

HZL/RDC/EC-CR/2021-22/H2

Date: 26.05.2022

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'21 to March'22.

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'21 to March'22** 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 (eccz.lko-mel@env.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.hzindia.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

Hindustan Zinc Limited

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certainly help us in our endeavor for further improve upon our Environmental Management Practices.

Hope the above are 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
Annexure XV	:	Fly Ash Return 2021-22
Annexure XVI	:	Approval of the state Land Use Department, GoR
Annexure XVII	:	The monitoring of land use using satellite imagery
Annexure XVIII	:	Details of the bag filters
Annexure XIX	:	Detailed hydrological and hydro-geological study
Annexure XX	:	Copy of the compliance report submitted to CGWA
Annexure XXI	:	Monitoring of Primary and Secondary organics (Poly Aromatic Hydrocarbons) and various anions and cations in Jarofix/Jarosite and Fresh tailing Study
Annexure XXII	:	Tailing Dam and SLF stability, risk assessment and disaster risk mitigation & planning studies
Annexure XXIII	:	Hazard and risk assessment report

Annexure XXIV	:	Compliance of recommendations made in Charter for Corporate Responsibility for Environment Protection (CREP) for Zinc smelters
Annexure XXV	:	Compliance of recommendation made in Charter for Corporate Responsibility for Environment Protection (CREP) for Zinc smelter, Thermal Power Plants and mining
Annexure XXVI	:	CGWA NOC
Annexure XXVII	:	3 rd party ground water sampling report (DSC)

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-2021 to March-2022

- (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, 2022

Introduction:

S. No	Particulars	Details
1	Name of Project	<ul style="list-style-type: none"> M/s Hindustan Zinc Limited, Dariba Integrated Project
2	Address of Project	<ul style="list-style-type: none"> M/s Hindustan Zinc Limited, Dariba Integrated Project, Village Dariba, Tehsil- Railmagra, District- Rajsamand, Rajasthan, 313211
3	Environment Clearance Letter no & Date	<ul style="list-style-type: none"> 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.	<ul style="list-style-type: none"> IV/ENV/R/Ind-115/758/2009 IV/ENV/R/Ind- 115/994/2019
5	Status of Project	<ul style="list-style-type: none"> 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 2021-22
1	Lead & Zinc Ore mining	1.08 Million MT	1983	638763 MT
2	Lead & Zinc Ore Beneficiation	1.2 Million MT	1983	404317 MT
3	Zinc Smelter	Zn: 2,50,000 MT	March 2010	248444 MT
4	Lead Smelter	Pb: 1,25,000 MT	July 2011	70423 MT
5	CPP	CPP: 170 MW	Unit 1- Feb'10 Unit 2- June'10	Unit 1- 663 MU Unit 2- 649 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/ 6523-6527 dated 4.2.2019	Valid till 28/2/2023	
Lead & Zinc Ore Beneficiation	F(Mines)/Rajsamand(Railmagra)/6460(1)/2019-20/6027-6030 dated 18.3.2020	Valid till 28/2/2023	
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 2021 to March 2022

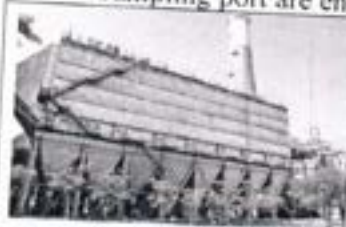
A.	EC Specific Conditions	Status of Compliance
i)	No construction work related to expansion at the proposed project site shall be started without obtaining prior clearances / approvals for the linked mining component from the Indian Bureau of Mines (IBM) and State Govt. of Rajasthan. A copy of the mining 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.	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • Complied, Approval of the State Land Use department, GoR was already obtained and submitted to RO, MOEF&CC with Six monthly compliance report. (Letter in again enclosed as Annexure XVI)
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	<ul style="list-style-type: none"> • 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 is again enclosed as Annexure XVII. Satellite imagery

	multi-data computer compatible tape.	LULC is to be carried out once in 5 years, thereby not conducted.
v)	The gaseous emissions from various process units shall conform 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.	<p>Complied.</p> <ul style="list-style-type: none"> • Various mechanism adopted for controlling of all gaseous emissions coming from the plants. • Gaseous Emissions Monitoring is being done on 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/Nm ³ . The height of the stacks shall be as per the standards prescribed under the Environment (Protection) Act, 1986. Low NO _x burners shall be provided to control NO _x emissions. NO _x emissions shall be restricted to 750 mg/Nm ³ by using low NO _x burners. On-line stack emission monitoring equipments for continuous monitoring of SO ₂ , NO _x , SPM and O ₂ 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 Sulphuric acid plant, blast and fuming furnace plant, copper recovery plant shall be treated in the calcine based scrubbing plant where the SO ₂ shall be removed before letting out to the	<p>Complied.</p> <ul style="list-style-type: none"> • 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, NO_x 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 recovered before letting out to the atmosphere. • Opacity meters have being 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

atmosphere. Adequate stack height shall be provided for proper dispersion of pollutants like SO₂, NO_x etc.

transfer points & silos.

- Calibration of all instruments are being done on regular basis.
- Photographs of ESP, NO_x Burners, 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

		<div data-bbox="762 248 1098 555"></div> <div data-bbox="810 555 944 586">CPP Stack</div> <div data-bbox="1114 248 1449 555"></div> <div data-bbox="1104 555 1396 631">8 Field ESP with 165 mt Stack height</div> <div data-bbox="762 638 1098 862"></div> <div data-bbox="753 878 997 945">Existing SO2 Analyzer</div> <div data-bbox="1114 638 1449 862"></div> <div data-bbox="1104 878 1396 945">SO2 ppm Reading in HMI</div> <div data-bbox="762 952 1449 1220"></div> <div data-bbox="976 1227 1264 1258">Online Server Reading</div>
vii)	<p>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 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.</p>	<ul style="list-style-type: none"> 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 is taken to respective Sulphuric 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. 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.



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.

Months	Acid Plant (Zn Smelter) Roaster-1	Acid Plant (Zn Smelter) Roaster-2	TGT Stack (Pb Stack)
	SO ₂ (Kg/T of H ₂ SO ₄ Production)		
Oct'21	0.89	1.12	0.11
Nov'21	0.93	1.12	0.11
Dec'21	0.98	1.13	0.13
Jan'22	0.89	1.11	0.15
Feb'22	0.89	0.98	0.22
Mar'22	0.74	0.93	0.28

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

ix) The critical parameters such as SPM, RSPM, NO_x, SO₂ and acid mist in the ambient air within the impact

- Complied
- Third Party Periodical monitoring of various

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.





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	76.35	85.45	77.85	83.95
PM2.5	50.55	50.25	45.75	48.50
SO2	30.35	34.70	26.15	16.35
NO2	35.40	41.85	39.60	33.70
CO	1.09	1.14	1.02	1.10
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 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.hzindia.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.	<ul style="list-style-type: none">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.	<ul style="list-style-type: none">Four nos. of Continuous Ambient Air Quality Monitoring Stations (CAAQMS) have been installed. <table><tr><th rowspan="2">Locations</th><th rowspan="2">Parameters (µg/ m3)</th><th colspan="6">Months</th></tr><tr><th>Oct'21</th><th>Nov'21</th><th>Dec'21</th><th>Jan'22</th><th>Feb'22</th><th>Mar'22</th></tr><tr><td rowspan="4">Near to Main Gate (South West)</td><td>PM</td><td>73.05</td><td>70.39</td><td>75.49</td><td>72.74</td><td>75.24</td><td>69.27</td></tr><tr><td>SO2</td><td>35.54</td><td>34.56</td><td>34.17</td><td>34.52</td><td>33.80</td><td>32.31</td></tr><tr><td>NOX</td><td>36.69</td><td>34.49</td><td>35.85</td><td>36.13</td><td>38.12</td><td>36.62</td></tr><tr><td>CO</td><td>0.70</td><td>0.74</td><td>0.73</td><td>0.91</td><td>0.91</td><td>0.94</td></tr><tr><td rowspan="4">Near to SWP (North West)</td><td>PM</td><td>78.29</td><td>77.16</td><td>74.34</td><td>82.28</td><td>78.40</td><td>78.62</td></tr><tr><td>SO2</td><td>40.66</td><td>39.90</td><td>36.01</td><td>34.97</td><td>34.80</td><td>36.93</td></tr><tr><td>NOX</td><td>39.35</td><td>35.06</td><td>34.16</td><td>39.12</td><td>39.69</td><td>38.55</td></tr><tr><td>CO</td><td>0.80</td><td>0.80</td><td>0.78</td><td>0.90</td><td>0.93</td><td>0.91</td></tr><tr><td rowspan="4">Near to CPP (North East)</td><td>PM</td><td>76.62</td><td>80.46</td><td>78.85</td><td>81.00</td><td>79.80</td><td>79.69</td></tr><tr><td>SO2</td><td>24.79</td><td>25.66</td><td>25.72</td><td>24.72</td><td>24.70</td><td>24.36</td></tr><tr><td>NOX</td><td>35.71</td><td>32.95</td><td>34.30</td><td>36.37</td><td>35.63</td><td>34.62</td></tr><tr><td>CO</td><td>0.78</td><td>0.78</td><td>0.78</td><td>0.85</td><td>0.89</td><td>0.89</td></tr><tr><td rowspan="4">SLF (South East)</td><td>PM</td><td>77.73</td><td>79.59</td><td>78.96</td><td>81.7</td><td>78.9</td><td>80.5</td></tr><tr><td>SO2</td><td>19.29</td><td>17.65</td><td>18.29</td><td>17.5</td><td>17.4</td><td>16.0</td></tr><tr><td>NOX</td><td>31.85</td><td>30.92</td><td>31.15</td><td>37.1</td><td>34.3</td><td>34.6</td></tr><tr><td>CO</td><td>0.78</td><td>0.78</td><td>0.78</td><td>0.89</td><td>0.86</td><td>0.88</td></tr></table> <ul style="list-style-type: none">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.	Locations	Parameters (µg/ m3)	Months						Oct'21	Nov'21	Dec'21	Jan'22	Feb'22	Mar'22	Near to Main Gate (South West)	PM	73.05	70.39	75.49	72.74	75.24	69.27	SO2	35.54	34.56	34.17	34.52	33.80	32.31	NOX	36.69	34.49	35.85	36.13	38.12	36.62	CO	0.70	0.74	0.73	0.91	0.91	0.94	Near to SWP (North West)	PM	78.29	77.16	74.34	82.28	78.40	78.62	SO2	40.66	39.90	36.01	34.97	34.80	36.93	NOX	39.35	35.06	34.16	39.12	39.69	38.55	CO	0.80	0.80	0.78	0.90	0.93	0.91	Near to CPP (North East)	PM	76.62	80.46	78.85	81.00	79.80	79.69	SO2	24.79	25.66	25.72	24.72	24.70	24.36	NOX	35.71	32.95	34.30	36.37	35.63	34.62	CO	0.78	0.78	0.78	0.85	0.89	0.89	SLF (South East)	PM	77.73	79.59	78.96	81.7	78.9	80.5	SO2	19.29	17.65	18.29	17.5	17.4	16.0	NOX	31.85	30.92	31.15	37.1	34.3	34.6	CO	0.78	0.78	0.78	0.89	0.86	0.88
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	CO	0.80	0.80	0.78	0.90	0.93	0.91																																																																																																																													
Near to CPP (North East)	PM	76.62	80.46	78.85	81.00	79.80	79.69																																																																																																																													
	SO2	24.79	25.66	25.72	24.72	24.70	24.36																																																																																																																													
	NOX	35.71	32.95	34.30	36.37	35.63	34.62																																																																																																																													
	CO	0.78	0.78	0.78	0.85	0.89	0.89																																																																																																																													
SLF (South East)	PM	77.73	79.59	78.96	81.7	78.9	80.5																																																																																																																													
	SO2	19.29	17.65	18.29	17.5	17.4	16.0																																																																																																																													
	NOX	31.85	30.92	31.15	37.1	34.3	34.6																																																																																																																													
	CO	0.78	0.78	0.78	0.89	0.86	0.88																																																																																																																													

<p>xii)</p>	<p>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 asphaltting the internal roads and to reduce the generation of fugitive dust from vehicle movements.</p>	<p>Complied.</p> <ul style="list-style-type: none"> 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. <div data-bbox="730 952 1121 1193">  </div> <p>Water Sprinkling on road</p> <div data-bbox="1145 952 1503 1193">  </div> <p>Mechanized Road sweeper</p> <div data-bbox="730 1294 1090 1585">  </div> <p>Water Sprinkling System</p> <div data-bbox="1145 1294 1473 1574">  </div> <p>Dust Suppression System</p>
<p>xiii)</p>	<p>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</p>	<p>Complied.</p> <ul style="list-style-type: none"> To minimize fugitive emissions, 8-10% moisture is provided in the Zn & Pb Concentrate coming from the mines.

handling plant, zinc dust plant, melting 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. Asphaltting/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.

- Bag Filters have been provided to calcine handling 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. Details again attached as **Annexure XVIII**
- 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.	<p>Complied.</p> <ul style="list-style-type: none">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.	<ul style="list-style-type: none">Complied, Fugitive emission monitoring results is furnished herewith as Annexure VII.	
		Locations	Parameters ($\mu\text{g}/\text{m}^3$)
			TSPM
		Raw Material Handling (RMH)- Zinc Plant	489.13
		Roaster Plant	435.8
		Calcine Handling	406.9
		Coal Handling Plant (CPP)	442.1
		Fly Ash Handling	465.8
		Raw Material Handling- Lead Plant	478.93
	Near SKS Primary	429.04	
xvi)	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.	<p>Complied</p> <ul style="list-style-type: none">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 the mineral, vehicles are covered with tarpaulin.	
xvii)	Total water requirement for the proposed smelter complex including	<ul style="list-style-type: none">Closed circuit cooling system with cooling towers has been provided to captive power	


the mining and beneficiation plants from Matrikundia dam, Gosunda dam and Mansiwakal dam shall not exceed 42,050 m³/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 conform 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

plant. Cooling tower blow down and boiler blow down from CPP is being recycled in 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. The treated effluents conform to the prescribed standards and recycled in the process. Domestic Sewage is treated in STP and recycled water used in green belt development and process. Multiple Effect Evaporator (MEE).
- Third party analysis of the treated effluent is being conducted by M/s Eko Pro Engineers which is NABL and MOEF&CC accredited laboratory.
- Values of all parameters are well within limit of prescribed standard. Analysis reports are enclosed herewith as Annexure VIII.

Parameters (in mg/L)	ETP Outlet
pH	7.35
TSS	43.00
Oil & Grease	<4.00
COD	100.35
BOD (3 days at 270C)	22.00
Sulphide (as S)	<1.00
Chloride (as Cl)	515.05
Sulphates (as SO ₄)	162.25
Fluoride (as F)	1.07
Copper (as Cu)	0.03
Zinc (as Zn)	0.74
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)	0.41
Phosphate (as P)	0.73
Free available chlorine	<0.2

	tank followed by soak pit.	
xviii)	The mine seepage water shall be collected in underground sumps and 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.	<p>Complied</p> <ul style="list-style-type: none"> 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.	<ul style="list-style-type: none"> 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.	<p>Complied.</p> <ul style="list-style-type: none"> Sewage treatment plant of 500KLD capacity is 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'	<p>Complied</p> <ul style="list-style-type: none"> 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.

	discharge from the tailing dam. Acid mine water, if any, shall be neutralized and reused within the plant.	 <p>Tailing dam pipeline</p>
xxii)	Detailed hydrological study shall be carried out and implementation of recommendations of the detailed hydrological study shall be ensured.	<p>Complied.</p> <ul style="list-style-type: none"> 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 again enclosed as Annexure XIX
xxiii)	The project proponent shall ensure that no natural water course and/or water resources shall be obstructed due to any mining operations.	<ul style="list-style-type: none"> 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.	<p>Complied.</p> <ul style="list-style-type: none"> Suitable rainwater harvesting structures have been constructed to harvest rainwater and recharge the ground water in CPP, residential colonies, school & in mine premises. Copy of the compliance report submitted to CGWA has been submitted along with six monthly compliance report vide letter no. HZL/DSC/Env/2011/2/2 dated 23.11.2011. Report is again enclosed as Annexure XX
xxv)	Regular monitoring of ground water level and quality shall be carried out in and around the project area (mine	<ul style="list-style-type: none"> Complied, Six no's of Piezometer have been installed for monitoring of ground water level and quality around the tailing dam and monthly

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.

monitoring is being carried out.

- Average Ground Water Monitoring Results for October'21 to Marc'22 are furnished herewith as **Annexure IX.**

Parameters	PW1	PW2	PW3	PW4	PW5	PW6
All figures in ppm except pH						
pH	7.28	7.33	7.33	7.32	7.79	7.67
Suspended Solids	10.5	8.5	11.5	13	8.5	14.5
Lead	BDL	BDL	BDL	BDL	BDL	BDL
Zinc	0.05	0.035	0.05	0.175	0.035	0.035
Copper	0.02	BDL	BDL	BDL	BDL	BDL
Iron	0.055	BDL	BDL	BDL	BDL	BDL
Cadmium	BDL	BDL	BDL	BDL	BDL	BDL
Nickel	BDL	BDL	BDL	BDL	BDL	BDL
Cobalt	BDL	BDL	BDL	BDL	BDL	BDL
Depth of well from surface (ft.)	145	145	150	140	145	150
Water level in well from surface (ft.)	4.92	3.28	8.84	5.41	3.04	20.58





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.

