



ENVIRONMENT STATEMENT

FOR THE FINANCIAL YEAR 2022-23

Submitted to SPCB under Rule 14 of The Environment (Protection) Rules 1986

TATA STEEL LIMITED

**FERRO ALLOYS PLANT, BAMNIPAL
(TATA STEEL LIMITED)**



Ref. No.: FAMD/FAPB/ 068/FY-24

Date: 28.09.2023

To
The Member Secretary
Odisha Pollution Control Board
A/118, Nilakantha Nagar
Bhubaneswar--751012

Sub: Submission of Environmental Statement for the period of 2022-23 for Ferro Alloys Plant, Bamnival of Tata Steel Limited.

Sir,

With reference to above subject whereby, we would like to submit one set of Annual Environmental Statement in form-V dully filled in for the year 2022-2023 in respect of M/s Ferro Alloys Plant, Bamnival by Tata steel for your kind consideration.

We wish to maintain that necessary control measures have been installed and adopted to minimize the impact on environment.

We look forward to further your guidance which shall certainly help us in endeavouring further improvements in our Environmental Management Practices.

This is for your kind information and perusal with a request for your kind acknowledgement.

Thanking you,

Yours faithfully,
For : TATA STEEL LTD.

HEAD, (F A PRODUCTION)
FERRO ALLOYS PLANT, BAMNIVAL

Encl : as above.

Copy to -Regional Officer, OPCB, At-Baniapatt, College Road, Keonjhar - with enclosure.

TATA STEEL LTD
Ferro Alloys Plant, Bamnival-758082, Dist. Keonjhar, Odisha, India
Tel : 09238118601,9238118603
Regd. Office : Bombay House, 24 Homi Mody Street, Mumbai - 400 001
Tel. 91 22 66658282, FAX 91 22 666577724
Corporate Identity No - L27100MH1907PLC000260, Website : www.tatasteel.com

INTRODUCTION

The Ferro Alloy Plant, Bamnival unit was originally set up by M/s ORISSA MINING CORPORATION LTD. (OMC) (A GOVT. OF ORISSA UNDERTAKING) in 1986, under technical collaboration with Consortium Voest Alpine AG (Linz, Austria) and Outokumpu OY, ESPOO Finland. The Plant adopts the OUTOKUMPU process of manufacturing sintered chrome ore pellet and production of Ferro Chrome by Electro Thermic Reduction in Submerged Arc-Furnace.

The Plant was taken-over by "TATA STEEL" under an agreement with GOVT. OF ORISSA on 27th SEPT'91. The earlier marketing agreement with M/s KLOCKNER AG, WEST GERMANY ceased to exist w.e.f. the date of takeover by TATA STEEL.

The plant produces superior Ferro alloy product with 60-65% chromium, 6-8% carbon and other elements like Silicon, Iron and other trace elements. Product of Ferro alloy plant, Bamnival is qualitatively appreciated at international market for manufacture of special grade stainless steel. Around 75% of this prime grade HCFeCr goes to export market. The major consumer being Korea, Japan, China and USA. High Carbon Ferro chrome also goes to the domestic market for several steel processing unit.

Ferro Alloy Plant, Bamnival is one of the leading Ferro alloy producers of the country with a capacity of 65000 MT per year. The plant produces premium grade High Carbon Ferro Chrome (HCFeCr) which is supplied mostly to international customers across Japan, Korea, China and US market as well as to domestic customers.

ABOUT THE PLANT

Plant Location and Accessibility

The site of the Ferro Alloys Plant is located at Bamnival, Tehsil- Harichandanpur, District-Keonjhar, State-Odisha and the plant site is located besides the Daitari – Paradeep Expressway near Bamnival, Keonjhar District of Odisha at about 20km towards west of Duburi and 18km before Daitari Mines. The nearest East Cost Railway station Tomka is at a distance of 0.6 km from plant. The nearest airport is at Bhubaneswar at a distance of about 130 km. Nearest port is Paradeep at a distance of 145 km. The nearest township is Jajpur Road which is 40Km.

FORM -V

FORM - V

Environmental Statement for the financial year ending on 31.03.2023

PART - A

1. Name and address of the owner/ occupier of the Industry, operation or process : Ferro Alloy Plant, Bamnival
Tata Steel Ltd,
At/PO- Bamnival, Keonjhar-758082
- Factory Manager : Mr. Lovlin Swain
Head, Ferro Alloys Production,
- Nominated Occupier : Mr. T.V Narendran,
Managing Director,
Tata Steel Ltd., Jamshedpur.
2. Industry Category : Large
3. Production Capacity of Ferro Alloys.: 65,000 MT/Year
4. Year of establishment : 1986
5. Date of submission of previous Environmental Statement : 28th September, 2022

PART - B

Water and Raw Material Consumption

- Water Consumption - Water is used inside the Plant for the following purposes
- a) Industrial Cooling
 - b) Process and
 - c) Domestic Purpose

Water consumption* under all the three heads for the assessment year are as follows: -

Consumption Head	Water consumption in M ³ /Year	
	During FY 21-22 (in M ³ /Year)	During FY 22-23 (in M ³ /Year)
Industrial Cooling	415203	331340
Process	286346	148580
Domestic	249270	200370
Name of Product	Process Water Consumption per Unit of Products	
High Carbon Fe. Cr.	13.83	11.45

*The Colony of FAP, Bamnival is situated outside the plant area.

