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

BALCO /ENVT/A-01/2025/454

26.09.2025

To,
The Member Secretary,
Head Office, Chhattisgarh Environment Conservation Board,
Paryavas Bhawan, North Block, Sector-19,
Atal Nagar RAIPUR (C.G.).

Sub: Environment Statement of Aluminum Smelter of 3.25 LTPA & 2.7 LTPA and its Fabrication Including NCRM and Hi-Tech Rolling Mill, Use of Calcined Petroleum Coke, Dross Processing Units, Alumina Railway Sidings, Calcined Petroleum Coke Railway Siding and Finished Goods Railway Siding, Bharat Aluminium Company Limited for the financial year 2024-25.

Dear Sir,

With reference to the captioned subject, we are enclosing the Environment Statement of Aluminum Smelter of 3.25 LTPA & 2.7 LTPA and its Fabrication Including NCRM and Hi-Tech Rolling Mill, Use of Calcined Petroleum Coke, Dross Processing Units, Alumina Railway Sidings, Calcined Petroleum Coke Railway Siding and Finished Goods Railway Siding, Bharat Aluminium Company Limited for the financial year 2024-2025 in the prescribed Form - V under Rule 14 of the Environment (Protection) Rules, 1986 and the relevant provisions of the Environment (Protection) Act, 1986.

Thanking you,

Yours truly,
On behalf of Bharat Aluminium Company Limited

RK Singh
CEO- Metal

Encls: a/a

Copy to: The Regional Officer, Chhattisgarh Enviroonment Conservation Board, Korba, Chhattisgarh.

FORM- V

(See Rule-14)

ENVIRONMENTAL STATEMENT FOR THE FINANCIAL YEAR 2024-25

PART – A

1.	Name & address of the owner/ occupier of the industry operation or process	:	**Mr. Rajesh Kumar** **CEO & Whole Time Director (BALCO)** BHARAT ALUMINIUM COMPANY LIMITED, KORBA – 495684 (Chhattisgarh) (Aluminum Smelter of 3.25 LTPA & 2.7 LTPA and its Fabrication Including NCRM and Hi-Tech Rolling Mill, Use of Calcined Petroleum Coke, Dross Processing Units, Alumina Railway Sidings, Calcined Petroleum Coke Railway Siding and Finished Goods Railway Siding)
2.	Industry category primary (STC Code) /Secondary (STC Code)	:	Primary
3.	Production Capacity	:	5.95 LTPA
4.	Year of establishment	:	Plant I – Nov 1973 Aluminium Smelter (2.70 LTPA) – Jan'2005 Aluminium Smelter (3.25 LTPA) – Feb'2013
5.	Date of last Environment Statement Submitted	:	28th September 2024

PAR – B

WATER AND RAW MATERIAL CONSUMPTION

i) Water Consumption in m^3/day: -[1]

Process, Cooling water	13.55
Domestic (Plant) water	632.45
Other	0.00

[1] *Excludes water consumption in Township.

Name of product	WATER CONSUMPTION PER UNIT OF PRODUCT OUTPUT	
	During the financial year 2023-24 (m^3/MT)	During the financial year 2024-25 (m^3/MT)
Aluminium	**0.52***	**0.40***

* Water consumption based on water used for per metric ton production.

ii) Raw Material Consumption:

Name of raw Materials	Name of Product	CONSUMPTION OF RAW MATERIAL PER UNIT (Kg/T)	
		FY 2023-24	FY 2024-25
Sp. Alumina Consumption*	Aluminium Smelter Plant (Hot Metal, Ingot, Alloy Ingot, Sow ingot, Wire Rod, Rolled Product)	1931.40	1934.05
Sp. Aluminium Fluoride Consumption *		17.74	18.69
Sp. CP Coke Consumption*		367.98	379.58
Sp. Pitch Consumption*		82.12	84.64
Sp. HFO Consumption #		12.13	0.00
Sp. LSHS Consumption#		24.93	37.08

* Per unit of Hot Metal produced, # Per unit of Finished Goods produced (KL/MT)

