

**GN 893 of 22 November 2013: List of activities which result in atmospheric emissions which have or may have a significant detrimental effect on the environment, including health, social conditions, economic conditions, ecological conditions or cultural heritage
(Government Gazette No. 37054)**

	as amended by	
Notice	Government Gazette	Date
551	38863	12 June 2015
1207	42013	31 October 2018
687	42472	22 May 2019
421	43174	27 March 2020

DEPARTMENT OF ENVIRONMENTAL AFFAIRS

I, Bomo Edith Edna Molewa, Minister of Water and Environmental Affairs, hereby amend the list of activities which result in atmospheric emissions which have or may have a significant detrimental effect on the environment, including health, social conditions, economic conditions, ecological conditions or cultural heritage published under Government Notice No. 248, *Gazette* No. 33064 dated 31 March 2010, in terms of section 21 (1) (b) of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004), set out in the Schedule hereto.

(Signed)

BOMO EDITH EDNA MOLEWA
MINISTER OF WATER AND ENVIRONMENTAL AFFAIRS

SCHEDULE

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PART 1

DEFINITIONS

Definitions

In this Notice, a word or expression to which a meaning has been assigned in this Act has that meaning and, unless the context otherwise indicates—

“Act” means the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004).

“alternative fuels and resources” means general and hazardous wastes which are used to substitute conventional or primary fossil fuels and/or virgin raw materials in cement kilns and other industrial thermal processes.

“atmospheric emission license” means an atmospheric emission license contemplated in Chapter 5 of this Act.

“biomass” means non-fossilised and biodegradable organic material originating from plants, animals and micro-organisms excluding – (a) sewage; and (b) treated or coated wood waste which may contain halogenated organic compounds or heavy metals.

“bottom loading” means the transfer of compounds in a liquid state to a suitable vessel by filling from the bottom by means of bottom valve or from the top utilising a transfer pipe extended to the bottom of the vessel.

“design capacity” means capacity as installed.

“existing plant” unless where specified, shall mean any plant or process that was legally authorised to operate before 01 April 2010 or any plant where an application for authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), was made before 01 April 2010.

“flare” means a combustion device that uses an open flame to burn combustible gases with combustion air provided by ambient air around the flame. Combustion may be steam or air assisted. Flares may be either continuous or intermittent. This term includes both ground and elevated flares.

“fugitive emissions” means emissions to the air from a facility for which an emission license has been issued, other than those emitted from a point source.

“incineration” means any method, technique or process to convert waste to flue gases and residues by means of oxidation.

“licensing authority” means an authority referred to in sections 36 (1), (2), (3) or (4) responsible for implementing the licensing system set out in Chapter 5 of this Act.

“listed activities” includes the singular.

“new plant” unless where specified, shall mean any plant or process where the application for authorisation in terms of the National Environmental Management Act 1998, (Act No. 107 of 1998), was made on or after 01 April 2010.

“normal operating condition” means any condition that constitutes operation as designed.

“non-thermal treatment of volatile organic compounds” means the removal of volatile organic compounds through non-combustion processes including but not limited to cryogenic cooling, scrubbing and vapour recovery.

“oxides of nitrogen (NO_x)” means the sum of nitrogen oxide (NO) and nitrogen dioxide (NO₂) expressed as nitrogen dioxide (NO₂).

“particulate matter (PM)” means total particulate matter, that is the solid matter contained in the gas stream in the solid state as well as the insoluble and soluble solid matter contained in entrained droplets in the gas stream, as measured by the appropriate method listed in Annexure A.

“petrochemicals” means ethylene and its polymers, ethylene oxide, ethylene glycol, glycol ethers, ethoxylates, vinyl acetate, 1,2-dichloroethane, trichloroethylene, tetrachloroethylene, vinyl chloride, propylene, propyl alcohols, acrylonitrile, propylene oxide, isomers of utylenes, butyl ethers, butadienes, polyolefins and alpha-olefins, all alcohols (except those produced during the production of beverages), acrylic acid, allyl chloride, epichlorohydrin, benzene and alkylbenzenes, toluene, o-, m- and p-xylene, ethylbenzene, styrene, cumene, phenols, acetone, cyclohexane, adipic acid, nitrobenzene, chlorobenzene, aniline, methylene diphenyl diisocyanate (mdi), toluene di-isocyanate or other di-isocyanates of comparable volatility, benzoic acid.

"point source" means a single identifiable source and fixed location of atmospheric emission, and includes smoke stacks and residential chimneys.

"point of compliance" means any point within the off gas line, where a sample can be taken, from the last vessel closest to the point source of an individual listed activity to the open-end of the point source or in the case of a combinations of listed activities sharing a common point source, any point from the last vessel closest to the point source up to the point within the point source prior to the combination/interference from another Listed Activity.

"pyrolysis" means the decomposition of a material by heat in the absence of oxygen.

"SANAS" means the South African National Accreditation System established by section 3 of the Accreditation for Conformity Assessment, Calibration and Good Laboratory Practice Act, 2006 (Act No. 19 of 2006).

"sulphur recovery plant" means a unit that processes sulphur containing gases obtained from the processing of crude mineral oil or the coking or gasification of coal and produces a final product of sulphur containing compounds.

"thermal treatment" means incineration, co-processing and other high temperature treatment of hazardous and general waste.

"thermal treatment of volatile organic compounds" means the destruction of volatile organic compounds through combustion processes.

"total volatile organic compounds" means organic compounds listed under US-EPA Compendium Method TO-14.

"upset conditions" means any temporary failure of air pollution control equipment or process equipment or failure of a process to operate in a normal or usual manner that leads to an emission standard being exceeded.

PART 2

GENERAL

Applicability of the Notice

(1) Minimum emission standards as contained in this Notice shall apply to both permanently operated plants and for experimental (pilot) plants with a design capacity equivalent to the one of a listed activity.

(2) Minimum emission standards are applicable under normal operating conditions.

(3) Should normal start-up, maintenance, upset and shut-down conditions exceed a period of 48 hours, section 30 of the National Environmental Management, 1998 (Act No. 107 of 1998), shall apply unless otherwise specified by the Licensing Authority.

Averaging Period

(4) Unless where otherwise specified, minimum emission standards are expressed on a daily average basis, under normal conditions of 273K, 101.3kPa, specific oxygen percentage and dry gas.

Emission measurement

(5) The manner in which measurements of minimum emissions standards, as required by section 21 (3) (a) (ii) of this Act, shall be carried out must be in accordance with the standard sampling and analysis methods listed in Annexure A of this Notice.

(6) Methods other than those contained in Annexure A may be used with the written consent of the National Air Quality Officer.

(7) In seeking the written consent referred to in paragraph (6), an applicant must provide the National Air Quality Officer with any information that supports the equivalence of the method other than that contained in Annexure A to a method contained in Annexure A.

Compliance time frames

(8) New plant must comply with the new plant minimum emission standards as contained in Part 3 from 01 April 2010.

(9) Existing plant must comply with minimum emission standards for existing plant as contained in Part 3 by 01 April 2015, unless where specified.

(10) Existing plant must comply with minimum emission standards for new plant as contained in Part 3 by 01 April 2020, unless where specified.

Postponement of compliance time frames

(11) As contemplated in paragraph 5.4.3.5 of the National Framework for Air Quality Management in the Republic of South Africa, published in terms of Section 7 of this Act, an application may be made to the National Air Quality Officer for the postponement of the compliance time frames in paragraph (9) and (10) for an existing plant.

[Para. (11) substituted by GN 1207 of 31 October 2018.]

(11A) An existing plant may apply to the National Air Quality Officer for a once-off postponement with the compliance timeframes for minimum emission standards for new plant as contemplated in paragraph (10). A once-off postponement with the compliance timeframes for minimum emission standards for new plant may not exceed a period of five years from the date of issue. No once-off postponement with the compliance timeframes with minimum emission standards for new plant will be valid beyond 31 March 2025.

[Para. (11A) inserted by GN 1207 of 31 October 2018.]

(11B) An existing plant to be decommissioned by 31 March 2030 may apply to the National Air Quality Officer before 31 March 2019 for a once-off suspension of compliance timeframes with minimum emission standards for new plant. Such an application must be accompanied by a detailed decommissioning schedule. No such application shall be accepted by the National Air Quality Officer after 31 March 2019.

[Para. (11B) inserted by GN 1207 of 31 October 2018.]

(11C) An existing plant that has been granted a once-off suspension of the compliance timeframes as contemplated in paragraph (11B) must comply with minimum emission standards for existing plant from the date of granting of the application and during the period of suspension until decommissioning.

[Para. (11C) inserted by GN 1207 of 31 October 2018.]

(11D) No postponement of compliance timeframes or a suspension of compliance timeframes shall be granted for compliance with minimum emission standards for existing plant.

[Para. (11D) inserted by GN 1207 of 31 October 2018.]

(12) The application contemplated in paragraph (11A) and (11B) must include—

- (a) An air pollution impact assessment compiled in accordance with the regulations prescribing the format of an Atmospheric Impact Report (as contemplated in Section 30 of the Act), by a person registered as a professional engineer or as a professional natural scientist in the appropriate category;
- (b) a detailed justification and reasons for the application; and
- (c) a concluded public participation process undertaken as specified in the National Environmental Management Act and the Environmental Impact Assessment Regulations made under section 24 (5) of the aforementioned Act.

[Para. (12) substituted by GN 1207 of 31 October 2018.]

(12A) (a) An existing plant may submit an application regarding a new plant standard to the National Air Quality Officer for consideration if the plant is in compliance with other emission standards but cannot comply with a particular pollutant or pollutants.

(b) An application must demonstrate a previous reduction in emissions of the said pollutant or pollutants, measures and direct investments implemented towards compliance with the relevant new plant standards.

(c) The National Air Quality Officer, after consultation with the Licensing Authority, may grant an alternative emission limit or emission load if—

- (i) there is material compliance with the national ambient air quality standards in the area for pollutant or pollutants applied for; or
- (ii) the Atmospheric Impact Report does not show a material increased health risk where there is no ambient air quality standard.

[Para. (12A) inserted by GN 1207 of 31 October 2018.]

(13) The National Air Quality Officer, with the concurrence of the Licensing Authority as contemplated in section 36 of this Act, may in respect of an application for a once-off postponement with compliance timeframes with minimum emission standards for new plant as contemplated in paragraph (11A), or a once-off suspension of compliance timeframes with minimum emission standards for new plant as contemplated in paragraph (11B)—

- (a) grant the application with or without conditions; or
- (b) refuse the application with written reasons.

[Para. (13) substituted by GN 1207 of 31 October 2018.]

(14) The National Air Quality Officer, with the concurrence of the Licensing Authority, may—

- (a) from time to time review any postponement granted in terms of paragraph (13) should ambient air quality conditions in the affected area of the plant not conform to ambient air quality standards; and
- (b) on good grounds, withdraw any postponement following—

- (i) representations from the affected plant; and
- (ii) representations from the affected communities.

Compliance monitoring

- (15) Where continuous emission monitoring is required for a listed activity—
 - (a) the averaging period for the purposes of compliance monitoring shall be expressed on a daily average basis or as prescribed in the Atmospheric Emission License;
 - (b) the emission monitoring system must be maintained to yield a minimum of 80% valid hourly average values during the reporting period;
 - (c) the emission monitoring system must be maintained and calibrated as per the original equipment manufacturers' specifications;
 - (d) continuous emission monitoring systems must be audited by a SANAS accredited laboratory at least once every two (2) years.
- (16) Where periodic emission monitoring is required for a listed activity—
 - (a) the averaging period for the purposes of compliance monitoring shall be expressed on an hourly average basis or as prescribed in the Atmospheric Emission License;
 - (b) emission measurement will be conducted in accordance with paragraphs (5), (6) and (7) of this notice;
 - (c) measurements shall take place on, at least, an annual basis unless otherwise prescribed in the Atmospheric Emission License;
 - (d) sampling will take place under normal operating conditions using the permitted feed-stock or raw material;
 - (e) all tests will be conducted by SANAS accredited laboratories or laboratories accredited by similar foreign authorities.

Reporting Requirements

- (17) Notwithstanding the compliance time frames established in terms of paragraphs (8), (9) and (10), the Atmospheric Emission License holder shall submit an emission report in the form specified by the National Air Quality Officer to the Licensing Authority—
 - (a) within one (1) year of the date of publication of this Notice; and
 - (b) annually thereafter unless otherwise prescribed in the Atmospheric Emission License.
- (18) The report contemplated in paragraph (17) shall include—
 - (a) The name, description and license reference number of the plant as reflected in the Atmospheric Emission License.
 - (b) Where periodic emission monitoring is required for a listed activity, the report contemplated in paragraph (17) shall further include—
 - (i) the name and address of the accredited measurement service-provider that carried out or verified the emission test, including the test report produced by the accredited measurement service-provider;
 - (ii) the date and time on which the emission test was carried out;
 - (iii) a declaration by the Atmospheric Emission License holder to the effect that normal operating conditions were maintained during the emission tests;
 - (iv) the total volumetric flow of gas, expressed in normal cubic meters (Nm³) per unit time and mass flow (kg per unit time) being emitted by the listed activity or activities measured during the emission test, as the average of at least three (3) measurements;
 - (v) the concentration or mass of pollutant for which emissions standards have been set in this Notice emitted by listed activity or activities as the average of at least three (3) measurements; each measured over a minimum sample period of 60 minutes and a maximum of 8 hours to obtain a representative sample; and
 - (vi) the method or combination of methods used for determining the flow rate and concentration as contemplated in paragraphs (5), (6) and (7).
 - (c) Where continuous emission monitoring is required for a listed activity, the report contemplated in paragraph (17) shall further include—
 - (i) results of the spot measurements or correlation tests carried out to verify the accuracy of the continuous emission measurements;

- (ii) the most recent correlation tests; and
 - (iii) the availability of the system as contemplated in (15) (b) in terms of the number of full hours per annum that valid results were obtained.
- (d) Following the compliance time frames established in terms of paragraphs (8), (9) and (10), an explanation of all instances where minimum emission standards were exceeded and remediation measures and associated implementation plans aimed at ensuring that the accidents do not re-occur.
- (e) Any other relevant information as required by the National Air Quality Officer from time to time.

