

Fezile Dabi District Municipality John Vorster Road P.O Box 10 Sasolburg, 1947

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Alming above the horizon-

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Atmospheric Emissions Licence Holder: SASOL Chemical Industries

Atmospheric Emissions licence Reference Number: FDDM-MET-2013-23

ATMOSPHERIC EMISSIONS LICENCE ISSUED IN TERMS OF SECTION 43 OF THE NATIONAL ENVIRONMENTAL MANAGEMENT: AIR QUALITY ACT, 2004, (ACT NO. 39 OF 2004)

This Atmospheric Emissions Licence issued to SASOL CHEMICAL INDUSTRIES (PTY) LTD in respect of their Sasolburg operations, formerly Infrachem, in terms of section 41(1)(a) (as read with Section 47) of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) ("the Act"), in respect of listed activities No's 1.1; 2.1; 8.1; 7.1; 7.2; and 7.3.

The Almospheric Emissions Licence has been issued on the basis of information provided in the company's application dated 25 March 2019 and information that became available during processing of the application.

The Atmospheric Emissions Licence is valid until 31 Malch 2019.

The reason for issuance of the current licence is conversion of Atmospheric Pollution Prevention Act-Registration Certificate Into Air Quality Act-Atmospheric Emissions Licence (APPA-RC into AQA-AEL)

The Atmospheric Emissions Licence is issued subject to the conditions and requirements set out below which form part of the Atmospheric Emissions Licence and which are binding on the holder of the Atmospheric Emissions Licence, hereinafter referred to as the ("the licence holder").

1. ATMOSPHERIC EMISSIONS LICENCE ADMINISTRATION

Name of the Licensing Authority	Fezile Dabi District Municipality
Almospheric Emissions Licence Number	FDDM-MET-2013-23
Atmospheric Emissions Licence Issue Dale	Date of Signature by Air Quality Officer
Atmospheric Emissions Licence Type	Final
Review Date, not later than	31 March 2019

Air Quality Officer Signature: ...?

AEL No.: FDDM-MET-2013-23

Date: 31 March 2014

2. ATMOSPHERIC EMISSIONS LICENCE HOLDER DETAILS

Enterprise Name	Sasol Chemical Industries Ply Ltd	
Trading as	N/a	
Enlerprise Registration Number (Registration Numbers if Joint Venture)	1968/013914/07	
Registered Address	1 Sturdee Avenue Rosebank 2149	
Postal Address	PO Box 1 Sasolburg 1947	
Telephone Number (General)	016 960 1111	
Industry Sector	Petrochemical Industry	
Name of Responsible Officer	Louis Fourie	
Name of Emission Control Officer	Ristoff van Zyl	
Telephone Number	016 920 4913	
Cell Phone Number	083 632 5975	
Fax Number	011 219 2438	
Email Address	<u>ristoff.yanzyl@sasol.com</u>	
After Hours Contact Details	083 632 5975	
Land Use Zoning as per Town Planning Scheme	Industrial	

3. SITUATION AND EXTENT OF PLANT

3,1 LOCATION AND EXTENT OF PLANT

Physical Address of the Premises	Sasol One Site Klasie Havenga Street
	Sasolburg
	1947

Description of Site (Erf)	Subdivision 6 of 2 of Driefontein No- 2 and certain subdivisions of the farm Saltberry Plain, Roseberry Plain Flerewarde and Antrim and subdivision 5 of 4 of Montrose, District of Sasolburg, Free State,
Coordinates of Approximate Centre of Operations	Sasol 1 Latitude: S. 26.82678 Longitude: E 27.84206
Exlent	15.51 km²
Elevation Above Mean Sea Level (m)	1 498 m
Province	Free State
District Municipality	Fezile Davi
Local Municipality	Metsimaholo
Designated Priority Area	Vaal Triangle Priority Area

3.2 Description of Surrounding Land Use within 5 $\ensuremath{\mathrm{km}}$ radius

Within a 5 km radius from the Sasol One facility is the town of Sasolburg, a residential area as well as an informal settlement called Zamdela. Other land use includes heavy as well as light industries. Sasol's water treatment facility and waste areas also falls within this 5 km radius.

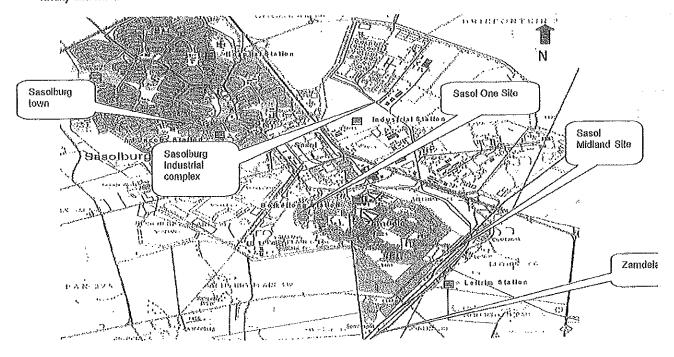


Figure 1: Sasolburg Area layout

Within 5 km from the Sasol Midland sile is mainly heavy industrial area as well as some farm land and game reserves operated and maintained by Sasol. The Zamdela also falls within the specified radius from the Midland site.

4. GENERAL CONDITIONS

4.1. Process and ownership changes

The holder of the atmospheric emissions licence must ensure that all unit processes and apparatus used for the purpose of undertaking the listed activity in question, and all appliances and mitigation measures for preventing or reducing atmospheric emissions, are at all times properly maintained and operated.

Building, plant or site works related to the listed activity or activities used by the licence holder shall be extended, altered or added subject to the applicable requirements for an environmental authorisation from the competent authority as per the provisions of the National Environmental Management Act 1998 (Act No. 107 of 1998) (NEMA), as amended read with the Environmental Impact Assessment Regulations thereunder. The Investigation, assessment and communication of potential impact of such an activity must follow the required assessment procedure as prescribed in the Environmental Impact Assessment Regulations published in terms of section 24(5) of the National Environmental Management Act.

Any changes in processes or production increases which may have an impact on atmospheric emissions, by the licence holder, will require prior approval by the licensing authority.

Any changes to the type and quantities of input materials and products, or to production equipment and treatment facilities which may have an impact on atmospheric emissions will require prior written approval by the licensing authority.

The licence holder must, in writing, inform the licensing authority of any change of ownership of the enterprise. The licensing authority must be informed within 30 (thirty) days after the change of ownership.

The licence holder must immediately on cessation or decommissioning of the listed activity inform, in writing, inform the licensing authority.

4.2. General duty of care

The holder of the license must, when undertaking the listed activity, adhere to the duty of care obligations as set out in section 28 of the NEMA.

The license holder must undertake the necessary measures to minimize or contain the almospheric emissions. The measures are set out in section 28(3) of the NEMA.

Fallure to comply with the above condition is a breach of the duty of care, and the licence holder will be subject to the sanctions set out in section 28 of the NEMA.

