SHAKAMBHARI GROUP

BRAVO SPONGE IRON PRIVATE LIMITED

CIN: U27106WB1997PTC082921 | GSTIN: 19AACCB5058J1ZH | PAN: AACCB5058J | State: West Bengal | State Code: 19

Date: 07/06/2019

To
Government of India
Ministry of Environment Forest & Climate Change
Eastern Regional Office
A/3, Chandrasekharpur,
Bhubaneswar – 751 023

Kind Attn.: Mr. P. Suresh Babu, Dy. Director (S)

Sub.: Submission of Six monthly Compliance Report on EC Ref. No. J-11011/758/2009-1A.II(I), dated. 18.04.2017.

Sir,
As per requirement for submission of the six monthly EC compliance report, we are sending herewith the following for your kind consideration.

1. One six monthly compliance report for the period of **October'2018** to **March' 2019** on the status of implementation of the stipulated conditions and environmental safe guard is submitted herewith.

We hope that you will do the needful in this regard.

Thanking you

Yours truly,
For BRAVO SPONGE IRON PVT LTD

Authorized Signatory

CC to:

i. The Senior Environmental Engineer, EIM CELL, , WBPCB, Paribesh Bhawan, Block –LA, 10A, Sec.-III, Salt Lake City, Kolkata -700098

BRAVO SPONGE IRON PVT LTD.

COMPLIANCE STATUS ON ENVIRONMENTAL CLEARANCE
For the Sponge Iron & Power Plant
Vide letter No. : J-11011/758/2009-1A.II(I), dtd. 18th April, 2017
COMPLIANCE PERIOD: OCTOBER 18 TO MARCH 19

INTRODUCTION

M/S. Bravo Sponge Iron Pvt Ltd. at Village Mahuda, PO-Rukni, DIst-Purulia, West Bengal was accorded the Environmental Clearance No. J-11011/758/2009-1A.II(I), dtd. 18thApril, 2017 for Expansion of Sponge Iron & Power plant.

As per requirement this unit is giving below the compliance report as per conditions of Environmental Clearance for the period of **October 2018 to March 2019.**

COMPLIANCE REPORT

A.	SPECIFIC CONDITIONS :		
	COMPLIANCE CONDITIONS	**:**	**COMPLIANCE STATUS**
i)	The project proponent shall install 24x7 air monitoring devices to monitor air emissions, as provided by the CPCB and submit report to Ministry and its Regional Office	:	The proponent has taken required step and installed monitoring devices to measure air emissions.

ii)	In-plant control measures for checking fugitive emissions from all the vulnerable sources shall be provided. Dust suppression system like water spraying shall be provided at unloading and raw material handling areas, storage yards, conveyor belts and bucket elevators to control fugitive dust emissions to meet the WBPCB norms. Covered conveyer belts shall be provided to prevent the dust emissions.	:	Dust suppression is done with proper implementation of water sprinkler. Fugitive air quality is measured and annexed with the report. Pollution control is done to the optimum level.
iii)	The COD level in the effluent should be maintained at the prescribed standard and the STP effluent is to be recycled within the premises.		The COD level in the effluent water is maintained within the permissible limit.
iv)	No effluent shall be discharged outside the plant premises and 'zero' discharge shall be adopted.		Project proponent is giving attention to use process and domestic water as minimum as possible. Zero effluent discharge will be maintained and it will be given top priority.

v)	Continuous stack monitoring facilities for all the stacks shall be provided and sufficient air pollution control devices viz. Electrostatic precipitator (ESP), bag house, bag filters etc. shall be provided to keep the emission levels below 50 mg/Nm3 and installing energy efficient technology.		All the stacks are monitored within the defined time limit. The detailed report of stack monitoring are attached with this report.
vi)	Efforts shall further be made to use maximum water from the rain water harvesting sources. Use of air cooled condensers shall be explored and closed circuit cooling system shall be provided to reduce water consumption and water requirement shall be modified accordingly. All the effluent should be treated and used for ash handling, dust suppression and green belt development. ETP sludge should be disposed off scientifically.	:	Proponent gives importance to optimize use of water within the plant. Rain water harvesting system is present in the plant to reduce water consumption.
vii)	All internal roads shall be black topped. The roads shall be regularly cleaned with mechanical sweepers. A 3-tier avenue plantation using native species shall be developed along the roads. Facilities for parking of trucks carrying	:	This condition is followed and avenue plantation is done inside the plant.

viii)	The National Ambient Air Quality Emission Standards issued by the Ministry vide G.S.R. No. 826(E) dated 16th November, 2009 shall be followed	:	This is followed.
ix)	'Gaseous emission levels including secondary fugitive emissions from all the sources shall be controlled within the latest permissible limits issued by the Ministry vide G.S.R. 414(E) dated 30th May, 2008 and regularly monitored. Guidelines / Code of Practice issued by the CPCB shall be followed.	:	This unit has been maintaining the load/mass based standards notified by the Ministry prescribed from time to time.
x)	Regular monitoring of influent and effluent surface, sub-surface and ground water shall be ensured and treated wastewater shall meet the norms prescribed by the State Pollution Control Board or described under the Environment (Protection) Act, 1986 whichever are more stringent.	:	Constant monitoring is done of the influent, effluent, surface, & ground water. The results are within the prescribed limit.

xi)	Proper handling, storage, utilization and disposal of all the solid waste shall be ensured and regular report regarding toxic metal content in the waste material and its composition, end use of solid/hazardous waste shall be submitted to the Ministry's Regional Office, SPCB and CPCB.	:	The proponent ensures efficient handling, storage, utilization, disposal of solid waste. Toxic metal content in the waste content is submitted to the Ministry's Regional office at Bhubaneswar, WBPCB and CPCB.
xii)	A time bound action plan shall be submitted to reduce solid waste generated due to the project related activity, its proper utilization and disposal.	:	This is followed.
xiii)	Proper utilization of fly ash shall be ensured as per Fly Ash Notification, 1999 and subsequent amendment in 2003 and 2009. All the fly ash shall be provided to cement and brick manufacturers for further utilization and Memorandum of Understanding shall be submitted to the Ministry's Regional Office.	:	Fly ash generated within the plant is distributed to the brick manufacturers with efficient methodology.

xiv)	A Risk and Disaster Management Plan shall be prepared and a copy submitted to the Ministry ' s Regional Office, SPCB and CPCB within 3 months of issue of environment clearance letter.	:	Proper Risk & Disaster Management Plan is generated and it's been implemented as per the condition.
xv)	10-15m wide green belt should be developed all along the boundary of the plant and in all 33% of the area should be developed green by planting native and broad leaved species in consultation with local DFO and local communities as per the CPCB guidelines. The complete plantation should be completed in 3 years.	:	A well-developed green belt is present in the plant premises. The total area of the green belt is 33% of the total area.
xvi)	All the commitments made to the Public Hearing/public consultation meeting shall be satisfactorily implemented and adequate budget provision shall be made accordingly. .	:	This is noted and will be followed.