(19) In January 2014, the National Air Quality Officer will establish an internet-based National Atmospheric Emissions Inventory System. Once established, the reports contemplated in paragraph (17) must be made in the format required for the internet-based National Atmospheric Emissions Inventory System.

General special arrangement

(20) A fugitive emissions management plan must be included in the Atmospheric Emission Licenses for listed activities that are likely to generate such emissions.

PART 3

MINIMUM EMISSION STANDARDS

Category 1: Combustion Installations

(1) *Subcategory 1.1: Solid Fuel Combustion Installations*

Description:		Solid fuels combustion installations used primarily for steam raising or electricity generation.	
Application:		All installations with design capacity equal to or greater than 50MW heat input per unit, based on the lower calorific value of the fuel used.	
Substance or mixture of substances		Plant status	mg/Nm³ under normal conditions of 10% O₂, 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	50
		Existing	100
Sulphur dioxide	SO ₂	New	500
		Existing	3 500
Oxides of nitrogen	NO _x expressed as NO ₂	New	750
		Existing	1 100

- (a) The following special arrangement shall apply—
- (i) Continuous emission monitoring of PM, SO₂ and NO_x is required, however, installations less than 100MW heat input per unit must adhere to periodic emission monitoring as stipulated in Part 2 of this Notice.
 - (ii) Where co-feeding with waste materials with calorific value allowed in terms of the Waste Disposal Standards published in terms of the Waste Act, 2008 (Act No. 59 of 2008) occurs, additional requirements under subcategory 1.6 shall apply.
 - (iii) *Additional requirements under subcategory 1.6 shall continue to apply even after the waste ceases to be waste in terms of section 1 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008), as amended by the National Environmental Management: Waste Amendment Act, 2014 (Act No. 26 of 2014).*
 [Sub-para. (iii) added by GN 551 of 12 June 2015.]
 - (iii)
 [Sub-para. (iii) added by GN 1207 of 31 October 2018 and deleted by GN 687 of 22 May 2019.]
 (Editorial Note: Numbering as per original *Government Gazette*.)
 - (iv) Existing plants shall comply with a new plant emission limit of 1000mg/Nm³ for sulphur dioxide (SO₂).
 [Sub-para. (iv) added by GN 421 of 27 March 2020.]

(2) *Subcategory 1.2: Liquid Fuel Combustion Installations*

Description:		Liquid fuels combustion installations used primarily for steam raising or electricity generation.	
Application:		All installations with design capacity equal to or greater than 50MW heat input per unit, based on the lower calorific value of the fuel used.	
Substance or mixture of substances		Plant status	mg/Nm³ under normal conditions of 3% O₂, 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	50
		Existing	75
Sulphur dioxide	SO ₂	New	500
		Existing	3 500
Oxides of nitrogen	NO _x expressed as NO ₂	New	250
		Existing	1 100

(a) The following special arrangements shall apply—

- (i) Reference conditions for gas turbines shall be 15% O₂, 273K and 101.3kPa
- (ii) Continuous emission monitoring of PM, SO₂ and NO_x is required, however, installations less than 100MW heat input per unit must adhere to periodic emission monitoring as stipulated in Part 2 of this Notice.
- (iii) Where co-feeding with waste materials with calorific value allowed in terms of the Waste Disposal Standards published in terms of the Waste Act, 2008 (Act No. 59 of 2008) occurs, additional requirements under subcategory 1.6 shall apply.
- (iv) Additional requirements under subcategory 1.6 shall continue to apply even after the waste ceases to be waste in terms of section 1 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008), as amended by the National Environmental Management: Waste Amendment Act, 2014 (Act No. 26 of 2014).

[Sub-para. (iv) added by GN 551 of 12 June 2015.]

(3) *Subcategory 1.3: Solid Biomass Combustion Installations*

Description:		Solid biomass fuel combustion installations used primarily for steam raising or electricity generation.	
Application:		All installations with design capacity equal to or greater than 50MW heat input per unit, based on the lower calorific value of the fuel used.	
Substance or mixture of substances		Plant status	mg/Nm³ under normal conditions of 10% O₂, 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	50
		Existing	100
Sulphur dioxide	SO ₂	New	500
		Existing	3 500
Oxides of nitrogen	NO _x expressed as NO ₂	New	750
		Existing	1 100

(a) The following special arrangements shall apply—

- (i) Continuous emission monitoring of PM, SO₂ and NO_x is required, however, installations less than 100MW heat input per unit must adhere to periodic emission monitoring as stipulated in Part 2 of this Notice.
- (ii) Where co-feeding with waste materials with calorific value allowed in terms of the Waste Disposal Standards published in terms of the Waste Act, 2008 (Act No. 59 of 2008) occurs, additional requirements under subcategory 1.6 shall apply.
- (iii) Additional requirements under subcategory 1.6 shall continue to apply even after the waste ceases to be waste in terms of section 1 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008), as amended by the National Environmental Management: Waste Amendment Act, 2014 (Act No. 26 of 2014).

[Sub-para. (iii) added by GN 551 of 12 June 2015.]

(4) *Subcategory 1.4: Gas Combustion Installations*

Description:	Gas combustion (including gas turbines burning natural gas) used primarily for steam raising or electricity generation.		
Application:	All installations with design capacity equal to or greater than 50MW heat input per unit, based on the lower calorific value of the fuel used.		
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 3% O ₂ , 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter	NA	New	10
		Existing	10
Sulphur dioxide	SO ₂	New	400
		Existing	500
Oxides of nitrogen	NO _x expressed as NO ₂	New	50
		Existing	300

(a) The following special arrangements shall apply—

- (i) Reference conditions for gas turbines shall be 15% O₂, 273K and 101.3kPa.
- (ii) Where co-feeding with waste materials with calorific value allowed in terms of the Waste Disposal Standards published in terms of the Waste Act, 2008 (Act No. 59 of 2008) occurs, additional requirements under subcategory 1.6 shall apply.
- (iii) Additional requirements under subcategory 1.6 shall continue to apply even after the waste ceases to be waste in terms of section 1 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008), as amended by the National Environmental Management: Waste Amendment Act, 2014 (Act No. 26 of 2014).

[Sub-para. (iii) added by GN 551 of 12 June 2015.]

(5) *Subcategory 1.5: Reciprocating Engines*

Description:	Liquid and gas fuel stationary engines used for electricity generation.		
Application:	All installations with design capacity equal to or greater than 10MW heat input per unit, based on the lower calorific value of the fuel used.		
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 15% O ₂ , 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	50
		Existing	50
Oxides of nitrogen	NO _x expressed as NO ₂	New	2 000* 400**
		Existing	2 000* 400**
Sulphur dioxide	SO ₂	New	1 170*
		Existing	1 170*
*Liquid fuels fired **Gas fired			

(6) *Subcategory 1.6: Waste Co-feeding Combustion Installations*

Description:	Combustion installations co-feeding waste with conventional fuels in processes used primarily for steam raising or electricity generation.		
Application:	All installations.		
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Carbon monoxide	CO	New	50
		Existing	75
Hydrogen chloride	HCl	New	10
		Existing	10

Hydrogen fluoride	HF	New	1
		Existing	1
Sum of Lead, arsenic, antimony, chromium, cobalt, copper, manganese nickel, vanadium	Pb + As + Sb + Cr + Co + Cu + Mn + Ni + V	New	0.5
		Existing	0.5
Mercury	Hg	New	0.05
		Existing	0.05
Cadmium Thallium	Cd + TI	New	0.05
		Existing	0.05
Total organic compounds	TOC	New	10
		Existing	10
Ammonia	NH ₃	New	10
		Existing	10
			ng I-TEQ/Nm³ under normal conditions of 10% O₂, 273 Kelvin and 101.3kPa.
Dioxins and furans	PCDD/PCDF	New	0.1
		Existing	0.1

Category 2: Petroleum Industry, the production of gaseous and liquid fuels as well as petrochemicals from crude oil, coal, gas or biomass

(1) *Subcategory 2.1: Combustion Installations*

Description:	Combustion installations including furnaces; heaters; and boilers with a design capacity equal to or greater than 50 MW heat input.		
Application:	All refinery furnaces; heaters; and boilers with a design capacity equal to or greater than 50 MW heat input.		
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 10% O ₂ (15% O ₂ for gas turbines), 273 Kelvin and 101.3 kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	70
		Existing	120
Oxides of nitrogen	NO _x expressed as NO ₂	New	400
		Existing	1700
Sulphur dioxide	SO ₂	New	1000
		Existing	1700

(a) The following special arrangements shall apply—

- (i) No continuous flaring of hydrogen sulphide-rich gases shall be allowed.
- (ii) A bubble cap of all Combustion Installations and Catalytic Cracking Units shall be at 1.2 Kg SO₂/ton for existing plants.
- (iii) A bubble cap of all Combustion Installations and Catalytic Cracking Units shall be at 0.4 Kg SO₂/ton for new plants.

[Subcategory 2.1 substituted by GN 551 of 12 June 2015.]

(2) *Subcategory 2.2: Catalytic Cracking Units*

Description:	Refinery catalytic cracking units.		
Application:	All installations.		
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 10% O ₂ , 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		

Particulate Matter	N/A	New	100
		Existing	120
Oxides of nitrogen	NO _x expressed as NO ₂	New	400
		Existing	550
Sulphur dioxide	SO ₂	New	1 500
		Existing	3 000

(a) The following special arrangements shall apply—

- (i) A bubble cap of all Combustion Installations and Catalytic Cracking Units shall be at 1.2Kg SO₂/ton for existing plants.
- (ii) A bubble cap of all Combustion Installations and Catalytic Cracking Units shall be at 0.4Kg SO₂/ton for new plants.

(3) *Subcategory 2.3: Sulphur Recovery Units*

Description:		Sulphur Recovery Units.	
Application:		All installations.	
Substance or mixture of substances		Plant status	mg/Nm³ under normal conditions of 10% O₂, 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Hydrogen Sulphide	H ₂ S		a
			a

(a) The following special arrangement shall apply—

Sulphur recovery units should achieve 95% recovery efficiency and availability of 99%.

(4) *Subcategory 2.4: Storage and Handling of Petroleum Products*

Description:	Petroleum products storage tanks and product transfer facilities
Application:	All permanent immobile liquid storage tanks larger than 1000 cubic meters cumulative tankage capacity at a site.

(a) The following special arrangement applies for the storage and handling of raw materials, intermediate and final products with a vapour pressure greater than 14kPa at operating temperature:

Leak detection and repair (LDAR) program approved by licensing authority must be instituted.

(b) The following special arrangements apply for control of Total Volatile Organic Compounds (TVOCs) from storage of raw materials, intermediate and final products, except during loading and offloading. (Alternative control measures that can achieve the same or better results may be used)—

(i) Storage vessels for liquids must be of the following type:

True vapour pressure of contents at product storage temperature	Type of tank or vessel
Application	All permanent immobile liquid storage facilities at a single site with a combined storage capacity of greater than 1000 cubic meters
True vapour pressure of contents at product storage temperature	Type of tank or vessel
Type 1: Up to 14 kPa	Fixed-roof tank vented to atmosphere, or as per Type 2 and 3
Type 2: Above 14 kPa and up to 91 kPa with a throughput of less than 50'000 m ³ per annum	Fixed-roof tank with Pressure Vacuum Vents fitted as a minimum, to prevent "breathing" losses, or as per Type 3
Type 3: Above 14 kPa and up to 91 kPa with a throughput greater than 50'000 m ³ per annum	(a) External floating-roof tank with primary rim seal and secondary rim seal for tank with a diameter greater than 20m, or (b) fixed-roof tank with internal floating deck / roof fitted with primary seal, or (c) fixed-roof tank with vapour recovery system.
Type 4: Above 91 kPa	Pressure vessel

- (ii) The roof legs, slotted pipes and/or dipping well on floating roof tanks (except for domed floating roof tanks or internal floating roof tanks) must have sleeves fitted to minimise emissions.
 - (ii) Relief valves on pressurised storage must undergo periodic checks for internal leaks. This can be carried out using portable acoustic monitors or if venting to atmosphere with an accessible open end, tested with a hydrocarbon analyser as part of an LDAR programme.
- (c) The following special arrangements apply for control of TVOCs from the loading and unloading (excluding ships) of raw materials, intermediate and final products with a vapour pressure of greater than 14kPa at handling temperature. Alternative control measures that can achieve the same or better results may be used:
- (i) All installations with a throughput of greater than 50'000 m³ per annum of products with a vapour pressure greater than 14 kPa, must be fitted with vapour recovery / destruction units. Emission limits are set out in the table below—

Description:	Vapour Recovery Units		
Application:	All loading/ offloading facilities with a throughput greater than 50 000 m ³ per annum		
Substance or mixture of substances		Plant status	mg/Nm³ under normal conditions of 273 Kelvin and 101.3 kPa.
Common name	Chemical symbol		
Total volatile organic compounds from vapour recovery/ destruction units using thermal treatment.	N/A	New	150
		Existing	150
Total volatile organic compounds from vapour recovery/ destruction units using non-thermal treatment.	N/A	New	40 000
		Existing	40 000

- (ii) For road tanker and rail car loading / offloading facilities where the throughput is less than 50'000 m³ per annum, and where ambient air quality is, or is likely to be impacted, all liquid products must be loaded using bottom loading, or equivalent, with the venting pipe connected to a vapour balancing system.

Where vapour balancing and / or bottom loading is not possible, a recovery system utilizing adsorption, absorption, condensation or incineration of the remaining VOC's, with a collection efficiency of at least 95%, must be fitted.

[Subcategory 2.4 substituted by GN 1207 of 31 October 2018.]