4.3. Sampling and/or analysis requirements

Measurement, calculation and/or sampling and analysis shall be carried out in accordance with any nationally or internationally acceptable standard. A different method may be acceptable to the licensing

authority as long as it has been consulted and agreed to the satisfactory documentation necessary in confirming the equivalent test reliability, quality and equivalence of analyses.

The licence holder is responsible for quality assurance of methods and performance. Where the holder of the licence uses external laboratories for sampling or analysis, accredited laboratories shall be used.

4.4. General requirements for licence holder

The licence holder is responsible for ensuring compliance with the conditions of this licence by any person acting on his, her or its behalf, including but not limited to, an employee, agent, sub-contractor or person rendering a service to the holder of the licence.

The licence does not relieve the licence holder to comply with any other statutory requirements that may be applicable to the carrying on of the listed activity.

A copy of the licence must be kept at the premises where the listed activity is undertaken. The licence must be made available to the environmental management inspector representing the licensing authority who requests to see it.

The licence holder must inform, in writing, the licensing authority of any change to its details including the name of the emissions control officer, postal address and/or telephonic details.

4.5. Statutory obligations

The licence holder must comply with the obligations as set out in Chapter 5 of the Act.

4.6. Annual payment of atmospheric emissions licence processing fee

The licence holder must, for the period of validity of the licence, pay the processing fee annually to the licensing authority. Alternatively the licence holder can pay the emissions licence processing fee once off.

4.7 Variation of Atmospheric Emissions Licence

The Air Quality Officer reserves the right to by notice, in writing, set and adjust the emissions limit value or standards after consultation with the holder.

4.8 Non- Compliance with Conditions

If the holder fails to comply with the conditions or requirements of this Atmospheric Emissions License, the Air Quality Officer may by notice in writing call upon such a holder to comply with such conditions or requirement within a reasonable period specified in the notice, and in the event of failure on the part of such holder to comply with the said conditions or requirement within the period so specified, the Air Quality Officer may cancel the Atmospheric Emissions License or suspend the operation thereof for such period as he or she may deem fit.

Air Quality Officer Signature:

5. NATURE OF PROCESS

5.1. PROCESS DESCRIPTION

Steam Stations

Sasol Infrachem operates two steam/power stations in Sasolburg. Pulverised coal is fired in hollers which are used for steam and power generation. Both the steam and power generated at these stations are used for Sasol's purposes, although Sasol can assist Eskom by supplying electricity directly into the national grid during peak time periods when Eskom are nearing its maximum generaling capacity. Emissions include combustion gasses (SO₂, SO₃, NO, NO₂, Particulates, CO₂ and CO).

Auto Thermal Reformers

Sasol Infrachem operates two Auto Thermal Reformers (ATRs) on the Sasol One facility. Natural gas is reformed in the ATRs to form the building blocks of the Fischer Tropsch process. The heat required in the ATRs is obtained from the Fired Heaters which is fired with process tail gas, except during startup when they are fired with natural gas. Emissions from the two Fired Heaters are combustion gas products, such as NO, NO₂, GO and GO₂. No sulphur compounds are present.

Rectisol

Sasol Infrachem operates the Rectisol plant on the Sasol One Site. The purpose of the Rectisol plant is "dew point correction" and "CO₂" removal. Due to the high concentration of methane and other hydrocarbons, the gas from the first two stages are sent to the flare and those from the last three stages are sent to atmosphere through the Steam Station 1 Stacks. Emissions include hydrocarbons specifically benzene with high concentrations of CO₂ emitted from the Steam Station 1 stacks.

Thermal Oxidation

Sasol Infrachem operates a thermal oxidation unit where various waste streams from various business units are thermally oxidized to harmless components. As part of the oxidation process, heat is recovered by means of steam, which supplements the steam supply to the plants from the Steam Stations. Three incinerators are newfold high sulpher pitch incinerators as well as a caustic incinerator. The on high sulphur pitch incinerator have a bag house for particulate emission control, whilst the caustic incinerator have a caustic scrubber to have both SO₂ and particulate matter emission control.

Thermal Oxidation also operates two API storage dams on the Sasol 1 site. Historically a OSB dam was operated but this facility was decommissioned and capped.

Benfleld

Sasol Infrachem operates a Benfield unit as part of the ammonta plant on the Sasol One Site. The Benfield unit consists of a CO_2 absorber column were CO_2 is removed from the process gas stream using the benfield solution. The benfield solution is regenerated in the desorber column were the CO_2 is desorbed to the almosphere.

Nitric acid plant (NAP)

A nitric acid plant is operational at the Sasol Bunsen Street site. Ammonia is piped from the cold storage area to the nitric acid plant where it is reacted with oxygen to produce NOx, as an intermediate product, which is fed to a catalyst to selectively convert NO to NO₂. The NO₂ is fed to a series of absorption columns where nitric acid is formed. The exhaust vent from the second tower, which contains NO₂, and N₂O is sent to the de-NOx reactor, where the gas is reduced over a catalyst to nitrogen and oxygen, which is released to almosphere.

Air Quality Officer Signature: ... A. A. A.

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Ammonium Nitrate solution

Sasol Infrachem operates the ammonium nitrate solution plant. This plant is integrated into the NAP plant. The nitric acid from the NAP plant is reacted with ammonia in a reactor to form the ammonium nitrate solution.

Ammonium Nitrate Prill

Sasol Infrachem operates an ammonium nitrate prillian unit on the Sasol One Site. Aqueous ammonium nitrate is combined with off spec prill in a dissolving tank and then concentrated by means of parallel evaporators. The concentrated liquor is then fed to the top of the prill tower where after it is prayed through the prill nozzles to obtain a desired diameter. The spheres fall inside the prill tower through counter current air flow which cools the droplet and forming the prill. The upward air flow is passed through three scrubbers at the top of the prill plant before it is vented to atmosphere. The prill is fed to drying, cooling and screening units where off spec prill is recycled to the dissolving tank whilst the on spec prill is packaged as the final product. The air used for drying is passed through a scrubber before being vented to atmosphere. Emissions are particulates coming from the scrubbers on top of the Prill tower as well as from the drying scrubbers.

Ammonla

Nitrogen from the Air Products plant on site is combined with hydrogen from the Rectisol stream to form ammonia in the ammonia plant. Inert gasses and hydrogen are vented to ammonia flare and combustion gasses (CO₂, CO, NO₂ and NO) are vented to atmosphere from the super heater.