xvii)	An amount equal to Rs 400.87 lakhs, shall be earmarked towards the Enterprise Social Commitment based on Public Hearing issues, locals need and item-wise details along with time bound action plan as indicated by the project proponent shall be implemented. Action taken report in this regard shall be submitted to the Ministry's Regional Office.	:	The mentioned amount is designated toward the Enterprise Social Commitment. The proponent performs social responsibility as per the compliance condition.
xviii)	The company shall submit within three months their policy towards Corporate Environment Responsibility which shall inter-alia address (i) Standard operating process/procedure to being into focus any infringement/deviation/violation of environmental or forest norms/conditions, (ii) Hierarchical system or Administrative order of the Company to deal with environmental issues and ensuring issues and ensuring compliance to the environmental clearance conditions and (iii) Systems of reporting of non-compliance/violation environmental norms to the Board of Directors of the Company and/or stakeholders or shareholders.	:	The company submits their policy toward Corporate Social Responsibility within the due course of time.
xix)	The project proponent shall provide for solar light system for all common areas, street lights, villages, parking around project area and maintain the same regularly.		There is provision for solar light system in the common areas of plant premises.
xx)	The project proponent shall provide for LED lights in their offices and residential areas.		LED light is provided for the common areas.

xxi)	Provision shall be made for the housing of 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.		The labour hutment is made for the workers. All the basic infrastructure is given to the workers for their daily living.

B.	GENERAL CONDITIONS	:	
i)	The project authority shall adhere to the stipulations made by West Bengal Pollution Control Board (WBPCB) and State Government.	:	The project proponent has received 'Consent to Establish' & 'Consent to Operate' from West Bengal Pollution Control Board. The proponent adheres to the stipulation made by the authority.
ii)	No further expansion or modification of the plant shall be carried out without prior approval of this Ministry.	:	Further expansion or modification of the plant will be done with prior approval of MoEF, Govt. of India and obtaining Consent to Establish from WBPCB. Without approval from the ministry no expansion will be carried out.
iii)	At least four ambient air quality monitoring stations should be established in the downward direction as well as where maximum round level concentration of PM10, PM2.5, SO2 and NOx are anticipated in consultation with the PCB data on ambient air quality and stack emission shall be regularly submitted to this Ministry including its Regional Office at Bhubaneswar and the SPCB/CPCB once in six months.	:	The monitoring locations are installed and constant monitoring is done to determine the pollutant concentration in the ambient air. The analysis report is annexed.

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 shall be utilized for plantation purpose.	:	The wastewater generated in the plant is collected efficiently and treated properly to avoid any kind of water pollution.
v)	The overall noise levels in and around the plant area shall be kept well within the standards (85 dB(A)) 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. 75dB(A) during day time and 70 dB(A) during night time.		The noise level around the plant is within the permissible standard.
vi)	Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.		This is followed.
vii)	The company shall develop rain water harvesting structures to harvest the rain water for utilization in the lean season besides recharging the ground water table.		Rain water harvesting structure is developed within the plant to reduce the ground water consumption.
viii)	The project proponent shall also comply with all the environmental protection measures and safeguards recommended in the EIA/EMP report. Further, the company must undertake		All the environmental protection measures are safeguarded as recommended in the EIA/EMP report.

	socio-economic development activities in the surrounding villages like community development programmes, educational programmes, drinking water supply and health care etc.		
ix)	Requisite funds shall be earmarked towards capital cost and recurring cost/annum for environment pollution control measures to implement the conditions stipulated by the Ministry of Environment, Forest and Climate Change (MoEF&CC) as well as the State Government. An implementation schedule for implementing all the conditions stipulated herein shall be submitted to the Regional Office of the Ministry at Bhubaneswar. The funds so provided shall not be diverted for any other purpose		It is agreed and will be followed.
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.		Clearance letter is sent to concerned local body.
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&CC at Bhubaneswar. The respective Zonal Office of CPCB and the SPCB. The criteria		The compliance status is uploaded within regular time interval to comply with this condition.

	pollutant levels namely; PM10,SO2, NOx (ambient levels as well as stack emissions) or critical sectoral parameters, indicated for the projects shall be monitored and displayed at a convenient location near the main gate of the company in the public domain.		
xii)	The project proponent shall also submit six monthly report 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&CC, the respective Zonal Office of CPCB and the SPCB. The Regional Office of this Ministry at Bhubaneswar/ CPCB/SPCB shall monitor the stipulated conditions.		Six monthly monitoring report is submitted to MoEF&CC in both soft & hard copies. All the environmental monitoring data is attached with the report.
xiii)	The environmental statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental conditions and shall also be sent to the respective Regional Office of the MoEF&CC at Bhubaneswar by e-mail.		Its is agreed and followed.
xiv)	The project proponent shall inform the public that the project has been accorded environment clearance by the Ministry and copies of the clearance letter are available with the SPCB and may also be seen at website of the Ministry of Environment, Forest and Climate Change (MoEF&CC) at http:/envfor.nic.in. This shall be		Public is informed by the project proponent about the environmental clearance. The copy of the clearance letter is also uploaded the website of the ministry.

	advertised within seven days from the date of issue of the clearance letter, at least in two local newspaper that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and copy of the same should be forwarded to the Regional Office at Bhubaneswar		
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.		It is agreed and will be followed.

DETAILS OF ENVIRONMENTAL MONITORING

1. AMBIENT AIR QUALITY MONITORING

Ambient Air Quality Monitoring Stations

Ambient air quality monitoring has been carried out on 18th March in four locations to assess the ambient air quality of Project Site. This will enable to have an analytical understanding about air quality and the changes in the air environment in the study area with respect to the condition prevailing. The location of the ambient air quality monitoring station is given in **Table 1.1**.

Table 1.1 Details of Ambient Air Quality Monitoring Stations

Sl. No.	Location Code	Location Name/ Description	Environmental Setting
1.	AAQ-1	Near Main Gate	Sponge and Power Plant
2.	AAQ-2	Mohuda Village	Sponge and Power Plant
3	AAQ-3	Near Railway Siding Area	Sponge and Power Plant
4	AAQ-4	Roof of main Adm Building	Sponge and Power Plant

Ambient Air Quality Monitoring Methodology

Monitoring was conducted in respect of the following parameters:

- Particulate Matter 2.5 ($PM_{2.5}$)
- Particulate Matter 10 (PM_{10})
- Sulphur Dioxide (SO_2)
- Oxides of Nitrogen (NO_x)

The air samples were analyzed as per standard methods specified by Central Pollution Control Board (CPCB) and IS: 5182. The techniques used for ambient air quality monitoring and minimum detectable levels are given in **Table 1.2**.