PART – C

Pollution discharged to environment/ unit output

Water: *Zero discharge condition maintained.*
Air: *Monitoring results for major pollutants are attached as Annexure-I*

PART- D

HAZARDOUS WASTE

As specified under Hazardous and other Waste (Management and Transboundary Movement) Rules 2016

A. **From Process**

Hazardous Waste	TOTAL QUANTITY GENERATED (MT)	
	FY 2023-24	FY 2024-25
Used or Spent oil (Schedule - I, Cat. No. 5.1)	47.110	44.900
Waste or residue containing oil (Schedule - I, Cat. No. 5.2)	2.086	1.630
Cathode residues including Pot Lining wastes (Schedule - I, Cat. No. 11.2)	10712.000	9836.000
Flammable chemical waste lab (Schedule-II, Class-C-I)	0.016	0.000
Used anode butts (Schedule - I, Cat. No. - 11.6)	75282.499	75593.771

Drosses and waste from treatment of salt sludge (Schedule - I, Cat. No. - 11.5)	8225.775	8000.951
Flue gas dust and other particulates (Schedule - I, Cat. No. - 11.4)	3146.500	2856.300
Discarded asbestos (Schedule - I, Cat. No. - 15.2)	23.950	80.790
Empty barrels/containers/liners contaminated with hazardous chemicals /wastes (Schedule - I, Cat. No. - 33.1)	82.115	76.770
Oil and grease skimming (Schedule - I, Cat. No. - 35.4)	Nil	Nil

B. **From Pollution Control Devices**

Hazardous Waste	Quantity (MT) in FY 2023-24	Quantity (MT) in FY 2024-25
Chemical sludge from waste water treatment (Schedule - I, Cat. No. 35.3)	0.700	0.691
Rejected filter bags (FTP) (Schedule-I, Cat.no. 33.1)	47.930	35.040

PART- E
SOLID WASTE

A. From Process

Hazardous Waste	TOTAL QUANTITY GENERATED (MT)	
	FY 2023-24	FY 2024-25
Used or Spent oil (Schedule - I, Cat. No. 5.1)	47.110	44.900
Waste or residue containing oil (Schedule - I, Cat. No. 5.2)	2.086	1.630
Cathode residues including Pot Lining wastes (Schedule - I, Cat. No. 11.2)	10712.000	9836.000
Used anode butts (Schedule - I, Cat. No. - 11.6)	75282.499	75593.771
Drosses and waste from treatment of salt sludge (Schedule - I, Cat. No. - 11.5)	8225.775	8000.951
Flue gas dust and other particulates (Schedule - I, Cat. No. - 11.4)	3146.500	2856.300
Discarded asbestos (Schedule - I, Cat. No. - 15.2)	23.950	80.790
Empty barrels/containers/liners contaminated with hazardous chemicals /wastes (Schedule - I, Cat. No. - 33.1)	82.115	76.770
Oil and grease skimming (Schedule - I, Cat. No. - 35.4)	Nil	Nil

B. From Pollution Control Devices

Hazardous Waste	FY 2023-24	FY 2024-25
Chemical sludge from waste water treatment (Schedule - I, Cat. No. 35.3)	0.700	0.691
Rejected filter bags (FTP) (Schedule-I, Cat.no. 33.1)	47.930	35.040

C. 1. Quantity Recycled or Re-Utilized within the unit:

Hazardous Waste	FY 2023-24	FY 2024-25
Used anode butts (Schedule - I, Cat. No. - 11.6)	75046.959	73181.166

2. Sold:

Hazardous Waste	FY 2023-24	FY 2024-25
Used or Spent oil (Schedule - I, Cat. No. 5.1)	44.938	57.330
Cathode residues including Pot Lining wastes (Schedule - I, Cat. No. 11.2)	20305.940	23587.520
Used anode butts (Schedule - I, Cat. No. - 11.6)	1396.360	2216.920
Drosses and waste from treatment of salt sludge (Schedule - I, Cat. No. - 11.5)	11353.830	7795.780
Empty barrels/containers/liners contaminated with hazardous chemicals /wastes (Schedule - I, Cat. No. - 33.1)	126.608	48.540