5.2. LISTED ACTIVITIES

Listed Activities, as published in terms of Section 21 of the AQA, authorised to be conducted at the premises by the licence holder:

Activity of Listed of the Listed					· · · · · · · · · · · · · · · · · · ·
1 1.1 Solid Fuel Combustion Solid fuels (excluding biomass) combustion installations used primarily for steam raising or electricity generation	Listed Activity Number	of Listed	of the Listed	Listed Activity Name	Description of the Listed Activity
Installations combustion installations used primarily for steam raising or electricity generation			Steam/Powe	er Generation (Steam Sta	tions 1, 2)
Auto Thormal Deformore (ATD) and Deeffeet	1	1	1.1	1	combustion installations used primarily for steam raising or
Willy Histilia izalomia (VIII) and izalish			Auto Thern	nal Reformers (ATR) and	Rectisol
gaseous and liquid fuels as well	2	2	2.1	Petroleum Industry	Petroleum industry, the production of gaseous and liquid fuels as well as petrochemicals from crude oil, coal, gas or biomass
Thermal Oxklation		- 		Thermal Oxldation	
3 8 8.1 Thermal treatment of hazardous and general hazardous waste are treated by waste application of heat (Applicable :	3	8	8.1	Thermal treatment of hazardous and general	hazardous waste are treated by the
Nitric acid plant				Nitric acld plant	
4 7 7.1 Inorganic Chemical The use of ammonia in the	4	7	7.1	Inorganic Chemical	The use of ammonia in the

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Listed Activity Number	Category of Listed Activity	Sub-category of the Listed Activity	Listed Activity Name	Description of the Listed Activity
			Industry	manufacturing of ammonia
5	7	7.2	Inorganic Chemical Industry	The primary production of nitric acid in concentrations exceeding 10%
		Ar	nmonium nitrate solution	
6	7	7.1	Inorganic Chemical Industry	The use of ammonia in the manufacturing of ammonia
7	7	7.3	Inorganic Chemical Industry	The manufacturing of ammonium nitrate and its processing into fertilisers
	1	· · · · · · · · · · · · · · · · · · ·	Ammonium nitrate prill	
8	7	7.1	Inorganic Chemical Industry	The use of ammonia in the manufacturing of ammonia
9	7	7.3	Inorganic Chemical Industry	The manufacturing of ammonium nitrate and its processing into fertilisers
	.1		Ammonla	,
10	7	7.1	Inorganic Chemical Industry	The production of ammonia

5.3. UNIT PROCESS OR PROCESSES

List of all unit processes associated with the listed activities to be undertaken at the site of work.

Unit Process	Function of Unit Process	Batch or Continuous Process
	ATR	
Auto Thermal reformers	Convert natural gas to reform gas	Continuous
Membrane separators	Purification of reformed gas	Continuous
Flares	Destruction of gas	Batch
	Rectisol	
Reclisol	CO₂ removal and dew point correction	Continuous
	Water and waste – Thermal oxidation	
6993 Spent Caustic cinerator The incineration of spent caustic solution and off specification solvent products including MIBK by-products in a down fired incinerator.		Continuous
Spent Causlle Storage F6903	Intermediale storage	Batch
Hydrocarbon Solvents F6963 A/B F6927 B	Intermediate storage Batch	
Sodium Carbonale F6954	Intermediate storage	Balch

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Unit Process	Function of Unit Process	Batch or Continuous Process
Caustic F6959 / F6975	Intermediale storage	Batch
B6930 High Sulphur Pilch Inclnerator	The incineration of High Sulphur Pitch, Organic solvents and High Organic waters in a limestone fluidized bed unit.	Continuous
HSP Storage tanks F6926 / F6990	Intermediate storage	Batch
HOW tank F6938	Intermediate storage	Baleh
BFW tank F6939	Intermediale storage	Balch
B6990 Chemical Incinerator	The incineration of heavy oils, off-specification waxes, Sasot spent catalyst, funda filter cake, slop solvents and high organic waste.	Continuous
Product tank	Intermediate storage	Batch
	Steam Stations	
Fuel oil tanks	Holding fuel	Continuous
Coal bunkers/silos	Holding coal	Continuous
15 Bollers	Steam production	Continuous
Feed water tanks	Holding water	Continuous
Resins (HCL, caustic)	Holding chemicals	Continuous
NH ₃ tank	Holding anmonia	Continuous
Blow down tank		Continuous
	NITRIC ACID (NAP)	
NO reactor	Reaction of NH3 and air to form NO	Continuous
Absober columns	Absorbtion of NO ₂ to HNO ₃	Continuous
De-NOx reactor	Reduction of NOx to O ₂ and N ₂	Continuous
	AMMONIUM NITRATE	
AN reactor	Reaction to form ammonium nitrate	Continuous
Neutralizer	pH correction	Continuous
AN solution tank	Storage of AN solution	Continuous
	PRILLAN	
Wet section	Concentration of ammonium NH ₄ OH solution	Continuous
Dry section	Drying of prilled NH4OH	Continuous
Storage	Storage of prilled NH ₄ OH	Continuous

Unit Process	Function of Unit Process	Batch or Continuous Process
	AMMONIA	
CO₂ capture	Remove moisture from the CO ₂ stream	Continuous
CO-shift	Reacts CO + steam to form H ₂	Continuous
Benfiled	Removal of CO ₂ from the process stream	Continuous
PSA	Production of LPH ₂	Continuous
Deoxo	N ₂ purification	Continuous
Ammonia synthesis	Production of NH ₃	Continuous
BFW	Demineralized water	Continuous

5.4. HOURS OF OPERATIONS

Unit Process / Plant	Operating Hours (e.g. 07h00 17h00)	No. Days Operation per Year
	ATR	
Reformers	24 hours	365
Membrane separators	24 hours	365
Flares	Ad hoc	When required – upsets, start ups and shut downs
Wate	r and waste – Thermal Oxidatio	1)
B6993 Spent Caustic Incinerator	24 Hours	365
B6930 High Sulphur Pitch Inclnerator	24 Hours	365
B6990 Chemical Incinerator	24 Hours	365
	Steam Stations	
Fuel oil tanks	24 hours	365
Coal bunkers/sllos	24 hours	365
15 Bollers	24 hours	365
Feed water tanks	24 hours	365
Resins (HCL, caustic)	24 hours	365
Coarse ash	24 hours	365
Ash water	24 hours	365
NH3 tank	24 hours	365
Blowdowns tank	24 hours	365
The state of the s	NITRIC ACID	
NO reactor	24 hours	365
Absober columns	24 hours	365
De-NOx reactor	24 hours	365

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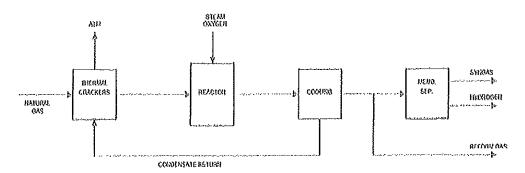
Unit Process / Plant	Operating Hours (e.g. 07h00 – 17h00)	No. Days Operation per Year
Alexander de la companya de la compa	AMMONIUM NITRATE	
AN reactor	24 hours	365
Neutralizer	24 hours	365
AN solution lank	24 hours	365
NACON MANA	PRILLAN	
Wet section	24 hours	365
Dry section	24 hours	365
Slorage	24 hours	365
	AMMONIA	
CO ₂ capture	24 hours 365	
CO-shift	24 hours	365
Benfiled	24 hours	365
PSA	24 hours	365
Ammonia synthesis	24 hours	365
BFW	24 hours	365

5.5 GRAPHICAL PROCESS INFORMATION

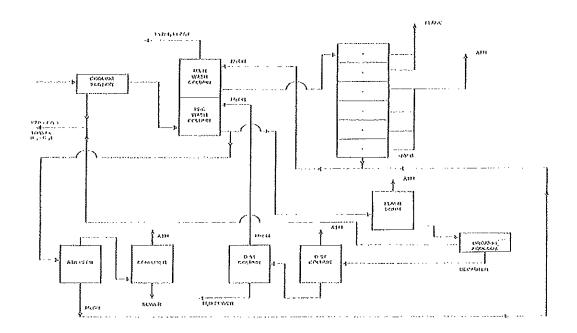
Simplified block diagram with the name of each unit process in a block; showing links between all unit processes or blocks.