Fine Particulate Sampler APM 550 instruments have been used for monitoring Particulate Matter 2.5 (PM2.5 i.e. <2.5 microns), and Respirable Dust Sampler APM 450 was used for sampling Respirable fraction (<10 microns), gaseous pollutants like SO2, and NOx.

Table 1.2 Techniques used for Ambient Air Quality Monitoring

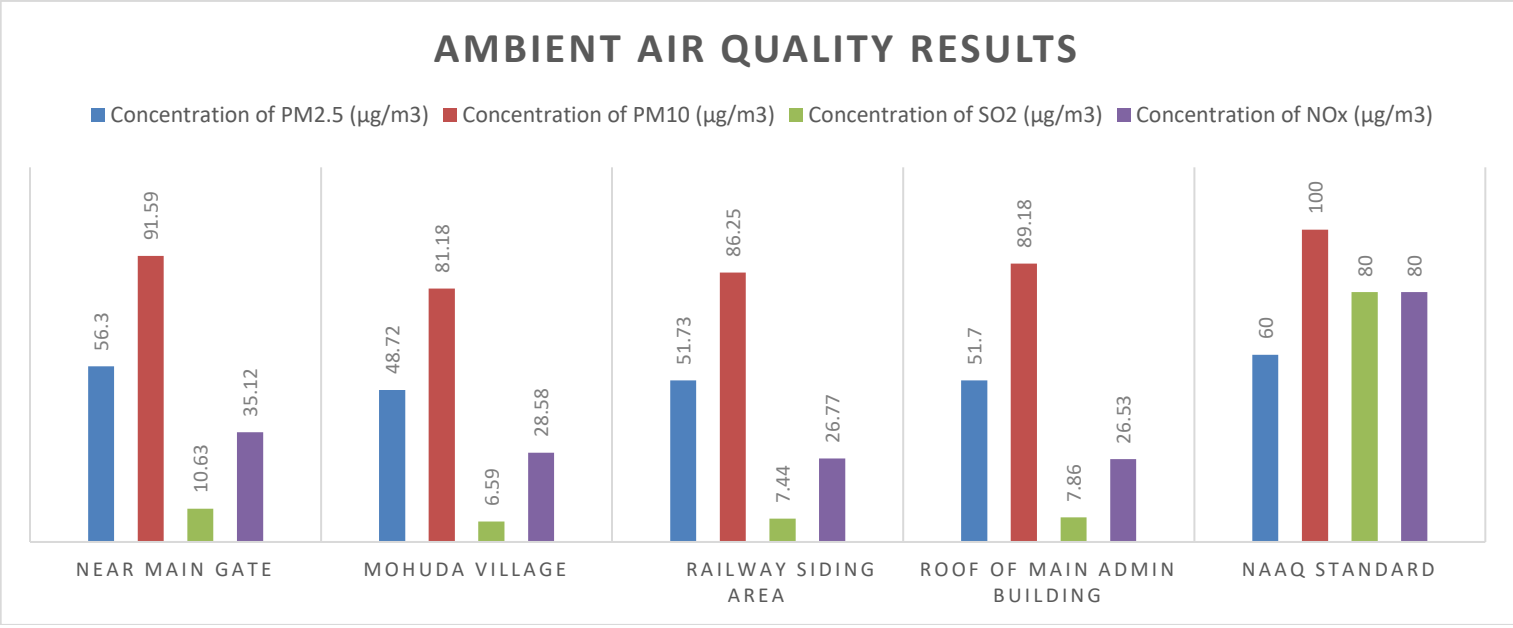
S. No.	Parameter	Technique	Technical Protocol
1	Particulate Matter 2.5 ($PM_{2.5}$)	USEPA 1997a, 40 CFR Part 50, Appendix L	IS-5182 (Part-IV)
2	Particulate Matter 10 (PM_{10})	IS 5182 (PART 23) : 2006	IS-5182 (Part-23)
3	Sulphur dioxide	IS 5182 (Part 2) 2001 & ASTM D 2914-01 reapproved 2007 : Sec 11 (Vol. 11.07) : 2011	IS-5182 (Part- II)
4	Nitrogen dioxide	IS 5182 (Part 6) 2006 & ASTM D 1607-91 reapproved 2005 : Sec 11 (Vol. 11.07) : 2011	IS-5182 (Part-VI)

Ambient Air Quality Monitoring Results

The detailed on-site monitoring results of PM 2.5, PM 10, SO_2 and NO_x are presented in Table 1.3.

Table 1.3 Ambient Air Quality Monitoring Results

	18.03.2019 -19.03.2019	Near Main Gate	Mohuda Village	Railway Siding Area	Roof of Main Admin Building	NAAQ Standard
Oct 18 – March 19	Concentration of PM2.5 (µg/m³)	56.30	48.72	51.73	51.70	60
	Concentration of PM10 (µg/m³)	91.59	81.18	86.25	89.18	100
	Concentration of SO2 (µg/m³)	10.63	6.59	7.44	7.86	80
	Concentration of NOx (µg/m³)	35.12	28.56	26.77	26.53	80



Discussion on Ambient Air Quality in the Study Area

The level of PM10 and PM2.5, SO_2 and NOx near Main Gate is under the permissible limit (for residential, rural and other areas as stipulated in the National Ambient Air Quality Standards).

2. STACK GAS MONITORING

Stack gas is generated from many combustion sources, including incinerators, kilns and thermal oxidizers. A thermal oxidizer is a process for the treatment of air exhaust and is commonly used during the incineration of waste. When the stack is mixed with air, the exhausting gas is cool enough to be measured by a thermal mass flow meter, thereby getting the benefit of the fast response and wide turn down of the device. Measuring the flow rate of stack gas is required in order to calculate the overall mass of gas over time. This is a requirement for many environmental regulations.

The stacks are attached to Rotary Kiln and induction furnace. The sample was taken on 18th March,2019.