B. Raw material Consumption :-

The raw material consumptions for the production of FeCr are as follows:-

Raw Materials Used	Name of Products	Avg quantity used to produce. 1 MT of FeCr for the Previous Year (2021-22)	Avg Quantity used to produce. 1 MT of FeCr for the current year (2022-23)
Chrome Ore (Kg)	Fe. Cr.	2021*	2010*
Coke (Kg)	Fe. Cr.	524*	532*
Electrode Paste (Kg)	Fe. Cr.	9*	8*
Power (KWH)	Fe. Cr.	3213*	3271*

*Annual average

PART - C

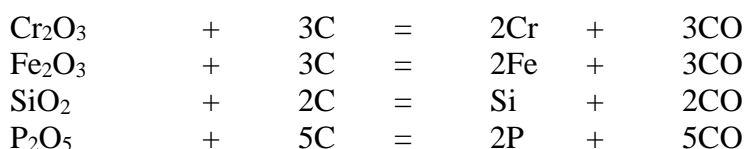
Pollution discharged to environment / unit of output

(Parameter as specified in the Consents issued)

Basically the plant produces air pollution and the causes can be attributed to the process which has been briefed as follows:-

Brief description of the process producing FeCr:

During the smelting process, oxides of Chromium, Iron, Silicon, Sulphur and Phosphorous are reduced and the reactions involved in the above process are as follows:-



The Sulphur goes into the Slag and also escapes to the atmosphere through the stack as SO₂.

Sources of Pollution:

The sources of pollution can be in the form of:

1. Water Pollution
2. Air Pollution

1. Water Pollution:-

The water used for cooling several parts of the Furnaces, making slurry in GFPS, slag granulation, scrubbing in GCP is re-circulated to the system and is not discharged outside the Plant.

2. Air Pollution:

30 MVA Arc Furnace produces the following air pollutants which is released to atmosphere through GCP.SPM, SO₂, NO₂ & CO

1.1 Pollutants from Stack :

Sl No	Stack Details	Pollutants	Quantity of pollutants discharged (Mass/Day) (Ton/Day) 2022-2023	Quantity of pollutants discharged (Mass/Volume) (mg/Nm ³) 2022-2023	% variation from the norms with reason.
1	Stack attached to Arc Furnace	PM (mg/Nm ³)	0.0040	38.8	1% (due to the effective operation of Gas Cleaning Plant)

Note: Last year the pollution load was estimated based on the stack emission report as tested by the agency and expressed in mg/NM³

PART – D HAZARDOUS WASTES

(AS SPECIFIED UNDER THE HAZARDOUS WASTES)

HAZARDOUS WASTES	TOTAL QUANTITY GENERATED	
	DURING THE PREVIOUS YEAR (2021-22)	DURING THE CURRENT YEAR (2022-23)
D) FROM PROCESS a. Used Oil b. Waste Containing Oil c. Waste batteries	a) NIL Ltrs b) Nil Ltrs c) 16 Nos	a) NIL Ltrs b) 300 Ltrs c) 79 Nos
II) FROM POLLUTION CONTROL FACILITY (GCP) a) Flue gas cleaning residue	d) 131.5 Mt (as sludge)	d) *189.8 Mt (as sludge)

* including backlog

PART - E SOLID WASTES

SOURCES	TOTAL QUANTITY	
	DURING THE PREVIOUS YEAR (2021- 2022)	DURING THE CURRENT YEAR (2022- 2023)
a. From Process i) Slag ii) Cotton wastes iii) Waste Batteries	38657 MT Nil (The use has been stopped completely) 16 Nos	41887 MT Nil (The use has been stopped completely) 79 Nos
b. From Pollution Control Facility.	189.8 MT (As GCP sludge)	198.8 MT (As GCP sludge)

c. i. Quantity recycled or Reused within the unit (Fe. Cr. Slag)	Nil	Nil
	Nil	Nil
ii. Quantity sold		
iii. Quantity disposed	a. Slag dumped in our company leased area and sludge sent to authorized TSDf and remaining stored in impervious lined pit inside leased area.	a. Slag used for road construction in NHAI projects and Tata Steel Kalinga Nagar Project site for land filling and sludge sent to TSDf operator and remaining stored in impervious lined pit inside leased area.
	b. 2216.07 MT of sludge	b. 2414.87 MT of sludge*