Process flow chart(s) clearly indicating inputs, outputs and emissions at the site of works, including points of potential fugitive emissions and emergency releases.

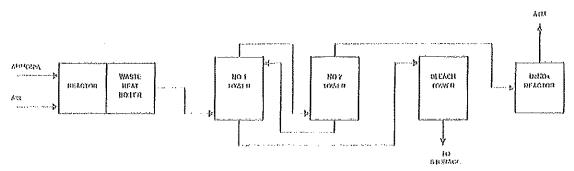
Auto Thermal Reformers (ATR)



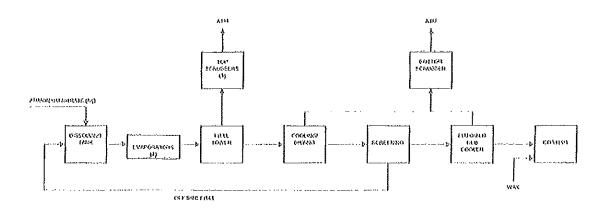
Rectisol



Sasol Nitro - Nitric Acid Plant



Ammonium Nitrate Prillan Plant

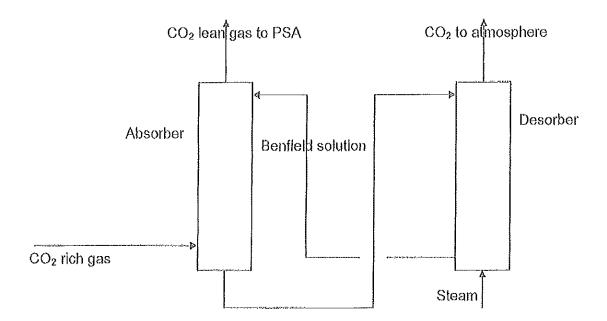


Benfield Plant:

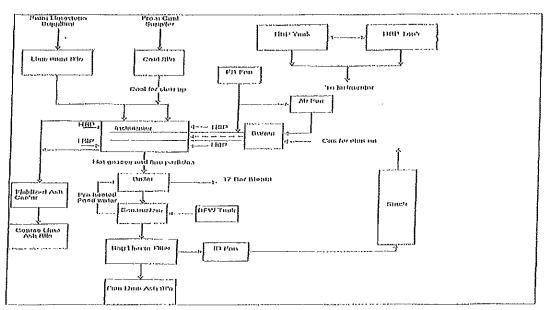
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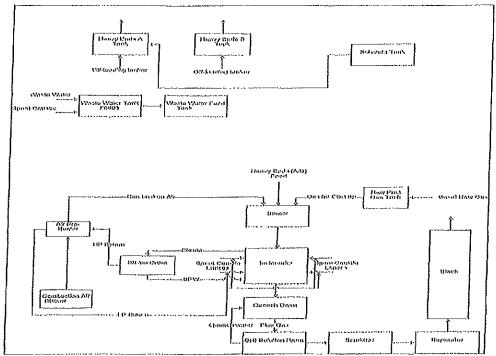
Date: 31 March 2014



Thermal Oxidation



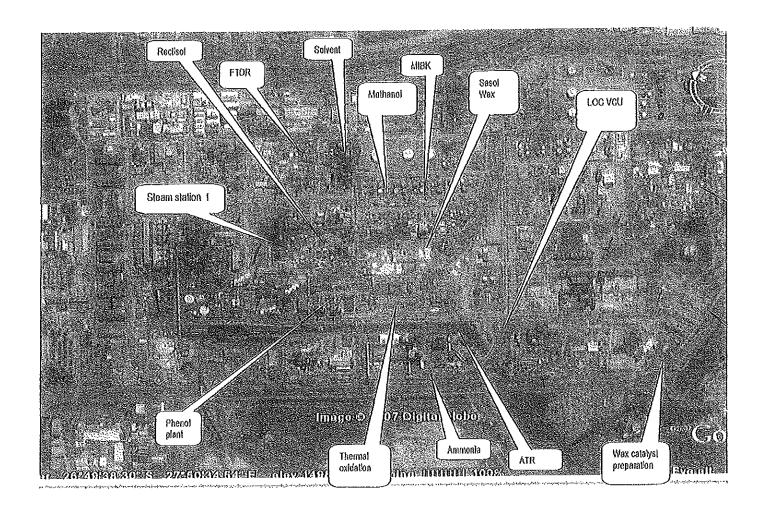
Block Flow Diagram of HSP incherator



Blook Flow Diagram of Spent Caustic Incinerator

Air Quality Officer Signature: 114 12

Site layout diagram (plan view and to scale) indicating location of unit processes, plants, buildings, stacks, stockpiles and roads (include true north arrow and scale).



RAW MATERIALS AND PRODUCTS 6.

Raw materials used 6.1.

Raw Material Type	Maximum Permitted Consumption Rate (Quantity)	Units (quantity/period)
	ATR	
Natural Gas		Nm³/h
	Rectisol	
Gas mixture (CO, H ₂ , CO ₂ , CH ₄)	150 000	Nm³/h
_	Water and waste – Thermal oxidation	
Spent Caustic	3.5	tons/year
Organic Solvents	1.5	tons/hour
Hlgh Sulphur Pitch	2.5	tons/hour
Organic Solvents	1.0	tons/hour
Limestone	3.0	tons/hour
Organic waste water	2.0	tons/hour
Off- specification waxes	60	tons/ month
Sasol spent catalyst	204	tons/ month
High sulphur pitch	730	tons/ month
Funda lilter cake	220	tons/ month
Polyethylene wax	80	tons/ month
Other solid waste	150	tons/ month
High organic waste	400	tons/ month
Pilch/ tar waste Slop oils	150	tons/ month
	Steam Stations	
Water (Steam station 1)	1 304	tons/hour
Waler (Steam station 2)	1 467	lons/hour
Water (Steam station 3)	255	lons/hour
Coal (Steam station 1)	245.2	tons/hour

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Coal (Steam station 2)	228.2	lons/hour
Coal (Steam Station 3)	35.5	tons/hour
, ,	Ammonia	
Gas mixture (CO, H ₂ , CO ₂ , CH ₄)		Nns³/hr
Nilrogen		Nm³/hr
Sleam		tons/hour
	Prillian	
Ammonia nitrate solution (88%)		tons/day
	Nitric Acid/Ammonlum Nitrate	
Ammonia	A STATE OF THE STA	tons/day

PRODUCTION RATES 6.2.