The details of the stack attached to Rotary Kiln No 1 & 2 are given in tabular form in Table 2.1:

Parameters	Results	Methods
Flue Gas Temperature (0C)	129.0	IS : 11255 (Part 1)
Barometric Pressure (mm of Hg.)	757.0	--
Velocity of Gas flow (m/s)	11.0	IS : 11255 (Part 3)
Quantity of Gas flow (Nm3/hr.)	8796.36	IS : 11255 (Part III)
Concentration of SO_2 (mg/Nm3)	690.06	IS 11255 (Part 2) 1985 RA 2003
Concentration of CO_2 %(v/v)	10.8	IS 13270 1992 RA 2003
Concentration of CO %(v/v)	<1.0	IS 13270 1992 RA 2003
Concentration of Particulate Matter (mg/Nm3) (at 10.8% CO2)	23.44	IS 11255 (Part – 1) 1985 RA 2003 & ASTM D 3685/D 3685M-98 (reapproved 2005) : Sec 11(Vol3 11.07) : 2011
Concentration of Particulate Matter (mg/Nm3) (at 12% CO2)	26.04	

Results of the stack attached to Rotary Kiln (No 3 & 4)

Parameters	Results	Methods
Flue Gas Temperature (0C)	127.0	IS : 11255 (Part 1)
Barometric Pressure (mm of Hg.)	757.0	--
Velocity of Gas flow (m/s)	10.99	IS : 11255 (Part 3)
Quantity of Gas flow (Nm3/hr.)	72910.68	IS : 11255 (Part III)
Concentration of SO_2 (mg/Nm3)	633.71	IS 11255 (Part 2) 1985 RA 2003
Concentration of CO_2 %(v/v)	10.4	IS 13270 1992 RA 2003
Concentration of CO %(v/v)	<1.0	IS 13270 1992 RA 2003
Concentration of Particulate Matter (mg/Nm3) (at 10.4 % CO2)	27.57	IS 11255 (Part – 1) 1985 RA 2003 & ASTM D 3685/D 3685M-98 (reapproved 2005) : Sec 11(Vol3 11.07) : 2011
Concentration of Particulate Matter (mg/Nm3) (at 12% CO2)	31.81	

Results of the stack attached to Induction Furnace

Parameters	Results	Methods
Flue Gas Temperature (0C)	57.3	IS : 11255 (Part 1)
Barometric Pressure (mm of Hg.)	757.0	--
Velocity of Gas flow (m/s)	9.34	IS : 11255 (Part 3)
Quantity of Gas flow (Nm3/hr.)	10018.73	IS : 11255 (Part III)
Concentration of Particulate Matter (mg/Nm3)	34.17	IS 11255 (Part – 1) 1985 RA 2003 & ASTM D 3685/D 3685M-98

3. WORK ZONE AIR QUALITY MONITORING

Fugitive emissions are emissions of gases or vapors from pressurized equipment due to leaks and other unintended or irregular releases of gases, mostly from industrial activities. As well as the economic cost of lost commodities, fugitive emissions contribute to air pollution and climate change.

The sampling was done on 18th March, 2019 for fugitive analysis. The results are given in tabular form

Results of Fugitive Air Analysis near raw material stock yard

PARAMETERS	METHOD NO.	RESULTS
Concentration of SPM (µg/m3)	NIOSH 0500 : 1994	491.38
Concentration of *RPM (µg/m3)	IS 5182 (PART 23) : 2006	238.68
Concentration of *SO2 (µg/m3)	IS 5182 (Part 2) 2001 & ASTM D 2914-01 reapproved 2007 : Sec 11 (Vol. 11.07) : 2011	7.01
Concentration of *NOx (µg/m3)	IS 5182 (Part 6) 2006 & ASTM D 1607-91 reapproved 2005 : Sec 11 (Vol. 11.07) : 2011	25.05

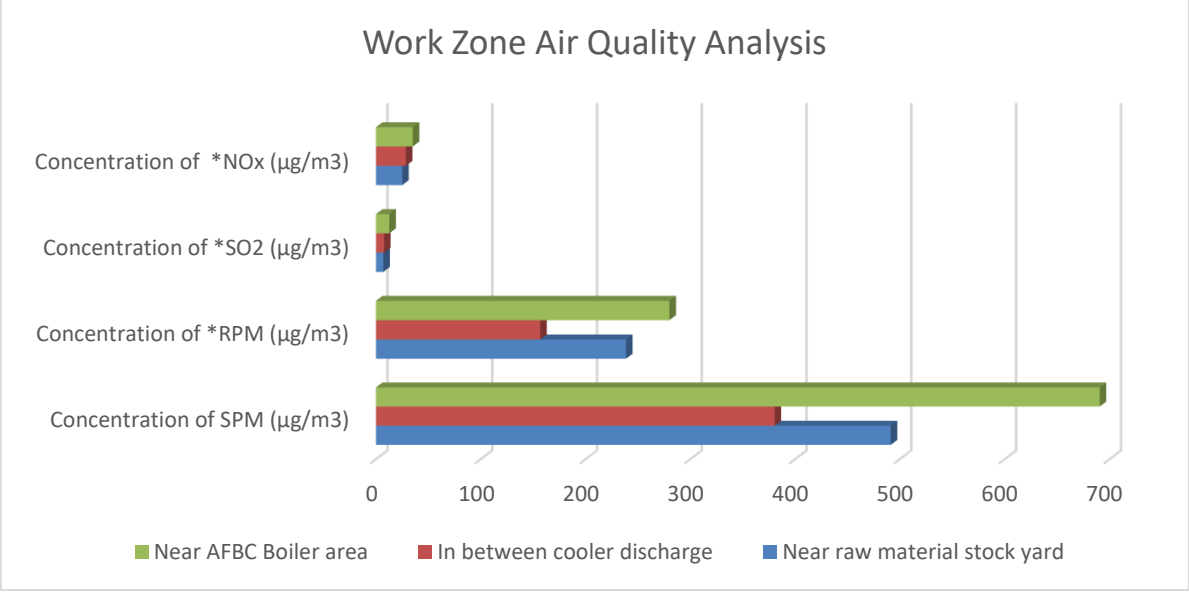
Results of Fugitive Air analysis in between Cooler Discharge –

PARAMETERS	METHOD NO.	RESULTS
Concentration of SPM (µg/m3)	NIOSH 0500 : 1994	380.56
Concentration of *RPM (µg/m3)	IS 5182 (PART 23) : 2006	156.78
Concentration of *SO2 (µg/m3)	IS 5182 (Part 2) 2001 & ASTM D 2914-01 reapproved 2007 : Sec 11 (Vol. 11.07) : 2011	7.65
Concentration of *NOx (µg/m3)	IS 5182 (Part 6) 2006 & ASTM D 1607-91 reapproved 2005 : Sec 11 (Vol. 11.07) : 2011	28.56

Results of Fugitive Air Analysis near AFBC Boiler area-

PARAMETERS	METHOD NO.	RESULTS
Concentration of SPM (µg/m3)	NIOSH 0500 : 1994	690.60
Concentration of *RPM (µg/m3)	IS 5182 (PART 23) : 2006	280.13
Concentration of *SO2 (µg/m3)	IS 5182 (Part 2) 2001 & ASTM D 2914-01 reapproved 2007 : Sec 11 (Vol. 11.07) : 2011	12.75
Concentration of *NOx (µg/m3)	IS 5182 (Part 6) 2006 & ASTM D 1607-91 reapproved 2005 : Sec 11 (Vol. 11.07) : 2011	35.12

The comparison are given in graphical form



4. **Effluent Water Quality Monitoring**

Effluent Water sample was collected from waste water storage tank. The sample was analyzed for various parameters. The details of water sampling locations are given in **Table 4.1**.