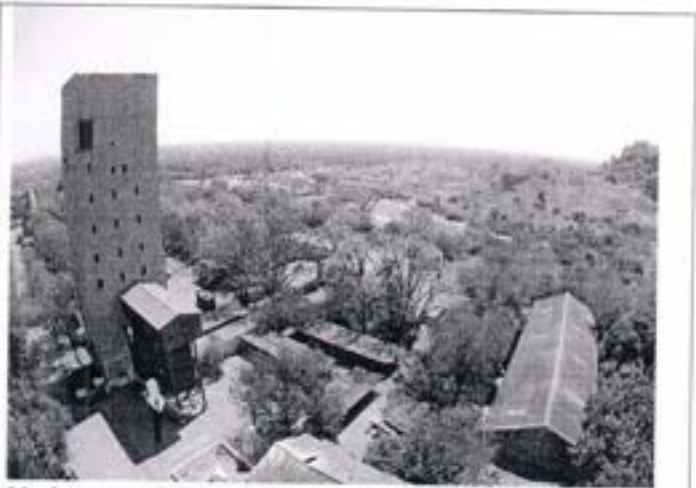
- Complied, Ground water and surface water monitoring is being carried out on monthly basis for analysis of heavy metals.
- Average Surface & Ground Water Monitoring Results (around RD Mine & Tailing Dam Area) for October'21 to March'22 is furnished herewith as **Annexure X.**

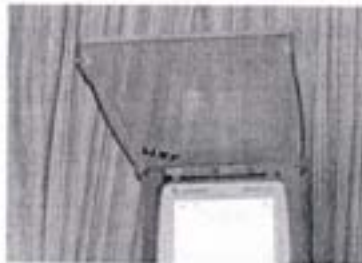

Parameters	Mine Water	Tailing Dam	Garland Drain	Sumer Singh Well	Nahar Singh Well
All figures in ppm except pH					
pH	7.37	7.49	7.08	7.85	7.42
Suspended Solids	20.33	20.5	23.17	7.17	9.50
Lead	BDL	BDL	BDL	BDL	BDL
Zinc	1.25	0.76	0.55	BDL	BDL
Copper	0.03	0.035	0.046	BDL	BDL
Iron	0.04	0.055	0.05	BDL	BDL
Cadmium	BDL	BDL	BDL	BDL	BDL
Nickle	BDL	BDL	BDL	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/IND/Proj/2017-243-R Dated 16 Nov 2017 • CGWA NOC Letter is enclosed as Annexure XXVI
xxviii)	Suitable rainwater harvesting measures on long term basis shall be planned and implemented in consultation with the Regional Director, Central Ground Water Board.	<ul style="list-style-type: none"> 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 <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>Pond Deepening – Mahenduriya Pond</p> </div> <div style="text-align: center;">  <p>Mahenduriya Pond after Pond Deepening</p> </div> </div> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>Recharge Well</p> </div> <div style="text-align: center;">  <p>Storm Water Ponds # 3 & # 4</p> </div> </div>
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.	<p>Complied</p> <ul style="list-style-type: none"> 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	<p>Complied.</p> <ul style="list-style-type: none"> Garland drains have been constructed around the waste dump area along with a collection sump to

	<p>over burden dumps to 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.</p>	<p>prevent run off of water and flow of sediments directly into the Banas River and other water bodies.</p> <ul style="list-style-type: none"> 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.
xxxii)	<p>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.</p>	<p>Complied</p> <ul style="list-style-type: none"> 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. <div data-bbox="730 1048 1428 1534" data-label="Image">  </div> <p>Underground RD mines</p>
xxxii)	<p>Controlled blasting practice shall be adopted. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders shall be implemented.</p>	<p>Complied</p> <ul style="list-style-type: none"> Controlled blasting is adopted. Same practice will be continued. Various mitigative measures for control of ground vibrations have being adopted.

		<ul style="list-style-type: none"> Being Underground mine there is no fly rocks and boulders generation. Photos of Ground Vibrations control and monitoring  <p>Instrument used for ground vibration monitoring</p>
xxxiii)	Wet drilling blasting method and provision for the control air emissions during blasting using dust collectors etc. shall be used.	<ul style="list-style-type: none"> Complied, Wet drilling Controlled blasting is being adopted to control air emissions and same practice will be regularly followed.  <p>Wet Drilling</p>
xxxiv)	Blast vibration shall be assessed from proposed operation. Ground subsidence and mine stability shall also be monitored on regular basis.	<p>Complied</p> <ul style="list-style-type: none"> Wet drilling Controlled blasting is being adopted in mining and same practice will be regularly followed. Blast vibrations, Ground subsidence and mine stability is being continuously observed.

xxxv)	Regular monitoring of subsidence movement on the surface over working area and impact on water bodies/vegetation/ structures/ 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.	<p>Complied</p> <ul style="list-style-type: none"> Regular subsidence-monitoring is carried out on surface on top of mining area, till date no 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.	<p>Complied</p> <ul style="list-style-type: none"> 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.	<ul style="list-style-type: none"> 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.	<p>Complied</p> <ul style="list-style-type: none"> 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).	<p>Complied</p> <ul style="list-style-type: none"> 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 2021-22 has been submitted in vide letter No. HZL/DSC/ENV/FLY ASH Return/2021-22 Dated -13.04.2022. Fly ash





		return is enclosed as Annexure XV
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 in construction and enhancement of tailing dam. In beneficiation plant, existing tailing dam shall be used for disposal of tailings.	<p>Complied</p> <ul style="list-style-type: none"> • Mine waste is used for height rising of the tailing dam and construction of roads. • Tailings generated from Beneficiation plant being 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.	<p>Complied</p> <ul style="list-style-type: none"> • 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. • 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. Monitoring reports are enclosed as Annexure XVI • Waste/used oil is being sold to registered recycler.

		 <p>Used Oil Storage</p>  <p>Organic Waste Converter</p>  <p>Secured Landfill</p>  <p>Jarofix Yard</p>
xljii)	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.	<p>Complied.</p> <ul style="list-style-type: none"> 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.
xljii)	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	<p>Complied.</p> <ul style="list-style-type: none"> 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

	<p>potential as per details given below:</p> <p>Temperature fluctuation and sunlight exposure under confined and unconfined conditions.</p> <p>Buried conditions</p> <p>Air circulation</p> <p>Dry – wet conditions in both confined and unconfined situations</p> <p>Temperature episodes and leachate release conditions</p> <p>Leachate environmental residence study</p> <p>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.</p>	<p>along with EC compliance report for Apr'12 to Sep'12 period vide letter HZL /DSC/ENV/2012/8/24.11.2012. Again, report is enclosed as Annexure XXI</p> <ul style="list-style-type: none"> Monitoring of Primary and Secondary organics (Poly Aromatic Hydrocarbons) and various anions and cations in Jarofix/Jarosite and Fresh tailings Study Report is enclosed as Annexure XXI
xliv)	<p>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.</p>	<p>Complied.</p> <ul style="list-style-type: none"> 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 enclosed as Annexure XXII
xlv)	<p>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.</p>	<p>Complied.</p> <ul style="list-style-type: none"> 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. Report is enclosed as Annexure XXIII

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.	<ul style="list-style-type: none"> 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.
xlvi)	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.	<ul style="list-style-type: none"> Not applicable as mine is underground, therefore, no topsoil is not generated.
xlvi)	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.	<p>Complied.</p> <ul style="list-style-type: none"> 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	<p>Complied</p> <ul style="list-style-type: none"> Medical examination of all the workers engaged is carried out and records are maintained as per the

	maintained. For the purpose, schedule of health examination of the workers shall be drawn and followed accordingly.	<p>rules.</p> <ul style="list-style-type: none"> The main tests include in PME are Audiometry, Lung function & X- Ray.
I)	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.	<p>Complied</p> <ul style="list-style-type: none"> 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. <div data-bbox="730 869 1476 1272" data-label="Image"> </div> <p>Panoramic View of Industrial Area with Green Belt</p> <div data-bbox="730 1332 1109 1601" data-label="Image"> </div> <p>Plantation Near Main Gate</p> <div data-bbox="1125 1332 1476 1601" data-label="Image"> </div> <p>Plantation CPP Boundary Wall</p>

		 <p>Plantation near Community Centre</p>	 <p>Plantation opposite Residential Colony</p>
		 <p>Plantation - In front of CDSS</p>	 <p>Plantation - Parking Area</p>
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.	<p>Noted for Compliance.</p> <ul style="list-style-type: none"> • 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.	<p>Complied.</p> <ul style="list-style-type: none"> • 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	<p>Complied.</p> <ul style="list-style-type: none"> • A full-fledged occupation health center with qualified doctor is established in the project site. 	

	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 beginning of the employment or 15 years after the retirement or cessation of employment whichever is later.	<ul style="list-style-type: none"> 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.
liv)	All the recommendations made in Charter for Corporate Responsibility for Environment Protection (CREP) for Zinc smelters shall be implemented.	<p>Complied</p> <ul style="list-style-type: none"> 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 is enclosed as Annexure XXIV
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 asphaltting the internal roads and to reduce the generation of fugitive dust from vehicle movements.	<p>Complied</p> <ul style="list-style-type: none"> Internal roads have been concreted/ asphalted to reduce the dust emission. The roads are being swept through road sweeper 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-	<p>Complied</p> <ul style="list-style-type: none"> Adequate funds are allocated for capital and revenue expenditures and no fund is diverted to other jobs/places. Environmental control measure expenditure breakup for FY2021-22 and Funds earmarked towards environmental control measures for FY2022-23 has been attached as Annexure XIII and Annexure XIV.

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.	<table><tr><th>S.No</th><th>Description (Funds earmarked towards environmental control measures for FY 2022-23)</th><th>Total Amount (Rs. In Lakhs)</th></tr><tr><td>1</td><td>Green Belt Development, Maintenance of old plantation & landscaping</td><td>398</td></tr><tr><td>2</td><td>Environment Monitoring</td><td>119</td></tr><tr><td>3</td><td>Storm water ponds operations and maintenance & Monsoon management</td><td>28</td></tr><tr><td>4</td><td>Environmental training, awareness and publicity</td><td>20</td></tr><tr><td>5</td><td>Hazardous Waste Management</td><td>3429</td></tr><tr><td>6</td><td>O&M of Organic waste Converter</td><td>5</td></tr><tr><td>7</td><td>Environmental Audit & IMS</td><td>2</td></tr><tr><td>8</td><td>Returns, Fees for Award & CTO</td><td>30</td></tr><tr><td>9</td><td>Pollution control measures</td><td>22</td></tr><tr><td colspan="2">Grand Total</td><td>4055</td></tr></table>			S.No	Description (Funds earmarked towards environmental control measures for FY 2022-23)	Total Amount (Rs. In Lakhs)	1	Green Belt Development, Maintenance of old plantation & landscaping	398	2	Environment Monitoring	119	3	Storm water ponds operations and maintenance & Monsoon management	28	4	Environmental training, awareness and publicity	20	5	Hazardous Waste Management	3429	6	O&M of Organic waste Converter	5	7	Environmental Audit & IMS	2	8	Returns, Fees for Award & CTO	30	9	Pollution control measures	22	Grand Total		4055
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Ivii)	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.	<ul style="list-style-type: none">Noted for compliance, as of now no Rehabilitation and Resettlement Plan applicable for this project.																																		
Iviii)	All the safety norms stipulated by the Director General, Mine & Safety (DGMS) shall be implemented.	<ul style="list-style-type: none">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.	<p>Complied</p> <ul style="list-style-type: none">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 is enclosed as Annexure XXV																																		
lx)	The company shall comply with the	<ul style="list-style-type: none">Complied, all commitments made during Public																																		

	commitments made during public hearing / consultation meeting held.	Hearing/consultations are being complied.
ixi)	No change in mining technology and scope of working shall be carried out without prior approval of the Ministry.	<ul style="list-style-type: none"> 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.
ixii)	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, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	<ul style="list-style-type: none"> 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.
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.	<ul style="list-style-type: none"> 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.	<ul style="list-style-type: none"> 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, SO ₂ and NO _x 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.	<p>Complied.</p> <ul style="list-style-type: none"> Third Party Periodical monitoring of various parameters i.e. PM₁₀, PM_{2.5}, NO_x 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 M/s Eko Pro Engineers, which is NABL and MoEF&CC accredited laboratory.

	Parameters ($\mu\text{g}/\text{m}^3$)	Observed Value			
		Near Main Gate	Near Storm Water pond	Near CPP Area	Near SLF Area
	PM10	76.35	85.45	77.85	83.95
	PM2.5	50.55	50.25	45.75	48.50
	SO2	30.35	34.70	26.15	16.35
	NO2	35.40	41.85	39.60	33.70
	CO	1.09	1.14	1.02	1.10
	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
	<ul style="list-style-type: none"> 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.hzindia.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 from time to time. The treated wastewater should be recycled in the plant as well as utilization for plantation purposes.	Complied <ul style="list-style-type: none"> 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 has been submitted along with six monthly compliance report vide letter no. 			

		<p>HZL/DSC/Env/2011/2/2 dated 23.11.2011.</p> <ul style="list-style-type: none"> Zero Discharge is being maintained.
v)	<p>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.</p>	<p>Complied</p> <ul style="list-style-type: none"> 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 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)	<p>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).</p>	<p>Complied</p> <ul style="list-style-type: none"> 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)	<p>Occupational Health Surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.</p>	<p>Complied</p> <ul style="list-style-type: none"> 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.	<p>Complied</p> <ul style="list-style-type: none"> 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. 																																	
ix)	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.	<p>Complied</p> <ul style="list-style-type: none"> Adequate funds are allocated for capital and revenue expenditures and no fund is diverted to other jobs/places. Environmental control measure expenditure breakup for FY2021-22 and Funds earmarked towards environmental control measures for FY2022-23 has already been submitted as Annexure- XIII & XIV. 																																	
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x)	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.	<ul style="list-style-type: none"> Complied and communicated to Regional Office, MoEF vide letter no: HZL/RDM/Env/2009/898 dated 20.11.2009.
xi)	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. The criteria pollutant levels namely; SPM, RSPM, SO ₂ , NO _x (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.	<p>Complied</p> <ul style="list-style-type: none"> Status of compliance of the stipulated environment clearance conditions, including results of monitored data are being furnished regularly to the Regional Office, MOEF&CC Lucknow, CPCB and RSPCB. Critical environmental parameters are being displayed near the main gate and company website along with six monthly compliance reports. Link of the report is https://www.hzlindia.com/sustainability/environment-t-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.	<p>Complied</p> <ul style="list-style-type: none"> 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.
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	<p>Complied</p> <ul style="list-style-type: none"> Environmental Statement (Form-V) of Financial Year 2020-21 is submitted on date 20.09.2021 via letter number: HZL/DSC/ENV/ES/2020/1 for Zinc, HZL/DSC/ENV/ES/2021/2 for Lead, &

	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.	<p>HZL/DSC/ENV/ES/2021/3 for CPP.</p> <ul style="list-style-type: none"> Environmental Statement (Form-V) of Financial Year 2020-21 is displayed in 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 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.	<ul style="list-style-type: none"> 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.
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.	<ul style="list-style-type: none"> 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,	<ul style="list-style-type: none"> Noted and Complied.

	applicable to this project.	
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.	<ul style="list-style-type: none"> 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.	<ul style="list-style-type: none"> Noted and Complied.

Annexure I

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

SO₂ Continuous Monitoring Report (Oct'21-Mar'22)

Month Location	Parameters	Prescribed Limits	Oct'21	Nov'21	Dec'21	Jan'22	Feb'22	Mar'22
Acid Plant* (Zinc Smelter) Roaster-1	SO ₂ (Kg/T of H ₂ SO ₄ Production)	1.5	0.89	0.93	0.98	0.89	0.89	0.74
Acid Plant* (Zinc Smelter) Roaster-2	SO ₂ (Kg/T of H ₂ SO ₄ Production)	1.5	1.12	1.12	1.13	1.11	0.98	0.93
TGT Stack (Lead Plant)	SO ₂ (Kg/T of H ₂ SO ₄ Production)	1.5	0.11	0.11	0.13	0.15	0.22	0.28



(Vivek Kumar)

Head Environment
 Dariba Smelter Complex



Office & Laboratory : 3041, South Side of G. T. Road, UPSIDC Industrial Area, Gurgaon - 122 006 (Delhi-NCR) INDIA
Contact No.: 9818405427, 9810240876, 9820344487 E-mail: enul@ekopro.in, ekoproengineers@ekopro.in, website: www.ekopro.in

TEST REPORT**Stack Emission Analysis**

Test Report No. : EKO/266/271221

Issue Date : 04/01/2022

Issued To

: HINDUSTAN ZINC LIMITED
Dariba Smelter Complex
Post - Dariba, District - Rajsamand
(Rajasthan)

Sample Description : Stack Emission
Sample Drawn on : 23/12/2021
Sample Drawn by : EPEPL (Mr. Harish Kumar)
Sample Received on : 27/12/2021
Time of Sampling (minutes) : 30.0
Sampling Location : NA
Sampling Plan & Procedure : SOP-SE/08
Analysis Duration : 27/12/2021 To 31/12/2021
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) : 21.0
Stack Temperature (°C) : 56.0
Average Velocity of Fuel Emission (m/sec) : 6.2
Average Flow Rate (lpm) : 24.9
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)	420.5	mg/Nm ³	950.0
2	Acid Mist (as H ₂ SO ₄)	USEPA Method 8	40.9	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.
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 CHAUDHARI
TECHNICAL MANAGER
(Authorised Signatory)



TEST REPORT

Stack Emission Analysis

Test Report No. : EKO/268/271221

Issue Date : 04/01/2022

Issued To

: HINDUSTAN ZINC LIMITED
Dariba Smelter Complex
Post - Dariba, District - Rajsamand
(Rajasthan)

Sample Description : Stack Emission
Sample Drawn on : 25/12/2021
Sample Drawn by : EPEPL (Mr. Harish Kumar)
Sample Received on : 27/12/2021
Time of Sampling (minutes) : 30.0
Sampling Location : NA
Sampling Plan & Procedure : SOP-SE/09
Analysis Duration : 27/12/2021 To 01/01/2022
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) : 20.0
Stack Temperature (°C) : 85.0
Average Velocity of Fuel Emission (m/sec) : 6.8
Average Flow Rate (lpm) : 20.6
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)	404.36	mg/Nm ³	950.0
2	Acid Mist (as H ₂ SO ₄)	USEPA Method 8	40.2	mg/Nm ³	50.0

Notes :

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

** End of Report **

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



EKO PRO ENGINEERS PVT. LTD.

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

Office & Laboratory : 32/H, South Side of G. T. Road, UPSIDC Industrial Area, Ghaziabad - 201 009 (Distt-HR) INDIA.
Contact No.: 9918405427, 9910240376, 9928344407 E-mail : email@ekopro.in, ekoproengineers@gmail.com, website : www.ekopro.in

TEST REPORT

Stack Emission Analysis

Test Report No. : EKO/163/311221

Issued To

Issue Date : 04/01/2022

: HINDUSTAN ZINC LIMITED
Dariba Smelter Complex
Post - Dariba, District - Rajesmand
(Rajasthan)

Sample Description	: Stack Emission
Sample Drawn on	: 27/12/2021
Sample Drawn by	: EPEPL (Mr. Harish Kumar)
Sample Received on	: 31/12/2021
Time of Sampling (minutes)	: 30.0
Sampling Location	: NA
Sampling Plan & Procedure	: SOP-SE/09
Analysis Duration	: 31/12/2021 To 04/01/2022
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)	: 1.0
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)	: 20.0
Stack Temperature (°C)	: 45.0
Average Velocity of Fuel Emission (m/sec)	: 6.3
Average Flow Rate (lpm)	: 23.2
Control Measures (if any)	: Nil
mark (if any)	: NA

RESULTS

S.No.	Parameters	Test Methods	Results	Units	Limits as per Consent
1	Particulate Matter (as PM)	IS: 11255 (P-1)	24.8	mg/Nm ³	50.0

Notes :

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- The test samples will be disposed off after 15 days from the date of issue of test report, unless until specified by the customer.
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**** End of Report ****

For EKO PRO ENGINEERS PVT. LTD.

PURNIMA CHAUHAN
* TECHNICAL MANAGER *
(Authorised Signatory)



Office & Laboratory : 32/11, South Side of G. T. Road, UPSIDC Industrial Area, Ghaziabad - 201 006 (Delhi-NCR) INDIA.

