

Emission limit values: Comparative tables for combustion plants, existing installations in the EU

The present document contains comparative tables of emission limit values for combustion plants in the EU. The sector considered is Combustion installations with a rated thermal input exceeding 50 MW (category 1.1). The tables concern existing installations.

There is a [companion document](#) concerning new or substantially changed installations.

See below for further explanations.

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Explanatory notes

The IPPC Directive 96/61/EC prescribes that member countries must report certain information on industrial activities to the European Commission. The information to be reported includes representative data on emission limit values. The data are classified according to categories of industrial activities, cf. Annex 1 of the directive.

The information presented has been compiled from EU Member States through a questionnaire, as prescribed by the IPPC directive. The reports from the member states have been compiled in the report:

Analysis of Member States' first implementation reports on the IPPC Directive (EU-15) by LDK-ECO Environmental Consultants S.A. Athens, Greece. (June 2004). The report was prepared for the European Commission, Directorate General Environment, Directorate G: Sustainable Development and Integration, Unit G.2 Industry and Environment.

This report is available through

http://europa.eu.int/comm/environment/ipcc/ipcc_ms_implementation.htm

The information presented on the subsequent pages is extracted from that report, and concerns the sector Combustion installations, existing installations.

Where "new" and "old" reports and limit values are referred to, it refers to the years 2003, respectively 2001.

The emission limit values in the tables are meant to be representative values of permits issued in the Member States. Ideally, they should represent the limit value for the median installation in a given category.

The abbreviations used in the subsequent tables have the following meaning:

No I.	No installations
C	Continuous measurement method including continuous sampling
P	Periodical measurement method
Calc	Calculation method using consumption of raw materials
HHA V	Half hourly average value
HAV	Hourly average value
DAV	Daily average value
MAV	Monthly average value
YAV	Yearly average value

Notes on remarks or text:

- Text in italics means that this text (remarks or ELV) was not comprised anywhere in the new reports of the Member States (MS). They are usually highlighted in yellow colour, but in some occasions in green colour as well (there is no difference concerning these colours)
- Yellow highlighted text means that this text (either remark or ELV) needs to be checked for small differences that are met between the two articles.

- Yellow highlighted remarks under the label “FOE”. These remarks were made by the person that has checked the aggregated tables, in order to provide additional information.
- Green highlighted text means that this text (either remark or ELV) was found in the new reports of the Member States (MS) and added to the tables.

Notes on Pollutant's Cells:

- Grey cells in general indicate that new or different ELV are found in the new reports (under Article 16(3)) comparing to the old aggregated tables (Article 16(1)). Therefore, in most cases, there are two cells per pollutant, the one comprising the old ELV (where the values are in italics) and another one that comprises the new ELV. However, in some cases, the old values are not in italics and placed in a white cell, indicating that the new ELV (in grey cell) are additional ELV and do not replace the old ELV.
- Grey rows in particular, indicate that the comprised pollutants were not included in the old aggregated tables and are considered in the present tables, under Article 16(3).

Notes on columns:

- The columns referring to UK's ELV are in a pale-green colour that indicates the submission of ELV by this MS, for the first time.

1.1.1 Combustion installations using solid fuels with a rated thermal input exceeding 50 MW

Typically, there are two rows for each pollutant, corresponding to "old" and "new" reports from Member States. See the *Explanatory Notes* on the first page for explanation of color coding etc.