(5) *Subcategory 2.5: Industrial Fuel Oil Recyclers*

Description:	Installations used to recycle or recover oil from waste oils.		
Application:	Industrial fuel oil recyclers with a throughput > 5 000 ton/month.		
Substance or mixture of substances		Plant status	mg/Nm³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Carbon monoxide	CO	New	130
		Existing	250
Sulphur dioxide	SO ₂	New	500
		Existing	3 500
Total volatile organic compounds from vapour recovery/destructic units.	N/A	New	40
		Existing	90

- (a) The following transitional arrangement shall apply for the storage and handling of raw materials, intermediate and final products with a vapour pressure greater than 14kPa at operating temperature:

Leak detection and repair (LDAR) program approved by licensing authority to be instituted, by 01 January 2014.

- (b) The following special arrangements shall apply for control of TVOCs from storage of raw materials, intermediate and final products with a vapour pressure of up to 14kPa at operating temperature, except during loading and offloading. (Alternative control measures that can achieve the same or better results may be used)—

- (i) Storage vessels for liquids shall be of the following type:

Application	All permanent immobile liquid storage facilities at a single site with a combined storage capacity of greater than 1 000 cubic meters.
True vapour pressure of contents at product storage temperature	Type of tank or vessel
Type 1: Up to 14kPa	Fixed-roof tank vented to atmosphere, or as per Type 2 and 3.
Type 2: Above 14kPa and up to 91kPa with a throughput of less than 50'000m ³ per annum	Fixed-roof tank with Pressure Vacuum Vents fitted as a minimum, to prevent "breathing" losses, or as per Type 3.
Type 3: Above 14kPa and up to 91kPa with a throughput greater than 50'000m ³ per annum	(d) External floating-roof tank with primary rim seal and secondary rim seal for tank with a diameter greater than 20m; or
	(e) fixed-roof tank with internal floating deck/roof fitted with primary seal; or
	(f) fixed-roof tank with vapour recovery system.
(Editorial Note: Numbering as per original <i>Government Gazette</i> .)	
Type 4: Above 91kPa	Pressure vessel.

- (ii) The roof legs, slotted pipes and/or dipping well on floating roof tanks (except for domed floating roof tanks or internal floating roof tanks) shall have sleeves fitted to minimise emissions.
- (iii) Relief valves on pressurised storage should undergo periodic checks for internal leaks. This can be carried out using portable acoustic monitors or if venting to atmosphere with an accessible open end, tested with a hydrocarbon analyser as part of an LDAR programme.
- (c) The following special arrangements shall apply for control of TVOCs from the loading and unloading (excluding ships) of raw materials, intermediate and final products with a vapour pressure of greater than 14kPa at handling temperature. Alternative control measures that can achieve the same or better results may be used—
- (i) All installations with a throughput of greater than 50'000m³ per annum of products with a vapour pressure greater than 14kPa, must be fitted with vapour recovery/destruction units.
- (ii) For road tanker and rail car loading/offloading facilities where the throughput is less than 50'000m³ per annum, and where ambient air quality is, or is likely to be impacted, all liquid products shall be loaded using bottom loading, or equivalent, with the venting pipe connected to a vapour balancing system. Where vapour balancing and/or bottom loading is not possible, a recovery system utilising adsorption, absorption, condensation or incineration of the remaining VOC's, with a collection efficiency of at least 95%, shall be fitted.

Category 3: Carbonisation and Coal Gasification

(1) Subcategory 3.1: Combustion Installations

Description:	Combustion installations not used primarily for steam raising or electricity generation.		
Application:	All combustion installations (except test or experimental installations).		
Substance or mixture of substances		Plant status	mg/Nm³ under normal conditions of 10% O₂, 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	50
		Existing	100
Oxides of nitrogen	NO _x expressed as NO ₂	New	700
		Existing	2 000
Total volatile organic compounds (from non-coke oven operations)	N/A	New	40
		Existing	90

- (a) The following special arrangements shall apply—
- (i) Sulphur-containing compounds to be recovered from gases to be used for combustion with a recovery efficiency of not less than 90% or remaining content of inorganic sulphur-containing compounds to be less than 1 000mg/Nm³ measured as hydrogen sulphide, whichever is strictest.

- (ii) Where co-feeding with waste materials with calorific value allowed in terms of the Waste Disposal Standards published in terms of the Waste Act, 2008 (Act No. 59 of 2008) occurs, additional requirements under subcategory 1.6 shall apply.
- (iii) Additional requirements under subcategory 1.6 shall continue to apply even after the waste ceases to be waste in terms of section 1 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008), as amended by the National Environmental Management: Waste Amendment Act, 2014 (Act No. 26 of 2014).

[Sub-para. (iii) added by GN 551 of 12 June 2015.]

(2) *Subcategory 3.2: Coke Production*

Description:	Coke production and by-product recovery.		
Application:	All installations.		
Substance or mixture of substances		Plant status	mg/Nm³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Hydrogen sulphide	H ₂ S	New	7 (i)
		Existing	10 (i)
Notes:	(i) from point source		

(3) *Subcategory 3.3: Tar Processes*

Description:	Processes in which tar, creosote or any other product of distillation of tar is distilled or is heated in any manufacturing process.		
Application:	All installations.		
Substance or mixture of substances		Plant status	mg/Nm³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Total Volatile Organic Compounds	N/A	New	130
		Existing	250

- (a) The following transitional arrangement shall apply for the storage and handling of raw materials, intermediate and final products with a vapour pressure greater than 14kPa at operating temperature:

Leak detection and repair (LDAR) program approved by licensing authority to be instituted, by 01 January 2014.

- (b) The following special arrangements shall apply for control of TVOCs from storage of raw materials, intermediate and final products with a vapour pressure of up to 14kPa at operating temperature, except during loading and offloading. (Alternative control measures that can achieve the same or better results may be used)—

- (i) Storage vessels for liquids shall be of the following type:

Application	All permanent immobile liquid storage facilities at a single site with a combined storage capacity of greater than 1 000 cubic meters.
True vapour pressure of contents at product storage temperature	Type of tank or vessel
Type1: Up to 14kPa	Fixed-roof tank vented to atmosphere, or as per Type 2 and 3.
Type 2: Above 14kPa and up to 91kPa with a throughput of less than 50'000m ³ per annum	Fixed-roof tank with Pressure Vacuum Vents fitted as a minimum, to prevent "breathing" losses, or as per Type 3.
Type 3: Above 14kPa and up to 91kPa with a throughput greater than 50'000m ³ per annum	(g) External floating-roof tank with primary rim seal and secondary rim seal for tank with a diameter greater than 20m; or
	(h) fixed-roof tank with internal floating deck/roof fitted with primary seal; or
	(i) fixed-roof tank with vapour recovery system.

Type 4: Above 91kPa	(h) Pressure vessel.
(Editorial Note: Numbering as per original <i>Government Gazette</i> .)	

- (ii) The roof legs, slotted pipes and/or dipping well on floating roof tanks (except for domed floating roof tanks or internal floating roof tanks) shall have sleeves fitted to minimise emissions.
- (iii) Relief valves on pressurised storage should undergo periodic checks for internal leaks. This can be carried out using portable acoustic monitors or if venting to atmosphere with an accessible open end, tested with a hydrocarbon analyser as part of an LDAR programme.
- (c) The following special arrangements shall apply for control of TVOCs from the loading and unloading (excluding ships) of raw materials, intermediate and final products with a vapour pressure of greater than 14kPa at handling temperature. Alternative control measures that can achieve the same or better results may be used:
- (i) All installations with a throughput of greater than 50'000m³ per annum of products with a vapour pressure greater than 14kPa, must be fitted with vapour recovery/destruction units. Emission limits are set out in the table below:

Description:	Vapour Recovery Units.		
Application:	All loading/offloading facilities with a throughput greater than 50 000m ³ .		
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Total volatile organic compounds from vapour recovery/destruction units using thermal treatment.	N/A	New	150
		Existing	150
Total volatile organic compounds from vapour recovery/destruction units using non-thermal treatment.	N/A	New	40 000
		Existing	40 000

- (ii) For road tanker and rail car loading/offloading facilities where the throughput is less than 50'000m³ per annum, and where ambient air quality is, or is likely to be impacted, all liquid products shall be loaded using bottom loading, or equivalent, with the venting pipe connected to a vapour balancing system. Where vapour balancing and/or bottom loading is not possible, a recovery system utilising adsorption, absorption, condensation or incineration of the remaining VOC's, with a collection efficiency of at least 95%, shall be fitted.

(4) *Subcategory 3.4 Char, Charcoal and Carbon Black Production*

Description:	Production of char, charcoal and the production and use of carbon black.		
Application:	All installations producing more than 20 tons of char or charcoal per month. Installations consuming more than 20 tons per month of carbon black in any processes.		
Substance or mixture of substances		Plant status	Mg/Nm ³ under normal conditions of 273 Kelvin and 101.3 kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	50
		Existing	100
Polycyclic Aromatic Hydrocarbons	PAH	New	0.1
		Existing	0.5

[Subcategory 3.4 substituted by GN 551 of 12 June 2015.]

(5) *Subcategory 3.5 Electrode Paste Production*

Description:	Electrode paste production.		
Application:	All installations.		
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
		New	50

Particulate matter	N/A	Existing	100

(6) Subcategory 3.6 Synthetic Gas Production and Clean-up

Description:		The production and clean-up of a gaseous stream derived from coal gasification and includes gasification, separation and clean-up of a raw gas stream through a process that involves sulphur removal and Rectisol as well as the stripping of a liquid tar stream derived from the gasification process.	
Application:		All installations.	
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Hydrogen Sulphide	H ₂ S	New	3 500
		Existing	4 200
Total Volatile Organic Compounds	N/A	New	130
		Existing	250
Sulphur dioxide	SO ₂	New	500
		Existing	3 500

Category 4: Metallurgical Industry

(1) Subcategory 4.1: Drying and Calcining

Description:		Drying and calcining of mineral solids including ore.	
Application:		Facilities with capacity of more than 100 tons/month product.	
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	50
		Existing	100
Sulphur dioxide	SO ₂	New	1 000
		Existing	1 000
Oxides of nitrogen	NO _x expressed as NO ₂	New	500
		Existing	1 200

(2) Subcategory 4.2: Combustion Installations

Description:		Combustion installations not used for primarily for steam raising and electricity generation (except drying).	
Application:		All combustion installations (except test or experimental).	
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	50
		Existing	100
Sulphur dioxide	SO ₂	New	500
		Existing	500
Oxides of nitrogen	NO _x expressed as NO ₂	New	500
		Existing	2 000

(a) The following special arrangements shall apply—

- (i) Reference oxygen content appropriate to fuel type must be used.
- (ii) Where co-feeding with waste materials with calorific value allowed in terms of the Waste Disposal Standards published in terms of the Waste Act, 2008 (Act No. 59 of 2008) occurs,

additional requirements under subcategory 1.6 shall apply.

- (iii) Additional requirements under subcategory 1.6 shall continue to apply even after the waste ceases to be waste in terms of section 1 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008), as amended by the National Environmental Management: Waste Amendment Act, 2014 (Act No. 26 of 2014).

[Sub-para. (iii) added by GN 551 of 12 June 2015.]

(3) *Subcategory 4.3: Primary Aluminium Production*

Description:		Primary aluminium production.	
Application:		All installations.	
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 273 Kelvin and 101.3 kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	50
		Existing	100
Sulphur dioxide	SO ₂	Reduction Process (New)	250
		Reduction Process (Existing)	250
		Carbon Process (New)	500
		Carbon Process (Existing)	500
Total volatile organic compounds	N/A	New	40
		Existing	40
Total fluorides measured as Hydrogen fluoride	F as HF	New	0.5
		Existing	1

[Subcategory 4.3 substituted by GN 551 of 12 June 2015.]

(4) *Subcategory 4.4: Secondary Aluminium Production*

Description:		Secondary aluminium production and alloying through the application of heat (excluding metal recovery, covered under subcategory 4.21).	
Application:		All installations.	
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	30
		Existing	100
Total fluorides measured as Hydrogen fluoride	F as HF	New	1
		Existing	5
Total volatile organic compounds	N/A	New	40
		Existing	40
Ammonia	NH ₃	New	30
		Existing	100

(5) *Subcategory 4.5: Sinter Plants*

Description:		Sinter plants for agglomeration of fine ores using a heating process, including sinter cooling where applicable.	
Application:		All installations.	
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		

Particulate matter	N/A	New	50
		Existing	100
Sulphur dioxide	SO ₂	New	500
		Existing	1 000
Oxides of nitrogen	NO _x expressed as NO ₂	New	700
		Existing	1 200

(6) *Subcategory 4.6: Basic Oxygen Furnaces*

Description:	Basic oxygen furnaces in the steel making industry.		
Application:	All installations.		
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	30
		Existing	100
Sulphur dioxide	SO ₂	New	500
		Existing	500
Oxides of nitrogen	NO _x expressed as NO ₂	New	500
		Existing	500

(a) The following special arrangement shall apply—

Secondary fume capture installations shall be fitted to all new furnace installations.

(7) *Subcategory 4.7: Electric Arc Furnaces (Primary and Secondary)*

Description:	Electric arc furnaces in the steel making industry.		
Application:	All installations.		
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	30
		Existing	100
Sulphur dioxide	SO ₂	New	500
		Existing	500
Oxides of nitrogen	NO _x expressed as NO ₂	New	500
		Existing	500

(a) The following special arrangement shall apply—

Secondary fume capture installations shall be fitted to all new furnace installations.

(8) *Subcategory 4.8: Blast Furnaces*

Description:	Blast furnace operations.		
Application:	All installations.		
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	30
		Existing	100
Sulphur dioxide	SO ₂	New	500
		Existing	500
Oxides of nitrogen	NO _x expressed as NO ₂	New	500
		Existing	500

(a) The following special arrangement shall apply—

Secondary fume capture installations shall be fitted to all new furnace installations.