Contact No.: 9810243870, 9810243878, 9820344457 E-mail : email@ekopro.in, ekoproengineers@gmail.com, website : www.ekopro.in

TEST REPORT

Stack Emission Analysis

Test Report No. : EKO/158/311221

Issue Date : 04/01/2022

Issued To

: HINDUSTAN ZINC LIMITED
 Dariba Smelter Complex
 Post - Dariba, District - Rajsamand
 (Rajasthan)

Sample Description : Stack Emission
 Sample Drawn on : 29/12/2021
 Sample Drawn by : EPEPL (Mr. Harish Kumar)
 Sample Received on : 31/12/2021
 Time of Sampling (minutes) : 30.0
 Sampling Location : NA
 Sampling Plan & Procedure : SOP-SE/09
 Analysis Duration : 31/12/2021 To 04/01/2022
 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) : 20.0
 Stack Temperature (°C) : 72.0
 Average Velocity of Fuel Emission (m/sec) : 7.3
 Average Flow Rate (lpm) : 21.5
 Control Measures (if any) : Nil
 mark (if any) : ** Attached to Blast Furnace, Aid 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)	235.6	mg/Nm ³	950.0
2	Acid Mist (as H ₂ SO ₄)	USEPA Method 8	34.8	mg/Nm ³	50.0

Notes :

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- 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)



Office & Laboratory : 234/1, South Side of G. T. Road, UPSIDC Industrial Area, Ghaziabad - 201 009 (Delhi-NCR) INDIA.
 Contact No: 8010408427, 8010240376, 0628344487 E-mail : enail@ekopro.in, ekoproengineers@gmail.com, website : www.ekopro.in

TEST REPORT**Stack Emission Analysis**

Test Report No. : EKO/168/311221

Issue Date : 04/01/2022

Issued To

: HINDUSTAN ZINC LIMITED
 Dariba Smelter Complex
 Post - Dariba, District - Rajsamand
 (Rajasthan)

Sample Description : Stack Emission
 Sample Drawn on : 28/12/2021
 Sample Drawn by : EPEPL (Mr. Harish Kumar)
 Sample Received on : 31/12/2021
 Time of Sampling (minutes) : 30.0
 Sampling Location : NA
 Sampling Plan & Procedure : SOP-SE/09
 Analysis Duration : 31/12/2021 To 04/01/2022
 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) : 20.0
 Stack Temperature (°C) : 68.0
 Average Velocity of Fuel Emission (m/sec) : 7.4
 Average Flow Rate (lpm) : 21.2
 Control Measures (if any) : Nil
 mark (if any) : NA

RESULTS

S.No.	Parameters	Test Methods	Results	Units	Limits as per Consent
1	Particulate Matter (as PM)	IS: 11255 (P-1)	40.8	mg/Nm ³	50.0
2	Lead (as Pb)	USEPA (P-12)	3.68	mg/Nm ³	10.0

Notes :

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**** End of Report ****

For EKO PRO ENGINEERS PVT. LTD.

PURNIMA CHAUHAN
TECHNICAL MANAGER
 (Authorized Signatory)



Office & Laboratory : 52/11, South Side of G. T. Road, UPSIDC Industrial Area, Ghaziabad - 201 006 (Delhi-NCR) INDIA.
Contact No.: 8813405427, 8810340076, 8803344457. E-mail: eneli@ekopro.in, ekoproengineers@gmail.com, website: www.ekopro.in

TEST REPORT

Stack Emission Analysis

Test Report No. : EKO/160/311221

Issue Date : 04/01/2022

Issued To

: HINDUSTAN ZINC LIMITED
Dariba Smelter Complex
Post - Dariba, District - Rajsamand
(Rajasthan)

Sample Description	: Stack Emission
Sample Drawn on	: 28/12/2021
Sample Drawn by	: EPEPL (Mr. Harish Kumar)
Sample Received on	: 31/12/2021
Time of Sampling (minutes)	: 30.0
Sampling Location	: NA
Sampling Plan & Procedure	: SOP-SE/09
Analysis Duration	: 31/12/2021 To 04/01/2022
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)	: 20.0
Stack Temperature (°C)	: 65.0
Average Velocity of Fuel Emission (m/sec)	: 8.3
Average Flow Rate (lpm)	: 22.6
Control Measures (If any)	: Nil
mark (if any)	: NA

RESULTS

S.No.	Parameters	Test Methods	Results	Units	Limits as per Consent
1	Particulate Matter (as PM)	IS: 11255 (P-1)	39.5	mg/Nm ³	50.0
2	Lead (as Pb)	USEPA (P-12)	3.98	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 CHAUDHARI
TECHNICAL MANAGER
(Authorised Signatory)



TEST REPORT

Stack Emission Analysis

Test Report No. : EKO/154/311221

Issue Date : 04/01/2022

Issued To

: HINDUSTAN ZINC LIMITED
Dariba Smelter Complex
Post - Dariba, District - Rajsamand
(Rajasthan)

Sample Description	: Stack Emission
Sample Drawn on	: 28/12/2021
Sample Drawn by	: EPEPL (Mr. Harish Kumar)
Sample Received on	: 31/12/2021
Time of Sampling (minutes)	: 30.0
Sampling Location	: NA
Sampling Plan & Procedure	: SOP-SE/09
Analysis Duration	: 31/12/2021 To 04/01/2022
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)	: 1.2
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)	: 20.0
Stack Temperature (°C)	: 145.0
Average Velocity of Fuel Emission (m/sec)	: 6.8
Average Flow Rate (lpm)	: 20.5
Control Measures (if any)	: Nil
mark (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)	40.1	mg/Nm ³	50.0
2	Lead (as Pb)	USEPA (P-12)	3.84	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
(Authorized Signatory)



Office & Laboratory : 32A/1, South Side of G. T. Road, UPSIDC Industrial Area, Ghaziabad - 201 009 (Delhi-NCR) INDIA.
Contact No.: 9810240370, 9810240376, 9828341467 E-mail : email@ekopro.in, ekoproengineers@gmail.com, website : www.ekopro.in

TEST REPORT

Stack Emission Analysis

Test Report No. : EKO/153/311221

Issued To

Issue Date : 04/01/2022

: HINDUSTAN ZINC LIMITED
Dariba Smelter Complex
Post - Dariba, District - Rajsamand
(Rajasthan)

Sample Description : Stack Emission
Sample Drawn on : 28/12/2021
Sample Drawn by : EPEPL (Mr. Harish Kumar)
Sample Received on : 31/12/2021
Time of Sampling (minutes) : 30.0
Sampling Location : NA
Sampling Plan & Procedure : SOP-SE/09
Analysis Duration : 31/12/2021 To 04/01/2022
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) : 1.2
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) : 20.0
Stack Temperature (°C) : 125.0
Average Velocity of Fuel Emission (m/sec) : 5.7
Average Flow Rate (lpm) : 21.4
Control Measures (if any) : Nil
mark (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)	39.6	mg/Nm ³	50.0
2	Lead (as Pb)	USEPA (P-12)	3.22	mg/Nm ³	10.0

Notes :

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** End of Report **

For EKO PRO ENGINEERS PVT. LTD.

PURNIMA CHAUHAN
TECHNICAL MANAGER
(Authorised Signatory)



Office & Laboratory : 224/1, South Side of G. T. Road, UPSIDC Industrial Area, Ghaziabad - 201 009 (Delhi-NCR) INDIA.
 Contact No. : 9112243070, 9810340678, 9828344437 E-mail : email@ekopro.in, ekoproengineers@gmail.com, website : www.ekopro.in

TEST REPORT

Stack Emission Analysis

Test Report No. : EKO/269/27/22

Issued To

Issue Date : 04/01/2022

: HINDUSTAN ZINC LIMITED

Dariba Smelter Complex

Post - Dariba, District - Rajasamand

(Rajasthan)

Sample Description : Stack Emission
 Sample Drawn on : 25/12/2021
 Sample Drawn by : EPEPL (Mr. Harish Kumar)
 Sample Received on : 27/12/2021
 Time of Sampling (minutes) : 30.0
 Sampling Location : NA
 Sampling Plan & Procedure : SOP-SE/09
 Analysis Duration : 27/12/2021 To 01/01/2022
 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) : 1.2
 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) : 20.0
 Stack Temperature (°C) : 142.0
 Average Velocity of Fuel Emission (m/sec) : 6.5
 Average Flow Rate (lpm) : 20.8
 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)	41.3	mg/Nm ³	50.0
2	Lead (as Pb)	USEPA (P-12)	3.94	mg/Nm ³	10.0

Notes :

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

** End of Report **

For EKO PRO ENGINEERS PVT. LTD.

PURNIMA CHAUDHAN
 TECHNICAL MANAGER
 (Authorised Signatory)



Office & Laboratory : 334/1, South Side of G. T. Road, UPSIDC Industrial Area, Ghaziabad - 201 009 (Delhi-NCR) INDIA.
 Contact No.: 8018403427, 8010240370, 8826344457 E-mail : email@ekopro.in, ekoproengineers@gmail.com, website : www.ekopro.in

TEST REPORT**Stack Emission Analysis**

Test Report No. : EKO/270/271221

Issue Date : 04/01/2022

Issued To

: HINDUSTAN ZINC LIMITED
 Dariba Smelter Complex
 Post - Dariba, District - Rajsamand
 (Rajasthan)

Sample Description : Stack Emission
 Sample Drawn on : 25/12/2021
 Sample Drawn by : EPEPL (Mr. Harish Kumar)
 Sample Received on : 27/12/2021
 Time of Sampling (minutes) : 30.0
 Sampling Location : NA
 Sampling Plan & Procedure : SOP-SE/09
 Analysis Duration : 27/12/2021 To 01/01/2022
 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) : 1.2
 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) : 20.0
 Stack Temperature (°C) : 125.0
 Average Velocity of Fuel Emission (m/sec) : 5.9
 Average Flow Rate (lpm) : 21.2
 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)	40.8	mg/Nm ³	50.0
2	Lead (as Pb)	USEPA (P-12)	3.74	mg/Nm ³	10.0

Notes :

- 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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- The test report will not be used for any publicity/legal purpose.
- The test samples will be disposed off after 15 days from the date of issue of test report, unless until specified by the customer.
- 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)



Office & Laboratory : 324/1, South Side of G. T. Road, UPSIDC Industrial Area, Chopalwad - 301 006 (Dain-NOR) INDIA.
Contact No: 9616105427, 9810310078, 8628344157 E-mail: eko@ekopro.in, ekoproengineers@gmail.com, www.ekopro.in

TEST REPORT

Stack Emission Analysis

Test Report No. : EKO/55/311221
Issued To

Issue Date : 04/01/2022

: HINDUSTAN ZINC LIMITED
Dariba Smelter Complex
Post - Dariba, District - Rajsamand
(Rajasthan)

Sample Description : Stack Emission
Sample Drawn on : 30/12/2021
Sample Drawn by : EPEPL (Mr. Harish Kumar)
Sample Received on : 31/12/2021
Time of Sampling (minutes) : 30.0
Sampling Location : NA
Sampling Plan & Procedure : SOP-SE/09
Analysis Duration : 31/12/2021 To 03/01/2022
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) : 22.0
Stack Temperature (°C) : 130.0
Average Velocity of Fuel Emission (m/sec) : 12.9
Average Flow Rate (lpm) : 20.7
Control Measures (if any) : Nil
Remarks (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)	30.5	mg/Nm ³	50.0
2	Sulphur Dioxide (as SO ₂)	IS: 11255 (P-2)	490.3	mg/Nm ³	600.0
3	Oxide of Nitrogen (as NOx)	IS: 11255 (P-7)	215.7	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.
PUJAN CHAUHAN
TECHNICAL MANAGER
(Authorised Signatory)



Office & Laboratory : 224/1, South Side of G. T. Road, UPSIDC Industrial Area, Ghatebad - 201 006 (Dahidhara) INDIA.
Contact No: 8648405127, 8610240578, 8628344487 E-mail : emak@ekopro.in, ekoproengineers@gmail.com, website : www.ekopro.in

TEST REPORT**Stack Emission Analysis**

Test Report No. : EKO/55/311221

Issued To

Issue Date : 04/01/2022

: HINDUSTAN ZINC LIMITED
Dariba Smelter Complex
Post - Dariba, District - Rajsamand
(Rajasthan)

Sample Description : Stack Emission
Sample Drawn on : 30/12/2021
Sample Drawn by : EPEPL (Mr. Harish Kumar)
Sample Received on : 31/12/2021
Time of Sampling (minutes) : 30.0
Sampling Location : NA
Sampling Plan & Procedure : SOP-SE/09
Analysis Duration : 31/12/2021 To 04/01/2022
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) : -
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) : 20.0
Stack Temperature (°C) : 92.0
Average Velocity of Fuel Emission (m/sec) : 7.7
Average Flow Rate (lpm) : 20.5
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)	40.2	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 DRAHMAN
TECHNICAL MANAGER
(Authorized Signatory)



Office & Laboratory : 32/41, South Side of G. T. Road, UPSIDC Industrial Area, Ghaziabad - 201 008 (Delhi-NCR) INDIA.
Contact No.: 8818405427, 8810249370, 8820344467 E-mail: email@ekopro.in, ekoproengineers@gmail.com, website: www.ekopro.in

TEST REPORT

Stack Emission Analysis

Test Report No. : EKO/203/160322

Issue Date : 22/03/2022

Issued To

: HINDUSTAN ZINC LIMITED
Dariba Smelter Complex
Post - Dariba, District - Rajsamand
(Rajasthan)

Sample Description : Stack Emission
Sample Drawn on : 14/03/2022
Sample Drawn by : EPEPL (Mr. Harish Kumar)
Sample Received on : 16/03/2022
Time of Sampling (minutes) : 30.0
Sampling Location : NA
Sampling Plan & Procedure : SOP-SE/09
Analysis Duration : 16/03/2022 To 22/03/2022
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) : 29.0
Stack Temperature (°C) : 52.0
Average Velocity of Fuel Emission (m/sec) : 6.4
Average Flow Rate (lpm) : 24.1
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)	416.3	mg/Nm ³	950.0
2	Acid Mist (as H ₂ SO ₄)	USEPA Method 8	36.4	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.

(Signature)
★ PURNIMA CHAUDHARI
TECHNICAL MANAGER
(Authorised Signatory)



Office & Laboratory : 32/41, South Side of G. T. Road, UPSIDC Industrial Area, Ghaziabad - 201 009 (Delhi-NCR) INDIA.
Contact No.: 9918403427, 9910240370, 8828344487 E-mail : ems@ekopro.in, ekoproengineers@gmail.com, website : www.ekopro.in

TEST REPORT**Stack Emission Analysis**

Test Report No. : EKO/204/160322

Issue Date : 22/03/2022

Issued To

: HINDUSTAN ZINC LIMITED
Dariba Smelter Complex
Post - Dariba, District - Rajsamand
(Rajasthan)

Sample Description : Stack Emission
Sample Drawn on : 14/03/2022
Sample Drawn by : EPEPL (Mr. Harish Kumar)
Sample Received on : 16/03/2022
Time of Sampling (minutes) : 30.0
Sampling Location : NA
Sampling Plan & Procedure : SOP-SE/09
Analysis Duration : 16/03/2022 To 22/03/2022
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) : 29.0
Stack Temperature (°C) : 80.0
Average Velocity of Fuel Emission (m/sec) : 6.5
Average Flow Rate (lpm) : 20.1
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)	398.4	mg/Nm ³	950.0
2	Acid Mist (as H ₂ SO ₄)	USEPA Method 8	37.7	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.
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.

PURNIMABABU
TECHNICAL MANAGER
(Authorized Signatory)



Office & Laboratory : 3241, South Side of G. T. Road, UPSIDC Industrial Area, Ghaziabad - 201 009 (Delhi-NCR) INDIA.
Contact No.: 9810043870, 9810040376, 8888344457 E-mail : email@ekopro.in, ekoproengineers@gmail.com, website : www.ekopro.in

TEST REPORT**Stack Emission Analysis**

Test Report No. : EKO/202/160322

Issue Date : 22/03/2022

Issued To

: HINDUSTAN ZINC LIMITED
Dariba Smelter Complex
Post - Dariba, District - Rajsamand
(Rajasthan)

Sample Description	: Stack Emission
Sample Drawn on	: 14/03/2022
Sample Drawn by	: EPEPL (Mr. Harish Kumar)
Sample Received on	: 16/03/2022
Time of Sampling (minutes)	: 30.0
Sampling Location	: NA
Sampling Plan & Procedure	: SOP-SE/09
Analysis Duration	: 16/03/2022 To 22/03/2022
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)	: 29.0
Stack Temperature (°C)	: 70.0
Average Velocity of Fuel Emission (m/sec)	: 7.4
Average Flow Rate (lpm)	: 21.3
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 CHAUDHARI
TECHNICAL MANAGER
(Authorized Signatory)



Office & Laboratory : 32/41, South Side of G. T. Road, UPSIDC Industrial Area, Ghaziabad - 201 009 (Distt-NCR) INDIA.
 Contact No.: 9810243870, 9810243870, 9822344487 E-mail : ekopro@ekopro.in, ekoproengineers@gmail.com, website : www.ekopro.in

TEST REPORT**Stack Emission Analysis**

Test Report No. : EKO/201/160322

Issue Date : 22/03/2022

Issued To

: HINDUSTAN ZINC LIMITED
 Dariba Smelter Complex
 Post - Dariba, District - Rajsamand
 (Rajasthan)

Sample Description : Stack Emission
 Sample Drawn on : 12/03/2022
 Sample Drawn by : EPEPL (Mr. Harish Kumar)
 Sample Received on : 16/03/2022
 Time of Sampling (minutes) : 30.0
 Sampling Location : NA
 Sampling Plan & Procedure : SOP-SE/09
 Analysis Duration : 16/03/2022 To 22/03/2022
 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) : 1.0
 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) : 29.0
 Stack Temperature (°C) : 40.0
 Average Velocity of Fuel Emission (m/sec) : 6.8
 Average Flow Rate (lpm) : 22.8
 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)	26.2	mg/Nm ³	50.0

Notes :

- 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.
- This test report will not be generated again, either wholly or in part, without prior written permission of the Laboratory.
- The test report will not be used for any publicity/legal purpose.
- The test samples will be disposed off after 15 days from the date of issue of test report, unless until specified by the customer.
- Responsibility of the Laboratory is limited to the invoiced amount only.

**** End of Report ****

For EKO PRO ENGINEERS PVT. LTD.