Air pollutant	A ^{A1}	B	DK ^{DK1} MAV	FIN ^{MAV}	F ^{F1}	D ^{D1 D2}	EL ^{EL1}	IRL
Particulates	50		50	50 ^{FIN1}	100 ^{1, 2} 50 ³	50 ^{DAV, HHAV}	100 / 150 ⁴ 50 or 100	No I.
	(mg/m ³)		(mg/Nm ³)	60 ^{FIN1, 5} 70 ^{FIN2, 6} (mg/m ³ (n))	42.5 ^{7, 8} (mg/m ³)	(mg/m ³)	(mg/m ³) (mg/Nm ³)	
CO	250 (mg/m ³)		None	None	None	250 ^{DAV HHAV} (mg/m ³)	None	No I.
NOx	600 ⁹ 450 ¹⁰ 300 ¹¹ 200 ¹²		200	150 ^{13 YAV}	650 ^{14, 15}	400 ^{16 DAV} HHA 200 ^{17 DAV} HHA	650-1300	No I.
	(mg/m ³)		(mg/Nm ³)	None (mg/MJ)	1000 (360- 1300) ^{18, 19} (mg/m ³)	(mg/m ³)	(mg/Nm ³)	
SOx	1000 600 / 200 ²⁰ 400 / 200 ²¹		400	140 ^{22 YAV}	400 ^{23, 24}	2000 ^{25 DAV} HHA 2000 and 60% ^{26 DAV} HHA 400 and 85% ^{27 DAV} HHA	400-2000	No I.

A1 Reference conditions: 6% O₂

DK1 Reference conditions: 6% O₂

F1 Reference conditions: 273 K, 101.3 kPa, 6% O₂

D1 Reference conditions: 5%, 6% or 7% O₂; O₂% depending on combustion technology

D2 Where waste is co-incinerated mixed ELVs apply.

EL1 Reference conditions: 6% O₂

¹ If P < 500 MW

² if P > 300 MW continued surveillance otherwise trimestriel surveillance

³ if P >= 500 MW

⁴ MW >= 500, MW < 500

FIN1 Reference conditions: 6% O₂

⁵ 390 MW, main boiler

FIN2 Reference conditions: 3% O₂

⁶ 2*10.6 MW, secondary boiler

⁷ The values depend on the power of the installation

⁸ if P > 300 MW continued surveillance otherwise trimestriel surveillance

⁹ 50-150 MW

¹⁰ 150-300 MW

¹¹ 300-500 MW

¹² > 500 MW

¹³ mg/MJ energy input of fuel into boiler

¹⁴ 1300 mg/m³ if the content of volatile elements of the fuel > 10%

¹⁵ if P > 300 MW continued surveillance otherwise trimestriel surveillance

¹⁶ MW > 50 to 300

¹⁷ MW > 300

¹⁸ The values depend on the power of the installation

¹⁹ if P > 300 MW continued surveillance otherwise trimestriel surveillance

²⁰ lignite / hard coal; 150-300 MW

²¹ lignite / hard coal; > 300 MW

²² mg/MJ energy input of fuel into boiler

²³ if the power of the installation > 500 MW; if 100 MW < P < 500 MW = 2400-4xP

²⁴ if P > 300 MW continued surveillance otherwise trimestriel surveillance

²⁵ MW > 50 to 100

²⁶ MW > 100 to 300

²⁷ MW > 300

Air pollutant	A ^{A1}	B	DK ^{DK1} MAV	FIN ^{MAV}	F ^{F1}	D ^{D1 D2}	EL ^{EL1}	IRL
				mg/MJ				
	(mg/m ³)		(mg/Nm ³)	840 ^{FIN1, 28} (mg/m ³ (n))	1005 (320-2000) ^{29, 30} (mg/m ³)	400 and 95% ³¹ DAV HHA ^{AV} (mg/m ³ and ROD ³²)	(mg/Nm ³)	
Metals and their compounds (Cu, Pb, As, Ni, Cd, Zn, Cr, Hg, Sn)	None		Cd/Hg 0.1 (mg/Nm ³)	None	None	0.5 ³³ HHA ^{AV} (mg/m ³)	10 / 20 ³⁴ (mg/Nm ³)	No I.
PCDD/PCDF	None		None	None	None	None ³⁵	None	No I.
PCB	None		None	None	None	None	None	No I.
NH ₃	5-10 or none (mg/m ³)		None	None	None	None	None	No I.