Product Name	Maximum Permitted Production Capacity (Quantity)	Units (quantity/period)
	ATR	
Reformed gas (CO and H ₂)		Nm³/h
	Rectisol	
Gas mixture (CO, H ₂ , CO ₂ , CH ₄)	110 000	Nm³/h
	Thermal oxidation	
Sodium Carbonate	286.2	m³/day
Sleam	20	tons/hour
Gypsum (Oxylime)	3	tons/hour
Catalyst	195	tons/month
	Steam Stations	
Steam	163	Tons/day per boiler
	Ammonia	
Liquid ammonia		tons/day
H ₂		Nm ³ hour
Process tail gas		Nm³/hour
Nitrogen	:	Nm³/h
CO ₂		lons/hour
Ammonia hydroxide		tons/month

Low pressure steam		tons/hour
	Prilled Ammonium Nitrate	
Prilled ammonium nitrate		lons/day
	Nitric Acid/Ammonium Nitrate	
Nitric acid		tons/day
Ammonium nitrate		tons/day

By-Product Name	Maximum Permitted Production Capacity (Quantity)	Units (quantity/period)
Catalyst	500	lons/year

6.3. MATERIALS USED IN ENERGY SOURCES

Materials for Energy Source	Actual Consumption Rate (Quantity)	Units (quantity/period)	Materials Characteristics
Coal (Thermal Oxidation)	Approx 20 ton per annum for start up of Incinerator B6930	Va Va	Sulphur content: ±0.5% Ash Content: ±30%
Nitro Electricity	2857247 kWh	kWh	n/a
Infrachem Electricity	1372224247	kWh	n/a
Process Tall Gas	35 000	Nm³/h	n/a
Start up Oil for hollers	6 000	m³/h	Ash: 0 Sulphur content: ±1.0%

6.4. SOURCES OF ATMOSPHERIC EMISSIONS

6.4.1. Point source parameters

Type of Emissions (Continuous / Batch)		Continuous	Continuous		Continuous	Continuous	Continuous	Continuous		Continuous	Continuous
Emissions Hours		24 Hours	24 Hours		24 Hours	24 Hours	24 Hours	24 Hours		24 Hours	24 Hours
Actual Gas Exit Velocity (m/s)		25.5	24.7		3.7	7 158	7 158	10.7		07	26.2
Actual Gas Volumetric Flow (m²/hr)		794710	769778		260 000	505969	505969	1737413		24811	173411
Actual Gas Exit Temperature (°C)		190	190		160	160	150	160		570	171
Diameter at Stack Tip / Vent Exit (m)	ATR	3.32	3.32	STEAM STATIONS	2.5	2.5	2.5	7.8	THERMAL OXIDATION	ر ا	1.53
Height Above Nearby Building (m)		1	The state of the s	STEAM	N/a	Wa	N/a	N/a	THERMAL	Na	N/a
Height of Release Above Ground (m)		95	65		75	75	75	145		40	40
Longitude (decimal degrees) East		27.84331	27.84069		27.84006	27.84007	27.84008	27.84853		27.84044	27.84022
Latitude (decimal degrees) South		26.82653	26.82689		26,82272	26.82272	26.82272	26.82247		26.82556	26.82544
Source Name		Fired Heaters ATR A	Fired Heaters ATR B		SS1 Boiler 4	SS1 Boiler 5&6	SS1 Boiler 7&8	SS2 Boiler 1 to 7		Old HSP incinerator	New HSP incinerator
Point Source Code		\	2		က	4	ιρ	ဟ		7	00

Type of Emissions (Continuous / Batch)	Continuous		Continuous		-to	- 1 5	c'n		Continuous
FES =	වි		ঠ		Batch	Batch	Batch		ර්
Emissions Hours	24 Hours		24 Hours		24 Hours	24 Hours	24 Hours		24 Hours
Actual Gas Exit Velocity (m/s)	12.9		C:		28.3	78	28		24
Actual Gas Volumetric Flow (m³/hr)	52522		Steam Statio		185 000	80 000	80 000		150 000
Actual Gas Ext Temperature (°C)	88		Combined with Steam Station 1	CATE	23.9	32	32		215
Diameter at Stack Tip / Vent Exit (m)	1.2	RECTISOL	ιO	PRILLIN/AWWONIUM NITRATE	1.5		~ -	Nitric Acid PLANT	1.5
Height Above Nearby Building (m)	N/a	REC	Wa	HLINAMM	N/a	N/a	N/a	Nitric A	N/a
Height of Release Above Ground (m)	40		75	y.	85	22	22		75
Longitude (decimal degrees) East	27.84086		27.84006		27.84078	27.84078	27.84078		27.86047
Latitude (decimal degrees) South	26.82544		26.82272		26.82881	26.82881	26.82881		26.82542
Source Name	Caustic incinerator		Rectisol E stream off gas		10 Prill Tower	Scrubber stack 1	Scrubber stack 2		Effluent stack
Point Source Code	တ				13	7	12		13

.2. Area and/or line source parameters

J-1	1		·	3
Type of Emissions	Confinuous	Confinuous	Continuous	Continuous
Emissions Hours	24 hours	24 hours	24 hours	24 hours
Width of Area (m)	15	GG	20	875
Length of Area (m)	S 8	99	100	1 125
Height of Release Above Ground (m)	8	e	©	40m
Longitude (decimal degrees) of SW comer	27.84106	27.84419	27.97206	27.817489
Latifude (decimal degrees) of SW corner	26.82731	26.83453	26.83283	26.844267
Source Description	Water separation basin	Water separation basin	Water separation basin	Solids dams containing fine ash
Source Name	SBSO PIO	APIs	New OSBs	Fine ash dam 5
Area Source Code	spins .	2	8	et.