PURNIMA CHAUDHAN
 * TECHNICAL MANAGER
 (Authorised Signatory)



Office & Laboratory : 52/41, South Side of G. T. Road, UPSIDC Industrial Area, Ghaziabad - 201 009 (Delhi-NCR) INDIA.
Contact No.: 8516403427, 9210240370, 8828344457 E-mail : email@ekopro.in, ekoproengineers@gmail.com, website : www.ekopro.in

TEST REPORT**Stack Emission Analysis**

Test Report No. : EKO/199/160322

Issue Date : 22/03/2022

Issued To

: HINDUSTAN ZINC LIMITED
Dariba Smelter Complex
Post - Dariba, District - Rajsamand
(Rajasthan)

Sample Description	: Stack Emission
Sample Drawn on	: 12/03/2022
Sample Drawn by	: EPEPL (Mr. Harish Kumar)
Sample Received on	: 16/03/2022
Time of Sampling (minutes)	: 30.0
Sampling Location	: NA
Sampling Plan & Procedure	: SOP-SE/09
Analysis Duration	: 16/03/2022 To 22/03/2022
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)	: 29.0
Stack Temperature (°C)	: 70.0
Average Velocity of Fuel Emission (m/sec)	: 7.5
Average Flow Rate (lpm)	: 20.1
Control Measures (if any)	: Nil
Remark (if any)	: ** Attached to Blast Furnace, Aid 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)	230.4	mg/Nm ³	950.0
2	Acid Mist (as H ₂ SO ₄)	USEPA Method B	31.7	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.
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 CHAUDHARI
TECHNICAL MANAGER
(Authorised Signatory)



Office & Laboratory : 32/47, South Side of G. T. Road, UPSIDC Industrial Area, Ghaziabad - 201 009 (Delhi-NCR) INDIA.
Contact No.: 9810243570, 9810240378, 9828344457 E-mail : email@emopro.in, emoproengineers@gmail.com, website : www.emopro.in

TEST REPORT

Stack Emission Analysis

Test Report No. : EKO/200/160322

Issue Date : 22/03/2022

Issued To

: HINDUSTAN ZINC LIMITED
Dariba Smelter Complex
Post - Dariba, District - Rajsamand
(Rajasthan)

Sample Description	: Stack Emission
Sample Drawn on	: 12/03/2022
Sample Drawn by	: EPEPL (Mr. Harish Kumar)
Sample Received on	: 16/03/2022
Time of Sampling (minutes)	: 30.0
Sampling Location	: NA
Sampling Plan & Procedure	: SOP-SE/09
Analysis Duration	: 16/03/2022 To 22/03/2022
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)	: 28.0
Stack Temperature (°C)	: 60.0
Average Velocity of Fuel Emission (m/sec)	: 8.5
Average Flow Rate (lpm)	: 20.9
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)	36.4	mg/Nm ³	50.0
2	Lead (as Pb)	USEPA (P-12)	4.01	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 EMO PRO ENGINEERS PVT. LTD.
(PURNIMA CHAUDHARI)
TECHNICAL MANAGER
(Authorized Signatory)



Office & Laboratory : 32/41, South Side of G. T. Road, UPSIDC Industrial Area, Ghaziabad - 201 009 (Distt-HR) INDIA.
Contact No.: 9818406407, 9810340070, 9820344407 E-mail: ekopro@ekopro.in, ekoproengineers@gmail.com, website: www.ekopro.in

TEST REPORT**Stack Emission Analysis**

Test Report No. : EKO/195/160322

Issue Date : 22/03/2022

Issued To

: HINDUSTAN ZINC LIMITED
Dariba Smelter Complex
Post - Dariba, District - Rajsamand
(Rajasthan)

Sample Description : Stack Emission
Sample Drawn on : 11/03/2022
Sample Drawn by : EPEPL (Mr. Harish Kumar)
Sample Received on : 16/03/2022
Time of Sampling (minutes) : 30.0
Sampling Location : NA
Sampling Plan & Procedure : SOP-SE/09
Analysis Duration : 16/03/2022 To 22/03/2022
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) : 1.2
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) : 29.0
Stack Temperature (°C) : 140.0
Average Velocity of Fuel Emission (m/sec) : 6.6
Average Flow Rate (lpm) : 20.1
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)	42.7	mg/Nm ³	50.0
2	Lead (as Pb)	USEPA (P-12)	2.92	mg/Nm ³	10.0

Notes :

- 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.
- This test report will not be generated again, either wholly or in part, without prior written permission of the Laboratory.
- The test report will not be used for any publicity/legal purpose.
- The test samples will be disposed off after 15 days from the date of issue of test report, unless until specified by the customer.
- Responsibility of the Laboratory is limited to the invoiced amount only.

**** End of Report ****

For EKO PRO ENGINEERS PVT. LTD.

PURNIMA CHAUHAN
TECHNICAL MANAGER
(Authorized Signatory)



Office & Laboratory : 324/1, South Side of G. T. Road, UPSIDC Industrial Area, Ghaziabad - 201 008 (Distt-MCR) INDIA.
Contact No.: 9516405427, 9510240679, 8828344467 E-mail: email@ekopro.in, ekoproengineers@gmail.com, website: www.ekopro.in

TEST REPORT**Stack Emission Analysis**

Test Report No. : EKO/194/160322

Issue Date : 22/03/2022

Issued To

: HINDUSTAN ZINC LIMITED
Dariba Smelter Complex
Post - Dariba, District - Rajsamand
(Rajasthan)

Sample Description : Stack Emission
Sample Drawn on : 11/03/2022
Sample Drawn by : EPEPL (Mr. Harish Kumar)
Sample Received on : 16/03/2022
Time of Sampling (minutes) : 30.0
Sampling Location : NA
Sampling Plan & Procedure : SOP-SE/08
Analysis Duration : 16/03/2022 To 22/03/2022
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) : 1.2
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) : 29.0
Stack Temperature (°C) : 120.0
Average Velocity of Fuel Emission (m/sec) : 5.5
Average Flow Rate (lpm) : 20.6
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)	37.8	mg/Nm ³	50.0
2	Lead (as Pb)	USEPA (P-12)	3.12	mg/Nm ³	10.0

Notes :

- 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.
- This test report will not be generated again, either wholly or in part, without prior written permission of the Laboratory.
- The test report will not be used for any publicity/legal purpose.
- The test samples will be disposed off after 15 days from the date of issue of test report, unless until specified by the customer.
- Responsibility of the Laboratory is limited to the invoiced amount only.

**** End of Report ****

For EKO PRO ENGINEERS PVT. LTD.

*** PURNIMA CHANDAN ***
TECHNICAL MANAGER
(Authorized Signatory)



Office & Laboratory : 32/41, South Side of B. T. Road, UPSIDC Industrial Area, Ghaziabad - 201 006 (Delhi-NCR) INDIA.
Contact No.: 8910240370, 8910240375, 8920344467 E-mail : enr@ekopro.in, ekoproengineers@gmail.com, website : www.ekopro.in

TEST REPORT**Stack Emission Analysis**

Test Report No. : EKO/205/160322

Issue Date : 22/03/2022

Issued To

: HINDUSTAN ZINC LIMITED

Dariba Smelter Complex

Post - Dariba, District - Rajsamand

(Rajasthan)

Sample Description : Stack Emission
Sample Drawn on : 14/03/2022
Sample Drawn by : EPEPL (Mr. Harish Kumar)
Sample Received on : 16/03/2022
Time of Sampling (minutes) : 30.0
Sampling Location : NA
Sampling Plan & Procedure : SOP-SE/09
Analysis Duration : 16/03/2022 To 22/03/2022
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) : 1.2
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) : 29.0
Stack Temperature (°C) : 148.0
Average Velocity of Fuel Emission (m/sec) : 6.7
Average Flow Rate (lpm) : 20.1
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)	38.4	mg/Nm ³	50.0
2	Lead (as Pb)	USEPA (P-12)	3.47	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 CHAUDHARI ***
TECHNICAL MANAGER
(Authorised Signatory)



Office & Laboratory : 334/1, South Side of G. T. Road, UPSIDC Industrial Area, Ghaziabad - 201 009 (Delhi-NCR) INDIA.
Contact No.: 9918405427, 9910240370, 9920344487 E-mail : emsk@ekopro.in, ekoproengineers@gmail.com, website : www.ekopro.in

TEST REPORT

Stack Emission Analysis

Test Report No. : EKO/206/160322

Issue Date : 22/03/2022

Issued To

: HINDUSTAN ZINC LIMITED
Dariba Smelter Complex
Post - Dariba, District - Rajsamand
(Rajasthan)

Sample Description	: Stack Emission
Sample Drawn on	: 14/03/2022
Sample Drawn by	: EPEPL (Mr. Harish Kumar)
Sample Received on	: 16/03/2022
Time of Sampling (minutes)	: 30.0
Sampling Location	: NA
Sampling Plan & Procedure	: SOP-SE/09
Analysis Duration	: 16/03/2022 To 22/03/2022
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)	: 1.2
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)	: 29.0
Stack Temperature (°C)	: 120.0
Average Velocity of Fuel Emission (m/sec)	: 6.2
Average Flow Rate (lpm)	: 20.9
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)	42.7	mg/Nm ³	50.0
2	Lead (as Pb)	USEPA (P-12)	4.12	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 SHARMA
TECHNICAL MANAGER
(Authorised Signatory)



Office & Laboratory : 33/41, South Side of G. T. Road, UPSIDC Industrial Area, Ghaziabad - 201 009 (Delhi-NCR) INDIA.
Contact No.: 9810405427, 9810248870, 9826344487 E-mail : email@ekopro.in, ekoproengineers@gmail.com, website : www.ekopro.in

TEST REPORT

Stack Emission Analysis

Test Report No. : EKO/196/160322

Issue Date : 22/03/2022

Issued To

: HINDUSTAN ZINC LIMITED
Dariba Smelter Complex
Post - Dariba, District - Rajsamand
(Rajasthan)

Sample Description : Stack Emission
Sample Drawn on : 11/03/2022
Sample Drawn by : EPEPL (Mr. Harish Kumar)
Sample Received on : 16/03/2022
Time of Sampling (minutes) : 30.0
Sampling Location : NA
Sampling Plan & Procedure : SOP-SE/09
Analysis Duration : 16/03/2022 To 22/03/2022
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) : 29.0
Stack Temperature (°C) : 138.0
Average Velocity of Fuel Emission (m/sec) : 12.7
Average Flow Rate (lpm) : 20.4
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)	34.6	mg/Nm ³	50.0
2	Sulphur Dioxide (as SO ₂)	IS: 11255 (P-2)	486.4	mg/Nm ³	600.0
3	Oxide of Nitrogen (as NOx)	IS: 11255 (P-7)	210.7	mg/Nm ³	300.0
4	Hg and its Compounds	APHA Method 822	<0.005	mg/Nm ³	0.03

Notes :

- 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.
- This test report will not be generated again, either wholly or in part, without prior written permission of the Laboratory.
- The test report will not be used for any publicity/legal purpose.
- The test samples will be disposed off after 15 days from the date of issue of test report, unless until specified by the customer.
- Responsibility of the Laboratory is limited to the invoiced amount only.

** End of Report **

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



Office & Laboratory : 32/41, South Side of G. T. Road, UPSIDC Industrial Area, Ghaziabad - 201 006 (Distt-HCR) INDIA.
 Contact No.: 9810243670, 9810243678, 9830344467 E-mail: enr@ekopro.in, ekoproengineers@gmail.com, website : www.ekopro.in

TEST REPORT**Stack Emission Analysis**

Test Report No. : EKO/197/160322

Issue Date : 22/03/2022

Issued To

: HINDUSTAN ZINC LIMITED
 Dariba Smelter Complex
 Post - Dariba, District - Rajsamand
 (Rajasthan)

Sample Description : Stack Emission
 Sample Drawn on : 11/03/2022
 Sample Drawn by : EPEPL (Mr. Harish Kumar)
 Sample Received on : 16/03/2022
 Time of Sampling (minutes) : 30.0
 Sampling Location : NA
 Sampling Plan & Procedure : SOP-SE/09
 Analysis Duration : 16/03/2022 To 22/03/2022
 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) : -
 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) : 29.0
 Stack Temperature (°C) : 90.0
 Average Velocity of Fuel Emission (m/sec) : 7.5
 Average Flow Rate (lpm) : 20.1
 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)	38.7	mg/Nm ³	50.0

Notes :

- 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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- The test report will not be used for any publicity/legal purpose.
- The test samples will be disposed off after 15 days from the date of issue of test report, unless until specified by the customer.
- Responsibility of the Laboratory is limited to the invoiced amount only.


** End of Report **

For EKO PRO ENGINEERS PVT. LTD.

PURNIMAZHABAN
 TECHNICAL MANAGER
 (Authorised Signature)

Mar - 22

Name Of Monitoring Station	PM 10 ($\mu\text{g}/\text{m}^3$)	PM 2.5 ($\mu\text{g}/\text{m}^3$)	NO2 ($\mu\text{g}/\text{m}^3$)	SO2 ($\mu\text{g}/\text{m}^3$)	CO (mg/m^3)
Near Laboratory	68.84	25.52	10.96	2.92	310
Near DG Set	72.91	30.94	15.87	3.39	360
Near AB- Type Quarter	66.79	29.98	12.88	5.18	310


(Himanshu Sharda)
Environment Head
Rajpura Dariba Mines

Office & Laboratory : 324/1, South Side of G. T. Road, UPSIDCO Industrial Area, Ghaziabad - 201 009 (Delhi-NCR) INDIA.
Contact No.: 9818405427, 9810240578, 9820344487 E-mail : email@ekopro.in, ekopruengineers@gmail.com, website : www.ekopro.in**TEST REPORT****Ambient Air Quality Monitoring**

Test Report No. : EKO/185/311221

Issue Date : 04/01/2022

Issued To

: HINDUSTAN ZINC LIMITED
Dariba Smelter Complex
Post - Dariba, District - Rajsamand
(Rajasthan)

Sample Description : Ambient Air
 Sample Drawn on : 27/12/2021 To 28/12/2021
 Sample Drawn by : EPEPL (Mr. Harish Kumar)
 Sample Received on : 31/12/2021
 Sampling Location : Near Main Gate (South)
 Sampling Time : 24.0 Hrs.
 Sampling Plan & Procedure : SOP-AAQ/15
 Analysis Duration : 31/12/2021 To 04/01/2022
 Ambient Temperature (°C) : 20.0
 Average Flow Rate of SPM (m³/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)	76.3	µg/m ³	100.0
2	Particulate Matter (PM2.5)	EKO/CHEM/SOP/AAQ-01	49.5	µg/m ³	60.0
3	Sulphur Dioxide (as SO ₂)	IS: 5182 (P-2)	28.9	µg/m ³	80.0
4	Nitrogen Dioxide (as NO ₂)	IS: 5182 (P-6)	38.4	µg/m ³	80.0
5	Carbon Monoxide (as CO)	IS: 5182 (P-10)	1.08	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 ₆ H ₆)	IS: 5182 (P-11)	<1.0	µg/m ³	5.0
12	Benzo(alpha) Pyrene-Particulate Phase Only	IS: 5182 (P-12)	<1.0	ng/m ³	1.0

- Notes :
- 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.
 - This test report will not be generated again, either wholly or in part, without prior written permission of the Laboratory.
 - The test report will not be used for any publicity/legal purpose.
 - 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.
 - Responsibility of the Laboratory is limited to the invoiced amount only.

**** End of Report ****

For EKO PRO ENGINEERS PVT. LTD.

PURNIMA CHAUDHARI
TECHNICAL MANAGER
(Authorised Signatory)

Office & Laboratory : 32/41, South Side of G. T. Road, UPSIDC Industrial Area, Ghaziabad - 201 009 (Delhi-MCR) INDIA.
Contact No: 8818408427, 9810340578, 9826344457 E-mail : email@ekopro.in, ekoproengineers@gmail.com, website : www.ekopro.in**TEST REPORT****Ambient Air Quality Monitoring**

Test Report No. : EKO/167/311221

Issue Date : 04/01/2022

Issued To

: HINDUSTAN ZINC LIMITED

Dariba Smelter Complex

Post - Dariba, District - Rajasamand
(Rajasthan)

Sample Description : Ambient Air
 Sample Drawn on : 29/12/2021 To 30/12/2021
 Sample Drawn by : EPEPL (Mr. Harish Kumar)
 Sample Received on : 31/12/2021
 Sampling Location : Near Storm Water Pond (North West)
 Sampling Time : 24.0 Hrs.
 Sampling Plan & Procedure : SOP-AAQ/15
 Analysis Duration : 31/12/2021 To 04/01/2022
 Ambient Temperature (°C) : 20.0
 Average Flow Rate of SPM (m³/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)	82.3	µg/m ³	100.0
2	Particulate Matter (PM2.5)	EKO/CHEM/SOP/AAQ-01	48.1	µg/m ³	60.0
3	Sulphur Dioxide (as SO ₂)	IS: 5182 (P-2)	36.8	µg/m ³	80.0
4	Nitrogen Dioxide (as NO ₂)	IS: 5182 (P-6)	40.1	µg/m ³	80.0
5	Carbon Monoxide (as CO)	IS: 5182 (P-10)	1.05	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 ₆ H ₆)	IS: 5182 (P-11)	<1.0	µg/m ³	5.0
12	Benzo(alpha) Pyrene-Particulate Phase Only	IS: 5182 (P-12)	<1.0	ng/m ³	1.0

Notes :

- 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.
- This test report will not be generated again, either wholly or in part, without prior written permission of the Laboratory.
- The test report will not be used for any publicity/legal purpose.
- 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.
- Responsibility of the Laboratory is limited to the invoiced amount only.

**** End of Report ****

For EKO PRO ENGINEERS PVT. LTD.

PURNIMA CHAUDHAN
 TECHNICAL MANAGER
 (Authorised Signatory)



Office & Laboratory : 32/41, South Side of G. T. Road, UPSIDC Industrial Area, Gurgaon - 122 009 (Delhi-NCR) INDIA.
Contact No.: 9812405427, 9810249876, 8826344457 E-mail : email@ekopro.in, ekoproengineers@gmail.com, website : www.ekopro.in

TEST REPORT**Ambient Air Quality Monitoring**

Test Report No. : EKO/169/311221

Issue Date : 04/01/2022

Issued To

HINDUSTAN ZINC LIMITED
Dariba Smelter Complex
Post - Dariba, District - Rajsamand
(Rajasthan)

Sample Description : Ambient Air
Sample Drawn on : 28/12/2021 To 29/12/2021
Sample Drawn by : EPEPL (Mr. Harish Kumar)
Sample Received on : 31/12/2021
Sampling Location : Near CPP Area (North East)
Sampling Time : 24.0 Hrs.
Sampling Plan & Procedure : SOP-AAQ/15
Analysis Duration : 31/12/2021 To 04/01/2022
Ambient Temperature (°C) : 17.0
Average Flow Rate of SPIM (m³/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 CPOB Notification, 18th Nov 2009
1	Particulate Matter (PM10)	IS: 5182 (P-23)	79.4	µg/m ³	100.0
2	Particulate Matter (PM2.5)	EKO/CHEM/SOP/AAQ-01	42.6	µg/m ³	60.0
3	Sulphur Dioxide (as SO ₂)	IS: 5182 (P-2)	27.1	µg/m ³	80.0
4	Nitrogen Dioxide (as NO ₂)	IS: 5182 (P-6)	40.8	µg/m ³	80.0
5	Carbon Monoxide (as CO)	IS: 5182 (P-10)	0.82	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 ₆ H ₆)	IS: 5182 (P-11)	<1.0	µg/m ³	5.0
12	Benzo(alpha) Pyrene-Particulate Phase Only	IS: 5182 (P-12)	<1.0	ng/m ³	1.0

Notes :

- 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.
- This test report will not be generated again, either wholly or in part, without prior written permission of the Laboratory.
- The test report will not be used for any publicity/legal purpose.
- 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.
- 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)



Office & Laboratory : 32A/1, South Side of G. T. Road, UPSIDC Industrial Area, Gaziabad - 201 008 (Delhi-NCR) INDIA.
Contact No. 9318405427, 9310240576, 9326344467 E-mail : envelt@ekopro.in, ekoproengineers@gmail.com, website : www.ekopro.in

TEST REPORT

Ambient Air Quality Monitoring

Test Report No. : EKO/155/311221

Issue Date : 04/01/2022

Issued To

: HINDUSTAN ZINC LIMITED
Dariba Smelter Complex
Post - Dariba, District - Rajsamand
(Rajasthan)

Sample Description : Ambient Air
Sample Drawn on : 27/12/2021 To 28/12/2021
Sample Drawn by : EPEPL (Mr. Harish Kumar)
Sample Received on : 31/12/2021
Sampling Location : Near SLF Area
Sampling Time : 24.0 Hrs.
Sampling Plan & Procedure : SOP-AAQ/15
Analysis Duration : 31/12/2021 To 04/01/2022
Ambient Temperature (°C) : 20.0
Average Flow Rate of SPM (m³/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 (PM ₁₀)	IS: 5182 (P-23)	82.3	µg/m ³	100.0
2	Particulate Matter (PM _{2.5})	EKO/CHEM/SOP/AAQ-01	48.9	µg/m ³	60.0
3	Sulphur Dioxide (as SO ₂)	IS: 5182 (P-2)	15.1	µg/m ³	80.0
4	Nitrogen Dioxide (as NO ₂)	IS: 5182 (P-6)	32.6	µg/m ³	80.0
5	Carbon Monoxide (as CO)	IS: 5182 (P-10)	1.02	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 ₆ H ₆)	IS: 5182 (P-11)	<1.0	µg/m ³	5.0
12	Benzo(alpha) Pyrene-Particulate Phase Only	IS: 5182 (P-12)	<1.0	ng/m ³	1.0

- Notes :
- 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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 - The test report will not be used for any publicity/legal purpose.
 - 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.
 - Responsibility of the Laboratory is limited to the invoiced amount only.