²⁸ 390 MW, main boiler

²⁹ The values depend on the power of the installation

³⁰ if P > 300 MW continued surveillance otherwise trimestrial surveillance

³¹ combustion of brown coal with a high sulfur content

³² ROD: rate of desulfurization

³³ As+Pb+Cd+Cr+Co+Ni

³⁴ for PB, AS and Cd

³⁵ target value: 0.1 ng/m³; minimisation obligation; only relevant for combustion of wood and wood residues containing chlorinated compounds

Air pollutant	I ¹	L	NL ^{NL1}	P ^{P3}	E	S	UK
Particulates	50		5-50 ^{HHAV}	137 ^{P1}	100-350 ^{E1 E2}	50 ^{S1 MAV}	140
	(mg/m ³)		5-20 ^{HHAV}	No data	(mg/Nm ³)	(mg/m ³)	(mg/m ³)
CO	250		None	1000 ^{P1}	500 ^{E2}	90 ^{DAV} 180 ^{HAV}	None
	(mg/m ³)		(mg/m ³)	No data	ppm	(mg/MJ)	
NOx	200 ³⁶ 650 ³⁷		100-650 ^{38, HHAV} 200-400 ^{39, HHAV}	800 ^{P2}	650	100 ^{YAV}	650 ^{UK1}
	(mg/m ³)		(mg/m ³)	No data	(mg/Nm ³)	(mg/MJ)	(mg/m ³)
SOx	400 ⁴⁰ 1700 ⁴¹		700 ^{42, DAV} 200-400 ^{43, DAV} 85 ^{35, DAV}	400 ^{P2}	5000 ^{E1 E2} 44 750-1500	80 ^{YAV}	3000
	(mg/m ³)		(mg/m ³)	No data	(mg/Nm ³)	(mgS/MJ)	(mg/m ³)
Metals and their compounds (Cu, Pb, As, Ni, Cd, Zn, Cr, Hg, Sn)	0.2 ^{45, 46}		None	5 ⁴⁷ 0.2 ⁴⁸ 1 ⁴⁹	None	None	None
	(mg/m ³)		(mg/m ³)	No data			
PCDD/PCDF	0.01 ⁵⁰ (mg/m ³)		None	No data	None	None	None
PCB	0.5 ⁵¹ (mg/m ³)		None	No data	None	None	None
NH ₃	100		None	No data	None	None	None

¹ Reference conditions: %O₂: 6% for coal and 11% for other fuels

^{NL1} Reference conditions: standard, 6%O₂; for SOx (85% - reduction effic.)

^{P3} Portugal sets Emission Limit Values for water pollutants on a case by case basis, for air pollutants limit values are set according to categories. No representative data for sectors exists (categories 2.1.1 – 5.2) as traditionally ELVs were not considered as part of the permits.

Recent legislation (adoption water 1990 and air 1993) introduces limit values, it is only being implemented since 2000 as a phase of transition was necessary.

Values quoted for existing installations are not representative for the entire sector.

^{P1} Reference conditions: 8% O₂

^{E1} Reference conditions: 6% O₂

^{E2} Combustion of soft coal and anthracite

^{S1} Reference conditions: 13% CO₂

³⁶ MWth > 500

³⁷ MWth < 500

³⁸ < 300 MW

³⁹ = 300 MW

^{P2} Reference conditions: 6% O₂

^{UK1} Reference conditions: 6% O₂, dry

⁴⁰ MWth > 500

⁴¹ MWth < 500

⁴² < 300 MW

⁴³ = 300 MW

⁴⁴ combustion of national lignites 90% desulphurization

⁴⁵ Cd, Hg, Tl

⁴⁶ mass flow = 1 g/h

⁴⁷ Pb+Cr+Cu

⁴⁸ Hg+Cd

⁴⁹ As+Ni

⁵⁰ mass flow = 0.02 g/h

⁵¹ mass flow = 0.2 g/h

Air pollutant	I ¹	L	NL ^{NL1}	P ^{P3}	E	S	UK
	(mg/m ³)						