7. APPLIANCES AND MEASURES TO PREVENT AIR POLLUTION

7.1. Appliances and control measures

F 8 8 7 7 7	a a a a a a a a a a a a a a a a a a a
Walter/Lur Not available gis Walter/Lur Not available gis Walter/Lur Not available gis Walter/Lur Not available gis	lable Boiler 9 gis gis boiler 10 Wafter/Lur gis boiler 10 Wafter/Lur gis boiler 11 Wafter/Lur gis boiler 11 Wafter/Lur gis
1 00 1-	labie

ا ۱٫۰	,, -					Abatei	Abatement Equipment Control Technology	t Control Techn	ology		4 44 1
Appliance Appliance Abatement Serial Type / Equipment Number Description Technology Name and I Model	Appliance Abatement Type / Equipment Description Technology Name and Model	Abatement Equipment Technology Name and Model		• 5	Abatement Equipment Technology Manufacture Date	Commission Date	Date of Significant Modification // Upgrade	Technology Type	Design Capacity	Minimum Control Efficiency (%)	Minimum Utilisation (%)
Not Boiler 12 Walter/Lur it	Boller 12 Walter/Lur (lable gis	Walter/Lur gis	ter/Lur	~~	Not available	Not available	Not available	Electrosfatic precipitators	Not available	Not available	%96%
Not Boller 13 Walter/Lur available gis	Boller 13 Walter/Lur able gis	Walter/Lur gis	fer/Lur	2	Not available	Not avaïlabie	Not available	Electrostatic precipitators	Not avaĭlable	Not available	%96
Not Boiler 14 Watter/Lur available gis	Boiler 14		Walter/Lur gis		Not available	Not available	Not available	Electrostatic precipitators	Not available	Not available	%96
Not Boiler 15 Walter/Lur available gis	Boiler 15 lable		Wafter/Lur gis		Not available	Not available	Not available	Electrostatic precipitators	Not available	Not available	%96
Not New HSP Not available incinerator	New HSP incinerator		Not available		Not available	Not available	Not available	Baghouse	Not available	Not available	%96
Not Caustic Not available incinerator available	Caustic lable incinerator	ō	Not available		Not available	Not available	Not available	Venturi Scrubber	Not available	Not available	%96
Not Pril Tower Not available	Prill Tower Not avail	Not avail	Not available		Not available	Not availabie	Not available	Scrubber	Not available	Not available	%96
Not Prill Tower Not available	Prili Tower		Not available		Not available	Not available	Not avaitable	Scrubber	Not availabíe	99.5	%96
Not Prill Tower Not available	Prill Tower lable		Not avaíľable		Not available	Not available	Not available	Scrubber	Not available	Not available	%96
Not Effluent stack Not available	Effluent stack Not avai	Not avai	Not available		Not available	Not available	Not available	Selective catalytic reduction	Not available	Not available	%95

	Winsation (%)	%		%96	%96%
	Minimum Control Efficiency (%)	Not 96% available	Not available	Not available	Not available
ology	Design Capacity	Not available	Not available	Not available	Not available
Control Techno	Technology Type	Tare	Flare	न होडा ह	Flare
Abatement Equipment Control Technology	Date of Significant Modification / Upgrade	Not available	Not available	Not available	Not available
Abatem	Commission Date	Not available	Not availabie	Not avaìlable	Not available
	Abatement Equipment Technology Manufacture Date	Not avaitable	Not available	Not available	Not available
	Abatement Equipment Technology Name and Model	Flare	Flare	Flare	न <u>ब</u> क
	Appliance Type/ Description	Factory Main flare 1*	Factory Main flare 2*	Ammonia flare*	Ammonia storage flare [∞]
Appliances	Appliance Senal Number	Not available	Not available	Not available	Not available
	Appliance / Process Equipment Number	FMF 1 Factory Wain flare	FMF 2 Factory Main flare 2*	AF 1 Ammonia	ASF 1 Ammonia storage flare*
Associated	Source	FMF 1	FMF 2	AF 1	ASF 1

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7.2. POINT SOURCE - MMINIMUM EMISSIONS STANDARDSAXIMUM EMISSIONS RATES (UNDER NORMAL WORKING CONDITIONS)

Point	Pollutant Name	Maxim	ium Release Ra	ıte	Duration of
Source Code		(mg/Nm³)	Date to be Achieved By	Average Period	Emissions
1	PM	120	1 April 2015	Daily	Continuous
ATRA	NO _x	1700	1 April 2015	Daily	Continuous
	SO ₂	1700	1 April 2015	Daily	Continuous
2	PM	120	1 April 2015	Daily	Continuous
ATRB	NO _x	1700	1 April 2015	Daily	Continuous
	SO ₂	1700	1 April 2015	Daily	Continuous
3	PM	400	Immediately	Daily	Continuous
Boiler 4	SO ₂	3500	1 April 2015	Daily	Continuous
-	NO _x	1100	1 April 2015	Daily	Continuous
4	PM	400	Immediately	Daily	Continuous
Boiler 5&6	SO ₂	3500	1 April 2015	2015 Daily Conti-	Continuous
7,1,1	NO _x	1100	1 April 2015	15 Daily ely Daily 15 Daily 15 Daily	Continuous
5	PM	400	Immediately	Daily	Continuous
Boiler 7&8	SO ₂	3500	1 April 2015	Daily	Continuous
	NO _x	1100	1 April 2015	Daily	Continuous
6	PM	265	Immediately	Daily	Continuous
SS2 Boiler	SO ₂	3500	1 April 2015	Daily	Continuous
1-7	NO _x	1100	1 April 2015	Daily	Continuous
7*	Particulates	Cannot b	e measured due	to high ten	perature
Thermal Oxidation	CO	75	Immediately	Daily	Continuous
(90 Furnace)	NO _x as NO ₂	80 ppm	Immediately	Daily	Continuous
	SO ₂	2.7%	Immediately	Daily	Continuous
	HCl	10	1 April 2015	Daily	Continuous
	HF	1	1 April 2015	Daily	Continuous
	Pb+As+Sb+Cr+Co+Cu+Mn+Ni+V				***************************************
	Hg	Cannot b	e measured due	to high ten	nperature
	Cd+TI				

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Point	Pollutant Name	Maximu	m Release Ra	ite	Duration of
Source Code		(mg/Nm³)	Date to be Achieved By	Average Period	Emissions
	TOC	10	1 April 2015	Daily	Continuous
j	NH ₃	10	1 April 2015	Daily	Continuous
	Dioxins and furans	Cannot be	measured due	to high tem	perature
8*	Particulates	50	Immediately	Daily	Continuous
Thermal Oxidation	СО	75	1 April 2015	Daily	Continuous
(30 Furnace)	NO _x as NO₂	250 ppm	Immediately	Daily	Continuous
	SO ₂	600 ppm	Immediately	Daily	Continuous
	HCI	10	1 April 2015	Daily	Continuous
1	HF	1	1 April 2015	Daily	Continuous
	Pb+As+Sb+Cr+Co+Cu+Mn+Ni+V	0.5	1 April 2015	Daily	Continuous
	Hg	0.05	1 April 2015	Daily	Continuous
1	Cd+Ti	0.05	1 April 2015	Daily	Continuous
ĺ	TOC	10	1 April 2015	Daily	Continuous
	NH ₃	10	1 April 2015	Daily	Continuous
	Dioxins and furans	0.1 ng TEQ/Nm ³	1 April 2015	Daily	Continuous
9*	Particulates	200	Immediately	Daily	Continuous
Thermal	СО	75	1 April 2015	Daily	Continuous
Oxidation (93	NOx as NO2	50	1 April 2015	Daily	Continuous
(ย่อ Furnace)	SO2	200	1 April 2015	Daily	Continuous
·	HCI	10	1 April 2015	Daily	Continuous
	HF	1	1 April 2015	Daily	Continuous
	Pb+As+Sb+Cr+Co+Cu+Mn+Ni+V	0.5	1 April 2015	Daily	Continuous
	Hg	0.05	1 April 2015	Daily	Continuous
1	Cd+Tl	0.05	1 April 2015	Daily	Continuous
	TOC	10	1 April 2015	Daily	Continuous
	NH3	10	1 April 2015	Daily	Continuous
	Dioxins and furans	0.1 ng TEQ/Nm3	1 April 2015	Daily	Continuous
10	Particulates	50	Immediately	Daily	Batch
	NH ₃	100	1 April 2015	Daily	Batch