3. Disposed:

Hazardous Waste	FY 2023-24	FY 2024-25
Flue gas dust and other particulates (Schedule - I, Cat. No. - 11.4)	Nil	2875.800
Discarded asbestos (Schedule - I, Cat. No. - 15.2)	23.950	73.110

PART- F

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

S.No.	Waste Description including category	Composition	Quantum as per Hazardous Waste Authorization	Disposal Practice
1	Used or Spent oil (Schedule - I, Cat. No. 5.1)	As per Hazardous Waste, 2016 (Schedule V) Polychlorinated biphenyls (PCBs)- < 2ppm max. Lead- 100 ppm max. Arsenic- 5 ppm max. Cadmium+ Chromium+ Nickel- 500 ppm max. Polyaromatic hydrocarbons (PAH)- 6% max.	300 MT/Year	Sale to authorized recyclers
2	Waste or residue containing oil (Schedule - I, Cat. No. 5.2)	-	7 MT/Year	Captive Incineration in cast house furnaces/ Sale to authorized recyclers
3	Cathode residues including Pot Lining wastes (Schedule - I, Cat. No. 11.2)	Alumina: 10-40% Carbon: 0-20% Sodium: 6-14% Fluoride: 4-10% CaO: 1-8% SiO_2: 10-50% CN total: 0-0.1%	12,000 MT/Year	(i) Disposal through captive SLF/ Sale to authorized re-processors for detoxification/ Co-processing in cement plant/other residues of cathode will be sale to authorized recyclers/ reprocessor/ Coprocessing in Cement Plant/SLF/TSDF. (ii) Utilization of Spent Pot Lining (SPL) stored

				in Captive Secured Land Fill (SLF) and Sale to authorized reprocessor for detoxification/ Coprocessing in Cement Plant/TSDF
4	Chemical sludge from wastewater treatment (Schedule - I, Cat. No. 35.3)	-	20 MT/Year	Disposal through captive SLF/ co-processing in cement plant/TSDF
5	Rejected filter bags (FTP) (Schedule-I, Cat.no. 33.1)	-	50 MT/Year	Captive Incineration in pots
6	Flammable chemical waste lab (Schedule-II, Class-C-I)	-	0.4 KL/Year	Sale to authorized recycler/ captive incineration in cast house furnaces/ Captive incineration in power plant boilers /distillation and reuse
7	Used anode butts (Schedule - I, Cat. No. - 11.6)	Al_2O_3 : 0-5.9% AlF_6Na_3 : 0-5% AlF_3 : 0-1% Carbon: >= 93%	1,00,000 MT/ Year	Recycle and reuse in green anode plant for anode making/ captive SLF/ Sale to authorized recycler
8	Drosses and waste from treatment of salt sludge (Schedule - I, Cat. No. - 11.5)	Aluminium: 5-15% Si: 0-23% Cu: 0-11% Zn: 0-11% Mg: 0-30% Al_2O_3: 10-90% Metal Nitrides: 0-10%	10,000 MT/ Year	Metal recovery in cast house/sale to authorized utilizers/Disposal of residues to authorized utilizers
9	Flue gas dust and other particulates (Schedule - I, Cat. No. - 11.4)	Fe: 99% Mn: 1-2% Si: 0-1% Cr: 0-0.2% Ni: 0.1-1%	5,000 MT/ Year	Reuse in GAP for anode making/ disposal in captive SLF/ Sale to authorized utilizers/ TSDF
10	Spent Ion exchange resin containing toxic metals (Schedule - I, Cat. No. 35.2)	-	60 MT in 05 Years i.e. within authorization Period	Utilization for energy recovery in boiler for steam or power generation as per SOP issued by CPCB