**** End of Report ****

For EKO PRO ENGINEERS PVT. LTD.

PURUSHAKSHAN
TECHNICAL MANAGER
(Authorised Signatory)



Office & Laboratory : 32/41, South Side of G. T. Road, UPSIDC Industrial Area, Ghaziabad - 201 006 (Delhi-NCR) INDIA.
Contact No.: 9816405427, 9810240678, 9826344457 E-mail : email@ekopro.in, ekoproengineers@gmail.com, website : www.ekopro.in

TEST REPORT

Ambient Air Quality Monitoring

Test Report No. : EKO/267/160322

Issue Date : 22/03/2022

Issued To :

HINDUSTAN ZINC LIMITED
Dariba Smelter Complex
Post - Dariba, District - Rajasmand
(Rajasthan)

Sample Description : Ambient Air
Sample Drawn on : 11/03/2022 To 12/03/2022
Sample Drawn by : EPEPL (Mr. Harish Kumar)
Sample Received on : 16/03/2022
Sampling Location : Near Main Gate (South)
Sampling Time : 24.0 Hrs.
Sampling Plan & Procedure : SOP-AAQ/15
Analysis Duration : 16/03/2022 To 22/03/2022
Ambient Temperature (°C) : 29.0
Average Flow Rate of SPM (m³/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)	76.4	µg/m ³	100.0
2	Particulate Matter (PM2.5)	EKO/CHEM/SOP/AAQ-01	51.6	µg/m ³	60.0
3	Sulphur Dioxide (as SO ₂)	IS: 5182 (P-2)	31.8	µg/m ³	80.0
4	Nitrogen Dioxide (as NO ₂)	IS: 5182 (P-6)	32.4	µg/m ³	80.0
5	Carbon Monoxide (as CO)	IS: 5182 (P-10)	1.12	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 ₆ H ₆)	IS: 5182 (P-11)	<1.0	µg/m ³	5.0
12	Benzo(alpha) Pyrene-Particulate Phase Only	IS: 5182 (P-12)	<1.0	ng/m ³	1.0

Notes :

- 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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- The test report will not be used for any publicity/legal purpose.
- 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.
- Responsibility of the Laboratory is limited to the invoiced amount only.

**** End of Report ****

For EKO PRO ENGINEERS PVT. LTD.

PURNIMA CHAUHAN
TECHNICAL MANAGER
(Authorized Signatory)



Office & Laboratory : 32/41, South Side of G. T. Road, UPSIDC Industrial Area, Ghaziabad - 201 009 (Delhi-NCR) INDIA.
 Contact No: 9818405437, 9810240676, 9820344457 E-mail : email@ekopro.in, ekoproengineers@gmail.com, website : www.ekopro.in

TEST REPORT**Ambient Air Quality Monitoring**

Test Report No. : EKO/285/160322

Issue Date : 22/03/2022

Issued To

: HINDUSTAN ZINC LIMITED

Dariba Smelter Complex

Post - Dariba, District - Rajsamand

(Rajasthan)

Sample Description : Ambient Air
 Sample Drawn on : 11/03/2022 To 12/03/2022
 Sample Drawn by : EPEPL (Mr. Harish Kumar)
 Sample Received on : 16/03/2022
 Sampling Location : Near Storm Water Pond (North West)
 Sampling Time : 24.0 Hrs.
 Sampling Plan & Procedure : SOP-AAQ/15
 Analysis Duration : 16/03/2022 To 22/03/2022
 Ambient Temperature (°C) : 29.0
 Average Flow Rate of SPM (m³/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)	58.6	µg/m³	100.0
2	Particulate Matter (PM2.5)	EKO/CHEM/SOP/AAQ-01	52.4	µg/m³	60.0
3	Sulphur Dioxide (as SO₂)	IS: 5182 (P-2)	32.6	µg/m³	80.0
4	Nitrogen Dioxide (as NO₂)	IS: 5182 (P-6)	43.6	µg/m³	80.0
5	Carbon Monoxide (as CO)	IS: 5182 (P-10)	1.22	mg/m³	4.0
6	Lead (as Pb)	IS: 5182 (P-22)	<0.1	µg/m³	1.0
7	Nickel (as Ni)	EKO/CHEM/SOP/AAQ-02	<15.0	ng/m³	20.0
8	Arsenic (as As)	EKO/CHEM/SOP/AAQ-02	<5.0	ng/m³	6.0
9	Ozone (as O₃)	IS: 5182 (P-9)	<10.0	µg/m³	180.0
10	Ammonia (as NH₃)	APHA Method 401	<20.0	µg/m³	400.0
11	Benzene (as C₆H₆)	IS: 5182 (P-11)	<1.0	µg/m³	5.0
12	Benzo(alpha) Pyrene-Particulate Phase Only	IS: 5182 (P-12)	<1.0	ng/m³	1.0

Notes :

- 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.
- This test report will not be generated again, either wholly or in part, without prior written permission of the Laboratory.
- The test report will not be used for any publicity/legal purpose.
- 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.
- Responsibility of the Laboratory is limited to the invoiced amount only.

**** End of Report ****

For EKO PRO ENGINEERS PVT. LTD.

PURNIMA DEASHAN
 TECHNICAL MANAGER
 (Authorized Signatory)



Office & Laboratory : 32/41, South Side of G. T. Road, UPSIDC Industrial Area, Ghaziabad - 201 009 (Delhi-NCR) INDIA.
Contact No.: 9810405427, 9810240578, 9828344487 E-mail : email@ekopro.in, ekoproengineers@gmail.com, website : www.ekopro.in

TEST REPORT**Ambient Air Quality Monitoring**

Test Report No. : EKO/290/160322

Issue Date : 22/03/2022

Issued To

: HINDUSTAN ZINC LIMITED
Dariba Smelter Complex
Post - Dariba, District - Rajsamand
(Rajasthan)

Sample Description : Ambient Air
Sample Drawn on : 12/03/2022 To 13/03/2022
Sample Drawn by : EPEPL (Mr. Harish Kumar)
Sample Received on : 16/03/2022
Sampling Location : Near CPP Area (North East)
Sampling Time : 24.0 Hrs.
Sampling Plan & Procedure : SOP-AAQ/15
Analysis Duration : 16/03/2022 To 22/03/2022
Ambient Temperature (°C) : 29.0
Average Flow Rate of SPM (m³/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 (PM ₁₀)	IS: 5182 (P-23)	76.3	µg/m ³	100.0
2	Particulate Matter (PM _{2.5})	EKO/CHEM/SOP/AAQ-01	48.9	µg/m ³	60.0
3	Sulphur Dioxide (as SO ₂)	IS: 5182 (P-2)	25.2	µg/m ³	80.0
4	Nitrogen Dioxide (as NO ₂)	IS: 5182 (P-8)	38.4	µg/m ³	60.0
5	Carbon Monoxide (as CO)	IS: 5182 (P-10)	1.21	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 ₆ H ₆)	IS: 5182 (P-11)	<1.0	µg/m ³	5.0
12	Benzo(alpha) Pyrene-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 GAUHAN
TECHNICAL MANAGER
(Authorized Signatory)



Globe & Laboratory : 32/41, South Side of G. T. Road, UPSIDC Industrial Area, Ghaziabad - 201 005 (Delhi-NCR) INDIA.
 Contact No.: 9819405427, 9810240670, 9826544467 E-mail : email@ekopro.in, ekoproengineers@gmail.com, website : www.ekopro.in

TEST REPORT

Ambient Air Quality Monitoring

Test Report No. : EKO/288/160522

Issued To

: HINDUSTAN ZINC LIMITED

Issue Date : 22/03/2022

Dariba Smelter Complex

Post - Dariba, District - Rajsamand

(Rajasthan)

Sample Description : Ambient Air
 Sample Drawn on : 12/03/2022 To 13/03/2022
 Sample Drawn by : EPEPL (Mr. Harish Kumar)
 Sample Received on : 16/03/2022
 Sampling Location : Near SLF Area
 Sampling Time : 24.0 Hrs.
 Sampling Plan & Procedure : SOP-AAQ/15
 Analysis Duration : 16/03/2022 To 22/03/2022
 Ambient Temperature (°C) : 29.0
 Average Flow Rate of SPM (m³/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)	85.6	µg/m ³	100.0
2	Particulate Matter (PM2.5)	EKO/CHEM/SOP/AAQ-01	50.1	µg/m ³	60.0
3	Sulphur Dioxide (as SO ₂)	IS: 5182 (P-2)	17.6	µg/m ³	80.0
4	Nitrogen Dioxide (as NO ₂)	IS: 5182 (P-8)	34.6	µg/m ³	80.0
5	Carbon Monoxide (as CO)	IS: 5182 (P-10)	1.18	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 ₆ H ₆)	IS: 5182 (P-11)	<1.0	µg/m ³	5.0
12	Benzo(alpha) Pyrene-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.

PURVIMA CHAUHAN
 TECHNICAL MANAGER
 AUTHORIZED SIGNATORY

HINDUSTAN ZINC LIMITED
DARIBA SMELTER COMPLEX

Ambient Air Quality Monitoring Report (Outside Plant)
(Oct'21-Mar'22)

Month	Parameters	Oct'21	Nov'21	Dec'21	Jan'22	Feb'22	Mar'22
Village							
Aanjana	PM10	62.45	72.66	82.28	61.5	71.93	83.38
	PM2.5	30.06	35.09	36.67	29.2	36.08	42.59
	SO2	10.11	13.72	13.19	17.51	14.19	18.94
	NOx	18.64	24.91	17.24	22.71	26.86	25.98
	Pb	BDL	BDL	BDL	BDL	BDL	BDL
Makhanpuriya	PM10	73.74	68.19	58.42	59.71	49.41	70.17
	PM2.5	28.55	34.96	31.18	27.1	28.89	31.14
	SO2	9.72	10.44	10.03	9.69	10.74	10.27
	NOx	16.33	19.69	14.92	18.29	22.04	17.21
	Pb	BDL	BDL	BDL	BDL	BDL	BDL
Mahenduriya	PM10	68.42	76.34	92.17	65.01	81.51	88.53
	PM2.5	34.12	37.51	48.44	34.1	43.71	44.47
	SO2	16.38	15.94	20.4	22.2	17.82	19.08
	NOx	25.67	34.16	22.17	29.69	31.21	26.72
	Pb	BDL	BDL	BDL	BDL	BDL	BDL
Ladapacha	PM10	59.48	64.39	65.26	56.14	76.82	66.17
	PM2.5	24.79	28.44	32.15	30.21	40.84	25.73
	SO2	9.45	11.58	12.35	12	9.13	13.03
	NOx	18.91	21.49	19.43	20.12	17.15	16.92
	Pb	BDL	BDL	BDL	BDL	BDL	BDL

Annexure IV (Cont.)

Lunera	PM10	76.26	68.57	89.63	69.77	88.62	81.59
	PM2.5	35.04	29.45	48.75	39.67	56.78	46.79
	SO2	14.67	10.85	9.55	13.44	18.09	17.57
	NOx	28.29	19.67	14.32	23.31	33.75	23.11
	Pb	BDL	BDL	BDL	BDL	BDL	BDL
Charana	PM10	63.15	69.48	63.84	58.98	57.29	68.59
	PM2.5	32.42	34.11	33.33	37.31	24.53	27.72
	SO2	10.98	12.42	11.24	10.5	10.28	12.9
	NOx	16.47	20.37	17.09	18.09	22.36	17.7
	Pb	BDL	BDL	BDL	BDL	BDL	BDL
Kotadi	PM10	69.48	72.17	93.68	74.68	84.01	84.8
	PM2.5	38.24	35.08	58.82	43.57	51.5	49.87
	SO2	11.56	14.12	11.43	15.56	13.62	20.6
	NOx	16.44	33.82	20.06	31.33	25.24	29.93
	Pb	BDL	BDL	BDL	BDL	BDL	BDL
Chothpura	PM10	61.27	65.48	74.26	57.61	62.24	67.65
	PM2.5	29.23	32.57	30.62	28.9	34.98	28.86
	SO2	10.11	11.49	8.94	9.079	8.793	12.54
	NOx	19.36	23.12	12.92	15.43	16.46	19.68
	Pb	BDL	BDL	BDL	BDL	BDL	BDL

*All readings in ug/m³



(Vivek Kumar)

Head Environment

Dariba Smelter Complex

HINDUSTAN ZINC LIMITED
DARIBA SMELTER COMPLEX

Continuous Ambient Air Quality Monitoring Results
(Oct'21-Mar'22)

Location		Prescribed Limits*	Month					
			Oct'21	Nov'21	Dec'21	Jan'22	Feb'22	Mar'22
Near to Main Gate (South West)	RSPM	100.00	73.05	70.39	75.49	72.74	75.24	69.27
	SO ₂	80.00	35.54	34.56	34.17	34.52	33.80	32.31
	NO _x	80.00	36.69	34.49	35.85	36.13	38.12	36.62
	CO	2.00	0.70	0.74	0.73	0.91	0.91	0.94
Near to SWP (North West)	RSPM	100.00	78.29	77.16	74.34	82.28	78.40	78.62
	SO ₂	80.00	40.66	39.90	36.01	34.97	34.80	36.93
	NO _x	80.00	39.35	35.06	34.16	39.12	39.69	38.55
	CO	2.00	0.80	0.80	0.78	0.90	0.93	0.91
Near to CPP (North East)	RSPM	100.00	76.62	80.46	78.85	81.00	79.80	79.69
	SO ₂	80.00	24.79	25.66	25.72	24.72	24.70	24.36
	NO _x	80.00	35.71	32.95	34.30	36.37	35.63	34.62
	CO	2.00	0.78	0.78	0.78	0.85	0.89	0.89
SLF(South East)	RSPM	100.00	77.73	79.59	78.96	81.7	78.9	80.5
	SO ₂	80.00	19.29	17.65	18.29	17.5	17.4	16.0
	NO _x	80.00	31.85	30.92	31.15	37.1	34.3	34.6
	CO	2.00	0.78	0.78	0.78	0.89	0.86	0.88

* National Ambient Air Standards, 2009

* All readings in ug/m³



(Vivek Kumar)

Head Environment
Dariba Smelter Complex

HINDUSTAN ZINC LIMITED
DARIBA SMELTER COMPLEX
Work Zone Environment Monitoring Results
(Oct'21-Mar'22)

Month Location	Parameters	Prescribed Standards*	Oct'21	Nov'21	Dec'21	Jan'22	Feb'22	Mar'22
Zinc Plant								
Raw Material Handling (RMH)	SPM	10	8.71	9.10	8.93	8.54	8.95	8.45
	SO ₂	5	0.13	0.18	0.13	0.16	0.17	0.12
	Zn	5	1.04	1.32	1.19	1.00	1.09	0.91
Zinc Dust Plant	SPM	10	6.66	7.32	7.60	7.34	7.78	7.38
	SO ₂	5	0.04	0.05	0.06	0.06	0.07	0.05
	Zn	5	0.91	0.88	0.96	0.85	0.98	0.97
Purification Section	SPM	10	4.94	6.46	6.71	6.99	6.61	7.05
	SO ₂	5	0.06	0.08	0.07	0.09	0.08	0.08
	Zn	5	0.48	0.60	0.64	0.66	0.61	0.67
Cell House	SPM	10	2.74	3.08	3.45	3.05	2.24	2.67
	SO ₂	5	0.15	0.18	0.19	0.16	0.16	0.17
	Zn	5	0.20	0.16	0.20	0.16	0.14	0.18
Lead Plant								
Raw Material Handling (RMH)	SPM	10	8.47	8.76	9.01	8.37	8.82	8.35
	SO ₂	5	0.10	0.08	0.08	0.08	0.10	0.09
	Pb	0.15	0.12	0.13	0.13	0.10	0.12	0.11
SKS	SPM	10	7.82	8.18	8.28	8.09	7.46	7.10
	SO ₂	5	0.16	0.14	0.11	0.09	0.11	0.09
	Pb	0.15	0.12	0.12	0.11	0.10	0.09	0.09
Blast Furnance	SPM	10	6.26	6.96	7.55	7.61	6.74	6.13
	SO ₂	5	0.10	0.09	0.11	0.09	0.10	0.09
	Pb	0.15	0.11	0.09	0.10	0.11	0.09	0.09
LEP Melting & Casting	SPM	10	4.89	5.69	6.45	6.38	6.16	7.07
	SO ₂	5	0.07	0.05	0.07	0.08	0.07	0.09
	Pb	0.15	0.04	0.05	0.06	0.06	0.06	0.08

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

* Factory Act, 1948 (Schedule II)


(Vivek Kumar)
 Head Environment
 Dariba Smelter Complex

**HINDUSTAN ZINC LIMITED
DARIBA SMELTER COMPLEX**

**Fugitive Emission Monitoring Results
(Oct'21-Mar'22)**

Location	Parameters (All figures in $\mu\text{g}/\text{m}^3$)
	TSPM
Prescribed Limit*	-
Raw Material Handling (RMH) - Zinc	489.13
Roaster Plant	435.8
Calcine Handling	406.9
Coal Handling Plant (CPP)	442.1
Fly Ash Handling	465.8
Raw Material Handling (RMH) – Lead Plant	478.93
Near SKS Primary	429.04

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



Office & Laboratory : 32/41, South Side of G. T. Road, UPSIDC Industrial Area, Gandhinagar - 201 005 (Delhi-NCR) INDIA.