Table 4.1 Details of Effluent Water Quality Monitoring Station

S. No.	Location Code	Location Name/ Description
1.	Effluent Water	Domestic Effluent Water (Grab)

Methodology of Effluent Water Quality Monitoring

Sampling of effluent water was carried out on 18th March, 2019. Samples were collected as grab sample and sampling forms are filled in as per the sampling plan. The preservative sample were properly added to preserve as per standard operating procedures (SOP) and stored immediately in ice boxes, which were ensured for appropriate temperatures. Sample for chemical analysis was collected in polyethylene carboys.

Proper care was taken during packing and transportation of samples. All the samples reached the laboratory within the holding times for different parameters. After ensuring the same the samples were forwarded immediately for analysis.

The samples were analyzed as per the standard procedures specified in 'Standard Methods for the Examination of Water and Wastewater' published by American Public Health Association (APHA) and CPCB.

Effluent Water Quality Monitoring Results

The detailed effluent water quality monitoring results are presented in **Table 4.2**.

	PARAMETERS	TEST METHODS		RESULTS	LIMIT*
1.	pH	APHA 23rd Ed., 4500-H+B : 2017	:	6.78	5.5-9.0
2.	Total Suspended Solids (mg./l)	APHA 23rd Ed., 2540 D : 2017	:	25.0	100.0
3.	Oil and Grease (mg./l)	APHA 23rd Ed., 5520 B/D : 2017	:	2.5	10.0
4.	COD (mg./l)	APHA 23rd Ed., 5220 B/C/D : 2017	:	60.0	250.0
5.	BOD [3 days, 27^{0}C] (mg./l)	APHA 23rd Ed., 5210-B : 2017	:	20.0	30.0

ANNEXURE 1

STACK GAS ANALYSIS REPORT

1.	Name of the Industry	:	Bravo Sponge Iron Pvt. Ltd.
2.	Address	:	Vill. – Mohuda. P.O. – Rukni, P.S. – Para, Purulia – 723145
3.	Date of sampling	:	18.03.2019
4.	Report No.	:	103A/EC/M/March/TR(A)/II/18-19
5.	Analysis completed on	:	22.03.2019
6.	Reporting Date	:	25.03.2019

A. GENERAL INFORMATION ABOUT STACK

1.	Stack attached to	:	Rotary Kiln No. 1 & 2 (100 TPD each)
2.	Shape of Stack	:	Circular
3.	Material of Construction	:	M.S.
4.	Height of Stack from G. L. (mtr.)	:	30.0
5.	Stack I.D. at sampling point (mtr.)	:	1.90
6.	Height of sampling port from G. L. (mtr.)	:	14.0
7.	Capacity	:	6.42 MT/hr. (Kiln – 1), 6.29 MT/hr. (Kiln – 2)
8.	Emission due to	:	Oxidation of Coal & Reduction of Fe-Ore

	(a) Type of Fuel Used	:	Coal	(b) Fuel Consumption	:	Rated – 5.63 MT/hr. (each kiln) Working – 5.12 MT/hr. (each Kiln)
9.(a)	Permanent ladder & platform		Yes	(b) Pollution Control Device	:	E.S.P with WHRB

B. RESULTS OF SAMPLING

SL. NO.	PARAMETERS	METHOD NO.		RESULTS
1.	Flue Gas Temperature (^{0}C)	IS : 11255 (Part 1)	:	129.0
2.	Barometric Pressure (mm of Hg.)	--	:	757.0
3.	Velocity of Gas flow (m/s)	IS : 11255 (Part 3)	:	11.0
4.	Quantity of Gas flow (Nm^3/hr.)	IS : 11255 (Part III)	:	80796.36
5.	Concentration of SO_2 (mg/Nm^3)	IS 11255 (Part 2) 1985 RA 2003	:	690.06
6.	Concentration of CO_2 % (v/v)	IS 13270 1992 RA 2003	:	10.8
7.	Concentration of CO %(v/v)	IS 13270 1992 RA 2003	:	<1.0
8.	a) Concentration of Particulate Matter (mg/Nm^3) (at 10.8% CO_2)	IS 11255 (Part – 1) 1985 RA 2003 & ASTM D 3685/D 3685M-98 (reapproved 2005) : Sec 11(Vol. 3 11.07) : 2011	:	23.44
	b) Concentration of Particulate Matter (mg/Nm^3) (at 12% CO_2)		:	26.04

Remarks : *All the information under column A are supplied by the respective industry.*

Date : 25.03.2019

Authorised Signatory :

Dr. AJOY PAUL
Quality Manager

STACK GAS ANALYSIS REPORT

1.	Name of the Industry	:	Bravo Sponge Iron Pvt. Ltd.
2.	Address	:	Vill. – Mohuda. P.O. – Rukni, P.S. – Para, Purulia – 723145
3.	Date of sampling	:	18.03.2019
4.	Report No.	:	103A/EC/M/March/TR(A)/III/18-19
5.	Analysis completed on	:	22.03.2019
6.	Reporting Date	:	25.03.2019

A. GENERAL INFORMATION ABOUT STACK

1.	Stack attached to	:	Rotary Kiln No. 3 & 4 (100 TPD each)
2.	Shape of Stack	:	Circular
3.	Material of Construction	:	M.S.
4.	Height of Stack from G. L. (mtr.)	:	30.0
5.	Stack I.D. at sampling point (mtr.)	:	1.80
6.	Height of sampling port from G. L. (mtr.)	:	15.0
7.	Capacity	:	6.42 MT/hr. (Kiln – 3), 6.30 MT/hr. (Kiln – 4)
8.	Emission due to	:	Oxidation of Coal & Reduction of Fe-Ore

	(a) Type of Fuel Used	:	Coal	(b) Fuel Consumption	:	Rated – 5.63 MT/hr. (each kiln) Working – 5.12 MT/hr. (each Kiln)
9.(a)	Permanent ladder & platform		Yes	(b) Pollution Control Device	:	E.S.P with WHRB

B. RESULTS OF SAMPLING

SL. NO.	PARAMETERS	METHOD NO.		RESULTS
1.	Flue Gas Temperature (^{0}C)	IS : 11255 (Part 1)	:	127.0
2.	Barometric Pressure (mm of Hg.)	--	:	757.0
3.	Velocity of Gas flow (m/s)	IS : 11255 (Part 3)	:	10.99
4.	Quantity of Gas flow (Nm^3/hr.)	IS : 11255 (Part III)	:	72910.68
5.	Concentration of SO_2 (mg/Nm^3)	IS 11255 (Part 2) 1985 RA 2003	:	633.71
6.	Concentration of CO_2 % (v/v)	IS 13270 1992 RA 2003	:	10.4
7.	Concentration of CO %(v/v)	IS 13270 1992 RA 2003	:	<1.0
8.	a) Concentration of Particulate Matter (mg/Nm^3) (at 10.4% CO_2)	IS 11255 (Part – 1) 1985 RA 2003 & ASTM D 3685/D 3685M-98 (reapproved 2005) : Sec 11(Vol. 3 11.07) : 2011	:	27.57
	b) Concentration of Particulate Matter (mg/Nm^3) (at 12% CO_2)		:	31.81