(9) *Subcategory 4.9: Ferro-alloy Production*

Description:		Production of alloys of iron with chromium, manganese, silicon or vanadium, the separation of titanium slag from iron-containing minerals using heat.	
Application:		All installations.	
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Sulphur dioxide	SO ₂	New	500
		Existing	500
Oxides of nitrogen	NO _x expressed as NO ₂	New	400
		Existing	750
Particulate matter from primary fume capture system, open and semi-closed furnaces			
Particulate matter	N/A	New	30
		Existing	100
Particulate matter from primary fume capture system, closed furnaces			
Particulate matter	N/A	New	50
		Existing	100
Particulate matter from secondary fume capture system, all furnaces			
Particulate matter	N/A	New	50
		Existing	100

(a) The following special arrangements shall apply—

(i) Secondary fume capture installations shall be fitted to all new furnace installations

(ii) Emission of Cr (VI), Mn and V from primary fume captures systems of ferrochrome, ferromanganese and ferrovanadium furnaces respectively to be measured and reported to licensing authority annually.

(10) *Subcategory 4.10: Foundries*

Description:		Production and or casting of iron, iron ores, steel or ferro-alloys, including the cleaning of castings and handling of casting mould materials.	
Application:		All installations.	
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	30
		Existing	100
Sulphur dioxide	SO ₂	New	400
		Existing	400
Oxides of nitrogen	NO _x expressed as NO ₂	New	400
		Existing	1 200

(11) *Subcategory 4.11: Agglomeration Operations*

Description:		Production of pellets or briquettes using presses, inclined discs or rotating drums.	
Application:		All installations.	
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		

Particulate matter	N/A	New	30
		Existing	100
Ammonia	NH ₃	New	30
		Existing	50

(12) Subcategory 4.12: Pre-Reduction and Direct Reduction

Description:		Production of pre-reduced or metallised ore or pellets using gaseous or solid fuels.	
Application:		All installations.	
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	50
		Existing	100
Sulphur dioxide (from natural gas)	SO ₂	New	100
		Existing	500
Sulphur dioxide (from all other fuels)	SO ₂	New	500
		Existing	1 700
Oxides of nitrogen	NO _x expressed as NO ₂	New (gas based)	500
		New (all other fuels)	1 000
		Existing	2 000

(13) Subcategory 4.13: Lead Smelting

Description:		The extraction, processing and use of lead in production by the application of heat. The production of lead-containing electric batteries.	
Application:		All installations using more than 20 Kg/month. All installations producing lead-containing electric batteries.	
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	30
		Existing	30
Lead	Pb (as fraction of Total Suspended Particles)	New	2
		Existing	2

(14) Subcategory 4.14: Production and Processing of Zinc, Nickel and Cadmium

Description:		The extraction, processing and production of zinc, nickel or cadmium by the application of heat excluding metal recovery.	
Application:		All installations.	
Substance or mixture of substances		Plant status	mg/m ³ under normal conditions of 6% O ₂ , 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	50
		Existing	100
Sulphur dioxide	SO ₂	New	500
		Existing	500
Oxides of nitrogen	NO _x expressed as NO ₂	New	500
		Existing	500
Mercury	Hg	New	0,2

		Existing	1,0
Dioxins	PCDD/PCDF	New	0,1ngTEQ
		Existing	No standard proposed

(a) The following transitional arrangement shall apply—

Facilities processing nickel or cadmium shall measure or estimate, using a method to the satisfaction of the licensing authority, and report the emission of Ni and Cd respectively to the licensing authority annually, commencing immediately.

(15) *Subcategory 4.15: Processing of Arsenic, Antimony, Beryllium, Chromium and Silicon*

Description:	The metallurgical production and processing of arsenic, antimony, beryllium, chromium and silicon and their compounds by the application of heat.		
Application:	All installations.		
Substance or mixture of substances		Plant status	mg/m³ under normal conditions of 6% O₂, 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	20
		Existing	30

(16) *Subcategory 4.16: Smelting and Converting of Sulphide Ores*

Description:	Processes in which sulphide ores are smelted, roasted calcined or converted (Excluding Inorganic Chemicals-related activities regulated under Category 7).		
Application:	All installations.		
Substance or mixture of substances		Plant status	mg/Nm³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	50
		Existing	100
Oxides of nitrogen	NO _x expressed as NO ₂	New	350
		Existing	2 000
Sulphur dioxide (feed SO ₂ <5% SO ₂)	SO ₂	New	1 200
		Existing	3 500
Sulphur dioxide (feed SO ₂ >5% SO ₂)	SO ₂	New	1 200
		Existing	2 500

(a) The following special arrangement shall apply—

All facilities must install apparatus for the treatment of the sulphur content of the off-gases.

(17) *Subcategory 4.17: Precious and Base Metal Production and Refining*

Description:	The production or processing of precious and associated base metals through chemical treatment (Excluding Inorganic Chemicals-related activities regulated under Category 7).		
Application:	All installations		
Substance or mixture of substances		Plant status	mg/Nm³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	50
		Existing	100
Chlorine	Cl ₂	New	50
		Existing	50
Sulphur dioxide	SO ₂	New	400
		Existing	400

Hydrogen chloride	HCl	New	30
		Existing	30
Hydrogen fluoride	HF	New	30
		Existing	30
Ammonia	NH ₃	New	100
		Existing	100
Oxides of nitrogen	NO _x expressed as NO ₂	New	300
		Existing	500

(a) The following special arrangement shall apply—

Thermal treatment standard are not applicable to precious and base metal refining processes.

(18) *Subcategory 4.18: Vanadium Ore Processing*

Description:		The processing of vanadium-bearing ore or slag for the production of vanadium oxides or vanadium carbide by the application of heat.	
Application:		All installations.	
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	50
		Existing	50
Sulphur dioxide	SO ₂	New	1 200
		Existing	3 500
Ammonia	NH ₃	New	30
		Existing	b

(a) The following transitional arrangement shall apply—

Plants processing vanadium ore or slag for the production of vanadium oxides shall report the emissions of vanadium and its compounds to the licensing authority annually, commencing immediately.

(b) The following special arrangements for ammonia emissions shall apply—

- (i) Emission limits for ammonia shall be negotiated with the licensing authority, on the basis of the existing permits and submission of atmospheric impact reports.
- (ii) Existing Plants shall submit atmospheric impact reports to the licensing authority on its ammonia impact annually.

(19) *Subcategory 4.19: Production and or Casting of Bronze, Brass and Copper*

Description:		The production and or casting of bronze, brass and copper.	
Application:		All installations producing more than 10 tons per day of product in aggregate.	
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	50
		Existing	100
Sulphur dioxide	SO ₂	New	500
		Existing	500
Oxides of Nitrogen	NO _x expressed as NO ₂	New	1 000
		Existing	1 200

(20) *Subcategory 4.20: Slag Processes*

Description:	The processing or recovery of metallurgical slag by the application of heat.
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Application:	All installations.		
Substance or mixture of substances		Plant status	mg/Nm³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	50
		Existing	100
Sulphur dioxide	SO ₂	New	1 500
		Existing	2 500
Oxides of nitrogen	NO _x expressed as NO ₂	New	350
		Existing	2 000

(a) The following transitional arrangement shall apply—

Facilities processing slag by the application of heat for the recovery of chromium or manganese content shall report the emissions of Cr(III) and Cr(VI) or Mn and its compounds respectively to the licensing authority annually, commencing immediately.

(21) *Subcategory 4.21: Metal Recovery*

Description:	The recovery of metal from any form of scrap material by the application of heat.		
Application:	All installations.		
Substance or mixture of substances		Plant status	mg/Nm³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	10
		Existing	25
Carbon monoxide	CO	New	50
		Existing	75
Sulphur dioxide	SO ₂	New	50
		Existing	50
Oxides of nitrogen	NO _x expressed as NO ₂	New	200
		Existing	200
Hydrogen chloride	HCl	New	10
		Existing	10
Hydrogen fluoride	HF	New	1
		Existing	1
Sum of Lead, arsenic, antimony, chromium, cobalt, copper, manganese, nickel, vanadium	Pb + As + Sb + Cr + Co + Cu + Mn + Ni + V	New	0.5
		Existing	0.5
Mercury	Hg	New	0.05
		Existing	0.05
Cadmium Thallium	Cd + TI	New	0.05
		Existing	0.05
Total organic compounds	N/A	New	10
		Existing	10
Ammonia	NH ₃	New	10
		Existing	10
			ng I-TEQ/Nm³ under normal conditions of 10% O₂, 273 Kelvin and 101.3kPa.
Dioxins and furans	PCDD/PCDF	New	0.1
		Existing	0.1

(22) Subcategory 4.22: Hot Dip Galvanizing

Description:	The coating of steel articles with zinc using molten zinc, including the pickling and/or fluxing of articles before coating.		
Application:	All installations.		
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	10
		Existing	15
Hydrogen Chloride	HCl	New	30
		Existing	30

(23) Subcategory 4.23: Metal Spray

Description:	The coating of metals using molten metal.		
Application:	All installations.		
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	30
		Existing	50

Category 5: Mineral Processing, Storage and Handling

(1) Subcategory 5.1: Storage and Handling of Ore and Coal

Description:	Storage and handling of ore and coal not situated on the premises of a mine or works as defined in the Mines Health and Safety Act 29 of 1996.		
Application:	Locations designed	to hold more than 100 000 tons.	
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Dustfall	N/A	New	a
		Existing	a
^a three months running average not to exceed limit value for adjacent land use according to dust control regulations promulgated in terms of section 32 of the NEM: AQA, 2004 (Act No. 39 of 2004), in eight principal wind directions.			

(2) Subcategory 5.2: Drying

Description:	The drying of mineral solids including ore, using dedicated combustion installations.		
Application:	Facilities with a capacity of more than 100 tons/month product.		
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate Matter	N/A	New	50
		Existing	100
Sulphur dioxide	SO ₂	New	1 000
		Existing	1 000
Oxides of nitrogen	NO _x expressed as NO ₂	New	500
		Existing	1 200

(3) *Subcategory 5.3: Clamp Kilns for Brick Production*

Description:		The production of bricks using clamp kilns.	
Application:		All installations producing more than 100 000 bricks per month.	
Substance or mixture of substances		Plant status	mg/Nm³ under normal conditions of 273 Kelvin and 101.3 kPa.
Common name	Chemical symbol		
Dust fall	N/A	New	a
		Existing	a
Sulphur dioxide	SO ₂	New	b
		Existing	b
<p>^a Three months running average not to exceed limit value for adjacent land use according to dust control regulations promulgated in terms of section 32 of the NEM: AQA, 2004 (Act No. 39 of 2004), in eight principal wind directions.</p> <p>^b Twelve months running average not to exceed limit value as per GN 1210 of 24 December 2009. Passive diffusive measurement approved by the licensing authority carried out monthly.</p>			

(a) The following special arrangement shall apply—

- (i) Where co-feeding with waste materials with calorific value allowed in terms of the Waste Disposal Standards published in terms of the Waste Act, 2008 (Act No. 59 of 2008) occurs, additional requirements under subcategory 1.6 shall apply.
- (ii) Additional requirements under subcategory 1.6 shall continue to apply even after the waste ceases to be waste in terms of section 1 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008), as amended by the National Environmental Management: Waste Amendment Act, 2014 (Act No. 26 of 2014).

[Subcategory 5.3 amended by GN 551 of 12 June 2015. Sub-para. (ii) added by GN 551 of 12 June 2015.]

(4) *Subcategory 5.4: Cement Production (using conventional fuels and raw materials)*

Description:		The preparation of raw materials, production and cooling of Portland cement clinker; grinding and blending of clinker to produce finished cement; and packaging of finished cement.	
Application:		All installations.	
Substance or mixture of substances		Plant status	mg/Nm³ under normal conditions of 10% O₂, 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter (Separate Raw Mill)	N/A	New	30
		Existing	50
Particulate matter (Kiln)	N/A	New	50
		Existing	100
Particulate matter (Cooler ESP)	N/A	New	100
		Existing	150
Particulate matter (Cooler BF)	N/A	New	50
		Existing	50
Particulate matter (Clinker grinding)	N/A	New	30
		Existing	50
Sulphur dioxide	SO ₂	New	250
		Existing	250
Oxides of nitrogen	NO _x expressed as NO ₂	New	1 200
		Existing	2 000

(b) The following special arrangement shall apply—

Emissions from cooling, grinding and fugitive dust capture processes are not subject to the oxygen content reference condition.

- (a) (i) Emissions from cooling, grinding and fugitive dust capture processes are not subject to the oxygen content reference condition.
- (ii) For an existing plant using pyritic limestone, the minimum emission standard for existing plant for sulphur dioxide (SO₂) is 400 mg/Nm³.
- (iii) For an existing plant using pyritic limestone, the minimum emission standard for new plant for sulphur dioxide (SO₂) is 400 mg/Nm³.

(Editorial Note: Numbering as per original *Government Gazette*.)
[Para (b) amended by GN 1207 of 31 October 2018.]

(5) *Subcategory 5.5: Cement Production (using alternative fuels and/or resources)*

Description:	The production and cooling of Portland cement clinker; grinding and blending of clinker to produce finished cement where alternative fuels and/or resources are used.		
Application:	All installations.		
Substance or mixture of substances		Plant status	mg/Nm³ under normal conditions of 10% O₂, 273 Kelvin and 101.3kPa
Common name	Chemical symbol		
Particulate matter (Separate Raw Mill)	N/A	New	30
		Existing	50
Particulate matter (Clinker grinding)	N/A	New	30
		Existing	50
Particulate matter (Cooler ESP)	N/A	New	100
		Existing	150
Particulate matter (Cooler BF)	N/A	New	50
		Existing	50
Particulate matter (Kiln)	N/A	New	30
		Existing	80
Sulphur dioxide	SO ₂	New	50
		Existing	250
Oxides of nitrogen	NO _x expressed as NO ₂	New	800
		Existing	1 200
Total organic compounds,	N/A	New	10
		Existing	10
Hydrogen chloride	HCl	New	10
		Existing	10
Hydrogen fluoride	HF	New	1
		Existing	1
Cadmium + Thallium	Cd + Tl	New	0.05
		Existing	0.05
Mercury	Hg	New	0.05
		Existing	0.05
Sum of arsenic, antimony, lead, chromium, cobalt, copper; manganese, vanadium and nickel	As; Sb; Pb; Cr; Co; Cu; Mn; V & Ni	New	0.5
		Existing	0.5
			ng I-TEQ/Nm³ under normal conditions of 10% O₂, 273 Kelvin and 101.3kPa.
Dioxins and furans	PCDD/PCDF	New	0.1
		Existing	0.1

- (a) The following special arrangements shall apply—
- (i) Emissions from cooling, grinding, milling and fugitive dust capture processes are not subject to

the oxygen content reference condition.