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Point	Pollutant Name	Maxim	Duration of		
Source Code		(mg/Nm³)	Date to be Achleved By	Average Period	Emissions
11	Particulates	50	Immediately	Daily	Batch
	NH ₃	100	1 April 2015	Daily	Batch
12	Particulates	50	Immediately	Daily	Batch
	NH ₃	100	1 April 2015	Daily	Batch
13	NOx	500	Immediately	Daily	Continuous

^{*:} No halogenated components may be combusted in any of the incinerators

Point source - operating requirements

- 7.2.1 The licence holder must report any non-compliance with the condition stipulated in the license
- 7.2. 2 Since the licence holder's activities are carried out in a national air pollution priority area (Vaal Triangle Air shed Priority Area), further stricter condition may be introduced should it be found prudent to do so
- 7.2.3 The licence holder is responsible for ensuring compliance with conditions stipulated in this licence.
- 7.2.4 All records of compliance and noncompliance must be maintained and be kept for at least five (5) years.
- 7.2. 5 Any abnormalities experienced shall form part of the normal part of the monthly reporting and be forwarded to the licensing authority.
- 7.2.6 The licence holder must comply with air emissions reporting requirements as stipulated in the listed activities and associated minimum emissions standards in terms of the National Environmental Management: Air Quality Act (39 of 2004) (Government Notice No. 248, Gazette No. 33064 dated 30 March 2010 as amended in Government Notice No.893, Gazette No.37054 dated 22 November 2013)
- 7.2.7 The licence holder must comply with air emissions monitoring or sampling requirements as stipulated in the listed activities and associated minimum emissions standards in terms of the National Environmental Management: Air Quality Act (39 of 2004) (Government Notice No. 248, Gazette No. 33064 dated 30 March 2010 as amended in Government Notice No.893, Gazette No.37054 dated 22 November 2013). Section 4.3 of the licence should be taken into account should the facility wish to use another sampling method
- 7.3. POINT SOURCE OPERATING CONDITIONS (UNDER START-UP, MAINTENANCE AND SHUT-DOWN CONDITIONS)

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The following conditions must be adhered to at minimum during start up, maintenance and shut down conditions:

Should normal start up, maintenance and shuldown conditions exceed a period of 48 hours, Section 30 of the National Environmental Management Act, 1998 (Act No. 107 of 1998), shall apply.

7.4. POINT SOURCE - EMISSIONS MONITORING AND REPORTING REQUIREMENTS

Reporting Frequency	Annually	Annually	Annually	Annually
Conditions under which monitoring should be stopped	Upon written approval by the Air Quality Officer	Upon written approval by the Air Quality Officer	Upon written approval by the Air Quality Officer	Upon written approval by the Air Quality Officer
Parameters to be reported	Particulates, SO ₂ and NOx	Particulates, . SO ₂ and NOx	Particulates, SO ₂ and NOx	Particulates, SO ₂ and NOx
Parameters to be measured	Particulates, SO ₂ and NOx	Particulates, SO ₂ and NOx	Particulates, SO ₂ and NO _X	Particulates, SO ₂ and NOx
Sampling Duration	As Indicated in the National Environmental Management: Air Quality Act (39 of 2004) Standards and Regulations (Refer to Schedule A)	As indicated in the National Environmental Management: Air Quality Act (39 of 2004) Standards and Regulations (Refer to Schedule A)	As Indicated in the National Environmental Management. Air Quality Act (39 of 2004) Standards and Regulations (Refer to Schedule A)	As Indicated in the National Environmental Management: Air Quality Act (39 of 2004)
Sampling Frequency	At least Annualy	At least Annualy	At least Annualy	At least Annualy
Emissions Sampling / Monitoring Method	As Indicated in the National Environmental Management Air Quality Act (39 of 2004) Standards and Regulations (Refer to Schedule A)	As Indicated in the National Environmental Management Air Quality Act (39 of 2004) Standards and Regulations (Refer to Schedule A)	As Indicated in the National Environmental Management: Air Quality Act (39 of 2004) Standards and Regulations (Refer to Schedule A)	As Indicated in the National Environmental Management: Air Quality Act (39 of 2004) Standards and Regulations
Point Source Code	Y -	7	m	4

Air Quality Officer Signature:

	Annually	Annually	Annuælly	Annually
	Upon written approval by the Air Quality Officer			
	Particulates, SO ₂ and NO _X	Particulates, SO ₂ and NOx	SO ₂ , NOX, CO, HCI, HF, NH3, TOC,	Particulates, SO ₂ , NOx, CO, HCI, HF, NH3, Pb, As, Sb, Ct, Co, Cu, Mn, Ni, V,
	Particulates, SO ₂ and NO _X	Particulates, SO ₂ and NO _X	SO ₂ , NOx, CO, HCi, HF, NH3, TOC,	Particulates, SO ₂ , NOX, CO, HCI, HF, NH3, Pb, As, Sb, Cr, Co, Cu, Mn, Ni, V,
Standards and Regulations (Refer to Schedule A)	As Indicated in the National Environmental Management: Air Quality Act (39 of 2004) Standards and Regulations (Refer to Schedule A)	As Indicated in the National Environmental Management: Air Quality Act (39 of 2004) Standards and Regulations (Refer to Schedule A)	As Indicated in the National Environmental Management: Air Quality Act (39 of 2004) Standards and Regulations (Refer to Schedule A)	As Indicated in the National Environmental Management. Air Quality Act (39 of 2004) Standards and Regulations (Refer to
	At least Annualy	At least Annualy	At least Annualy	At least Annualy
(Refer to Schedule A)	As Indicated in the National Environmental Management Air Quality Act (39 of 2004) Standards and Regulations (Refer to Schedule A)	As Indicated in the National Environmental Management: Air Quality Act (39 of 2004) Standards and Regulations (Refer to Schedule A)	As indicated in the National Environmental Management: Air Quality Act (39 of 2004) Standards and Regulations (Refer to Schedule A)	As Indicated in the National Environmental Management: Air Quality Act (39 of 2004) Standards and Regulations (Refer to Schedule A)
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Air Quality Officer Signature:

