
   Old excise office building,
   Kalalwati, Rajnagar, Rajsamand
   Pin code : 313324

2. The Deputy Director (S)/ Scientist- C
   Ministry of Environment Forests and Climate Changes,
   Integrated Regional Office, A-209 & 218, Aranya Bhawan,
   Jhalana Institutional area, Jaipur – 302004

3. O/C

Hindustan Zinc Limited, Registered Office : Yashad Bhawan, Udaipur-313 004, Rajasthan, INDIA.
www.hzlindia.com CIN : L27204RJ1966PLC001208
Dariba Smelter Complex, P.O. Dariba, Teh. Railmagra, Distt. Rajsamand, Rajasthan - 313 211
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Hindustan Zinc Limited
Dariba Smelter Complex

ENVIRONMENTAL STATEMENT FOR ZINC SMELTER
(FINANCIAL YEAR ENDING MARCH 31ST 2025)

PREPARED & SUBMITTED BY

Zinc Smelter
Dariba Smelter Complex
Hindustan Zinc Limited
P.O. - Dariba, District – Rajasmand
Rajasthan - 313211

Form V
Environment Statement
For the Financial Year ending the 31st March 2025
Part A

(i)	Name and address of the owner/occupier of the industry operation or process	:	Arun Misra CEO M/s. Hindustan Zinc Limited Dariba Smelter Complex Hindustan Zinc Limited, P.O.- Dariba, Tehsil- Relmagra Dist. - Rajsamand Rajasthan – 313 211
(ii)	Industry category	:	Red/ Large
	Primary – (STC Code)	:	AAACH7354KST006
	Secondary- (SIC Code)	:	Not Applicable
(iii)	Production Capacity	:	
	Zinc Smelter		
	SHG Zinc Cathode/Ingot (Special High Grade)	:	250,000 TPA
	CGG (Continuous Galvizing Grade) Zinc	:	40,000 TPA
	By-Products (in TPA)		
	Cadmium metal / Sponge (equivalent metal)	:	800 TPA
	Calomel	:	44 TPA
	Copper as Copper cement/sulphate/concentrate (equivalent metal	:	500 TPA
	Lead Silver Compound/Low Grade Lead Concentrate	:	40000 TPA
	Sulphuric Acid	:	612000 TPA
	Year of Establishment	:	2010
(iv)	Date of Last Environmental Statement Submitted	:	21.09.2024

PART -B

WATER AND RAW MATERIAL CONSUMPTION

(1) Water consumption (m3 /d)*

Boiler/Cooling	:	4255
Domestic	:	247
Industrial Process	:	1694

* Daily water consumption for Zinc Plant (2, 50,000 TPA) including STP water

Name of Product		Process water consumption per unit of product output(cum/MT)	
		During the previous financial year	During the current financial year
		(1)	(2)
SHG Zinc Cathode/Ingot	With STP water	8.08	9.53
	Fresh Water (without STP water)	0.47	1.10

(2) Raw material consumption

Name of raw material	Name of products	Consumption of raw material per unit of output MT	
		During the previous financial year	During the current financial year
Zinc concentrate	SHG Zinc Cathode/ Ingot	2.73	2.75
Calcine		1.86	1.93
Aluminum Metal		0.0013	0.0016
Zinc dross and Zinc bearing waste		0.022	0.020
Calcine from outside DZS		NIL	NIL

PART-C

Pollution discharged to environment/ unit of output
(Parameter as specified in the consent issued)

Pollutants	Quantity of pollutants discharged (mass/day)	Concentration of pollutants in discharges (mass/ volume)	Percentage of variation from prescribed standards
a) Water	Not Applicable as Zero Discharge is maintained.		
pH			
TDS			
DO			
Suspended Solids			
Oil and Grease			
Chromium as hexavalent			
Manganese			
Nickel			
Copper			
Zinc			
Cadmium			
Lead			
Mercury			
Cyanide			
b) Air			
	Zinc Plant		
Particulate matter	28.85 Kg/Day	29.93 mg/nm3	- 40.13
SO_2 R-1	1086.1 Kg/Day	400.9 mg/nm3	- 57.8
Acid Mist	100.3 Kg/Day	36.935 mg/nm3	- 26.13
SO_2 R-2	1056.5 Kg/Day	363.78 mg/nm3	- 61.71
Acid Mist	78.9 Kg/Day	27.21 mg/nm3	- 45.58

PART-D

HAZARDOUS WASTES

As specified under Hazardous Wastes (Management, Handling & Transboundary Movement) Rules, 2016

As DSC is having common Hazardous waste authorization, which includes Zinc, Lead and CPP, so mentioned hazardous waste generation is for complete DSC location.