Remarks : *All the information under column A are supplied by the respective industry.*

Date : 25.03.2019

Authorised Signatory :

Dr. AJOY PAUL
Quality Manager

STACK GAS ANALYSIS REPORT

1.	Name of the Industry	:	Bravo Sponge Iron Pvt. Ltd.
2.	Address	:	Vill. – Mohuda. P.O. – Rukni, P.S. – Para, Purulia – 723145
3.	Date of sampling	:	18.03.2019
4.	Report No.	:	103A/EC/M/March/TR(A)/I/18-19
5.	Analysis completed on	:	22.03.2019
6.	Reporting Date	:	25.03.2019

A. GENERAL INFORMATION ABOUT STACK

1.	Stack attached to	:	2 Nos. x 15 Ton Induction Furnace attached to common stack
2.	Shape of Stack	:	Circular
3.	Material of Construction	:	M.S.
4.	Height of Stack from G. L. (mtr.)	:	30.0
5.	Stack I.D. at sampling point (mtr.)	:	0.65
6.	Height of sampling port from G. L. (mtr.)	:	--
7.	Capacity	:	2 x 15 Ton/Batch
8.	Emission due to	:	Melting of Sponge Iron, Pig Iron & Scraps

	(a) Type of Fuel Used	:	Electrically Operated	(b) Fuel Consumption	:	Nil	
9.(a)	Permanent ladder & platform		Yes	(b) Pollution Control Device	:	Bag Filter	

B. RESULTS OF SAMPLING

SL. NO.	PARAMETERS	METHOD NO.		RESULTS
1.	Flue Gas Temperature (^{0}C)	IS : 11255 (Part 1)	:	57.3
2.	Barometric Pressure (mm of Hg.)	--	:	757.0
3.	Velocity of Gas flow (m/s)	IS : 11255 (Part 3)	:	9.34
4.	Quantity of Gas flow (Nm^3/hr.)	IS : 11255 (Part III)	:	10018.73
8.	Concentration of Particulate Matter (mg/Nm^3)	IS 11255 (Part – 1) 1985 RA 2003 & ASTM D 3685/D 3685M-98 (reapproved 2005) : Sec 11(Vol. 3 11.07) : 2011	:	34.17

Remarks : *All the information under column A are supplied by the respective industry.*

Date : 25.03.2019

Authorised Signatory :

Dr. AJOY PAUL
Quality Manager

AMBIENT AIR ANALYSIS REPORT

1.	Name of the Industry	:	Bravo Sponge Iron Pvt. Ltd.
2.	Address	:	Vill. – Mohuda. P.O. – Rukni, P.S. – Para, Purulia – 723145
3.	Date of sampling	:	18.03.2019 – 19.03.2019
4.	Report No.	:	103A/EC/M/March/TR(A)/IV/18-19
5.	Analysis completed on	:	22.03.2019
6.	Reporting Date	:	25.03.2019
7.	Particular of Plant	:	Sponge & Power Plant

A] GENERAL INFORMATION

1.	Location of Sampling	:	Near Main Gate (Western Side)
2.	Duration of Sampling	:	24 hrs. (10:15 a.m. – 10:15 a.m.)

B] METEOROLOGICAL INFORMATION

1.	Average Temperature (^{0}C)	:	40.0
2.	Average Relative Humidity (%)	:	78.2
3.	Barometric Pressure (mm of Hg)	:	757.0
4.	Smell or Odour	:	No Remarkable Smell
5.	Weather Condition	:	Clear sky

C] RESULTS

SL. NO.	PARAMETERS	METHOD NO.		RESULTS
1.	Concentration of $PM_{2.5}$ (µg/m^3)	USEPA 1997a, 40 CFR Part 50, Appendix L	:	56.30
2.	Concentration of PM_{10} (µg/m^3)	IS 5182 (PART 23) : 2006	:	91.59
3.	Concentration of SO_2 (µg/m^3)	IS 5182 (Part 2) 2001 & ASTM D 2914-01 reapproved 2007 : Sec 11 (Vol. 11.07) : 2011	:	10.63
4.	Concentration of NO_x (µg/m^3)	IS 5182 (Part 6) 2006 & ASTM D 1607-91 reapproved 2005 : Sec 11 (Vol. 11.07) : 2011	:	35.12
5.	Concentration of CO (mg/m^3)	IS 5182 (Part 10): 1999 reaffirmed 2005 & ASTM D 3162-94 reapproved 2005 : Sec 11 (Vol. 11.07) : 2011	:	0.38
6.	Concentration of Pb (µg/m^3)	IS 5182 (Part 22) 2004	:	<0.01
7.	Benzo (a) Pyrene (BaP) (ng/m^3)	IS 5182 (Part 12) : 2004 & ASTM D 6209-98 reapproved 2004 : Sec 11 (Vol. 11.07) : 2011	:	<0.36
8.	Benzene (C_6H_6) (µg/m^3)	IS 5182 (Part 11) 2006 & ASTM D 5466-01 reapproved 2007 : Sec 11 (Vol. 11.07) : 2011	:	<0.74
9.	Ozone (O_3) (µg/m^3)	IS 5182 (Part-IX) : 1974	:	<10.0
10.	Ammonia (NH_3) (µg/m^3)	NIOSH Manual of Analytical Method, 4th Edition 1994, Method 6015, issue 2	:	<4.18
11.	Nickel (Ni) (ng/m^3)	EPA IO 3.2, 1999	:	<0.02
12.	Arsenic (As) (ng/m^3)	EPA IO 3.2, 1999, APHA 23rd Ed 3114C : 2017	:	<0.01

Date : 25.03.2019

Authorised Signatory :

Dr. AJOY PAUL
Quality Manager

AMBIENT AIR ANALYSIS REPORT

1.	Name of the Industry	:	Bravo Sponge Iron Pvt. Ltd.
2.	Address	:	Vill. – Mohuda. P.O. – Rukni, P.S. – Para, Purulia – 723145
3.	Date of sampling	:	18.03.2019 – 19.03.2019
4.	Report No.	:	103A/EC/M/March/TR(A)/V/18-19
5.	Analysis completed on	:	22.03.2019
6.	Reporting Date	:	25.03.2019
7.	Particular of Plant	:	Sponge & Power Plant

A] GENERAL INFORMATION

1.	Location of Sampling	:	Mohuda Village (0.5 K.M. from Plant) (Southern Side)
2.	Duration of Sampling	:	24 hrs. (10:35 a.m. – 10:35 a.m.)