1.1.2 Combustion installations using liquid fuels with a rated thermal input exceeding 50 MW

Air pollutant	A ^{A1}	B	DK ^{DK1}	FIN	F ^{F1}	D ^{D1, D2}	EL ^{EL3}	IRL ^{IRL1}
Particulates	50 ⁵² 30 ⁵³ 110 ⁵⁴		50	None	50 ⁵⁵	50 ^{DAV} HHA ^V	100 / 150 ⁵⁶ 50 ⁵⁶ 100 ⁵⁷	50 ^{HHA} V
	(mg/m ³)		(mg/Nm ³)	40 (mg/MJ)	(mg/m ³)	(mg/m ³)	(mg/Nm ³)	(mg/m ³)
CO	175		None	None	None	175 ^{DAV} HHA ^V	None	None
	(mg/m ³)				100 (mg/m ³)	(mg/m ³)		
NOx	450 ⁵⁸ 300 ⁵⁹ 200 ⁶⁰ 150 ⁶¹ 900 ⁶² (mg/m ³)		225	None	450 ⁶³	300 ⁶⁴ ^{DAV} HHA ^V 150 ^{DAV} HHA ^V 65	450	750 ^{HHA} V
	(mg/m ³)		(mg/Nm ³)		(mg/m ³)	(mg/m ³)	(mg/Nm ³)	(mg/m ³)
SOx	1100 ⁶⁶ 350 ⁶⁷ 200 ⁶⁸ 800 ⁶⁹		400	None	400 ^{70, 71}	1700 ⁷² DAV ^{HHA} 1700 and 60% ^{DAV} HHA ^V 73 400 and 85% ^{DAV} HHA ^V 74	400-1700 1000 ⁷⁵	5100 ⁷⁶ HHA ^V 1700 ⁷⁷ HHA ^V
	(mg/m ³)		(mg/Nm ³)		1700 (300- 3400) ^{78, 79} (mg/m ³)	(mg/m ³ , ROD ⁸⁰)		(mg/m ³)

A1 Reference conditions: 3% O₂

DK1 Reference conditions: 3% O₂

F1 Reference conditions: 273 K, 101.3 kPa, 3% O₂

D1 Reference conditions: 3% O₂

D2 Where waste is co-incinerated mixed ELVs apply.

EL3 3% O₂

IRL1 272K, 101.3kPa, dry gas 6% O₂

52 Heavy fuel oil

53 Gas oil

54 fuel: liquid residues of refineries

55 if P > 300 MW: continued surveillance, otherwise trimestriel surveillance

56 general case

57 ash content >= 0.06 %

58 50-150 MW

59 150-300 MW

60 300-500 MW

61 > 500 MW

62 fuel: liquid residues of refineries

63 if P > 300 MW: continued surveillance, otherwise trimestriel surveillance

64 MW > 50 to 300

65 MW > 300

66 50-150 MW

67 150-300 MW

68 > 300 MW

69 fuel: liquid residues of refineries

70 if P > 300 MW: continued surveillance, otherwise trimestriel surveillance

71 if P > 500 MW: limit value = 400 mg/m³, if 300 < P < 500 MW: limit value = 3.650-6.5xP

72 MW > 50 to 100

73 MW > 100 to 300

74 MW > 300; 400 mg/m³ and 85% ROD or use of light oil

75 refineries mixed combustion

76 150 MW plant operating on HFO 3 % S until 01.01.03

77 > 300 MWth

78 if P > 300 MW: continued surveillance, otherwise trimestriel surveillance

79 The values depend on the power of the installation

80 ROD: rate of desulfurization

Air pollutant	A ^{A1}	B	DK ^{DK1}	FIN	F ^{F1}	D ^{D1, D2}	EL ^{EL3}	IRL ^{IRL1}
Metals and their compounds (Cu, Pb, As, Ni, Cd, Zn, Cr, Hg, Sn)	None		Cd/Hg 0.1	None	None	2 ⁸¹ HHAV	None	None
					Cd: 0.15 Pb: 5,0			
			(mg/Nm ³)		(mg/m ³)	(mg/m ³)		
PCDD/PCDF	None		None	None	None	None	None	None
					0.1			
					(ng/m ³)			
PCB	None		None	None	None	None	None	None
NH ₃	None		None	None	None	None	None	None