11	Glasswool (Schedule - II, C-4)	-	150 MT/Year	Dispose of in captive SLF/ TSDF
12	Discarded asbestos (Schedule - I, Cat. No. - 15.2)	Oxygen(O): 40–50% Silicon (Si): 20–25% Magnesium (Mg): 10–25% Iron (Fe): 5–20% Calcium (Ca): 0–10% Hydrogen (H): <1%	100 MT/ Year	Sale to authorized recyclers/ disposal in captive SLF/TSDF
13	Empty barrels/containers/liners contaminated with hazardous chemicals /wastes (Schedule - I, Cat. No. - 33.1)	-	300 MT/Year	Sale to authorized recyclers
14	Oil and grease skimming (Schedule - I, Cat. No. - 35.4)	-	1 KL/Year	Dispose of in captive SLF/ Sale to authorized recyclers

PART- G

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

- Smelters are designed with Point-Feeder Pre-Baked technology, which is superior to Soderberg technology.
- The dry scrubbing technology is adopted to treat the potroom fumes produced in the reduction process. These measures have ensured that the air pollutants are below the desired norms.
- Effluent treatment plant with RO system has been established for treatment and recycling of water leading to conservation/reduction of natural resources.
- Replacement of HFO with LSHS to reduce SOx emission.
- Adoption of EV forklifts in place of diesel forklifts leading to GHG emission reduction.
- Technical Fleet Optimization System implemented reducing requirement of 5 forklift.
- Design Modification in Stub Holes of Anodes and Anode Slot Height Increase implemented to reduce power consumption in the Potline.
- Installation of Butt Air Blowing Station to reduce shot blast dust generation.
- Implementation of indigenous RCC relining method for 49 pots.

PART- H

Additional measures/investment proposal for environmental protection, abatement of pollution, prevention of pollution.

Expenditure/investment for environmental protection, for the year 2024-25 for both Smelters was approx. Rs. 57.71 Cr. which includes Capital investment and operational expenses of air pollution control equipment,

water pollution control equipment, horticulture, housekeeping, waste management, monitoring, and other environmental expenses.

PART – I

Any other particulars for improving the quality of the environment

- Tree plantation is carried out every year in and around the BALCO Complex as well as in the Balco Township. During the year 2024-25 we have carried out plantation of 48,023 saplings at various places in and around BALCO Plant premises.
- BALCO Smelters are certified with the Environment Management System (ISO 14001:2015) certificate.
- BALCO Smelters are certified with the Energy Management System (ISO 50001:2018) certificate.
- Environment Day, Ozone Day, Earth Day being celebrated to awareness stakeholders and employees of BALCO for protection of Environment.