Contact No. : 2210-408437, 8510240879, 8025544467 E-mail : ekopro@ekopro.in, ekoproengineers@gmail.com, website : www.ekopro.in

TEST REPORT

Effluent Sample Analysis

Test Report No. : EKO/70/311221

Issue Date : 04/01/2022

Issued To

: HINDUSTAN ZINC LIMITED
 Dariba Smelter Complex
 Post - Dariba, District - Rajsamand
 (Rajasthan)

Sample Description : Effluent After Treatment (ETP Outlet)
 Sample Drawn on : 29/12/2021
 Sample Drawn by : EPEPL (Mr. Harish Kumar)
 Sample Received on : 31/12/2021
 Sampling Location : From ETP Plant
 Sampling Plan & Procedure : SOP-W/66
 Sample Quantity : 2.0 Litre
 Environmental Condition : Normal
 Analysis Duration : 31/12/2021 To 04/01/2022
 Remark (if any) : NA

RESULTS

S. No.	Parameters	Test Method	Results	Units	Limits as per CTO
1	pH	IS: 3025 (P-11)	7.38	-	6.5-8.5
2	Total Suspended Solids	IS: 3025 (P-17)	42.0	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)	102.3	mg/L	250.0
5	BOD (@27°C for 3 days)	IS: 3025 (P-44)	23.0	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)	520.1	mg/L	1000.0
8	Sulphate (as SO ₄)	IS: 3025 (P-24)	160.5	mg/L	1000.0
9	Fluoride (as F ⁻)	IS: 3025 (P-60)	1.02	mg/L	2.0
10	Copper (as Cu)	EKO/CHEM/SOP-ICPMS/W-01	0.034	mg/L	1.0
11	Zinc (as Zn)	EKO/CHEM/SOP-ICPMS/W-01	0.78	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	0.023	mg/L	0.1
16	Phosphate Dissolved (as P)	IS: 3025 (P-31)	0.74	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	0.42	mg/L	1.0
20	Free Available Chlorine	IS: 3025 (P-26)	<0.2	mg/L	0.5

Page 1 of 2





Office & Laboratory : 201/1, South Side of G.T. Road, UPSIDC Industrial Area, Ghaziabad - 201 009 (Delhi-NCR) (INDIA)
 Contact No.: 8810240670, 8810240670, 8028344467 E-mail : email@ekopro.in, ekoproengineers@gmail.com, website : www.ekopro.in

Test Report No. : EKO/170/31/221

Issue Date : 04/01/2022

Notes :

1. The results given above are related to the tested sample, as received & mentioned parameters.
The customer asked for the above tests only.
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End of Report

For EKO PRO ENGINEERS PVT. LTD.

PURNIMA CHAUHAN
 TECHNICAL MANAGER
 (Authorised Signatory)



Office & Laboratory : 324/1, South Side of G. T. Road, UPSIDC Industrial Area, Ghaziabad - 201 009 (Delhi-NCR) INDIA.
 Contact No.: 9010243870, 9010240370, 9026344407 E-mail: eko@eko.pro.in, eko@ekoengineers@gmail.com, website: www.eko.pro.in

TEST REPORT**Effluent Sample Analysis**

Test Report No.: EKO/207/160322

Issued To

Issue Date: 22/03/2022

HINDUSTAN ZINC LIMITED
 Dariba Smelter Complex
 Post - Dariba, District - Rajsamand
 (Rajasthan)

Sample Description : Effluent After Treatment (ETP Outlet)
 Sample Drawn on : 14/03/2022
 Sample Drawn by : EPEPL (Mr. Harish Kumar)
 Sample Received on : 16/03/2022
 Sampling Location : From ETP Plant
 Sampling Plan & Procedure : SOP-W/68
 Sample Quantity : 2.0 Litre
 Environmental Condition : Normal
 Analysis Duration : 16/03/2022 To 22/03/2022
 Remark (if any) : NA

RESULTS

S. No.	Parameters	Test Method	Results	Units	Limits as per CTO
1	pH	IS: 3025 (P-11)	7.31	-	6.5-8.5
2	Total Suspended Solids	IS: 3025 (P-17)	44.0	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)	98.4	mg/L	250.0
5	BOD (@27°C for 3 days)	IS: 3025 (P-44)	21.0	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)	510.4	mg/L	1000.0
8	Sulphate (as SO ₄)	IS: 3025 (P-24)	164.7	mg/L	1000.0
9	Fluoride (as F-)	IS: 3025 (P-60)	1.12	mg/L	2.0
10	Copper (as Cu)	EKO/CHEM/SOP-ICPMS/W-01	0.031	mg/L	1.0
11	Zinc (as Zn)	EKO/CHEM/SOP-ICPMS/W-01	0.69	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	0.019	mg/L	0.1
16	Phosphate Dissolved (as P)	IS: 3025 (P-31)	0.71	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	0.39	mg/L	1.0
20	Free Available Chlorine	IS: 3025 (P-26)	<0.2	mg/L	0.5





Contact : +91 - 9810343370

EKO PRO ENGINEERS PVT. LTD.

Environmental Consultants and Analytical Laboratory

(An ISO 9001:2015 Certified Company)

Office & Laboratory : 334/1, South Side of G. T. Road, UPSIDC Industrial Area, Ghaziabad - 201 009 (Delhi-NCR) INDIA.
Contact No.: 9810405427, 9810340570, 9820344457 E-mail : email@ekopro.in, ekoproengineers@gmail.com, website : www.ekopro.in

Test Report No. : EKO/207/150322

Issue Date : 22/03/2022

Notes :

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The customer asked for the above tests only.
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- **End of Report**

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

Piezometer water Quality & Level results

Dec - 21 (Tailing dam)

(All figures in ppm except pH)

Parameter	PW 1	PW 2	PW 3	PW 4	PW 5	PW 6
pH	7.23	7.26	7.23	7.36	7.74	7.65
Suspended Solids	8	8	10	11	9	15
Lead	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)
Zinc	0.02	0.04	BDL (<0.01)	0.16	0.03	0.04
Copper	0.02	0.02	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)
Iron	0.05	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)
Cadmium	BDL (<0.001)	BDL (<0.001)	BDL (<0.001)	BDL (<0.001)	BDL (<0.001)	BDL (<0.001)
Nickel	BDL (<0.01)	BDL (<0.01)	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)
Depth of well from surface (ft.)	145	145	150	140	145	150
Water level in. well from surface (ft.)	4.59	3.28	8.23	6.56	2.95	19.91

Feb - 22 (Tailing dam)

(All figures in ppm except pH)

Parameter	PW 1	PW 2	PW 3	PW 4	PW 5	PW 6
pH	7.33	7.40	7.42	7.27	7.83	7.69
Suspended Solids	13	9	13	15	8	14
Lead	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)
Zinc	0.08	0.03	0.05	0.19	0.04	0.03
Copper	BDL (<0.01)	BDL (<0.01)	0.02	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)
Iron	0.06	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)
Cadmium	BDL (<0.001)	BDL (<0.001)	BDL (<0.001)	BDL (<0.001)	BDL (<0.001)	BDL (<0.001)
Nickel	BDL (<0.01)	BDL (<0.01)	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)
Depth of well from surface (ft.)	145	145	150	140	145	150
Water level in. well from surface (ft.)	5.25	3.28	9.45	4.27	3.12	21.24

Process water Quality results

ANNEXURE – X

Oct - 21

Parameter	Mine Water	Tailing Dam Water	Garland Drain Water
pH	7.57	7.11	7.16
Suspended Solids	17	34	30
Lead	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)
Zinc	0.56	0.60	0.50
Copper	BDL (<0.01)	0.02	BDL (<0.01)
Iron	0.02	0.03	0.02
Cadmium	BDL (<0.001)	BDL (<0.001)	BDL (<0.001)
Nickel	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)
Cobalt	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)

(All figures in ppm except pH)

Nov - 21

Parameter	Mine Water	Tailing Dam Water	Garland Drain Water
pH	7.11	8.06	7.20
Suspended Solids	28	32	34
Lead	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)
Zinc	0.42	0.42	0.39
Copper	0.02	0.03	0.03
Iron	BDL (<0.01)	0.04	0.05
Cadmium	BDL (<0.001)	BDL (<0.001)	BDL (<0.001)
Nickel	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)
Cobalt	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)

(All figures in ppm except pH)

Dec - 21

Parameter	Mine Water	Tailing Dam Water	Garland Drain Water
pH	7.96	7.56	6.98
Suspended Solids	14	7	9
Lead	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)
Zinc	0.97	0.89	0.52
Copper	0.06	0.04	0.06
Iron	0.06	0.09	0.06
Cadmium	BDL (<0.001)	BDL (<0.001)	BDL (<0.001)
Nickel	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)
Cobalt	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)

(All figures in ppm except pH)

HW

Jan - 22

Parameter	Mine Water	Tailing Dam Water	Garland Drain Water
pH	7.53	7.81	7.05
Suspended Solids	22	11	15
Lead	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)
Zinc	0.94	0.92	0.47
Copper	0.02	0.05	0.05
Iron	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)
Cadmium	BDL (<0.001)	BDL (<0.001)	BDL (<0.001)
Nickel	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)
Cobalt	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)

(All figures in ppm except pH)

Feb - 22

Parameter	Mine Water	Tailing Dam Water	Garland Drain Water
pH	7.03	7.35	7.15
Suspended Solids	25	16	21
Lead	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)
Zinc	0.82	0.83	0.54
Copper	0.03	0.04	0.06
Iron	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)
Cadmium	BDL (<0.001)	BDL (<0.001)	BDL (<0.001)
Nickel	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)
Cobalt	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)

(All figures in ppm except pH)

Mar - 22

Parameter	Mine Water	Tailing Dam Water	Garland Drain Water
pH	7.01	7.06	6.95
Suspended Solids	16	23	30
Lead	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)
Zinc	3.79	0.89	0.87
Copper	0.02	0.03	0.03
Iron	0.04	0.06	0.07
Cadmium	BDL (<0.001)	BDL (<0.001)	BDL (<0.001)
Nickel	0.02	BDL (<0.01)	BDL (<0.01)
Cobalt	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)

(All figures in ppm except pH)

HW

**HINDUSTAN ZINC LIMITED
DARIBA SMELTER COMPLEX**

**Ambient Noise Monitoring Report
(Oct'21-Mar'22)**

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)				
Oct'21-Mar'22	55.1-65.2	56.2- 66.2	56.0-66.1	56.2-66.2

Vivek Kumar

(Vivek Kumar)
Head Environment
Dariba Smelter Complex

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

**Average Sulphur and ash content in coal Monitoring Report
(Oct'21-Mar'22)**

Month	Average Sulphur content %	Average Ash %
Oct-21	1.49	13.46
Nov-21	1.06	19.85
Dec-21	0.53	16.77
Jan-22	0.48	17.63
Feb-22	0.66	20.51
Mar-22	0.79	19.15



(Binu Raphael)

Head CPP

Dariba Smelter Complex

**HINDUSTAN ZINC LIMITED
DARIBA SMELTER COMPLEX**

**Expenditure made in environmental control measures
(2021-22)**

Sr. No.	Description	Total amount
		(Rs. in lakhs)
1	Green Belt Development, Maintenance of old plantation & landscaping	90.48
2	Environment Monitoring	169.23
3	Storm water ponds operation and maintenance & Monsoon management	0.94
4	Environmental training, awareness and publicity	0.00
5	Hazardous Waste Management	2478.56
6	O & M of Organic waste Converter	1.08
7	Environmental Audit	9.84
8	Returns, fees for Award & CTO	31.18
9	Pollution control measure	110.58
	Grand Total	2891.89

HINDUSTAN ZINC LIMITED
DARIBA SMELTER COMPLEX

Funds earmarked towards environmental control measures
(2022 -23)

Sr. No.	Description	Total amount
		(Rs. in lakhs)
1	Green Belt Development, Maintenance of old plantation & landscaping	398
2	Environment Monitoring	119
3	Storm water ponds operation and maintenance & Monsoon management	28
4	Environmental training, awareness and publicity	20
5	Hazardous Waste Management	3429
6	O & M of Organic waste Converter	5
7	Environmental Audit & IMS	2
8	Returns, fees for Award & CTO	30
9	Pollution control measure	22
	Grand Total	4055

YC

Annexure - XV



Reg. A/D

HZL/DSC/ENV/FLY ASH RETURN /2021-22

Date: 13.04.2022

To,

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

Sub: Annual implementation report about the compliance of provision in fly ash notification.

- Ref:** 1. Consent to Operate No: F(HDF)/Rajsamand(Railmagra)/6461(1)/2020-2021/5140-5142.
Order No. 2020-2021/HDF/3272 Dated 11.02.2021 for Captive power Plant (2 X 85 MW) Unit I & II.
2. Environmental Clearance Ref. No. -J-11011/380/2008/IA II (I) dated 04.11.2009.

Sir,

With reference to the above subject matter, please find enclosed herewith compliance report on fly ash notification for the financial year 2021-22.

Thanking You,
Yours faithfully,
For Hindustan Zinc Ltd


(Deepak Sopori)
Head-DSC
Dariba Smelter Complex
Hindustan Zinc Ltd

- Cc:** 1. Additional Director, Ministry of Environment & Forests
Kendriya Bhavan, 5th Floor, Section -H, Aliganj, Lucknow-226024.
- 2 Member Secretary
CPCB Parvesh Bhawan, CBD - Cum-office Complex,
East Arjun Nagar, Delhi-110032.
3. The Regional Officer, Rajasthan State Pollution Control Board,
Old Exsice office building, Kalalwati
Rajnagar, Rajsamand
Pin 313324


15/4/22

Hindustan Zinc Limited

Dariba Smelter Complex, P.O. Dariba, Teh. Railmagra, Distt. Rajsamand (Rajasthan) - 313 211
T +91-2952 265 873 - 76 F +91-2952 265 660 www.hzindia.com

Registered Office : Yashad Bhawan, Udaipur (Rajasthan) - 313 004
CIN : L27204RJ1966PLC001208

Fly ash notification S.O. 763(E), dated the 14th September, 1999 (as amended)
Annual Implementation Report for the period 1st April 2021 to 31st March 2022

S. No.	Particular	Details			
1	Name of the Thermal Power Station	Captive Thermal Power Plant Dariba Smelter Complex			
2	Full address including Pin code	Dariba Smelter Complex HINDUSTAN ZINC LIMITED P.O. - Dariba, District: Rajsamand (Pin) - 313211			
3	E mail address	Binu.Raphael@vedanta.co.in			
4	Name of the nodal officer(not below the rank of DGM/Dy.CE/or equivalent) dealing with the ash management and contents of this report and his designation	Binu Raphael Unit Head - CPP			
5	Telephone No.	+91-02952- 265450/51			
6	Fax. No.	+91-02952-265452			
7	Capacity of the Thermal Power station (MW)	170 MW			
8	Details of number of units	2 X 85 MW			
9	Coal/Lignite consumption in 2021-2022 (million tonnes)	0.67			
A. Ash generation in 2021-2022(in tonnes)					
10	Bottom Ash	23428.66			
11	Fly Ash	111173.68			
	Total A (10 and 11)	134602.34			
B. Fly Ash unutilized (in tonnes)					
12	Ash Pond disposal	0			
13	Ash yard	0			
14	Ash dump	0			
	Total B (12 to 14)	0			
C. Fly Ash utilization in 2021-2022					
	Purpose for which Fly ash is utilised	Target (as per action plan)	Actual (in Tonnes)		
			From ESP, Dry ash	From bottom Ash	Total
15	Ash pond dyke rising		--	--	--
16	Cement industry		70940.86	--	70940.86
17	Landfill		--	--	--
18	Own brick unit		--	--	--
19	Outside brick units other than brick kilns		--	--	--
20	Brick kilns		--	23428.66	23428.66
21	Own ash based products(other than bricks)		--	--	--
22	Ash based products		--	--	--
23	Road and flyover embankments		--	--	--
24	Back filling in mines		40232.82	--	40232.82
25	Agriculture		--	--	--
26	Ready mix concrete		--	--	--
27	Asbestos		--	--	--
28	Exports		--	--	--
29	Others(please specify)		--	--	--
	Total C(15 to 29)		111173.68	23428.66	134602.34

D. Reasons for variation from target

1		Not Applicable
2		Not Applicable
3		Not Applicable

E. Remedial measures taken

1		Not Applicable
2		Not Applicable
3		Not Applicable

F. Quantity in ash pond

30	Estimated quantity of Pond ash in active ash pond(pond in use) as on 31.03.2022(million tonnes)	Not Applicable, as no fly ash pond is in place
----	---	--

G. Ash Pond Details

31	Total area earmarked for ash ponds(ha)	Not Applicable, as no fly ash pond is in place Fly Ash is being provided to Cement Industry and Bottom Ash is being provided to Brick manufactures.
32	Ash ponds already filled up and reclaimed (ha)	
33	Ash ponds already filled up but yet to be reclaimed (ha)	
34	Ash ponds in use(ha) (Active ash ponds)	
35	Area earmarked for ash ponds but ash ponds yet to be constructed (ha)	

H. Dry ash collection facilities

36	Whether mechanical handling facility for dry fly ash collection is available	Yes
37	If yes for how many units	with each unit (2No's)

I. Dry fly ash storage

38	Daily ash generation(TPD)	Capacity of storage as on 31.03.2022(tonnes)	Capacity proposed if any in 2022-2023(tonnes)
	305	280	0

J. Capital expenditure (Rs. lakhs)

	Item	Expenditure in 2021-2022(Rs. lakhs)	Budgetary provision in 2022-23
39	Mechanical dry fly ash collection facility	0	0
40	Dry Fly Ash storage	0	0

K. Dispute Settlement Committee

41	No. of meetings held in 2021-2022	No Dispute received. No meeting held

L. Provision regarding supply to brick kilns

42	Whether the thermal power station is maintaining records of ash made available to each brick kiln	Yes
43	If yes how many Brick kilns have been supplied with fly ash	We are supplying bottom ash to Krishna Sales, Naresh Traders, Jai Manglam Multiples, Ujjwal Enterprises and Atharv Trading

M. Mode of transport for Fly Ash (strikeout whichever is not applicable) -Yes

44	Dry Ash	Open truck	--
		Truck covered with tarpaulin	--
		Trailer	--
		Trailer covered with tarpaulin	--
		Closed container	--
		Special container truck	Bulker
45	Wet Ash	Open truck	--
		Truck covered with tarpaulin	--
		Trailer	--
		Trailer covered with tarpaulin	--
		Closed container	--
		Special container truck	--

N. Promotional Measures

		No. of meetings/workshops exhibition held during 2021-2022	Amount spent in 2021-2022 (Rs. Lakhs)	Outlay for 2022-2023 (Rs. Lakhs)
46	Exhibitions	0	--	--
47	Seminars	0	--	--
48	Workshops	0	--	--
49	Advertisement in newspaper	0	--	--
50	Advertisement in TV	0	--	--
51	Advertisement in radio	0	--	--
52	Others (Please specify)	0	--	--
	Total N (46 to 52)	0	NIL	NIL

O. Administrative measures taken

	Administrative measures taken	Outcome
53	Meeting with brick manufacturers	Not required during the year
54	meeting with state government/agencies	Not required during the year
55	Any other measures (pl. specify)	Not required during the year