- (ii) The facility shall be designed, equipped, built and operated in such a way so as to prevent the emissions into the air giving rise to significant ground-level air pollution (i.e. leading to the exceedance of an accepted ambient air quality threshold standard).
- (iii) Monitoring equipment shall be installed and acceptable techniques used in order to accurately monitor the parameters, conditions and mass concentrations relevant to the co-processing of AFR and incineration of waste.
- (iv) All continuous, on-line emission monitoring results must be reported as a Daily Average concentration expressed as mg/Nm^3 , and at 'normalised' conditions of 10% O_2 , 101.3kPa, 273 K/0°C, dry gas.
- (v) Discontinuous (periodic) emission monitoring results must be expressed as mg/Nm^3 , or ng/Nm^3 I-TEQ for PCDD/PCDF, and at 'normalised' conditions of 10% O_2 , 101.3kPa, 273 K/0°C, dry gas.
- (vi) Exit gas temperatures must be maintained below 200 °C.
- (vii) Pollution control devices (exhaust gas cooling and bag filter or ESP) must have a daily availability of 98% (i.e. maximum downtime of 2% or 30 minutes per running 24 hours). The cumulative annual downtime (total downtime over a one year period) may however not exceed 60 hours (0.685 % per annum).
- (viii) Continuous, on-line measurement of the following emissions and operating parameters is required:
 - Particulate matter (total particulate);
 - O_2 ;
 - CO;
 - NO_x ;
 - SO_2 ;
 - HCl;
 - HF;
 - VOC/TOC;
 - Emission exhaust volume (e.g. Nm^3/hr) and flow rate (e.g. m/s);
 - Water vapour content of exhaust gas (humidity);
 - Exhaust gas temperature;
 - Internal process temperature/s;
 - Pressure; and
 - Availability of air pollution control equipment (including exit gas cooling).
- (ix) Appropriate installation and functioning of automated, continuous monitoring equipment for emissions to air, which are subject to quality control and to an annual surveillance test. Independent accredited calibration must be undertaken by means of parallel measurements with the reference methods, at a frequency as per the requirements of the equipment, but as a minimum every 3 years.
- (x) Periodic measurements of heavy metals and dioxin and furan emissions must be undertaken, using national (if available) or internationally acceptable methods, by independent/external, accredited specialists twice during the first 12 months of waste incineration/AFR co-processing, and annually thereafter.
- (xi) Average emission values for heavy metals are to be measured over a minimum sample period of 60 minutes to obtain a representative sample, and a maximum of 8 hours, and the average values for dioxins and furans (expressed as I-TEQ) over a sample period of a minimum of 60 minutes and maximum of 8 hours.
- (xii) Periodic measurements of heavy metals and dioxins and furans are to be carried out representatively to provide accurate and scientifically correct emission data and results, and sampling and analysis must be carried out by independent, accredited laboratories.
- (xiii) To ensure valid monitoring results are obtained, no more than five half-hourly average values in any day, and no more than ten daily average values per year, may be discarded due to malfunction or maintenance of the continuous measurement system.
- (xiv) All measurement results must be recorded, processed and presented in an appropriate manner in

a Quarterly Emissions Monitoring Report in order to enable verification of compliance with permitted operating conditions and air emission standards. Quarterly Emission Monitoring Reports must include, amongst others—

- Daily average results of all continuous, on-line emission monitoring parameters, reported on line graphs that include individual, daily average data points, and indicating the relevant air emission limit if applicable;
 - Results of all continuous, on-line operational monitoring parameters, reported on line graphs that correspond in scale with the emission monitoring results;
 - Results of periodic emission measurements of heavy metals, and dioxins and furans;
 - Confirmation of residence times and temperatures of specific wastes co-processed as determined by the specific feed points, plant dimensions and material and gas flow rates;
 - Discussion on availability or air pollution control equipment, together with reasons for and management of downtime;
 - All relevant results must be compared with baseline measurements taken prior to the co-processing of AFR or hazardous waste; and
 - Detailed evaluation and discussion of any non-compliance during the reporting period.
- (xv) Treatment of High Level POPs Containing Waste (as defined by the Stockholm and Basel Conventions) are to be preceded by an independently monitored Performance Verification Test to determine the Destruction Efficiency (DE) and Destruction and Removal Efficiency (DRE) of principal organic hazardous compounds (POHC) using a suitable verification compound (e.g. trichloroethane).
- (xvi) A plan for conducting a Performance Verification Test must be submitted to the relevant Government Department/s at least 3 months prior to the commencement of such a test, and must include, amongst others, the following—
- Motivation for why the plant should be used for treatment of High Level POPs;
 - A feasibility study showing that the plant is technically qualified;
 - Planned date for commencement of the test and expected duration;
 - Details on the waste to be co-processed during the test, including source, volume, composition etc.;
 - Motivation for the particular choice of waste and its suitability in providing an accurate and representative indication of the plant's DE and DRE, and therefore suitability to treat High Level POPs Containing Waste;
 - Extension of monitoring regime to include Chlorobenzenes, HCB, PCBs, Benzene, Toluene, Xylenes, PAHs, and NH₃;
 - Monitoring and analysis to be conducted, the associated methodologies and independent parties responsible for monitoring.
- (xvii) A detailed, independent report documenting and interpreting the results of the Performance Verification Test must be compiled. As a minimum, a DE/DRE of 99.9999% would be required, as well as compliance with Air Emission Standards.
- (xviii) An Air Quality Improvement Plan for achieving emission limits over time must be developed if transitional arrangements apply to compliance with emission standards.
- (xix) For an existing plant using pyritic limestone, the minimum emission standard for existing plant for sulphur dioxide (SO₂) is 400 mg/Nm³.
[Sub-para (xix) added by GN 1207 of 31 October 2018.]
- (xx) For an existing plant using pyritic limestone, the minimum emission standard for new plant for sulphur dioxide (SO₂) is 400 mg/Nm³.”; and
[Sub-para (xx) added by GN 1207 of 31 October 2018.]

(6) *Subcategory 5.6: Lime Production*

Description:	Processing of lime, magnesite, dolomite and calcium sulphate.		
Application:	All installations.		
Substance or mixture of substances		Plant status	mg/Nm³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	50

		Existing	50
Sulphur dioxide	SO ₂	New	400
		Existing	400
Oxides of nitrogen	NO _x expressed as NO ₂	New	500
		Existing	500

(7) Subcategory 5.7: Lime Production (using alternative fuels and/or resources)

Description:		Processing of lime, magnesite, dolomite and calcium sulphate where alternative fuels and/or resources are used.	
Application:		All installations.	
Substance or mixture of substances		Plant status	mg/Nm³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	30
		Existing	80
Sulphur dioxide	SO ₂	New	50
		Existing	250
Oxides of nitrogen	NO _x expressed as NO ₂	New	800
		Existing	1 200
Total organic compounds,	N/A	New	10
		Existing	10
Hydrogen chloride	HCl	New	10
		Existing	10
Hydrogen fluoride	HF	New	1
		Existing	1
Cadmium + Thallium	Cd + Tl	New	0.05
		Existing	0.05
Mercury	Hg	New	0.05
		Existing	0.05
Sum of arsenic, antimony, lead, chromium, cobalt, copper; manganese, vanadium and nickel	As; Sb; Pb; Cr; Co; Cu; Mn; V & Ni	New	0.5
		Existing	0.5
			ng I-TEQ/Nm³ under normal conditions of 10% O₂, 273 Kelvin and 101.3kPa.
Dioxins and furans	PCDD/PCDF	New	0.1
		Existing	0.1

(a) The following special arrangements shall apply—

- (i) Emissions from cooling, grinding, milling and fugitive dust capture processes are not subject to the oxygen content reference condition.
- (ii) The facility shall be designed, equipped, built and operated in such a way so as to prevent the emissions into the air giving rise to significant ground-level air pollution (i.e. leading to the exceedance of an accepted ambient air quality threshold standard).
- (iii) Monitoring equipment shall be installed and acceptable techniques used in order to accurately monitor the parameters, conditions and mass concentrations relevant to the co-processing of AFR and incineration of waste.
- (iv) All continuous, on-line emission monitoring results must be reported as a Daily Average concentration expressed as mg/Nm³, and at 'normalised' conditions of 10% O₂, 101.3kPa, 273 K/0°C, dry gas.
- (v) Discontinuous (periodic) emission monitoring results must be expressed as mg/Nm³, or ng/Nm³ I-TEQ for PCDD/PCDF, and at 'normalised' conditions of 10% O₂, 101.3kPa, 273K/0°C, dry gas.

- (vi) Exit gas temperatures must be maintained below 200°C.
- (vii) Pollution control devices (exhaust gas cooling and bag filter or ESP) must have a daily availability of 98% (i.e. maximum downtime of 2% or 30 minutes per running 24 hours). The cumulative annual downtime (total downtime over a one year period) may however not exceed 60 hours (0.685 % per annum).
- (viii) Continuous, on-line measurement of the following emissions and operating parameters is required—
- Particulate matter (total particulate);
 - O₂;
 - CO;
 - NO_x;
 - SO₂;
 - HCl;
 - HF;
 - VOC/TOC;
 - Emission exhaust volume (e.g. Nm³/hr) and flow rate (e.g. m/s);
 - Water vapour content of exhaust gas (humidity);
 - Exhaust gas temperature;
 - Internal process temperature/s;
 - Pressure; and
 - Availability of air pollution control equipment (including exit gas cooling).
- (ix) Appropriate installation and functioning of automated, continuous monitoring equipment for emissions to air, which are subject to quality control and to an annual surveillance test. Independent accredited calibration must be undertaken by means of parallel measurements with the reference methods, at a frequency as per the requirements of the equipment, but as a minimum every 3 years.
- (x) Periodic measurements of heavy metals and dioxin and furan emissions must be undertaken, using national (if available) or internationally acceptable methods, by independent/external, accredited specialists twice during the first 12 months of waste incineration/AFR co-processing, and annually thereafter.
- (xi) Average emission values for heavy metals are to be measured over a minimum sample period of 60 minutes to obtain a representative sample, and a maximum of 8 hours, and the average values for dioxins and furans (expressed as I-TEQ) over a sample period of a minimum of 60 minutes and maximum of 8 hours.
- (xii) Periodic measurements of heavy metals and dioxins and furans are to be carried out representatively to provide accurate and scientifically correct emission data and results, and sampling and analysis must be carried out by independent, accredited laboratories.
- (xiii) To ensure valid monitoring results are obtained, no more than five half-hourly average values in any day, and no more than ten daily average values per year, may be discarded due to malfunction or maintenance of the continuous measurement system.
- (xiv) All measurement results must be recorded, processed and presented in an appropriate manner in a Quarterly Emissions Monitoring Report in order to enable verification of compliance with permitted operating conditions and air emission standards. Quarterly Emission Monitoring Reports must include, amongst others—
- Daily average results of all continuous, on-line emission monitoring parameters, reported on line graphs that include individual, daily average data points, and indicating the relevant air emission limit if applicable;
 - Results of all continuous, on-line operational monitoring parameters, reported on line graphs that correspond in scale with the emission monitoring results;
 - Results of periodic emission measurements of heavy metals, and dioxins and furans;
 - Confirmation of residence times and temperatures of specific wastes co-processed as determined by the specific feed points, plant dimensions and material and gas flow rates;
 - Discussion on availability of air pollution control equipment, together with reasons for and

management of downtime;

- All relevant results must be compared with baseline measurements taken prior to the co-processing of AFR or hazardous waste; and
 - Detailed evaluation and discussion of any non-compliance during the reporting period.
- (xv) Treatment of High Level POPs Containing Waste (as defined by the Stockholm and Basel Conventions) are to be preceded by an independently monitored Performance Verification Test to determine the Destruction Efficiency (DE) and Destruction and Removal Efficiency (DRE) of principal organic hazardous compounds (POHC) using a suitable verification compound (e.g. trichloroethane).
- (xvi) A plan for conducting a Performance Verification Test must be submitted to the relevant Government Department/s at least 3 months prior to the commencement of such a test, and must include, amongst others, the following—
- Motivation for why the plant should be used for treatment of High Level POPs;
 - A feasibility study showing that the plant is technically qualified;
 - Planned date for commencement of the test and expected duration;
 - Details on the waste to be co-processed during the test, including source, volume, composition etc.;
 - Motivation for the particular choice of waste and its suitability in providing an accurate and representative indication of the plant's DE and DRE, and therefore suitability to treat High Level POPs Containing Waste;
 - Extension of monitoring regime to include Chlorobenzenes, HCB, PCBs, Benzene, Toluene, Xylenes, PAHs, and NH₃;
 - Monitoring and analysis to be conducted, the associated methodologies and independent parties responsible for monitoring.
- (xvii) A detailed, independent report documenting and interpreting the results of the Performance Verification Test must be compiled. As a minimum, a DE/DRE of 99.9999% would be required, as well as compliance with Air Emission Standards.
- (xviii) An Air Quality Improvement Plan for achieving emission limits over time must be developed if transitional arrangements apply to compliance with emission standards.