Hazardous Waste	Total Quantity Generation (Kg.)	
	During the previous financial year	During the current financial Year
(a) From process		
- Jarosite	189786000	198872600
- Purification Cake	3921040	3607000
- Anode Mud	1132000	1057000
- Cooler Cake	2947270	2855740
- Cobalt Cake	---	
- Used /spent Oil	38620	50180
- Spent Catalyst (V2O5)	29440	26180
- Chemical Sludge (Salts)	1233900	2101940
- Discarded Containers/barrels/liners used for hazardous waste/Chemicals	148 Nos	131 no.
- Flue Gas Cleaning Residue	--	
- Spent ion exchange resin containing Toxic metal	--	1440
- Oil soaked filter	--	
- Waste/residues containing oil	2980	8820
- Process Residue	19947640	19983160
(b) From pollution control facilities		
- Non-ferrous sludge from ETP and scrubbers (ETP Cake)	14005430	14215340

PART-E
SOLID WASTE

DSC has a common storage facility for storage of Scrap, which includes Zinc, Lead and CPP, so mentioned waste generated is for completed DSC location.

Solid Waste	Total Quantity Generation (Kg.)	
	During the previous financial year	During the current financial Year
(a) From process		
Metal Scrap	753820	583490
Wooden Scrap	98388	84034
Plastic Waste	7640	9330

PART-F

Please specify the characterization (in terms of composition and quantum) of hazardous as well as solid wastes and indicate disposal practice adopted for both the categories of wastes.

Details of Hazardous Wastes & Its Disposal Method

Sr. No.	Name of waste	Quantity (MT)	Chemical Characteristics (%)	Mode of Treatment / Disposal
1	Jarosite	198872.6	Zn: 2.5 -5 Pb: 5-7 Fe: 25-31	Stabilization with lime & cement as Jarofix using patented Jarofix Technology (M/s Canadian Electrolytic Zinc), followed by disposal in Jarofix yard.
2	Non-ferrous sludge from ETP and scrubbers (ETP Cake)	14215.34	Zn: 1- 8 Cu: 0.01 – 0.02 Pb: 0.2 – 0.5	Disposal in captive SLF after stabilization.
3	Cooler Cake	2855.74	Zn: 0.5-1.5 Balance Gypsum	Disposal in captive SLF after stabilization.
4	Purification Cake	3607.0	Zn: 20 - 35 Cd: 8-10 Cu: 3-12	Sale to authorized recyclers registered with CPCB/ MoEF.
5	Anode Mud	1057.0	Mn: 30-45 Zn: 0.3 - 1 Pb: 5-8	Reuse/sale to authorized recyclers registered with CPCB/ MoEF and surplus disposal to captive SLF.
6	Used Oil/Spent	50.18	--	Reuse/sale to authorized recyclers

	Oil			registered with CPCB/ MoEF.
7	Chemical Sludge (Salts)	2101.94	Sodium Salts (Na2SO4.10H2O etc)	Disposal in SLF
8	Spent Catalyst (V_2O_5)	26.18	V_2O_5	Disposal in SLF
9	Discarded Containers/barrels/liners used for hazardous waste/Chemicals	131 Nos.	--	Disposal in SLF
10	Cobalt Cake	--	--	No Generation
11	Flue Gas Cleaning Residue	--	--	No Generation
12	Spent ion exchange resin containing Toxic metal	--	--	No Generation
13	Oil soaked filter	--	--	Incineration in TSDF
14	Waste/residues containing oil	8.82	--	Sale to registered recycler
15	Process Residue	19983.16	--	Reuse/sale to authorized recyclers registered with CPCB/ MoEF.
16	Fly Ash	130303.91	116555.05	Provided to Cement Manufacturers
			13748.86	Backfilling in mines
17	Bottom Ash	35031.53	35031.53	Provided to Brick manufactures
16	Metal Scrap	583.490	--	Sent to recyclers
17	Wooden Scrap	84.034	--	Sent to recyclers
18	Plastic Waste	9.330	--	Sent to recyclers

PART-G

Impact of the pollution abatement measures taken on conservation of natural resources and on the cost of production.

Our aim is to preserve the long- term health of the natural environment affected by our operations. We set and achieve targets that promote efficient use of resources and include the reduction and prevention pollution.