Signature of CEO/General Manager/
CE of the thermal power station
Name: Binu Raphael
Designation: Unit Head - CPP
Date: 13.04.2022

(1)

राजस्थान सरकार /

उद्योग(ग्रुप-1)विभाग

क्रमांक.प.4(27)उद्योग / 1/2010

जयपुर, दिनांक 12 APR 2010

= आदेश =

जिला कलेक्टर, चित्तौड़गढ़ के पत्र क्रमांक राजस्व/चि./12-3/(28)08/234 दिनांक 16.3.2010 के प्रस्तावानुसार ग्राम चकपापड़िया, तहसील कपासन, जिला चित्तौड़गढ़ की राजकीय विलानाम भूमि एका 11.04 हेक्टेयर भूमि मैसर्स हिन्दुस्तान लिमिटेड लि0, यशद नयन उदयपुर राजस्थान के पक्ष में राजपुरा दरीबा औद्योगिक कॉम्प्लेक्स विस्तार हेतु राजस्थान भू-राजस्व (औद्योगिक क्षेत्र आवंटन) नियम 1959 में उल्लेखित प्रावधान एवं अन्य शर्तों के तहत आवंटित की जाती है। उक्त भूमि का आवंटन निम्न शर्तों के अधीन होगा :-

1. भूमि लीज डेल्ड के आधार पर 99 वर्ष की अवधि पर आवंटित की जायेगी।
2. आवंटनी को उक्त लीज उसके साइने पर 99 वर्ष के लिये पुनः नवीनीकरण की जा सकेगी।
3. यह आवंटन राजस्थान भू-राजस्व (औद्योगिक आवंटन) नियम 1959 एवं इसमें समय समय पर किये जाने वाले संशोधन सहित अन्तर्विष्ट शर्तों एवं निबंधनों के अन्तर्गत होगा।
4. आवंटनी से भूमि की कीमत राजस्व (ग्रुप-4) विभाग की अधिसूचना क्रमांक एफ4(24) राजस्व,ग्रुप-4/87 दिनांक 25.11.87 के अन्तर्गत संशोधित नियम 3 क के अनुसार इस भूमि के वर्ग की कृषि भूमि की प्रचलित बाजार मूल्य के बराबर देय होगी।

Signature

5. राजस्थान भू-राजस्व (औद्योगिक क्षेत्र आवंटन) नियम 1959 के नियम 5 के अन्तर्गत निर्धारित दर के अनुसार लीज किराया वसूल किया जायेगा ।
6. किराया प्रति 30 वर्ष में पुनः निर्धारित किया जायेगा जो कि वर्तमान में प्रदत्त किराये के 25 प्रतिशत से अधिक नहीं होगा । यह किराया अग्रिम रूप से जमा कराया जायेगा ।
7. भूमि औद्योगिक कॉम्प्लेक्स विस्तार करने के अतिरिक्त अन्य उपयोग में नहीं ली जायेगी । वाणिज्यिक उपयोग में लिये जाने हेतु कोई निर्माण स्वीकृत नहीं किया जायेगा ।
8. भूमि औद्योगिक कॉम्प्लेक्स विस्तार करने हेतु आवश्यकता होने पर श्रमिक कॉलोनी के निर्माण हेतु स्वीकृति अलग से ली जायेगी ।
9. आवंटन द्वारा उक्त भूमि का अधवा इसके अधीन किसी भाग को सबलेट नहीं किया जा सकेगा और ना ही राज्य सरकार की पूर्व अनुमति के बिना कोई वित्तीय अधवा तकनीकी भागीदार बनाया जायेगा ।
10. आवंटन द्वारा भूमि आवंटन की दिनांक से 2 वर्ष की अवधि में भूमि औद्योगिक कॉम्प्लेक्स विस्तार करने हेतु उद्योग स्थापित कर लिया जायेगा और ऐसा करने में उसके असफल रहने पर उक्त भूमि राज्य सरकार को स्वतः ही प्राप्त हो जायेगी । जब तक की आवंटन हेतु सक्षम अधिकारी द्वारा उचित कारणों से दो वर्ष की अवधि को बढ़ाया नहीं गया हो ।
11. यदि राज्य सरकार अधवा रीको लिमिटेड द्वारा उस भूमि में विकास कार्य किये जाते हैं तो उनके द्वारा विकास शुल्क के नाम से आवंटन से राजस्थान भू-राजस्व (औद्योगिक क्षेत्र आवंटन) नियम 1959 के नियम 3 क के तहत शुल्क वसूल किया जायेगा ।

Dr. B. S. Meena

12. उक्त भूमि में नदी, नाले, तालाब, जोहड़ का स्वरूप बचावत रहेगा।
13. राजस्वान भू-राजस्व (औद्योगिक क्षेत्र आवंटन) नियम 1959 के नियम-3(V) के अनुसार विकास शुल्क देय होगा।
14. यदि उपरोक्त किराया राशि का भुगतान आवेदक द्वारा समय पर नहीं किया गया तो बकाया राशि को राजस्व की बकाया के रूप में राजस्वान भू राजस्व अधिनियम 1956 की धारा 256 के प्रावधानों के अनुसार वसूल किया जायेगा।
15. भूमि को स्वीकृत लगान का 30 गुना विकास शुल्क एवं किराए की राशि में सम्मिलित कर लिया जायेगा।
16. कम्पनी को आरक्षित की गई भूमि 11.04 हेक्टेयर भूमि में पानी के बहाय क्षेत्र में किसी प्रकार का स्थाई/अस्थायी निर्माण भविष्य में नहीं करवाया जायेगा।
17. कम्पनी उक्त बहाय क्षेत्र में अपने हर्जे - खर्चे पर ऐसे नाले, पुलिया आदि का निर्माण करायेगी, जिससे पानी के बहाय में कोई बाधा उत्पन्न न हो।
18. आरक्षित की गई उपरोक्त भूमि पर कम्पनी के सीमित स्वामित्वाधिकार रहेंगे। प्रस्तावित उद्योग की उन्नति, विकास के लिए बैंक/वित्त निगम से बिना कब्जा त्रण लेने का अधिकार होगा।
19. कम्पनी को इस भूमि को विक्रय, दान, रहन अथवा अन्य प्रकार से हस्तांतरण करने के अधिकार नहीं होंगे।
20. भूमि का उपयोग नियम 7 में विहित कालावधि के भीतर उस प्रयोजन के लिए एक बार कर लिए जाने पर जिसके लिए वह आरक्षित/ आवंटित की गई थी। कम्पनी उक्त सम्पूर्ण भूमि में अपना अधिकार आरक्षित/ आवंटित किए जाने वाले अधिकारी की पूर्व अनुज्ञा से ही अन्तर्हित कर सकेगा।

anirag

(4)

21. आवेदक द्वारा इस आदेश में वर्णित प्रतिबन्धों व शर्तों की पूर्णपालना की जायेगी। इन शर्तों में से किसी भी शर्त का उल्लंघन होने पर आरक्षित भूमि समस्त भारों से मुक्त होकर राज्य सरकार में निहित हो जायेगी तथा उक्त भूमि पर निर्मित भवन एवं स्थापित उद्योग के लिए आवेदक को कोई क्षतिपूर्ति राशि का भुगतान नहीं किया जावेगा।
22. उद्योग विभाग द्वारा आयोजित किये जाने के पश्चात भूमि की लीज राजस्थान भू राजस्व (औद्योगिक क्षेत्र आवंटन) नियम 1959 के नियमों के प्रावधानान्तर्गत प्रपत्र "सी" में एक माह की अवधि में आवेदक को निष्पादित करानी होगी।

भूमि की अनुसूची ग्राम चकपापडीया

क्र. सं.	राजस्व ग्राम	आ.नं.	रकबा हेक्टेयर
	चकपापडीया	1	0.10
		2	0.05
		3	0.02
		4	0.59
		6	3.54
		8	6.59
		41	0.05
	योग	7	11.04 हेक्टेयर

17/12/21
प्रमुख शासन सचिव

(22)

(5)

प्रतिलिपि निम्न को सूचनाएं एवं आवश्यक कार्यवाही हेतु प्रेषित हैं :-

1. आद्युक्त उद्योग विभाग, राजस्थान, जयपुर ।
2. जिला फलेक्टर, चित्तौड़गढ़ को उनके पत्रांक राजस्व/चि./12-3/(28)08/234 दिनांक 16.3.2010 के संदर्भ में प्रति प्रेषित कर निवेदन है कि आवंट्य से राजस्थान भू राजस्व (औद्योगिक क्षेत्र आवंटन) नियम 1959 के नियम 3क के प्रावधानों के तहत भूमि की कीमत वसूल कर तथा आवंटन आदेश की अन्य सभी शर्तों की पूर्ति करवाकर आवंटित भूमि का कब्जा आवंट्य कम्पनी को सुपुर्द करे।
3. उप छाण्ड अधिकारी, कपासन, जिला चित्तौड़गढ़।
4. महाप्रबन्धक, जिला उद्योग केन्द्र, चित्तौड़गढ़ ।
5. तहसीलदार-कपासन, जिला चित्तौड़गढ़ ।
6. मैसर्स हिन्दुस्तान जिंक लि० यशद भवन उदयपुर, ।
7. रक्षित पत्रावली ।

2.1 निम्नलिखित
सहायक शासन सचिव, 12/4/2
वखोव (धुन-1) विभाग
राजस्थान शासनालय, जयपुर
उप-शासन सचिव

Land use mapping by digital processing of Rajpura-Dariba
mining lease using remote sensing techniques



Sponsor: Hindustan Zinc Limited, Rajpura-Dariba Mine

Studied by:



estb: 1988

Studied for:



Hydro-Geosurvey Consultants Private Limited
C-103, Shastri Nagar, Jodhpur 342003

Phone: - 0291-2481754

Web: www.hydrogeosurvey.com, E-mail: - hydrogeosurvey@yahoo.com
November, 2018

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HINDUSTAN ZINC LIMITED
DARIBA SMELTER COMPLEX

Bag Filters Details

Zinc Plant

S.No	Name	No. of bag Filter	Flow Rate(m ³ /hr) (m ³ /hr)	Outlet emission(mg/Nm ³) (mg/Nm ³)
1	Ball Mill	1	16000	<50
2	Dross Plant	1	25000	<50
3	Silo Top	2	-	-
4	Zinc Dust Plant	3	10200	<50

Lead Plant

S No	Area	No. of Bag Filter	inlet Gas flow (Nm ³ /hr)	outlet emission (mg/Nm ³)
1	Raw Material Handling	BF-001A	4000	<50
2		BF-001B	4000	<50
3		BF-001C	4000	<50
4		BF-001D	4000	<50
5		BF-002A	6000	<50
6		BF-002B	6000	<50
7		BF-002C	6000	<50
9	Raw Material Plant	BF-002	4000	<50
10	SKS	BF-003	4000	<50
11		BF-003	2100	<50
12		BF-001 A	4000	<20
14		BF-001 B	4000	<50
15		BF-001 C	4000	<50
17	Dust Collection and Ventilation	BF-001	330000	<20
18		BF-001	100000	<50
20	Lead Electro refining Plant	BF-001A	60100	<20
21		BF-001B	60100	<20
22		BF-001C	60100	<20
23		BF-001D	60100	<20
24	Copper Dross Treatment Plant	BF-001	49000	<50
25		BF-001	15800	<50
26	Coal Pulverization Station	BF-002A	1000	<50
27		BF-002B	1000	<50
28	Tail Gas Plant	DN-001-02-01	1000	<50

**HINDUSTAN ZINC LIMITED,
UDAIPUR, RAJASTHAN**

**Hydrology & hydrogeology of core and buffer zones of
Rajpura- Dariba mine and impact of mining on water regime**

Prepared by:



**Hydro-Geosurvey Consultants Private Limited
C-103, Shastri Nagar, Jodhpur
November, 2006**

Hydrology and hydrogeology of core and buffer zones
of Rajpura-Dariba mine and impact of mining on water regime

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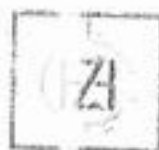
HINDUSTAN ZINC LIMITED
(Rajpura-Barbham area)

: ruled by:



Feb 1958

Submitted for:



Hydro-Engineering Consultants Private Limited

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October 20, 1996

Impact of dewatering from Rajpura-Dariba mine on ground water regime during the year 2018-19

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FINAL PROJECT REPORT

ON

COLUMN LEACHATE STUDIES OF THE STOCK PILES OF
RUN-OF-THE-MINE(ROM) ORE, CRUSHED ORE, TAILINGS,
JAROFIX

of

RAJPURA DARIBA MINE

Submitted by

Prof. Jayanta Bhattacharya



Department of Mining Engineering

Indian Institute of Technology,

Kharagpur - 721 302

January, 2001

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1. DESCRIPTION OF THE WORK SITE

Rajpura Daria mine
Lead-Zinc Ore Body:
Reserves: 7.80 Mt
Reserves: 24.81 Mt
Reserve Grade: 4.75%
Reserve Grade: 4.75%
The Production Capacity: 0.5 mtpa

2. SCOPE OF WORK

The feasibility studies of different piles in the mine and plant are a second Rajpura-Daria mine is underway. Various Leachate Studies of the stock piles of waste of the mine/ROM are, crushed ore, tailings, and leachate under the following conditions to ascertain the pollution potential:

- (1) Temperature fluctuation and sunlight exposure under confined and unconfined conditions
- (2) Wet conditions
- (3) Air circulation
- (4) Dry wet conditions in both confined and unconfined situations.
- (5) Temperature/dry wet exposure and leachate release conditions.
- (6) Confined Leachate environmental resistance study

3. ABSTRACT

Mining operations generally produce many types of mine wastes, including mine tailings, waste rock and slag. Mine tailings out of these, in particular, act as a main source of environmental contamination. Arsenic (As) and heavy metals may be released from the mine wastes to the ground and surface water systems, as well as the geologic environment due to their solubility and mobility.

Deep

Geotechnical Investigation Report

SR NO. : 189_17-18

GEO TECHNICAL INVESTIGATION IN THE
JEROL DUMPSITE FOR IDENTIFICATION AS AN
ALTERNATIVE BORROW EARTH FOR RD
TAILING DAM DYKES &
SLOPE STABILITY ANALYSIS

CLIENT

M/s. HINDUSTAN ZINC LTD.

PROGRAMME

APRIL-2018

CEGTH
CEG TEST HOUSE
RESEARCH CENTRE PVT LTD

B-11(G), Malviya Industrial Area, Jaipur-302017
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CHAPTER 1 GENERAL INTRODUCTION

1.1 INTRODUCTION

The work for conducting "Geotechnical Investigation in the Jerofix Dumpsite for identification as an alternative borrow earth for RD tailing dam dykes" at RD Mines Tailing Dam, HZL was requested by M/s Hindustan Zinc Ltd., Udaipur, vide Quotation No. CEGTH&RC/Geo./Quot./2017-18/579(R) dated 05.02.2018.

1.2 SITE LOCATION

The Location of Boreholes for the proposed site is situated at Jerofix Dumpsite. It was desired that appropriate soil exploration including field investigation at various locations and relevant laboratory tests on soil samples to be conducted to determine the slope stability of site and suitability.

1.3 SCOPE OF WORK

The stipulated scope of work involved carrying out the following operations at the specified locations as approved by the Client:-

- Mobilization of the personnel, plant and equipment to the site of work and demobilize the same after completion of work.
- Collection of Borrow area samples
- To conduct 4 trial pits of size 1.5m x 1.5m x 1.0m and collection of samples
- Further drilling boreholes in bottom of trial pits by Hand Augur for another 2.0m depth and collection of UDS samples at every 0.50m interval.
- Recording ground water table, if met.
- Conducting Field Packer permeability test in the boreholes at the specified depth.
- Slope Stability ANALYSIS
- Carrying out following Laboratory tests on the Soil samples collected from Borrow area, Trial Pit and Borehole in order to establish their engineering characteristics:-

Borrow Area Soil

- Sieve analysis
- Hydrometer analysis
- Specific gravity
- Atterberg limits
- Standard Proctor Test
- Unconfined compression test
- Triaxial test

CEG Test House & Research Centre Pvt. Ltd.

- Lab Permeability test

Trial Pit Soil

- Sieve analysis
- Hydrometer analysis
- Natural moisture content

Borehole Soil (UDS Sample)

- Sieve analysis
- Hydrometer analysis
- Natural moisture content
- Bulk density
- Specific gravity
- Atterberg limits
- Unconfined compression test
- Shear strength test
- Consolidation test
- Lab permeability test
- Preparation of Geotechnical investigation report comprising the following aspects
 - Lab test results of soil
 - Engineering Analysis of soil
 - Analysis of results & recommendation

1.4 METHODOLOGY

The investigation was planned to obtain the subsurface stratification in the proposed project site and collect soil / rock samples for laboratory testing to determine the engineering properties such as shear strength, along with basic engineering classification of the subsurface stratum to arrive at the foundation design parameters.

The subsurface investigation of soil or rock strata in the field involves three basic operations: -

- Boring / Drilling
- Sampling
- Conducting field tests, followed by laboratory tests on soil / rock samples retrieved from the field.

HAZOP STUDY REPORT
For
ZINC SMELTER PLANT
HINDUSTAN ZINC LIMITED
DARIBA SMELTER COMPLEX
DARIBA, RAJASTHAN
INDIA

2009



Safety Consultancy Services, Nerul (W). Navi-Mumbai-400706

HAZOP STUDY
For
ZINC SMELTER PLANT
HINDUSTAN ZINC LIMITED,
DARIBA SMELTER COMPLEX

Prepared By

P.K Saxena ,Lead Consultant

S.K.Shrivastava, Managing Director & Consultant



Safety Consultancy Services, Nerul (W). Navi-Mumbai-400706

PREFACE

M/s Hindustan Zinc Limited, Zinc Smelter. Dariba-Smelter Complex. DARIBA, District Rajsamand, Rajasthan have engaged the services of Safety Consultancy Services, Navi Mumbai, for carrying out a HAZOP Study of their ZINC Smelter plant which yet to be commissioned. Two highly experienced consultants carried out the Study.

The HAZOP Study was carried out by SCS as well as team of Process Engineers, Instrumentation Engineers and Safety Engineers of the plant the information and data about the factory was sought for ready reference at the time of study. P & I diagram and process flow diagram were kept available but since most of the Operational instruction and procedures are under draft stage so they were not readily made available. The team conducted discussions with the team members deputed by the management and with in-depth discussions and brainstorming and with the help of 7 guidewords to identify the abnormalities likely due to deviations in the process parameters and operating conditions. Important discussions were duly recorded and certain recommendations are proposed.

Disclaimer

The team of Consultants has exercised all reasonable skill, care and diligence based on the documents presented before them, discussions held with the plant personnel while carrying out the study. This report is not deemed to be any undertaking, warranty or certificate.

Place: Navi-Mumbai
Date: 20 September

S. K. Shrivastava
Managing Director and Consultant
Safety Consultancy Services

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HZL/DSC/ENV/CTO/2016/11

Date: 16.07.2016

To,

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

File No.CPM/M-53

Sub: Application for renewal of Consent to Operate under section 21 of the Air (Prevention and Control of Pollution) Act, 1981 and under section 25/26 of the Water (Prevention and Control of pollution) Act, 1974 for Zine Smelter (1 X 250000 TPA) and for the Roaster (1 X 954 TPD) of the 2nd unit of Zine Smelter Village Dariba, Tehsil Railmagra, Dist Rajsamand, Rajasthan.