(8) *Subcategory 5.8: Glass and Mineral Wool Production*

Description:	The production of glass containers, flat glass, glass fibre and mineral wool.		
Application:	All installations producing 100 ton per annum or more.		
Substance or mixture of substances		Plant status	mg/Nm³ under normal conditions of 11% O₂, 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	30
		Existing	140
Oxides of nitrogen	NO _x expressed as NO ₂	New	1 500
		Existing	2 000
Sulphur dioxide (Gas fired furnace)	SO ₂	New	800
		Existing	800
Sulphur dioxide (Oil fired furnace)	SO ₂	New	1 500
		Existing	1 500

(9) *Subcategory 5.9: Ceramic Production*

Description:	The production of tiles, bricks, refractory bricks, stoneware or porcelain ware by firing, excluding clamp kilns.		
Application:	All installations producing 100 ton per annum or more.		
Substance or mixture of substances		Plant status	mg/Nm³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	50
		Existing	150

Sulphur dioxide	SO ₂	New	400
		Existing	1 000
Total fluorides measured as hydrogen fluoride	HF	New	50
		Existing	50

The following special arrangement shall apply—

- (i) Where co-feeding with waste materials with calorific value allowed in terms of the National Norms and Standards for Disposal of Waste Disposal to Landfill published in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) as amended, occurs, additional requirements under subcategory 1.6 shall apply.
- (ii) The applicable minimum emission standard for Total Fluorides shall be as set out in this subcategory above.
- (iii) Additional requirements under subcategory 1.6 shall continue to apply even after the waste ceases to be waste in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008).

[Subcategory 5.9 amended by GN 1207 of 31 October 2018.]

(10) *Subcategory 5.10: Macadam Preparation*

Description:	Permanent facilities used for mixtures of aggregate; tar or bitumen to produce road-surfacing materials.		
Application:	All plants.		
Substance or mixture of substances		Plant status	mg/Nm³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	50
		Existing	120
Sulphur dioxide	SO ₂	New	1 000
		Existing	1 000
Total volatile organic compounds from vapour recovery/destruction units.	N/A	New	150
		Existing	150

(11) *Subcategory 5.11: Alkali Processes*

Description:	Production of potassium or sodium sulphate or the treatment of ores by chloride salts whereby hydrogen chloride gas is evolved.		
Application:	All installations producing 100 ton per annum or more.		
Substance or mixture of substances		Plant status	mg/Nm³ under normal conditions of 6% O₂, 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	30
		Existing	100
Hydrogen chloride	HCl	New	30
		Existing	30

Category 6: Organic Chemicals Industry

Description:	The production, or use in production of organic chemicals not specified elsewhere including acetylene, acetic, maleic or phthalic anhydride or their acids, carbon disulphide, pyridine, formaldehyde, acetaldehyde, acrolein and its derivatives, acrylonitrile, amines and synthetic rubber. The production of organometallic compounds, organic dyes and pigments, surface-active agents.
	The polymerisation or co-polymerisation of any unsaturated hydrocarbons, substituted hydrocarbon (including vinyl chloride).
	The manufacture, recovery or purification of acrylic acid or any ester of acrylic acid.
	The use of toluene di-isocyanate or other di-isocyanate of comparable volatility; or recovery of pyridine.

Application:		All installations producing or using more than 100 tons per annum of any of the listed compounds.	
Substance or mixture of substances		Plant status	mg/Nm³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Sulphur trioxide (from sulphonation processes)	SO ₃	New	30
		Existing	100
Acrylonitrile (from processes producing and/or using acrylonitrile).	CH ₂ CHCN	New	5
		Existing	5
Methylamines (from nitrogen-containing organic chemicals)	CH ₅ N	New	10
		Existing	10
Total volatile organic compounds (thermal)	N/A	New	150
		Existing	150
Total volatile organic compounds (non thermal)	N/A	New	40 000
		Existing	40 000

- (a) The following transitional arrangement shall apply for the storage and handling of raw materials, intermediate and final products with a vapour pressure greater than 14kPa at operating temperature:

Leak detection and repair (LDAR) program approved by licensing authority to be instituted, by 01 January 2014.

- (b) The following special arrangements shall apply for control of TVOCs from storage of raw materials, intermediate and final products with a vapour pressure of up to 14kPa at operating temperature, except during loading and offloading. (Alternative control measures that can achieve the same or better results may be used)—

- (i) Storage vessels for liquids shall be of the following type:

Application	All permanent immobile liquid storage facilities at a single site with a combined storage capacity of greater than 1 000 cubic meters.
True vapour pressure of contents at product storage temperature	Type of tank or vessel
Type 1: Up to 14kPa	Fixed-roof tank vented to atmosphere, or as per Type 2 and 3
Type 2: Above 14kPa and up to 91kPa with a throughput of less than 50'000m ³ per annum	Fixed-roof tank with Pressure Vacuum Vents fitted as a minimum, to prevent "breathing" losses, or as per Type 3
Type 3: Above 14kPa and up to 91kPa with a throughput greater than 50'000m ³ per annum	(j) External floating-roof tank with primary rim seal and secondary rim seal for tank with a diameter greater than 20m; or (k) fixed-roof tank with internal floating deck/roof fitted with primary seal; or (l) fixed-roof tank with vapour recovery system.
Type 4: Above 91kPa	Pressure vessel

- (ii) The roof legs, slotted pipes and/or dipping well on floating roof tanks (except for domed floating roof tanks or internal floating roof tanks) shall have sleeves fitted to minimise emissions.
- (iii) Relief valves on pressurised storage should undergo periodic checks for internal leaks. This can be carried out using portable acoustic monitors or if venting to atmosphere with an accessible open end, tested with a hydrocarbon analyser as part of an LDAR programme.
- (c) The following special arrangements shall apply for control of TVOCs from the loading and unloading (excluding ships) of raw materials, intermediate and final products with a vapour pressure of greater than 14kPa at handling temperature. Alternative control measures that can achieve the same or better results may be used:

- (i) All installations with a throughput of greater than 50'000m³ per annum of products with a vapour pressure greater than 14kPa, must be fitted with vapour recovery/destruction units. Emission limits are set out in the table below—

Description:	Vapour Recovery Units		
Application:	All loading/offloading facilities with a throughput greater than 50 000m ³		
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Total volatile organic compounds from vapour recovery/destruction units using thermal treatment.	N/A	New	150
		Existing	150
Total volatile organic compounds from vapour recovery/destruction units using non thermal treatment.	N/A	New	40 000
		Existing	40 000

- (ii) For road tanker and rail car loading/offloading facilities where the throughput is less than 50'000m³ per annum, and where ambient air quality is, or is likely to be impacted, all liquid products shall be loaded using bottom loading, or equivalent, with the venting pipe connected to a vapour balancing system. Where vapour balancing and/or bottom loading is not possible, a recovery system utilising adsorption, absorption, condensation or incineration of the remaining VOC's, with a collection efficiency of at least 95%, shall be fitted.

Category 7: Inorganic Chemicals Industry

(1) *Subcategory 7.1: Production and or Use in Manufacturing of Ammonia, Fluorine, Fluorine Compounds, Chlorine, and Hydrogen Cyanide*

Description:	Production and or use in manufacturing of ammonia, fluorine, fluorine compounds, hydrogen cyanide and chlorine gas (Excluding metallurgical processes-related activities regulated under category 4).		
Application:	All installations producing and or using more than 100 tons per annum of any of the listed compounds.		
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Hydrogen fluoride (from processes in which HF is evolved).	HF	New	5
		Existing	30
Chlorine (from processes in which Cl ₂ is evolved).	Cl ₂	New	50
		Existing	50
Ammonia (from processes in which NH ₃ is evolved).	NH ₃	New	30
		Existing	100
Hydrogen Cyanide (from processes in which HCN is evolved).	HCN	New	0.5
		Existing	2

(2) *Subcategory 7.2: Production of Acids*

Description:	The production, bulk handling and or use in manufacturing of hydrofluoric, hydrochloric, nitric and sulphuric acid (including oleum) in concentration exceeding 10%.		
	Processes in which oxides of sulphur are emitted through the production of acid sulphites of alkalis or alkaline earths or through the production of liquid sulphur or sulphurous acid.		
	Secondary production of hydrochloric acid through regeneration.		
Application:	All installations producing, handling and or using more than 100 tons per annum of any of the listed compounds (Excluding metallurgical processes-related activities regulated under category 4).		
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Total fluoride measured as Hydrogen Fluoride (from processes in which HF is evolved)	F as HF	New	5
		Existing	30

Hydrogen chloride (from primary production of hydrochloric acid)	HCl	New	15
		Existing	25
Hydrogen chloride (from secondary production of hydrochloric acid)	HCl	New	30
		Existing	100
Sulphur dioxide	SO ₂	New	350
		Existing	2 800
Sulphuric acid mist and sulphur trioxide expressed as SO ₃ (from processes in which SO ₃ is evolved).	SO ₃	New	25
		Existing	100
Oxides of nitrogen expressed as NO _x	NO _x	New	350
		Existing	2 000

(3) *Subcategory 7.3: Production of Chemical Fertilizer*

Description:	The production of superphosphates, ammonium nitrate, ammonium phosphates and or ammonium sulphate and their processing into fertiliser mixtures (NPK mixtures).		
Application:	All installations producing and or processing more than 10 tons per month.		
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	50
		Existing	100
Total fluoride measured as Hydrogen Fluoride	F as HF	New	5
		Existing	30
Ammonia	NH ₃	New	50
		Existing	100

(4) *Subcategory 7.4: Production, Use in Production or Recovery of Antimony, Arsenic, Beryllium, Cadmium, Chromium, Cobalt, Lead, Mercury, and or Selenium, by the Application of Heat.*

Description:	Production, use or recovery of antimony, arsenic, beryllium, cadmium, chromium, cobalt, lead, mercury, selenium, thallium and their salts not covered elsewhere, excluding their use as catalyst.		
Application:	All installations producing or using more than 1 ton per month.		
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 6% O ₂ , 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	10
		Existing	25

(a) The following special arrangement shall apply—

Operators shall estimate the emissions of the metals using methods set out in Annexure A. Where the estimated emissions exceed 10 tons per annum for any one of the metals, or 25 tons per annum for a combination of the metals, an air quality impact assessment for the emissions shall be submitted to the licensing authority annually, commencing within one year of the publication of the notice.

(5) *Subcategory 7.5: Production of Calcium Carbide*

Description:	Production of calcium carbide.		
Application:	All installations producing more than 10 tons per month.		
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 6% O ₂ , 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	25

(6) Subcategory 7.6: Production or Use of Phosphorus and Phosphate Salts not mentioned elsewhere

Description:	Production or use of phosphorus and phosphate salts.		
Application:	All installations producing or using more than 10 tons per month.		
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 6% O ₂ , 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	25
		Existing	50

(7) Subcategory 7.7: Production of Caustic Soda

Description:	Production of caustic soda.		
Application:	All installations producing more than 10 tons per month.		
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 6% O ₂ , 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	25
		Existing	50

Category 8: Thermal Treatment of Hazardous and General Waste

(1) Subcategory 8.1: Thermal Treatment of General and Hazardous Waste

Description:	Facilities where general and hazardous waste are treated by the application of heat.		
Application:	All installations treating 10 Kg per day of waste.		
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	10
		Existing	25
Carbon monoxide	CO	New	50
		Existing	75
Sulphur dioxide	SO ₂	New	50
		Existing	50
Oxides of nitrogen	NO _x expressed as NO ₂	New	200
		Existing	200
Hydrogen chloride	HCl	New	10
		Existing	10
Hydrogen fluoride	HF	New	1
		Existing	1
Sum of Lead, arsenic, antimony, chromium, cobalt, copper, manganese, nickel, vanadium	Pb + As + Sb + Cr + Co + Cu + Mn + Ni + V	New	0.5
		Existing	0.5
Mercury	Hg	New	0.05
		Existing	0.05
Cadmium Thallium	Cd + Tl	New	0.05
		Existing	0.05
Total organic compounds	TOC	New	10
		Existing	10

Ammonia	NH ₃	New	10
		Existing	10
			ng I-TEQ/Nm³ under normal conditions of 10% O₂, 273 Kelvin and 101.3kPa.
Dioxins and furans	PCDD/PCDF	New	0.1
		Existing	0.1

- (a) The following special arrangements shall apply—
- (i) For pyrolysis, reference oxygen content does not apply.
 - (ii) The facility shall be designed, equipped, built and operated in such a way so as to prevent the emissions into the air giving rise to significant ground-level air pollution (i.e. leading to the exceedance of an accepted ambient air quality threshold standard).
 - (iii) Monitoring equipment shall be installed and acceptable techniques used in order to accurately monitor the parameters, conditions and mass concentrations relevant to the co-processing of AFR and incineration of waste.
 - (iv) All continuous, on-line emission monitoring results must be reported as a Daily Average concentration expressed as mg/Nm³, and at 'normalised' conditions of 10% O₂, 101.3kPa, 273 K/0°C, dry gas.
 - (v) Discontinuous (periodic) emission monitoring results must be expressed as mg/Nm³, or ng/Nm³ I-TEQ for PCDD/PCDF, and at 'normalised' conditions of 10% O₂, 101.3kPa, 273K/0°C, dry gas.
 - (vi) Exit gas temperatures must be maintained below 200°C.
 - (vii) Pollution control devices (exhaust gas cooling and bag filter or ESP) must have a daily availability of 98% (i.e. maximum downtime of 2% or 30 minutes per running 24 hours). The cumulative annual downtime (total downtime over a one year period) may however not exceed 60 hours (0.685% per annum).
 - (viii) Continuous, on-line measurement of the following emissions and operating parameters is required:
 - Particulate matter (total particulate);
 - O₂;
 - CO;
 - NO_x;
 - SO₂;
 - HCl;
 - HF;
 - VOC/TOC;
 - Emission exhaust volume (e.g. Nm³/hr) and flow rate (e.g. m/s);
 - Water vapour content of exhaust gas (humidity);
 - Exhaust gas temperature;
 - Internal process temperature/s;
 - Pressure; and
 - Availability of air pollution control equipment (including exit gas cooling).
 - (ix) Appropriate installation and functioning of automated, continuous monitoring equipment for emissions to air, which are subject to quality control and to an annual surveillance test. Independent accredited calibration must be undertaken by means of parallel measurements with the reference methods, at a frequency as per the requirements of the equipment, but as a minimum every 3 years.
 - (x) Periodic measurements of heavy metals and dioxin and furan emissions must be undertaken, using national (if available) or internationally acceptable methods, by independent/external, accredited specialists twice during the first 12 months of waste incineration/AFR co-processing, and annually thereafter.