FY 2024-25															
Smelter 2.7 LTPA	**Parameter**	**Norms**	**Unit**	**Apr-24**	**May-24**	**Jun-24**	**Jul-24**	**Aug-24**	**Sep-24**	**Oct-24**	**Nov-24**	**Dec-24**	**Jan-25**	**Feb-25**	**Mar-25**
FTP 1	PM	50.00	(mg/Nm3)	3.08	4.78	2.81	2.47	2.65	2.93	2.18	3.85	3.60	2.40	3.07	2.52
	HF	0.65	(mg/Nm3)	0.036	0.075	0.069	0.054	0.068	0.029	0.043	0.049	0.079	0.084	0.072	0.089
FTP 2	PM	50.00	(mg/Nm3)	2.09	3.01	2.11	2.09	2.90	2.46	2.27	2.61	3.31	2.20	2.24	2.58
	HF	0.65	(mg/Nm3)	0.038	0.080	0.054	0.058	0.053	0.051	0.084	0.053	0.069	0.095	0.078	0.074
FTP 3	PM	50.00	(mg/Nm3)	2.38	4.87	3.87	2.40	3.59	2.24	1.87	4.28	3.93	4.30	2.71	3.90
	HF	0.65	(mg/Nm3)	0.050	0.058	0.067	0.067	0.068	0.075	0.066	0.042	0.070	0.094	0.064	0.060
FTP 4	PM	50.00	(mg/Nm3)	2.18	3.93	2.04	2.64	3.30	3.26	2.42	2.85	2.54	3.60	2.93	4.60
	HF	0.65	(mg/Nm3)	0.057	0.054	0.043	0.063	0.081	0.053	0.075	0.086	0.074	0.090	0.070	0.065
Smelter 3.25 LTPA	**Parameter**	**Norms**	**Unit**	**Apr-24**	**May-24**	**Jun-24**	**Jul-24**	**Aug-24**	**Sep-24**	**Oct-24**	**Nov-24**	**Dec-24**	**Jan-25**	**Feb-25**	**Mar-25**
FTP 1	PM	50.00	(mg/Nm3)	2.87	4.59	2.45	2.31	2.12	3.72	2.94	3.44	2.82	2.70	2.70	4.57
	HF	0.65	(mg/Nm3)	0.045	0.068	0.072	0.073	0.066	0.063	0.075	0.071	0.081	0.096	0.100	0.076
FTP 2	PM	50.00	(mg/Nm3)	4.57	2.42	2.68	2.05	3.13	4.45	2.63	2.92	3.50	2.50	2.74	2.44
	HF	0.65	(mg/Nm3)	0.042	0.089	0.084	0.077	0.079	0.045	0.070	0.061	0.075	0.061	0.068	0.075
Bake Oven	**Parameter**	**Norms**	**Unit**	**Apr-24**	**May-24**	**Jun-24**	**Jul-24**	**Aug-24**	**Sep-24**	**Oct-24**	**Nov-24**	**Dec-24**	**Jan-25**	**Feb-25**	**Mar-25**
FTP 1	PM	50.00	(mg/Nm3)	8.90	7.80	8.20	13.30	15.80	9.30	4.10	9.20	7.80	8.20	8.10	7.90
	HF	0.65	(mg/Nm3)	0.058	0.096	0.064	0.084	0.062	0.091	0.052	0.082	0.183	0.112	0.103	0.116
FTP 2	PM	50.00	(mg/Nm3)	5.70	9.30	10.80	7.20	8.30	8.50	5.40	12.10	7.20	8.70	9.60	9.1
	HF	0.65	(mg/Nm3)	0.046	0.084	0.076	0.071	0.049	0.084	0.058	0.063	0.108	0.094	0.092	0.099
GAP 1	**Parameter**	**Norms**	**Unit**	**Apr-24**	**May-24**	**Jun-24**	**Jul-24**	**Aug-24**	**Sep-24**	**Oct-24**	**Nov-24**	**Dec-24**	**Jan-25**	**Feb-25**	**Mar-25**
D6	PM	50.00	(mg/Nm3)	14.90	21.90	14.30	32.80	29.20	9.50	17.40	7.30	8.30	12.40	16.90	15.90
D7	PM	50.00	(mg/Nm3)	8.70	16.60	24.90	16.70	14.60	17.50	16.30	11.20	13.30	14.50	13.20	17.50
D8	PM	50.00	(mg/Nm3)	22.80	12.50	10.10	11.90	19.40	13.90	9.40	6.20	7.90	15.70	11.80	10.40
D9	PM	50.00	(mg/Nm3)	18.40	25.10	20.10	21.90	26.30	10.40	20.20	11.20	8.60	17.70	19.80	11.80
GAP 2	**Parameter**	**Norms**	**Unit**	**Apr-24**	**May-24**	**Jun-24**	**Jul-24**	**Aug-24**	**Sep-24**	**Oct-24**	**Nov-24**	**Dec-24**	**Jan-25**	**Feb-25**	**Mar-25**
D6	PM	50.00	(mg/Nm3)	21.70	24.90	19.70	22.10	20.60	13.70	15.10	13.90	10.74	8.90	11.20	11.50
D7	PM	50.00	(mg/Nm3)	11.50	18.70	23.70	28.80	25.80	10.10	18.50	8.70	14.20	13.30	15.80	18.30
D8	PM	50.00	(mg/Nm3)	16.40	12.30	11.50	16.70	13.60	7.20	12.50	6.70	13.60	11.20	15.50	8.30
D9	PM	50.00	(mg/Nm3)	17.90	20.10	16.00	30.90	27.30	17.60	11.90	5.80	15.20	17.60	16.20	16.90