⁸¹ As+Pb+Cd+Cr+Co+Ni; valid for fuels with more than 12 ppm Ni and liquid fuels without norm only

Air pollutant	I ^{I1}	L	NL ^{NL1}	P ^{P5}	E ^{E1}	S	UK ^{UK1}
Particulates	50 (mg/m ³)		50-100 ⁸² HAV (mg/m ³)	No data	150 (mg/Nm ³)	0.5-1 (g/kg of oil)	100 (mg/m ³)
CO	250 (mg/m ³)		None (mg/m ³)	No data	None	None	None
NOx	200 ⁸³ 650 ⁸⁴ (mg/m ³)		120-450 ⁸⁵ HAV (mg/m ³)	No data	470 ⁸⁶ (mg/Nm ³)	120 (mg/MJ)	1800 (mg/m ³)
SOx	400 ⁸⁷ 1700 ⁸⁸ (mg/m ³)		1700 ⁸⁹ DAV 200- 400 ⁹⁰ DAV 85 ⁹¹ DAV (mg/m ³ , %)	No data	FOE 5500 ⁹² 5000 ⁹³ (mg/Nm ³)	100 (mg/MJ)	400 (mg/m ³)
Metals and their compounds (Cu, Pb, As, Ni, Cd, Zn, Cr, Hg, Sn)	0.2 ^{94, 95} (mg/m ³)		None	No data	None	None	None
PCDD/PCDF	0.01 ⁹⁶ (mg/m ³)		None	None	None	None	None
PCB	0.5 ⁹⁷ (mg/m ³)		None	No data	None	None	None
NH ₃	100 (mg/m ³)		None	No data	None	None	None

^{I1} Reference conditions: 3 %O₂

^{NL1} Reference conditions: standard, 3%O₂; for SOx (85% - reduction effc.)