- (xi) Average emission values for heavy metals are to be measured over a minimum sample period of 60 minutes to obtain a representative sample, and a maximum of 8 hours, and the average values for dioxins and furans (expressed as I-TEQ) over a sample period of a minimum of 60 minutes and maximum of 8 hours.
- (xii) Periodic measurements of heavy metals and dioxins and furans are to be carried out representatively to provide accurate and scientifically correct emission data and results, and sampling and analysis must be carried out by independent, accredited laboratories.
- (xiii) To ensure valid monitoring results are obtained, no more than five half-hourly average values in any day, and no more than ten daily average values per year, may be discarded due to malfunction or maintenance of the continuous measurement system.
- (xiv) All measurement results must be recorded, processed and presented in an appropriate manner in a Quarterly Emissions Monitoring Report in order to enable verification of compliance with permitted operating conditions and air emission standards. Quarterly Emission Monitoring Reports must include, amongst others—
 - Daily average results of all continuous, on-line emission monitoring parameters, reported on line graphs that include individual, daily average data points, and indicating the relevant air emission limit if applicable;
 - Results of all continuous, on-line operational monitoring parameters, reported on line graphs that correspond in scale with the emission monitoring results;
 - Results of periodic emission measurements of heavy metals, and dioxins and furans;
 - Confirmation of residence times and temperatures of specific wastes co-processed as determined by the specific feed points, plant dimensions and material and gas flow rates;
 - Discussion on availability or air pollution control equipment, together with reasons for and management of downtime;
 - All relevant results must be compared with baseline measurements taken prior to the co-processing of AFR or hazardous waste; and
 - Detailed evaluation and discussion of any non-compliance during the reporting period.
- (xv) Treatment of High Level POPs Containing Waste (as defined by the Stockholm and Basel Conventions) are to be preceded by an independently monitored Performance Verification Test to determine the Destruction Efficiency (DE) and Destruction and Removal Efficiency (DRE) of principal organic hazardous compounds (POHC) using a suitable verification compound (e.g. trichloroethane).
- (xvi) A plan for conducting a Performance Verification Test must be submitted to the relevant Government Department/s at least 3 months prior to the commencement of such a test, and must include, amongst others, the following—
 - Motivation for why the plant should be used for treatment of High Level POPs;
 - A feasibility study showing that the plant is technically qualified;
 - Planned date for commencement of the test and expected duration;
 - Details on the waste to be co-processed during the test, including source, volume, composition etc.;
 - Motivation for the particular choice of waste and its suitability in providing an accurate and representative indication of the plant's DE and DRE, and therefore suitability to treat High Level POPs Containing Waste;
 - Extension of monitoring regime to include Chlorobenzenes, HCB, PCBs, Benzene, Toluene, Xylenes, PAHs, and NH₃;
 - Monitoring and analysis to be conducted, the associated methodologies and independent parties responsible for monitoring.
- (xvii) A detailed, independent report documenting and interpreting the results of the Performance Verification Test must be compiled. As a minimum, a DE/DRE of 99.9999% would be required, as well as compliance with Air Emission Standards.
- (xviii) An Air Quality Improvement Plan for achieving emission limits over time must be developed if transitional arrangements apply to compliance with emission standards.
- (xix) Compliance time frames for health care risk waste incineration will be as specified in paragraphs (8), (9) and (10) unless specific compliance time frames for health care risk waste incineration have been set under health care risk waste regulations, in which case, the specific compliance time frames for health care risk waste incineration set under health care risk waste regulations shall apply.
- (xx) Continuous emission monitoring for Health Care Risk Incinerators shall be complied with by 31

March 2014.

- (xxi) Combustion of solid, liquid and gaseous waste materials in installations primarily used for steam for steam raising or electricity generation must comply with the emission standards of this sub-category.

(2) *Subcategory 8.2: Crematoria and Veterinary Waste Incineration*

Description:	Cremation of human remains, companion animals (pets) and the incineration of veterinary waste.		
Application:	All installations.		
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 11% O ₂ , 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	40
		Existing	250
Carbon monoxide	CO	New	75
		Existing	150
Oxides of nitrogen	NO _x expressed as NO ₂	New	500
		Existing	1 000
Mercury (Applicable to human cremation only)	Hg	New	0.05
		Existing	0.05

(3) *Subcategory 8.3: Burning Grounds*

Description:	Facilities where waste material from the manufacture of explosives and contaminated explosive packaging material are destroyed.		
Application:	All installations disposing of more than 100kg of material per week		
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Dust fall	N/A	New	a
		Existing	a
Sulphur dioxide	SO ₂	New	b
		Existing	b
<p>^athree months running average not to exceed limit value for adjacent land use according to dust control regulations promulgated in terms of section 32 of the NEM: AQA, 2004 (Act No. 39 of 2004), in eight principal wind directions.</p> <p>^bTwelve months running average not to exceed limit value as per GN 1210 of 24 December 2009. Passive diffusive measurement approved by the licensing authority carried out monthly.</p>			

(4) *Subcategory 8.4: Drum Recycling Processes*

Description:	The process in which used drums are reconditioned by the application of heat.		
Application:	All installations.		
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	10
		Existing	25
Carbon monoxide	CO	New	50
		Existing	75
Sulphur dioxide	SO ₂	New	50
		Existing	50

Oxides of nitrogen	NO _x expressed as NO ₂	New	200
		Existing	200
Hydrogen chloride	HCl	New	10
		Existing	10
Hydrogen fluoride	HF	New	1
		Existing	1
Sum of Lead, arsenic, antimony, chromium, cobalt, copper, manganese, nickel, vanadium	Pb + As + Sb + Cr + Co + Cu + Mn + Ni + V	New	0.5
		Existing	0.5
Mercury	Hg	New	0.05
		Existing	0.05
Cadmium Thallium	Cd + Tl	New	0.05
		Existing	0.05
Total organic compounds	TOC	New	10
		Existing	10
Ammonia	NH ₃	New	10
		Existing	10
			ng I-TEQ/Nm³ under normal conditions of 10% O₂, 273 Kelvin and 101.3kPa.
Dioxins and furans	PCDD/PCDF	New	0.1
		Existing	0.1

Category 9: Pulp and Paper Manufacturing Activities, including By-Products Recovery

(1) Subcategory 9.1: Lime Recovery Kiln

Description:	The recovery of lime from the causticizing process.		
Application:	All installations producing more than 1 ton per month.		
Substance or mixture of substances		Plant status	mg/Nm³ under normal conditions of 6% O₂, 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	50
		Existing	100
Total reduced sulphur compounds measured as H ₂ S	H ₂ S	New	10
		Existing	10
Oxides of nitrogen	NO _x expressed as NO ₂	New	600
		Existing	2 000

(2) Subcategory 9.2: Chemical Recovery Furnaces

Description:	The recovery of chemicals from the thermal treatment of spent liquor using furnaces.		
Application:	All installations producing more than 1 ton per month.		
Substance or mixture of substances		Plant status	mg/Nm³ under normal conditions of 273 Kelvin and 101.3 kPa, and specific reference oxygen conditions specified under the special arrangements.
Common name	Chemical symbol		
Particulate matter	N/A	New	50
		Existing	100

Hydrogen sulphide	H ₂ S	New	15
		Existing	15
Sulphur dioxide	SO ₂	New Kraft Process	50
		Existing Kraft Process	300
		New Bisulphite Process	300
		Existing Bisulphite Process	450
Oxides of nitrogen	NO _x expressed as NO ₂	New Kraft Process	300
		Existing Kraft Process	300
		New Bisulphite Process	300
		Existing Bisulphite Process	400

(a) The following special arrangements shall apply—

- (i) An existing plant must comply with the minimum emission standards set out in the table at 10% oxygen reference condition.
- (ii) A new plant must comply with the minimum emission standards set out in the table at 6% oxygen reference condition; and
[Subcategory 9.2 amended by GN 1207 of 31 October 2018.]

(3) *Subcategory 9.3: Chemical Recovery Copeland Reactors*

Description:		The recovery of chemicals from the thermal treatment of spent liquor using Copeland reactors.	
Application:		All installations producing more than 1 ton per month	
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Particulate matter	N/A	New	No plant of this type will be authorised in the future
		Existing	400
Sulphur dioxide	SO ₂	New	No plant of this type will be authorised in the future
		Existing	800

(a) The following special arrangement shall apply—

Existing Plants shall submit atmospheric impact report to the licensing authority on its Particulate Matter impact annually.

(4) *Subcategory 9.4: Chlorine Dioxide Plants*

Description:		Production and use of chlorine dioxide for paper production.	
Application:		All installations.	
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of 273 Kelvin and 101.3kPa.
Common name	Chemical symbol		
Hydrogen chloride	HCl	New	15
		Existing	30

(5) *Subcategory 9.5: Wood Drying and the Manufacture of Wood Products*

Description:		The drying of wood; and the manufacture of laminated and compressed wood products.	
Application:		All installations producing more than 10 tons per month.	
Substance or mixture of substances		Plant status	mg/Nm ³ under normal conditions of [10% O ₂] 273 Kelvin and 101.3 kPa.
Common name	Chemical symbol		

Particulate matter	N/A	New	150
		Existing	200
Oxides of nitrogen	NOx expressed as NO ₂	New	500
		Existing	700

(a) The following special arrangements shall apply:

Where an external source of heat is used for drying of wood and in manufacturing of wood products, such source of heat must comply with—

- (i) the relevant emission standards for controlled emitters declared in terms of section 23 of the Act, if it is a declared controlled emitter; or
- (ii) the municipal by-laws for fuel burning appliance or equipment, if it has been designated as a fuel burning appliance or equipment under the municipal by-laws.

[Subcategory 9.5 substituted by GN 1207 of 31 October 2018.]

Category 10: Animal Matter Processing

Description:	Processes for the rendering cooking, drying, dehydrating, digesting, evaporating or protein concentrating of any animal matter not intended for human consumption.
Application:	All installations handling more than 1 ton of raw materials per day.

(a) The following special arrangement shall apply—

Best practice measures intended to minimise or avoid offensive odours must be implemented by all installations. These measures must be documented to the satisfaction of the Licensing Authority.

SCHEDULE A

METHODS FOR SAMPLING AND ANALYSIS

[Annexure A substituted by GN 1207 of 31 October 2018.]

The following referenced documents are indispensable for the application of the Notice. For undated references, the latest edition of the referenced document (including any amendments) applies. Information on currently valid national and international standards can be obtained from South African Bureau of Standards. The classification of the methods is not intended to be exclusive to a substance group.

Substance group	Parameter	Methods for Sampling and Analysis of Pollutants	
		Standard Reference Method	Title
Measurement Planning	Measurement planning and measurement sites selection	BS EN 15259	Requirements for the measurement sections and sites and for the measurement objective, plan and report.
	Traverse Points	USEPA Method 1	Sample and velocity traverses for stationary sources
	Traverse Points (Small Ducts)	USEPA Method 1A	Sample and velocity traverses for stationary sources with small stacks or ducts
	Method selection	DD CEN/TS 15674	Air quality. Measurement of stationary source emissions. Guidelines for the elaboration of standardised methods.
	Method selection	BS EN 14793	Stationary source emissions. Demonstration of equivalence of an alternative method with a reference method
	Competence of testing and calibration laboratories	ISO 17025	General requirements for the competence of testing and calibration laboratories.
		DD CEN/TS 15675	Air quality. Measurement of stationary source emissions. Application of EN ISO/IEC 17025:2005 to periodic measurements.

Quality Assurance	Continuous Emission Monitoring Systems (Includes portable analysers)	BS EN 14181	assurance of automated measurement systems.
		BS EN 15267-2	Air quality. Certification of automated measuring systems. Initial assessment of the AMS manufacturer's quality management system and post certification surveillance for the manufacturing process.
		BS EN 15267-3	Air quality. Certification of automated measuring systems. Performance criteria and test procedures for automated measuring systems for monitoring emissions from stationary sources.
	Portable analysers	BS EN 50379-1	Specification for portable electrical apparatus designed to measure combustion flue gas parameters of heating appliances. General requirements and test methods.
		BS EN 50379-2	Specification for portable electrical apparatus designed to measure combustion flue gas parameters of heating appliances. Performance requirements for apparatus used in statutory inspections and assessment.
		Determination of gas velocity and flow rate	ISO 10780
ISO 14164			Stationary Source Emissions - Determination of the volume flow rate of gas streams in ducts - Automated method
BS EN ISO 16911			Stationary source emissions. Manual and automatic determination of velocity and volume flow rate in ducts. Automated measuring systems
BS EN ISO 16911-1			Stationary source emissions. Manual and automatic determination of velocity and volume flow rate in ducts. Manual reference method
BS EN ISO 16911-2			Stationary source emissions. Manual and automatic determination of velocity and volume flow rate in ducts. Automated measuring systems.
USEPA Method 2			Determination of stack gas velocity and volumetric flow rate (Type S Pitot Tube)
USEPA Method 2A			Direct measurement of gas volume through pipes and small ducts
USEPA Method 2B			Determination of exhaust gas volume flow rate from gasoline vapour incinerators
USEPA Method 2C			Determination of gas velocity and volumetric flow rate in small stacks or ducts (standard pitot tube)
USEPA Method 2D			Measurement of gas volume flow rates in small pipes and ducts
USEPA Method 2F			Determination of stack gas velocity and volumetric flow rate with three dimensional probes
USEPA Method 2G			Determination of stack gas velocity and volumetric flow rate with two dimensional probes.
USEPA Method 2H			Determination of stack gas velocity taking into account velocity decay near the stack wall