* including backlog

PART - F

Hazardous Wastes/ Solid Wastes	Characteristics of	Method of Disposal
Fe Cr Slag	Cr_2O_3 = 8% to 15% SiO_2 = 28% to 30% MgO = 25% to 28% Al_2O_3 = 22% to 25% Fe_2O_3 = 3% to 4% CaO = 2% to 3%	During smelting operation of High Carbon Fe Cr., slag is generated as a byproduct, which is disposed inside leased area or used in NHAI Road Construction Projects or in Land filling purposes in plant project sites
GCP Sludge	Cr_2O_3 = 9% to 10% SiO_2 = 28% to 32% Al_2O_3 = 22% to 25% CaO = 2% to 4% MgO = 25% to 28% FeO = 05 to 07%	The sludge after being conveyed to the imperviously lined sludge drying beds from the thickener is allowed to dry sufficiently and the dry sludge is then transported to the earmarked sludge dumping site inside the plant premises & sent to the authorized recycler M/s RAMKY, Jajpur
Used Transformer Oil	Hydrocarbons	The waste oil generated at various sources is collected in leak proof barrels and then are kept on an impervious floor with oil catch pit. It is also ensured that the caps of the barrels remain intact and horizontal. The storage area is properly fenced and caution board displayed. During transfer of waste oil to barrels, a trough is placed underneath in order to prevent land contamination due to oil spillage. Then at a fixed interval, these barrels are returned to stores for final disposal through auction to the authorized recycler after due intimation to State Pollution Control Board. After dispatch of same, intimation of auction along with copy of manifest is also being sent to State Pollution Control Board.

Waste Batteries	Lead & Used Batteries	Waste Batteries are generated in Electrical section and Garage. These batteries with diluted acid and caps intact are kept under a shed having impervious floor. Then at a fixed interval, these batteries are returned to Stores for final disposal. All storage areas are having sheds have been suitably barricaded and caution board displayed. Then at a fixed interval, these batteries are disposed through auction to the authorized recycler after due intimation to State Pollution Control Board. After dispatch of same, intimation of auction along with copy of manifest is also being sent to State Pollution Control Board.
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PART - G

IMPACT OF THE POLLUTION ABATEMENT MEASURES TAKEN ON CONSERVATION OF NATURAL RESOURCES AND ON THE COST OF PRODUCTION:

M/s Ferro Chrome Plant has spearheaded the pursuit for Environmental Protection by implementing an effective environmental management system. To this effect, the Plant has undertaken the following measures:-

- i. Annual maintenance of both the GCPs including power consumption and upgradation of GCP costs 14.5 Crore
- ii. Annual maintenance of DFDS system of Rs 5 Lakh
- iii. Plantation in and around the Plant for which the annual expenditure of Rs. 3 lakhs was incurred.
- iv. Rs. 4 lakhs every year for water sprinkling on haul roads.
- v. Environmental Monitoring & Measurement every month by third party at annual cost of Rs. 19.1 lakhs.
- vi. Bio medical waste are disposed of at common bio medical waste treatment & dispose facility operated by M/s SANI Clean Pvt limited of an amount Rs 4.5 Lakh
- vii. Sludge Pit Construction of Rs 1.1 Crore
- viii. Slag Shifting from Dump Yard to Project Sites – 1 Crore

So the total annual expenditure incurred towards environmental protection
= 16.95 Crores (Approx.)

Annual production of the plant during the year = 41887 MT

So the impact of the pollution abatement measures on the cost of production shall be = Rs
16.95 Crores/41887 MT = Rs. 4046.60/ MT ≈ Rs. 4047/MT

PART – H

Environmental Management System in concurrence with the requirements of ISO-14001 standards has been implemented very effectively thro' the following efforts:-

- a. Effective solid wastes management
- b. 100% recycling of waste water
- c. Scheduled water sprinkling of haul roads

- d. Waste dump plantation
- e. Discharging the canteen waste water to Soak Pits thro' settling tank
- f. Imparting EMS training to all the employees.
- g. Proper handling and management of Hazardous Wastes
- h. Optimization of consumption of natural resources like water & minerals

PART – I

1. Community awareness development programs on environmental protection are also undertaken through celebration of World Environment Day and showing films on Environmental Protections in captive channel. Involvement of school children, spouse, family members and Road show (Drama) to develop awareness on world Environment day.
2. Also took integrated mosquito control programme to eradicate malaria cases in the colony.
3. TSRDS has done several mobile treatment programs in different villages regarding diseases and their remedial measures with full checkup.
4. The Plant has been certified to the coveted ISO-14001:2004 (EMS) Certification by IRQS, Kolkata.



**Head, FA Production
Ferro Alloy Plant, Bamnipal
Tata Steel Limited**