B] METEOROLOGICAL INFORMATION

1.	Average Temperature (^{0}C)	:	40.0
2.	Average Relative Humidity (%)	:	78.2
3.	Barometric Pressure (mm of Hg)	:	757.0
4.	Smell or Odour	:	No Remarkable Smell
5.	Weather Condition	:	Clear sky

C] RESULTS

SL. NO.	PARAMETERS	METHOD NO.		RESULTS
1.	Concentration of $PM_{2.5}$ (µg/m^3)	USEPA 1997a, 40 CFR Part 50, Appendix L	:	48.72
2.	Concentration of PM_{10} (µg/m^3)	IS 5182 (PART 23) : 2006	:	81.18
3.	Concentration of SO_2 (µg/m^3)	IS 5182 (Part 2) 2001 & ASTM D 2914-01 reapproved 2007 : Sec 11 (Vol. 11.07) : 2011	:	6.59
4.	Concentration of NO_x (µg/m^3)	IS 5182 (Part 6) 2006 & ASTM D 1607-91 reapproved 2005 : Sec 11 (Vol. 11.07) : 2011	:	28.56

Date : 25.03.2019

Authorised Signatory :

Dr. AJOY PAUL
Quality Manager

AMBIENT AIR ANALYSIS REPORT

1.	Name of the Industry	:	Bravo Sponge Iron Pvt. Ltd.
2.	Address	:	Vill. – Mohuda. P.O. – Rukni, P.S. – Para, Purulia – 723145
3.	Date of sampling	:	18.03.2019 – 19.03.2019
4.	Report No.	:	103A/EC/M/March/TR(A)/VI/18-19
5.	Analysis completed on	:	22.03.2019
6.	Reporting Date	:	25.03.2019
7.	Particular of Plant	:	Sponge & Power Plant

A] GENERAL INFORMATION

1.	Location of Sampling	:	Near Railway Siding Area (Northern Side)
2.	Duration of Sampling	:	24 hrs. (09:45 a.m. – 09:45 a.m.)

B] METEOROLOGICAL INFORMATION

1.	Average Temperature (^{0}C)	:	40.0
2.	Average Relative Humidity (%)	:	78.2
3.	Barometric Pressure (mm of Hg)	:	757.0
4.	Smell or Odour	:	No Remarkable Smell
5.	Weather Condition	:	Clear sky

C] RESULTS

SL. NO.	PARAMETERS	METHOD NO.		RESULTS
1.	Concentration of $PM_{2.5}$ (µg/m^3)	USEPA 1997a, 40 CFR Part 50, Appendix L	:	51.73
2.	Concentration of PM_{10} (µg/m^3)	IS 5182 (PART 23) : 2006	:	86.25
3.	Concentration of SO_2 (µg/m^3)	IS 5182 (Part 2) 2001 & ASTM D 2914-01 reapproved 2007 : Sec 11 (Vol. 11.07) : 2011	:	7.44
4.	Concentration of NO_x (µg/m^3)	IS 5182 (Part 6) 2006 & ASTM D 1607-91 reapproved 2005 : Sec 11 (Vol. 11.07) : 2011	:	26.77

Date : 25.03.2019

Authorised Signatory :

Dr. AJOY PAUL
Quality Manager

AMBIENT AIR ANALYSIS REPORT

1.	Name of the Industry	:	Bravo Sponge Iron Pvt. Ltd.
2.	Address	:	Vill. – Mohuda. P.O. – Rukni, P.S. – Para, Purulia – 723145
3.	Date of sampling	:	18.03.2019 – 19.03.2019
4.	Report No.	:	103A/EC/M/March/TR(A)/VII/18-19
5.	Analysis completed on	:	22.03.2019
6.	Reporting Date	:	25.03.2019
7.	Particular of Plant	:	Sponge & Power Plant

A] GENERAL INFORMATION

1.	Location of Sampling	:	On the Roof of Main Administrative Building (Eastern Side)
2.	Duration of Sampling	:	24 hrs. (11:00 a.m. – 11:00 a.m.)

B] METEOROLOGICAL INFORMATION

1.	Average Temperature (^{0}C)	:	40.0
2.	Average Relative Humidity (%)	:	78.2
3.	Barometric Pressure (mm of Hg)	:	757.0
4.	Smell or Odour	:	No Remarkable Smell
5.	Weather Condition	:	Clear sky

C] RESULTS

SL. NO.	PARAMETERS	METHOD NO.		RESULTS
1.	Concentration of $PM_{2.5}$ (µg/m^3)	USEPA 1997a, 40 CFR Part 50, Appendix L	:	51.70
2.	Concentration of PM_{10} (µg/m^3)	IS 5182 (PART 23) : 2006	:	89.18
3.	Concentration of SO_2 (µg/m^3)	IS 5182 (Part 2) 2001 & ASTM D 2914-01 reapproved 2007 : Sec 11 (Vol. 11.07) : 2011	:	7.86
4.	Concentration of NO_x (µg/m^3)	IS 5182 (Part 6) 2006 & ASTM D 1607-91 reapproved 2005 : Sec 11 (Vol. 11.07) : 2011	:	26.53

Date : 25.03.2019

Authorised Signatory :

Dr. AJOY PAUL
Quality Manager

WORK ZONE (FUGITIVE) AIR ANALYSIS REPORT

1.	Name of the Industry	:	Bravo Sponge Iron Pvt. Ltd.
2.	Address	:	Vill. – Mohuda. P.O. – Rukni, P.S. – Para, Purulia – 723145
3.	Date of sampling	:	18.03.2019 – 19.03.2019
4.	Report No.	:	103A/EC/M/March/TR(A)/VIII/18-19
5.	Analysis completed on	:	22.03.2019
6.	Reporting Date	:	25.03.2019
7.	Particular of Plant	:	Steel & Power Unit

A] GENERAL INFORMATION

1.	Location of Sampling	:	Raw Material Stock Yard (Iron Yard – 2)
2.	Duration of Sampling	:	08 hrs. (11:50 a.m. – 07:50 p.m.)