^{P5} non-representative data, also see comment on P in category 1.1.1

^{E1} Reference conditions: 3% O₂

^{UK1} Reference conditions: 273 K, 101.3 kPa, 15% O₂

⁸² 50 mg/Nm³ when ash concentration is below 0.06% or capacity > 500 MW

⁸³ MWth > 500

⁸⁴ MWth < 500

⁸⁵ standard depending on age of combustion installation

⁸⁶ low sulphur content fuels

⁸⁷ MWth > 500

⁸⁸ MWth < 500

⁸⁹ < 300 MW

⁹⁰ = 300 MW; standard depending on age of combustion installation

⁹¹ = 300 MW

FOE In Art-16(1) the remark was placed at the value 5500 mg/l

⁹² low sulphur content fuels

⁹³ low sulphur content fuels

⁹⁴ Cd, Hg, Tl

⁹⁵ mass flow = 1 g/h

⁹⁶ mass flow = 0.02 g/h

⁹⁷ mass flow = 0.2 g/h

1.1.3 Combustion installations using gaseous fuels with a rated thermal input exceeding 50 MW

Air pollutant	A	B	DK ^{DK1}	FIN	F ^{F1}	D ^{D1 D2}	EL ^{EL5}	IRL
Particulates	5-10 ^{A1 A2}		5	None	35 ^{98 99}	5 ^{100 HHAV} 10 ^{HHAV101} 50 ^{HHAV102}	5 ¹⁰³ 10 / 50 ¹⁰⁴	None
	(mg/m ³)		(mg/m ³)		10 ^{105 106} (mg/m ³)	(mg/m ³)	(mg/Nm ³)	
PM ₁₀	None		None	None	None	None	None	None
CO	100/80 ^{A1} 35 ^{A2 A3 A4}		None	None	None	100 ^{107 DAV} HHAV	None	None
	(mg/m ³)		500 (mg/m ³)		150 (mg/m ³)	(mg/m ³)		
NO _x	300 ^{A1 108} 200 ^{A1 109} 150 ^{A1 110} 80 ^{A2 111} 35 ^{A2 112}		225	80	350 ¹¹³	200 ¹¹⁴ HHAV 100 ^{115 DAV} HHAV	350 ¹¹⁶	None
	(mg/m ³)		(mg/m ³)	40 ¹¹⁷ (mgNO ₂ /MJ)	(mg/m ³)	(mg/m ³)	(mg/Nm ³)	
SO _x	None		35	None	5 ^{118 119}	35 ^{120 HHAV} 5 ^{121 HHAV} 100 ¹²² HHAV 200- 800 ¹²³ HHAV	35 ¹²⁴ 5 ¹²⁵ 800 ¹²⁶	50 ¹²⁷

DK1 Reference conditions: 3% O₂

F1 273K, 101.3 kPa, 3% O₂

D1 Reference conditions: 3% O₂

D2 Where waste is co-incinerated mixed ELVs apply.

EL5 Reference conditions: 3% O₂

A1 Reference conditions: 3% O₂

A2 Reference conditions: 15% O₂; gas turbine

98 5 mg/m³ for the installations using GPL, 800 mg/m³ for installations using gases of weak calorific value

99 if P > 300 MW: continued surveillance, otherwise trimestriel surveillance

100 gaseous fuels in general

101 blast furnaces

102 industrial off-gases from steel-production

103 general case

104 special cases (88/609/EC)

105 The values depend on the power of the installation

106 if P > 300 MW: continued surveillance, otherwise trimestriel surveillance

A3 gasturbines 50-200 MW permitted after January 1989

A4 gasturbines > 200 MW permitted after January 1989

107 gaseous fuels in general

108 50-150 MW

109 150-300 MW

110 > 300 MW

111 50-200 MW; gasturbines

112 > 200 MW; gasturbines

113 if P > 300 MW: continued surveillance, otherwise trimestriel surveillance

114 MW > 50 to 300

115 MW > 300

116 general case

117 target value

118 5 mg/m³: general case, 10 mg/m³: gas of melting ovens, 50 mg/m³: iron and steel industry gas

119 if P > 300 MW: continued surveillance, otherwise trimestriel surveillance

120 gaseous fuels in general

121 liquid gas

122 coke-oven gas

Air pollutant	A	B	DK ^{DK1}	FIN	F ^{F1}	D ^{D1 D2}	EL ^{EL5}	IRL
					35 ^{128 129}			
			(mg/m ³)		(mg/m ³)	(mg/m ³)	(mg/Nm ³)	(mg/m ³)
metals and their compounds (Cu, Pb, As, Ni, Cd, Zn, Cr, Hg, Sn)	None		None	None	None	None	None	None
					20 (Pb: 5 Zn: 2)			
					(mg/m ³)			
PCDD/PCDF	None		None	None	None	None	None	None
					0.1			
					(ng/m ³)			
PCB	None		None	None	None	None	None	None
NH ₃	10 or none ^{A1}		None	None	None	None	None	None

¹²³ combustion gases used jointly at steel works and coking plants

¹²⁴ general case

¹²⁵ LPG combustion

¹²⁶ special cases (88/609/EC)

¹²⁷ -272K, 101.3 kPa, dry gas 15% O₂ for gas turbine

¹²⁸ The values depend on the power of the installation

¹²⁹ La valeur de 5 mg/m³ indiquée dans la précédente réponse était un erreur. En effet la VLE nationale est en fait 35 mg/m³