Air Environment

Control of SO_2 Emissions in Acid Plant

During operation of the smelter complex, the main emission source is SO_2 from stack attached to Sulphuric Acid Plant. SO_2 emission is restricted to 1.5 kg/tone of acid and acid mist is controlled below 50 mg/Nm^3 which conform to the stipulated regulatory norms. Adequate stack height (100-m.) has been provided. DCDA process is used for better SO2 conversion and absorption efficiency. Candle Filter system and De-mister pad are installed in the Acid Plant to control Acid Mist.

Control of Particulate Matter Emission

Bag filters have been provided in calcine handling and Zinc dust plant. The PM emissions are controlled below 50 mg/Nm3.

Water sprinkling at transfer points and storage is deployed. The concentrate has inbuilt moisture content of around 7-8% which keep this powdery material in wet conditions avoiding any significant emissions. Conveyors are covered, with water sprinkling at junction of transfer points.

Water Environment

We have a long-term approach to water management that aims to improve our performance, recognize the significance of water and contribute to sustainable water management. We understand its importance and adopt best practices for making the judicious use of water and conserve it.

Effluent generated from the Dariba Smelter complex is treated in Effluent Treatment Plant (ETP) of capacity 9000 m3/day along with 8850 m3/day capacity of RO plant

The effluents generated from gas cleaning plant, sulphuric acid plant, anode and cathode washing, DM plant, cooling towers and power plant are treated to neutralize the acidity and to precipitate and remove metallic elements.

Treated water is reused/ recycled in processes. Multiple Effect Evaporator (MEE) and Solar Evaporation Ponds have been provided to treat RO reject water to ensure Zero Effluent Discharge from the plant premises.

Sewage collected from the plant is collected and treated in 500KLD Sewage Treatment Plant(STP). Sewage collected from residential colony is treated in Sewage Treatment Plant (STP) established in the colony itself.

Storm water ponds of adequate capacity have been constructed inside the plant premises for storing the drain water for further treatment in the ETP. It is used in the monsoon in conserving the rain water for further use in the plant.

Waste Management

We focus on a '4R' waste strategy - Reduce, Recycle, Reuse and Reclaim and 'Eco-friendly' disposal of process residues. The solid wastes generated from the Zinc smelter, are given in 'Part F' of the environmental statement.

A well designed Secured Landfill (SLF) with double composite liner system and Jarofix Yard with single composite liner system has been constructed in the plant premises for the proper disposal of the waste for preventiing the deterioration of the land and water environment.

Noise

In the Smelter, noise is generated from waste heat recovery boiler, fans, compressors and blowers. All equipments in the Smelter have been designed /operated to have a noise level in line with the regulatory requirements. Necessary acoustic enclosures have been provided to limit noise levels within the norms.

PART-H

Additional measures/investment proposal for environment protection including abatement of pollution /prevention of pollution.

Green belt Development

Implementation of afforestation program is of paramount importance for Dariba Smelter Complex. In the financial years 2009-2025, 269040 nos. of saplings have been planted successfully .Drip irrigation facility has been provided to all the plant saplings.

The various plant species grown at Dariba Smelter Complex include; Neem (*Azadirachta indica*), Amaltas (*Cassia fistula*), Shisum (Dalbergia Shishoo), Ficus Religiosa, Terminalia Arjuna, Karanj (*Pongamia pinnata*) and Gulmoher (*Delonix regia*), Sheesham, Pipal, Arjun, Bakan Neem etc. While selecting the plant species for green belt, following points have been taken into consideration:

- Dust capturing efficiency;
- Plant's growth;
- Canopy cover; and
- Origin of plant
- Arid Climatic conditions

PART-I

Any other particular for improving the quality of the environment.

Environmental Monitoring

Regular monitoring of important and crucial environmental parameters is of immense importance to assess the status of environment during plants operation. With the knowledge of baseline conditions, the monitoring program can serve as an indicator for any deterioration in environmental conditions due to operation of the plants and suitable preventive steps could be taken in time to safeguard the environment. Monitoring is as important as that of control of pollution since the efficiency of control measures can only be determined by monitoring. A full-fledged environmental laboratory has been set up for regular monitoring of environmental parameters, inside and outside the plant.

The environmental attributes being monitored are as given below:

- Air Pollution and Meteorological Aspects
- Water and Wastewater Quality
- Noise Levels
- Soil Quality

As per CPCB guidelines we have also installed online emission monitoring and effluent quality monitoring system. Real time data is being transmitted to CPCB and RPCB server.