B] METEOROLOGICAL INFORMATION

1.	Average Temperature (^{0}C)	:	43.0
2.	Average Relative Humidity (%)	:	82.0
3.	Barometric Pressure (mm of Hg)	:	757.0
4.	Smell or Odour	:	No Remarkable Smell

C] RESULTS

SL. NO.	PARAMETERS	METHOD NO.		RESULTS
1.	Concentration of SPM (µg/m^3)	NIOSH 0500 : 1994	:	491.38
2.	Concentration of *RPM (µg/m^3)	IS 5182 (PART 23) : 2006	:	238.68
3.	Concentration of *SO_2 (µg/m^3)	IS 5182 (Part 2) 2001 & ASTM D 2914-01 reapproved 2007 : Sec 11 (Vol. 11.07) : 2011	:	7.01
4.	Concentration of *NO_x (µg/m^3)	IS 5182 (Part 6) 2006 & ASTM D 1607-91 reapproved 2005 : Sec 11 (Vol. 11.07) : 2011	:	25.05

Note : The (*) marked parameters are not in NABL Scope.

Date : 25.03.2019

Authorised Signatory :

Dr. AJOY PAUL
Quality Manager

WORK ZONE (FUGITIVE) AIR ANALYSIS REPORT

1.	Name of the Industry	:	Bravo Sponge Iron Pvt. Ltd.
2.	Address	:	Vill. – Mohuda. P.O. – Rukni, P.S. – Para, Purulia – 723145
3.	Date of sampling	:	18.03.2019
4.	Report No.	:	103A/EC/M/March/TR(A)/X/18-19
5.	Analysis completed on	:	22.03.2019
6.	Reporting Date	:	25.03.2019
7.	Particular of Plant	:	Steel & Power Unit

A] GENERAL INFORMATION

1.	Location of Sampling	:	Inbetween Cooler Discharge (No.1 & 2) and (No.3 & 4)
2.	Duration of Sampling	:	08 hrs. (10:35 a.m. – 06:35 p.m.)

B] METEOROLOGICAL INFORMATION

1.	Average Temperature (^{0}C)	:	41.0
2.	Average Relative Humidity (%)	:	82.0
3.	Barometric Pressure (mm of Hg)	:	757.0
4.	Smell or Odour	:	No Remarkable Smell

C] RESULTS

SL. NO.	PARAMETERS	METHOD NO.		RESULTS
1.	Concentration of SPM (µg/m^3)	NIOSH 0500 : 1994	:	380.56
2.	Concentration of *RPM (µg/m^3)	IS 5182 (PART 23) : 2006	:	156.78
3.	Concentration of *SO_2 (µg/m^3)	IS 5182 (Part 2) 2001 & ASTM D 2914-01 reapproved 2007 : Sec 11 (Vol. 11.07) : 2011	:	7.65
4.	Concentration of *NO_x (µg/m^3)	IS 5182 (Part 6) 2006 & ASTM D 1607-91 reapproved 2005 : Sec 11 (Vol. 11.07) : 2011	:	28.56

Note : The (*) marked parameters are not in NABL Scope.

Date : 25.03.2019

Authorised Signatory :

Dr. AJOY PAUL
Quality Manager

WORK ZONE (FUGITIVE) AIR ANALYSIS REPORT

1.	Name of the Industry	:	Bravo Sponge Iron Pvt. Ltd.
2.	Address	:	Vill. – Mohuda. P.O. – Rukni, P.S. – Para, Purulia – 723145
3.	Date of sampling	:	18.03.2019
4.	Report No.	:	103A/EC/M/March/TR(A)/IX/18-19
5.	Analysis completed on	:	22.03.2019
6.	Reporting Date	:	25.03.2019
7.	Particular of Plant	:	Steel & Power Unit

A] GENERAL INFORMATION

1.	Location of Sampling	:	Near AFBC Boiler Area (CPP Division)
2.	Duration of Sampling	:	08 hrs. (12:10 a.m. – 08:10 p.m.)

B] METEOROLOGICAL INFORMATION

1.	Average Temperature (^{0}C)	:	42.0
2.	Average Relative Humidity (%)	:	84.0
3.	Barometric Pressure (mm of Hg)	:	757.0
4.	Smell or Odour	:	No Remarkable Smell

C] RESULTS

SL. NO.	PARAMETERS	METHOD NO.		RESULTS
1.	Concentration of SPM (µg/m^3)	NIOSH 0500 : 1994	:	690.60
2.	Concentration of *RPM (µg/m^3)	IS 5182 (PART 23) : 2006	:	280.13
3.	Concentration of *SO_2 (µg/m^3)	IS 5182 (Part 2) 2001 & ASTM D 2914-01 reapproved 2007 : Sec 11 (Vol. 11.07) : 2011	:	12.75
4.	Concentration of *NO_x (µg/m^3)	IS 5182 (Part 6) 2006 & ASTM D 1607-91 reapproved 2005 : Sec 11 (Vol. 11.07) : 2011	:	35.12

Note : The (*) marked parameters are not in NABL Scope.

Date : 25.03.2019

Authorised Signatory :

Dr. AJOY PAUL
Quality Manager

ANNEXURE 2

EFFLUENT WATER ANALYSIS REPORT

1.	Name of the Industry	:	Bravo Sponge Iron Pvt. Ltd.
2.	Address	:	Vill. – Mohuda. P.O. – Rukni, P.S. – Para, Purulia – 723145
3.	Report No.	:	Env/50A/E/M/March/18-19
4.	Date of sampling	:	18.03.2019
5.	Date of analysis	:	20.03.2019 – 23.03.2019
6.	Reporting date	:	25.03.2019
7.	Type of sample	:	Domestic Effluent Water (Grab)
8.	Location of sample	:	Waste Water Storage Tank
9.	Collection & Preservation of sample	:	APHA 23rd Ed., 1060 : 2017
10.	Sample collected in presence of	:	Company Representative

	PARAMETERS	TEST METHODS		RESULTS
1.	pH	APHA 23rd Ed., 4500-H^+B : 2017	:	6.78
2.	Total Suspended Solids (mg./l)	APHA 23rd Ed., 2540 D : 2017	:	25.0
3.	Oil and Grease (mg./l)	APHA 23rd Ed., 5520 B/D : 2017	:	2.5
4.	COD (mg./l)	APHA 23rd Ed., 5220 B/C/D : 2017	:	60.0
5.	BOD [3 days, 27^{0}C] (mg./l)	APHA 23rd Ed., 5210-B : 2017	:	20.0

Authorised Signatory :

Dr. AJOY PAUL
Quality Manager

PICTORIAL EVIDENCE

Glimpse of Plant :


BRAVO SPONGE IRON(P)LTD
MAHUDA RUKNI
THINK SAFETY
BEFORE YOU START
START
GET SMART


MAINTENANCE
& ENGINEERING
SECTION
WORK MUST BUT SAFETY
FIRST BECAUSE SOME
BODY WAITING FOR YOU
AT YOUR HOME


TATA


BEST GIFT
You Can Give your Family is
Your Please
AMBULANCE


SAFETY BEGINS WITH
TEAM WORK
मन राखना
परिवारको खुशि
राखतेहुले सुरक्षा
लिये काज करतेहुए