	Annually	Annually	Annually	Annually
	Upon written approval by the Air Quality Officer	Upon written approval by the Air Quality Officer	Upon written approval by the Air Quality Officer	Upon written approval by the Air Quality Officer
Hg, Cd, TI, TOC, dioxins&furans	Particulates, SO ₂ , NO _X , CO, HCI, HF, NH3, Pb, As, Sb, Cr, Co, Cu, Mn, Ni, V, Hg, Cd, Ti, TOC, dioxins&furans	Particulates and NH3	Particulates and NH3	Particulates and NH ₃
Hg, Cd, Tl, TOC, dioxins&furans	Particulates, SO ₂ , NOx, CO, HCI, HF, NH3, Pt, As, Sb, Cr, Co, Cu, Mn, Ni, V, Hg, Cd, TI, TOC, dioxins&furans	Particulates and NHs	Particulates and NH3	Particulates and NH3
Schedule A)	As Indicated in the National Environmental Management: Air Quality Act (39 of 2004) Standards and Regulations (Refer to Schedule A)	As Indicated in the National Environmental Management: Air Quality Act (39 of 2004) Standards and Regulations (Refer to Schedule A)	As Indicated in the National Environmental Management. Air Quality Act (39 of 2004) Standards and Regulations (Refer to Schedule A)	As Indicated in the National Environmental Management: Air Quality Act (39 of 2004)
	At least Annualy	At least Annualy	At least Annualy	At least Annualy
	As Indicated in the National Environmental Management Air Quality Act (39 of 2004) Standards and Regulations (Refer to Schedule A)	As Indicated in the National Environmental Management Air Quality Act (39 of 2004) Standards and Regulations (Refer to Schedule A)	As Indicated in the National Environmental Management: Air Quality Act (39 of 2004) Standards and Regulations (Refer to Schedule A)	As Indicated in the National Environmental Management. Air Quality Act (39 of 2004) Standards and Regulations (Refer to Schedule A)
	ത	0.	1.	12

Regulations (Refer to	Schedule A)	

7.5. AREA AND/OR LINE SOURCE - MANAGEMENT AND MITIGATION MEASURES

Area and/or Line Source Code Source Description	or Line cription	Description of Specific Measures	Timeframe for Achieving Required Control Efficiency	Method of Monitoring Measures Effectiveness	Confingency Measures
Jone			AND THE THE TAXABLE PROPERTY OF TA	**************************************	

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7.6. ROUTINE REPORTING AND RECORD-KEEPING

Complaints register

The licence holder must maintain a complaints register at its premises, and such register must be made available for inspections. The complaints register must include the following information on the complainant, namely, the name, physical address, telephone number, date and the time when the complaint was registered. The register should also provide space for noise, dust and offensive odours complaints.

Furthermore, the licence holder is to investigate and, monthly, report to the licencing authority in a summarised format on the total number of complaints logged. The complaints must be reported in the following format with each component indicated as may be necessary:

- (a) Source code / name;
- (b) Root cause analysis;
- (c) Calculation of Impacts / emissions associated with incidents and dispersion modelling of pollutants, where applicable:
- (d) Measures implemented or to be implemented to prevent recurrence; and
- (e) Date by which measure will be implemented.

The licensing authority must also be provided with a copy of the complaints register. The record of a complaint must be kept for at least 5 (five) years after the complaint was made.

7.7 ANNUAL REPORTING

The licence holder must complete and submit to the licensing authority an annual report. The report must include information for the year under review (i.e. annual year end of the company). The report must be submitted to the licensing authority not later than 60 (sixty) days after the end of each reporting period. The annual report must include, amongst others, the following items:

- (a) Pollutant emissions trend;
- (b) Compliance audit report(s);
- (c) Major upgrades projects (i.e. abatement equipment or process equipment); and
- (d) Greenhouse gas emissions.

The holder of the licence must keep a copy of the annual report for a period of at least 5 (five) years.

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8. DISPOSAL OF WASTE AND EFFLUENT ARISING FROM ABATEMENT EQUIPMENT CONTROL TECHNOLOGY

The disposal of any waste and effluent arising from the abatement equipment control technology must comply with the relevant legislation and requirements of the relevant authorities.

Unique Stack or Area ID (As per 5.4.1 or 5.4.5 above)	Waste / Efficient Type	Hazardous Components Present	Method of Disposal	Registration / Permit / License Status
<i>d</i> ,	Ash	None	Land filling	n/a
7,	Gypsum	None	Land filling	n/a

PENALTIES FOR NON-COMPLIANCE WITH LICENCE AND STATUTORY CONDITIONS OR REQUIREMENTS

Failure to comply with any of the licence and relevant statutory conditions and/or requirements is an offence, and licence holder, if convicted, will be subjected to those penalties as set out in section 52 of the AQA.

10. REPORTING OF ABNORMAL RELEASES AND EMERGENCY RESPONSES

The holder must prevent deviations from normal operating conditions that would result in pollution exceeding specified limit values. If any conditions exist that will result in excessive emissions or nuisance must be immediately reported to the Air Quality Officer. Section 30 NEMA incidence must also be reported to the Air Quality Officer within 24 hours. Where excessive emissions occur, which could cause adverse health and environmental impacts or nuisance, urgent corrective measures must be taken by the holder to contain or minimise the emissions through operational interventions. Remediation, if required shall be carried out to the satisfaction of the licensing authority and/or any other government agencies.

11. APPEAL OF ATMOSPHERIC EMISSIONS LICENCE

- 11.1 The holder of the authorization must notify every registered interested and affected party, in writing and within five (5) working days of the date of issue, of the holder's receipt of this atmospheric emissions licence.
- 11.2 The written notification referred to in Condition 11.1 above must -
 - 11.2.1 Specify the date on which the almospheric emissions licence was issued;
 - 11.2.2 Inform interested and affected parties of the appeal procedure provided for in Chapter 7 the GN No R543 of 18 June 2010; and

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- 11.2.3 Advise interested and affected parties that a copy of the atmospheric emissions licence and reasons for the decision will be furnished on request
- An appeal against the decisions contained in this atmospheric emissions licence must be lodged, in writing with the: Director: Environmental Health and Emergency Services, Fezille Dabi District Municipality, PO Box 10, Sasolburg, 1949, Tel No:016 970 8600, Fax No: 016 973 1582
- 12. REVIEW
- 12.1 The authority shall have the right to review the licence continuously within the period as slipulated in clause 1 above or as and when such review is deemed necessary by the Air Quality Officer;
- 12.2 Such review shall be done as a result of amendments in legislation or by virtue of findings from regular inspections done by the Air Quality Officer;
- 12.3 The authority shall serve the license holder with a 30(thirty) day notice when such a necessity arises;
- 12.4 The authority shall under no circumstances be barred by license holder from reviewing the license upon receiving notice of review.

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