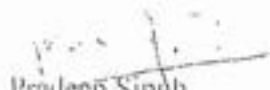
Ref: Application for renewal of Consent to Operate vide letter no.
HZL/DSC/ENV/CTO/2015/1 dated 23/06/2015.

Sir,

With reference to above subject matter and discussion in your good office on 19.05.2016, please find enclosed compliance status of CREP conditions.

This is for your information and record please.

Thanking you,
Yours Faithfully


Pradeep Singh

AGM Environment

CC: Regional Officer, Rajasthan State Pollution Control Board,
18, Azad Nagar, Near Pannadhy Circle,
Mining office Road, Bhilwara-311001

Enclosures:

Annexure I : Compliance status of CREP condition

Annexure I

Compliance Status of CREP Conditions for Zinc Smelter

Sr. no.	Conditions of CREP	Status
1	Meeting SO ₂ emission limit (1.5 kg/tonne of 100% H ₂ SO ₄ produced), 50 mg/ Nm ³ of acid mist	Average SO ₂ emission (2015-16) -0.60 Kg/Tonne Sulphuric Acid produced; Average Acid Mist-37.6 mg/Nm ³ .
2	SO ₂ Emissions monitoring - Installation / Proper operation, maintenance and calibration of continuous SO ₂ monitoring system	Online SO ₂ monitoring system has been installed in the Acid Plant of Zinc plant and connected with RPCB/CPCB server.
3	Solid and Hazardous Waste disposal: Construction of secured landfill for disposal of hazardous waste such as Jarosite cake, ETP cake and spent catalyst as per CPCB guidelines	Secured land fill for disposal of process residues, spent catalyst, ETP sludge etc after stabilization has been constructed. Jarofix disposal yard with single composite liner for disposal of jarosite after stabilization using lime and cement has been constructed.
4	Wastewater treatment and disposal: To achieve 100% recycle/ reuse of treated wastewater	Trade effluent is treated in Effluent Treatment Plant (ETP) of 9000KLD capacity followed by two stage Reverse Osmosis (RO) plant and the treated water (Permeate) is recycled back in to the process. Multiple Effect Evaporator (MEE) and solar evaporative pond have been provided to treat RO reject water ensure Zero effluent discharge from the plant premises.
5	Housekeeping: To reduce the generation of fugitive dust from vehicle movement and improve overall house keeping	Steps taken <ul style="list-style-type: none"> • Vacuum road cleaning system • Covered conveyor to transfer the material • Dust extraction or suppression system at transfer points • Truck and tyre washing systems
6	Green Belt: To develop green belt around the periphery of plant and township as per CPCB guidelines.	Total no of 87500 plant saplings have been planted in FY 2015-16 in the plant premises.



010

HZZ/DSC/ENV/CTO /2016/10

Date: 16.07.2016

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

File No.CPM/P-139

Sub: Application for amalgamation and renewal of Consent to Operate under section 21 of the Air (Prevention and Control of Pollution) Act, 1981 and under section 25/26 of the Water (Prevention and Control of pollution) Act, 1974 for Captive Power Plant -2 x 85 MW at Village Dariba, Tehsil Railmagra, Dist Rajsamand, Rajasthan.

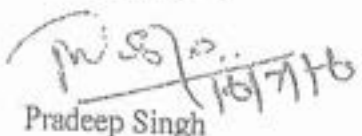
Ref: Application for amalgamation and renewal of Consent to Operate vide letter no. HZZ/DSC/ENV/CTO/2016/5 dated 18.03.2016.

Sir,

With reference to above subject matter and discussion in your good office on 19.05.2016, please find enclosed compliance status of CREP conditions.

This is for your information and record please.

Thanking you,
Yours Faithfully


Pradeep Singh

AGM Environment


19/7/16

CC: Regional Officer, Rajasthan State Pollution Control Board,
18, Azad Nagar, Near Pannadhay Circle,
Mining office Road, Bhilwara-311001

Enclosures:

Annexure I : Compliance status of CREP condition

M. S. P.
16/11/10

Annexure I

Compliance Status of CREP Conditions for CPP

Sr. no	Conditions of CREP	Status
1	New / expansion power projects to be accorded environmental clearance on or after 1.4.1.2003 shall meet the limit of 100 mg/Nm ³ for particulate matter.	ESPs, provided to Captive Power Plants (CPP) designed for particulate matter concentration less than 50 mg/Nm ³ at outlet.
2	Install/activate opacity meters/continuous monitoring system in all units.	Continuous on-line stack emission monitoring equipment for SO ₂ , NO _x , and SPM has been provided to the stack of captive power plant and connected to RPCB/CPCB server.
3	Power plants will provide dry ash to the users outside the premises	All the fly ash is being utilized as per Fly Ash Notification, 1999 as amended and is being provided to cement manufacturers.
4	Power Plants should provide dry flyash free of cost to the users.	All the fly ash is being utilized as per Fly Ash Notification, 1999 as amended and is being provided to cement manufacturers.
5	New plants shall promote adoption of clean coal and clean power generation technologies	Low NO _x burners provided to control NO _x emissions. Continuous on-line stack emission monitoring equipment for SO ₂ , NO _x and SPM has been provided to the stack of captive power plant. ESPs, provided to Captive Power Plant (CPP) designed for particulate matter concentration less than 50 mg/Nm ³ at outlet. The height of the stacks is as per the standard prescribed under the Environment (Protection) Act, 1986. The height of the CPP stack is 165 mtr.
6	Implementation of Environmental Standards (emission & effluent)	Being Complied.

[Handwritten signature]

Member Secretary



केन्द्रीय भूमि जल प्राधिकरण
जल संसाधन, नदी विकास एवं
गंगा संरक्षण मंत्रालय
भारत सरकार

Central Ground Water Authority
Ministry of Water Resources
River Development & Ganga Rejuvenation
Government of India

CGWA/IND/Prj/2017-243-R

Dated:- 16 Nov 2017

No.21-4(315)/WR/CGWA/2008-17-5

M/s Hindustan Zinc Limited
Rajpura Dariba Mines
PO Dariba, District Rajasthan
Rajasthan - 313211

Sub:- Renewal of NOC for ground water withdrawal to M/s Hindustan Zinc Ltd., in respect of their existing Rajpura Dariba Mines located at Railmagra Block, Rajasmand District, Rajasthan - reg.

Refer to your application dated 27.05.2015 on the above cited subject. Based on recommendations of Regional Director, CGWB, Western Region Jaipur vide their office letter No TS/21D/2017/CGWA/WR/2008-65 dated 11.05.2017 and further decisions on the subject, the renewal of NOC issued vide this office letter of even no dated 14.07.2016 is hereby accorded to M/s Hindustan Zinc Ltd., in respect of their existing Rajpura Dariba Mines located at Railmagra Block, Rajasmand District, Rajasthan. The renewal is however subject to the following conditions:-

1. The firm may dewater accumulated ground water in mining pits @446.50 m3/day due to seepage and intersection of water table. No additional dewatering structures shall be constructed for this purpose without prior approval of the CGWA.
2. All the wells shall remain fitted with water meter and monitoring of ground water abstraction shall be continued on regular basis at least once in a month. The firm will continue to provide data of ground water extraction on regular basis to the Regional Director, Central Ground Water Board, Western Region, Jaipur. The ground water quality shall be monitored twice in a year during pre monsoon and post monsoon periods.
3. M/s Hindustan Zinc Ltd., shall continue to implement ground water recharge measures to the tune of 0.0339 mcm/year for augmenting the ground water resources in consultation with the Regional Director, Central Ground Water Board, Western Region Jaipur. Firm shall also undertake periodic maintenance of recharge structures at its own cost.
4. The firm shall continue to execute monthly ground water regime monitoring in the core and buffer zones through five (5) nos of piezometers fitted with digital water level recorder on regular basis in consultation with the Central Ground Water Board Western Region, Jaipur.

Yours faithfully,
Regional Director, Central Ground Water Board, Western Region, Jaipur

5. The dewatering monitoring data in respect of S. No. 2 & 4 to be submitted to Central Ground Water Board Western Region Jaipur on regular basis at least once in a year.
6. The firm shall ensure proper recycling and reuse of waste water after adequate treatment.
7. Action taken report in respect of S.N.C. 1 to 6 shall be submitted to CGWA within one year period.
8. The renewal is liable to be cancelled in case of non-compliance of any of the conditions as mentioned in S. No. 1 to 7.
9. This NOC is subject to prevailing Central/State Government rules/laws or Court orders related to construction of tube-well/ground water withdrawal/construction of recharge or conservation structures/discharge of effluents or any such matter as applicable.
10. This NOC does not absolve the applicant / proponent of his obligation / requirement to obtain other statutory and administrative clearances from other statutory and administrative authorities.
11. The NOC does not imply that other statutory / administrative clearances shall be granted to the project by the concerned authorities. Such authorities would consider the project on merits and be taking decisions independently of the NOC.
12. This renewal is valid for three years from date of issuance of this letter.

Copy to:

Member Secretary

1. The Member Secretary Rajasthan State Pollution Control Board 4, Institutional Area, Jharna Dongri, Jaipur- 302004, Rajasthan with the request to ensure that the conditions mentioned in the NOC are complied by the firm in consultation with the District Collector, District Rajasmand, Rajasthan.
2. The District Collector, Distt of Rajasmand, Rajasthan for necessary action.
3. The Regional Director, Central Ground Water Board, Western Region, Jaipur for reference to your recommendation dated 11.08.2017.
4. TS to the Chairman, Central Ground Water Authority, Shyam Shakti Bawan, Rafi Marg, New Delhi.
5. Guwa Pdo 2017-19.

Member Secretary



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 of G. T. Road, UPSIDC Industrial Area, Ghaziabad - 201 009 (Delhi-NCR) INDIA.
Contact No. : 9711159210, 9810240637, 9810240678 E-mail : email@ekopro.in, ekoproengineers@gmail.com, website : www.ekopro.in

TEST REPORT

Water Sample Analysis

Test Report No. : EKO/174/311221

Issue Date : 04/01/2022

Issued To

: HINDUSTAN ZINC LIMITED
Dariba Smelter Complex
Post - Dariba, District - Rajsamand
(Rajasthan)

Sample Description : Water Sample
Sample Drawn on : 29/12/2021
Sample Drawn by : EPEPL (Mr. Harish Kumar)
Sample Received on : 31/12/2021
Sampling Location : Behind Lead RMH
Sampling Plan & Procedure : SOP-W/06
Sample Quantity : 3.0 Litre
Environmental Conditions : Normal
Analysis Duration : 31/12/2021 To 04/01/2022
Remark (if any) : NA

RESULTS

S. No.	Parameters	Test Methods	Results	Units	Limits as per IS: 10500-2012 (Amd.No.3 Feb-2021)	
					Acceptable	Permissible
1	Colour	IS: 3025 (P-4)	<1.0	Hazen	5.0	15.0
2	Odour	IS: 3025 (P-5)	Agreeable	-	Agreeable	Agreeable
3	Turbidity	IS: 3025 (P-10)	3.4	NTU	1.0	5.0
4	pH	IS: 3025 (P-11)	7.28	-	6.5-8.5	No relaxation
5	Total Hardness (as CaCO ₃)	IS: 3025 (P-21)	870.0	mg/L	200.0	600.0
6	Calcium (as Ca)	IS: 3025 (P-40)	160.7	mg/L	75.0	200.0
7	Iron (as Fe)	EKO/CHEM/SOP-ICPMS/W-01	0.25	mg/L	1.0	No relaxation
8	Chloride (as Cl)	IS: 3025 (P-32)	245.5	mg/L	250.0	1000.0
9	Residual Free Chlorine	IS: 3025 (P-26)	<0.1	mg/L	0.2	1.0
10	Fluoride (as F)	IS: 3025 (P-60)	<1.0	mg/L	1.0	1.5
11	Total Dissolved Solids	IS: 3025 (P-16)	1350.0	mg/L	500.0	2000.0
12	Magnesium (as Mg)	IS: 3025 (P-46)	65.4	mg/L	30.0	100.0
13	Copper (as Cu)	EKO/CHEM/SOP-ICPMS/W-01	<0.005	mg/L	0.05	1.5
14	Manganese (as Mn)	EKO/CHEM/SOP-ICPMS/W-01	<0.005	mg/L	0.1	0.3
15	Sulphate (as SO ₄)	IS: 3025 (P-24)	201.3	mg/L	200.0	400.0
16	Nitrate (as NO ₃)	IS: 3025 (P-34)	11.2	mg/L	45.0	No relaxation
17	Phenolic Compounds (as C ₆ H ₅ OH)	IS: 3025 (P-43)	<0.001	mg/L	0.001	0.002
18	Mercury (as Hg)	EKO/CHEM/SOP-ICPMS/W-01	<0.001	mg/L	0.001	No relaxation
19	Selenium (as Se)	EKO/CHEM/SOP-ICPMS/W-01	<0.005	mg/L	0.01	No relaxation
20	Arsenic (as As)	EKO/CHEM/SOP-ICPMS/W-01	<0.005	mg/L	0.01	No relaxation
21	Cyanide (as CN)	APHA 4500 CN-K	Absent	mg/L	0.05	No relaxation



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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, 9810240837, 9810240678 E-mail : email@ekopro.in, ekoproengineers@gmail.com, website : www.ekopro.in

TEST REPORT**Water Sample Analysis**

Test Report No. : EKO/211/160322

Issue Date : 22/03/2022

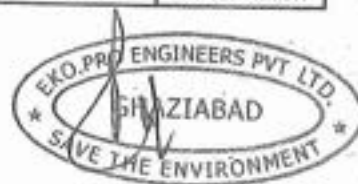
Issued To

: HINDUSTAN ZINC LIMITED
Dariba Smelter Complex
Post - Dariba, District - Rajsamand
(Rajasthan)

Sample Description : Water Sample
Sample Drawn on : 14/03/2022
Sample Drawn by : EPEPL (Mr. Harish Kumar)
Sample Received on : 16/03/2022
Sampling Location : Behind Lead RMH
Sampling Plan & Procedure : SOP-W/66
Sample Quantity : 3.0 Litre
Environmental Conditions : Normal
Analysis Duration : 16/03/2022 To 22/03/2022
Remark (if any) : NA

RESULTS

S. No.	Parameters	Test Methods	Results	Units	Limits as per IS: 10500-2012 (Amd.No.3 Feb-2021)	
					Acceptable	Permissible
1	Colour	IS: 3025 (P-4)	<1.0	Hazen	5.0	15.0
2	Odour	IS: 3025 (P-5)	Agreeable	-	Agreeable	Agreeable
3	Turbidity	IS: 3025 (P-10)	3.2	NTU	1.0	5.0
4	pH	IS: 3025 (P-11)	7.24	-	6.5-8.5	No relaxation
5	Total Hardness (as CaCO ₃)	IS: 3025 (P-21)	560.0	mg/L	200.0	600.0
6	Calcium (as Ca)	IS: 3025 (P-40)	134.30	mg/L	75.0	200.0
7	Iron (as Fe)	EKO/CHEM/SOP-ICPMS/W-01	0.21	mg/L	1.0	No relaxation
8	Chloride (as Cl)	IS: 3025 (P-32)	240.9	mg/L	250.0	1000.0
9	Residual Free Chlorine	IS: 3025 (P-26)	<0.1	mg/L	0.2	1.0
10	Fluoride (as F)	IS: 3025 (P-60)	<1.0	mg/L	1.0	1.5
11	Total Dissolved Solids	IS: 3025 (P-16)	1360.0	mg/L	500.0	2000.0
12	Magnesium (as Mg)	IS: 3025 (P-46)	54.68	mg/L	30.0	100.0
13	Copper (as Cu)	EKO/CHEM/SOP-ICPMS/W-01	<0.005	mg/L	0.05	1.5
14	Manganese (as Mn)	EKO/CHEM/SOP-ICPMS/W-01	<0.005	mg/L	0.1	0.3
15	Sulphate (as SO ₄)	IS: 3025 (P-24)	210.4	mg/L	200.0	400.0
16	Nitrate (as NO ₃)	IS: 3025 (P-34)	9.48	mg/L	45.0	No relaxation
17	Phenolic Compounds(as C ₆ H ₅ OH)	IS: 3025 (P-43)	<0.001	mg/L	0.001	0.002
18	Mercury (as Hg)	EKO/CHEM/SOP-ICPMS/W-01	<0.001	mg/L	0.001	No relaxation
19	Selenium (as Se)	EKO/CHEM/SOP-ICPMS/W-01	<0.005	mg/L	0.01	No relaxation
20	Arsenic (as As)	EKO/CHEM/SOP-ICPMS/W-01	<0.005	mg/L	0.01	No relaxation
21	Cyanide (as CN)	APHA 4500 CN-K	Absent	mg/L	0.05	No relaxation



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Contact No.: 9711159210, 9810240837, 9810240678 E-mail : email@ekopro.in, ekoproengineers@gmail.com, website : www.ekopro.in

Test Report No. : EKO/211/160322

Issue Date : 22/03/2022

22	Lead (as Pb)	EKO/CHEM/SOP-ICPMS/W-01	<0.005	mg/L	0.01	No relaxation
23	Zinc (as Zn)	EKO/CHEM/SOP-ICPMS/W-01	0.28	mg/L	5.0	15.0
24	Total Chromium (as Cr)	EKO/CHEM/SOP-ICPMS/W-01	<0.005	mg/L	0.05	No relaxation
25	Total Alkalinity (as CaCO ₃)	IS: 3025 (P-23)	520.0	mg/L	200.0	600.0
26	Aluminium (as Al)	EKO/CHEM/SOP-ICPMS/W-01	<0.005	mg/L	0.03	0.2
27	Boron (as B)	IS: 3025 (P-57)	<0.25	mg/L	0.5	2.4
28	Cadmium (as Cd)	EKO/CHEM/SOP-ICPMS/W-01	<0.001	mg/L	0.003	No relaxation
29	Anionic Detergents (as MBAS)	APHA 5540	<0.1	mg/L	0.2	1.0
30	Total Coliform	IS: 15185	Absent (<1)	cfu/100ml	Should be Absent	No relaxation
31	E.coli	IS: 15185	Absent	Per 100mL	Should be Absent	No relaxation

Notes:

- The results given above are related to the tested sample, as received & mentioned parameters.
- The customer asked for the above tests only.
- This test report will not be generated again, either wholly or in part, without prior written permission of the Laboratory.
- The test report will not be used for any publicity/legal purpose.
- The test samples will be disposed off after 15 days from the date of reporting of result, 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.
- Responsibility of the Laboratory is limited to the invoiced amount only.

****End of Report****For EKO PRO ENGINEERS PVT. LTD.
SHIVANGI SINGH RAIZADA
SECTION INCHARGE MICROBIOLOGY
(Authorized Signatory)For EKO PRO ENGINEERS PVT. LTD.
PURNIMA CHAUHAN
TECHNICAL MANAGER
(Authorized Signatory)