Secondary Parameters	Moisture Content	BS EN 14790	Determination of the water vapour in ducts
		USEPA Method 4	Determination of moisture content in stack gases
	Oxygen; Carbon monoxide; and Carbon dioxide	BS EN 14789	Stationary source emissions - Determination of volume concentration of oxygen (O ₂) - Reference method - Paramagnetism.
		USEPA Method 3	Gas analysis for the determination of dry molecular weight
		USEPA Method 3A	Determination of oxygen and carbon dioxide concentrations in emissions from stationary sources - (Instrumental Analyzer Procedure).
		USEPA Method 3B	Gas analysis for the determination of emission rate correction factor or excess air
		USEPA Method 3C	Determination of carbon dioxide, methane, nitrogen, and oxygen from stationary sources
		USEPA Method 10	Determination of carbon monoxide emissions from stationary sources (Instrumental Analyzer Procedure)
		USEPA Method 10A	Determination of carbon monoxide emissions in certifying continuous emission monitoring systems at petroleum refineries
		USEPA Method 10B	Determination of carbon monoxide emissions from stationary sources
		ISO 12039	Stationary Source Emissions - Determination of carbon monoxide, carbon dioxide and oxygen. Performance characteristics and calibration of automated measuring systems
		ISO 10396	Stationary source emissions— Sampling for the automated determination of gas emission concentrations for permanently-installed monitoring systems.
		BS EN 15058	Stationary Source Emissions - Determination of the mass concentration of carbon monoxide (CO). Reference Method: Non-Dispersive Infrared Spectrometry
		BS EN 50379-2	Specification for portable electrical apparatus designed to measure combustion flue gas parameters of heating appliances. Performance requirements for apparatus used in statutory inspections and assessment
		BS EN 50379-3	Specification for portable electrical apparatus designed to measure combustion flue gas parameters of heating appliances. Performance requirements for apparatus used in non-statutory servicing of gas fired heating appliances
		ASTM D6348	Standard test method for determination of gaseous compounds by Extractive Direct Interface Fourier Transform Infrared (FTIR) Spectroscopy
			BS EN 13284-1

Dust	Particulate Matter	BS EN 13284-2	Stationary source emissions. Determination of low range mass concentration of dust. Quality assurance of automated measuring systems
		ISO 9096	Stationary Source Emissions - Manual determination of mass concentration of particulate matter
		ISO 12141	Stationary Source Emissions - Determination of mass concentration of particulate matter (dust) at low concentrations -Manual gravimetric method
		ISO 10155	Stationary Source Emissions - Automated monitoring of mass concentrations of particles. Performance characteristics, test methods and specifications.
		USEPA Method 5	Determination of particulate matter emissions from stationary sources.
		USEPA Method 5D	Determination of particulate matter emissions from positive pressure fabric filters
		USEPA Method 5E	Determination of particulate matter emissions from the wool fiberglass insulation manufacturing industry
		USEPA Method 5F	Determination of nonsulfate particulate matter emissions from stationary sources
		USEPA Method 5I	Determination of low level particulate matter emissions from stationary sources
		USEPA Method 17	Determination of particulate matter emissions from stationary sources
		USEPA Method 201	Determination of PM ₁₀ emissions (exhaust gas recycle procedure)
		USEPA Method 201A	Determination of PM ₁₀ and PM _{2,5} emissions from stationary sources (constant sampling rate procedure)
		USEPA Method 202	Dry impinger method for determining condensable particulate emissions from stationary sources
		ISO 23210	Stationary source emissions -- Determination of PM ₁₀ /PM _{2,5} mass concentration in flue gas -- Measurement at low concentrations by use of impactors
	ISO 25597	Stationary source emissions -- Test method for determining PM _{2,5} and PM ₁₀ mass in stack gases using cyclone samplers and sample dilution	
	Dust fallout	SANS 1137/ASTM D1739	Standard Test Method for Collection and Measurement of Dustfall (Settleable Particulate Matter).
Opacity	Opacity	USEPA Method 9	Visual determination of the opacity of emissions from stationary sources
		USEPA Method 22	Visual determination of fugitive emissions from material sources and smoke emissions from flares
		USEPA Method 203A	Visual determination of opacity of emissions from stationary sources for time-averaged regulations
		USEPA Method 203B	Visual determination of opacity of emissions from stationary sources for time-exception regulations
		USEPA Method 203C	Visual determination of opacity of emissions from stationary sources for

			instantaneous limitation regulations
Metals	Arsenic Antimony Chromium Cobalt Copper Manganese Nickel Cadmium Thalium Vanadium Lead	BS EN 14385	Stationary Source Emissions - Determination of the total emission of As, Cd, Cr, Co, Cu, Mn, Ni, Pb, Sb, TI and V
		USEPA Method 29	Determination of metals emissions from stationary sources
	Mercury	BS EN 14884	Stationary Source Emissions - Determination of total mercury: automated measuring systems
		BS EN 13211	Stationary Source Emissions - Manual method of determination of the concentration of total mercury
		USEPA Method 30A	Determination of total vapor phase mercury emissions from stationary sources (instrumental analyzer procedure)
		USEPA Method 30B	Determination of total vapour phase mercury emissions from coal-fired combustion sources using carbon sorbent traps
	Chromium	USEPA Method 306	Determination of chromium emissions from decorative and hard chromium electroplating and chromium anodising operations–Isokinetic Method
	Lead	USEPA Method 12	Determination of inorganic lead emissions from stationary sources
	Arsenic	USEPA Method 108	Determination of particulate and gaseous arsenic emissions
		USEPA Method 108A	Determination of arsenic content in ore samples from nonferrous smelters
		USEPA Method 108B	Determination of arsenic content in ore samples from nonferrous smelters
		USEPA Method 108C	Determination of arsenic content in ore samples from nonferrous smelters - molybdenum blue photometric procedure
	Polychlorinated Dioxins/Furans	BS EN 1948	Stationery Source Emissions – Determination of the mass concentration of PCBBS/PCDFS and Dioxin-like PCBS
		BS EN 1948-1	Stationary source emissions. Determination of the mass concentration of PCDDs/PCDFs and dioxin-like PCBs. Sampling of PCDDs/PCDFs
		BS EN 1948-2	Stationary source emissions. Determination of the mass concentration of PCDDs/PCDFs and dioxin-like PCBs. Extraction and clean-up of PCDDs/PCDFs
BS EN 1948-3		Stationary source emissions. Determination of the mass concentration of PCDDs/PCDFs and dioxin-like PCBs. Identification and quantification of PCDDs/PCDFs	
BS EN 1948-		Stationary source emissions. Determination of the mass concentration	

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	4:2010+A1:2013	of PCDDs/PCDFs and dioxin-like PCBs. Sampling and analysis of dioxin-like PCBs
	USEPA Method 23	Determination of Polychlorinated Dibenzop-Dioxins and Polychlorinated Dibenzofurans from stationary sources
Acrylonitrile	USEPA Method 0031	Sampling method for volatile organic compounds
Methylamines	PD CEN/TS 13649	Stationary source emissions. Determination of the mass concentration of individual gaseous organic compounds. Sorptive sampling method followed by solvent extraction or thermal desorption
	OSHA Method 40	Methylamines
Polycyclic Aromatic Hydrocarbons	ISO 11338-1	Stationary Source Emissions - Determination of gas and particle-phase polycyclic aromatic hydrocarbons. Part 1: Sampling
	ISO 11338-2	Stationary Source Emissions - Determination of gas and particle-phase polycyclic aromatic hydrocarbons. Part 2: Sample preparation, clean-up and determination.
	CARB Method 429	Determination of Polycyclic Aromatic Hydrocarbon (PAH) Emissions from Stationary Sources
Total Volatile Organic Compounds	BS EN 12619	Stationary Source Emissions - Determination of the mass concentration of total gaseous organic carbon. Continuous Flame Ionisation Detector Method
	BS EN 13526	Stationary Source Emissions - Determination of the mass concentration of total gaseous organic carbon in flue gases from solvent using processes. Continuous Flame Ionisation Detector Method
	PD CEN/TS 13649	Stationary source emissions. Determination of the mass concentration of individual gaseous organic compounds. Sorptive sampling method followed by solvent extraction or thermal desorption (Use NIOSH 1600 for analysis)
	ISO 13199	Stationary source emissions – Determination of total volatile organic compounds (TVOCs) in waste gases from non-combustion processes – Non-dispersive infrared analyser equipped with catalytic converter
	BS EN 13649	Stationary Source Emissions - Determination of the mass concentration of individual gaseous organic compounds. Activated Carbon and Solvent Desorption Method
	USEPA Method 18	Measurement of gaseous organic compound emissions by gas chromatography
	USEPA Method 25	Determination of total gaseous nonmethane organic emissions as carbon
	USEPA Method 25A	Determination of total gaseous organic concentration using a flame ionization analyzer
	USEPA Method 25B	Determination of total gaseous organic concentration using a nondispersive infrared analyzer

		USEPA Method 21	Determination of volatile organic compound leaks
		BS EN 15446	Fugitive and diffuse emissions of common concern to industry sectors. Measurement of fugitive emission of vapours generating from equipment and piping leaks
	Hydrogen Sulphide	USEPA Method 11	Determination of hydrogen sulfide content of fuel gas streams in petroleum refineries
		USEPA Method 15	Determination of hydrogen sulfide, carbonyl sulfide, and carbon disulfide emissions from stationary sources
		USEPA Method 15A	Determination of total reduced sulfur emissions from sulfur recovery plants in petroleum refineries
		USEPA Method 16	Semicontinuous determination of sulfur emissions from stationary sources
		USEPA Method 16A	Determination of Total Reduced Sulfur Emissions from Stationary Sources (Impinger Technique)
		USEPA Method 16B	Determination of Total Reduced Sulfur Emissions from Stationary Sources (Gas Chromatograph Analysis)
		USEPA Method 16C	Determination of Total Reduced Sulfur Emissions from Stationary Sources (Real Time Data)
		Chlorine /Hydrogen Chloride	BS EN 1911
	PD CEN/TS 16429		Stationary source emissions. Sampling and determination of hydrogen chloride content in ducts and stacks. Infrared analytical technique
	USEPA Method 26		Determination of hydrogen halide and halogen emissions from stationary sources non-isokinetic method
	USEPA Method 26A		Determination of hydrogen halide and halogen emissions from stationary sources isokinetic method
	USEPA Method 321		Measurement of gaseous hydrogen chloride emissions at Portland cement kilns by Fourier Transform Infrared (FTIR) Spectroscopy
	Hydrogen Cyanide	USEPA OT Method 29	Sampling and analysis for hydrogen cyanide emissions from stationary sources
		CARB Method 426	Determination of cyanide emissions from stationary sources
		ASTM D7295	Standard Practice for Sampling Combustion Effluents and Other Stationary Sources for the Subsequent Determination of Hydrogen Cyanide
		USEPA Method 13A	Determination of total fluoride emissions from stationary sources (SPADNS Zirconium Lake Method)
		USEPA Method 13B	Determination of total fluoride emissions from stationary sources (Specific Ion Electrode Method)
		USEPA Method 14	Determination of fluoride emissions from potroom roof monitors for primary aluminum plants

Inorganic Compounds

Total Flourides/ Hydrogen Flouride	USEPA Method 14A	Determination of total fluoride emissions from selected sources at primary aluminum production facilities
	USEPA Method 26	Determination of hydrogen halide and halogen emissions from stationary sources non-isokinetic method
	USEPA Method 26A	Determination of hydrogen halide and halogen emissions from stationary sources non-isokinetic method
	ISO 15713	Stationary Source Emissions - Sampling and determination of gaseous fluoride content
Oxides of Sulphur	ISO 7935	Stationary Source Emissions - Determination of the mass concentration of sulphur dioxide. Performance characteristics of automated measuring methods
	ISO 10396	Stationary source emissions— Sampling for the automated determination of gas emission concentrations for permanently-installed monitoring systems.
	ISO 11632	Stationary source emissions - Determination of mass concentration of sulfur dioxide - Ion Chromatography Method
	BS EN 14791	Stationary Source Emissions - Determination of mass concentration of sulphur dioxide. Reference method
	USEPA Method 6	Determination of sulfur dioxide emissions from stationary sources
	USEPA Method 6A	Determination of Sulfur Dioxide, Moisture, and Carbon Dioxide From Fossil Fuel Combustion Sources
	USEPA Method 6B	Determination of sulfur dioxide and carbon dioxide daily average emissions from fossil fuel combustion sources
	USEPA Method 6C	Determination of sulfur dioxide emissions from stationary sources (instrumental analyzer procedure)
	USEPA Method 8	Determination of sulfuric acid and sulfur dioxide emissions from stationary sources
	USEPA Method 19	Determination of sulfur dioxide removal efficiency and particulate matter, sulfur dioxide, and nitrogen oxide emission rates
	ISO 10849	Stationary Source Emissions - Determination of the mass concentration of nitrogen oxides. Performance characteristics of automated measuring systems
	ISO 10396	Stationary source emissions— Sampling for the automated determination of gas emission concentrations for permanently-installed monitoring systems.
	BS EN 14792	Stationary Source Emissions - Determination of mass concentration of nitrogen oxides (NOx). Reference Method: Chemiluminescence
	ASTM D6348	Standard test method for determination of gaseous compounds by Extractive Direct Interface Fourier Transform Infrared (FTIR) Spectroscopy
	USEPA Method 7	Determination of nitrogen oxide emissions from stationary sources

Oxides of Nitrogen	USEPA Method 7A	Determination of nitrogen oxide emissions from stationary sources (ion chromatographic method)
	USEPA Method 7B	Determination of Nitrogen Oxide Emissions From Stationary Sources (Ultraviolet Spectrophotometric Method)
	USEPA Method 7C	Determination of nitrogen oxide emissions from stationary sources (Alkaline Permanganate/Colorimetric Method)
	USEPA Method 7D	Determination of Nitrogen Oxide Emissions from Stationary Sources (Alkaline-Permanganate/Ion Chromatographic Method)
	USEPA Method 7E	Determination of nitrogen oxides emissions from stationary sources (Instrumental Analyzer Procedure)
	USEPA Method 20	Determination of nitrogen oxides, sulfur dioxide, and diluent emissions from stationary gas turbines
Ammonia	ISO 17179	Stationary source emissions - Determination of the mass concentration of ammonia in flue gas - Performance characteristics of automated measuring systems
	EPA CTM 027	Ammonia Analysis
	ASTM D6348	Standard test method for determination of gaseous compounds by Extractive Direct Interface Fourier Transform Infrared (FTIR) Spectroscopy