Air pollutant	I ^{I1}	L	NL ^{HHAV}	P ^{P1}	E ^{E1}	S	UK
Particulates	50		5 ^{NL1, 130, HAV} 20 ^{NL1, 131} 10 ^{NL1, 132}	5 ^{P1, 133}	5 25 ¹³⁴	None	20
	(mg/m ³)		(mg/m ³)	10 (mg/Nm ³)	(mg/Nm ³)		(mg/m ³)
PM ₁₀	None		None	No data	None	None	20 (mg/m ³)
CO	250		None	1000 ^{P2}	None	None	100
	(mg/m ³)		(mg/m ³)	No data (mg/Nm ³)			(mg/m ³)
NO _x	200 ^{135, 136} 650 ^{137, 35}		70-350 ^{NL1, 138, HAV} 45-200 ^{NL2, 139, HAV} 100-500 ^{NL2, 140, HAV}	350 ^{P1}	75 ¹⁴¹ 120 ¹⁴² 143	70 ^{YAV}	220
	(mg/m ³)		(mg/m ³) ¹⁴⁴	150 (mg/Nm ³)	(mg/Nm ³)	(mg/MJ)	(mg/m ³)
SO _x	400 ¹⁴⁵ 1700 ¹⁴⁶		35-800 ^{NL1, 147, DAV} 200-400 ^{NL1, 148} 120-150 ^{NL1, 149} 35 ^{NL1, 150} 5 ^{NL1, 151}	35 ^{P1}	11 ¹⁵² 111 ^{153, 154}	None	100
	(mg/m ³)		(mg/m ³)	250 (mg/Nm ³)	(mg/Nm ³)		(mg/m ³)

^{I1} Reference conditions: 3 %O₂

^{P7} non-representative data, also see comment on P in category 1.1.1

^{E1} Reference conditions: 15% O₂

^{NL1} Reference conditions: standard, 3% O₂

¹³⁰ refinery gas, LPG, other gas (incl. natural gas)

¹³¹ coke oven gas, oxygen steel furnace gas

¹³² blast furnace gas

^{P1} Reference conditions: 3% O₂

¹³³ General fuel gas

¹³⁴ auxiliary fuel: gasoil

^{P2} Reference conditions: 8% O₂

¹³⁵ MWth > 500

¹³⁶ combined single plants fuelled with gas are normally authorised with a limit of 50 mg/m³

¹³⁷ MWth < 500

¹³⁸ process furnaces and boilers

^{NL2} Reference conditions: 15% O₂, ISO

¹³⁹ gas turbine

¹⁴⁰ gas engine

¹⁴¹ NO_x as NO₂

¹⁴² NO_x as NO₂

¹⁴³ auxiliary fuel: gasoil

¹⁴⁴ second and third line are in g/GJ

¹⁴⁵ MWth > 500

¹⁴⁶ MWth < 500

¹⁴⁷ refinery gas

¹⁴⁸ coke oven gas

¹⁴⁹ blast furnace gas

¹⁵⁰ oxygen steel furnace gas, other gas (incl. natural gas)

¹⁵¹ LPG

¹⁵² SO_x as SO₂

¹⁵³ auxiliary fuel: gasoil

¹⁵⁴ SO_x as SO₂

Air pollutant	I ¹⁴	L	NL ¹⁵⁵	P ¹⁵⁷	E ¹	S	UK
metals and their compounds (Cu, Pb, As, Ni, Cd, Zn, Cr, Hg, Sn)	0.2 ^{155, 156}		None	5 ¹⁵⁷ 0.2 ¹⁵⁸ 1 ¹⁵⁹	None	None	None
				No data			
	(mg/m ³)			(mg/Nm ³)			
PCDD/PCDF	0.01 ¹⁶⁰		None	No data	None	None	None
	(mg/m ³)						
PCB	0.5 ¹⁶¹		None	No data	None	None	None
	(mg/m ³)						
NH ₃	100		None	No data	None	None	20
	(mg/m ³)						(mg/m ³)

¹⁵⁵ Cd, Hg, Tl

¹⁵⁶ mass flow = 1 g/h

¹⁵⁷ Pb+Cr+Cu

¹⁵⁸ Hg+Cd

¹⁵⁹ As+Ni

¹⁶⁰ mass flow = 0.02 g/h

¹⁶¹ mass flow = 0.2 g/h