

Please note:

The following English text of the First Ordinance on the Implementation of the Federal Immission Control Act (Ordinance on Small and Medium-Sized Firing Installations) is a legally non-binding version for information purposes.

Only the German version published on 26 January 2010 (Federal Law Gazette [BGBl.] I p. 38), most recently amended by Article 2 of the Ordinance of 13 June 2019 (Federal Law Gazette I p. 804) is legally binding.

First Ordinance on the Implementation of the Federal Immission Control Act (Ordinance on Small and Medium-Sized Firing Installations) (*Erste Verordnung zur Durchführung des Bundes-Immissionsschutzgesetzes – Verordnung über kleine und mittlere Feuerungsanlagen – 1. BImSchV*)

1. BImSchV

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“Ordinance on Small and Medium-Sized Firing Installations of 26 January 2010 (Federal Law Gazette [BGBl.] I p. 38), most recently amended by Article 2 of the Ordinance of 13 June 2019 (Federal Law Gazette I p. 804)”

Version: Most recently amended by Art. 2 of the Ordinance of 13 June 2019 I 804

Footnote

*) The obligations resulting from Directive 98/34/EC of the European Parliament and of the Council of 22 June 1998 laying down a procedure for the provision of information in the field of technical standards and regulations and of rules on Information Society services (OJ L 204 of 21.7.1998, p. 37), last amended by Directive 2006/96/EC (OJ L 363 of 20.12.2006, p. 81), have been taken into account.

Introductory caption

On the basis of section 23 subsection (1) in conjunction with section 48b, as well as of section 59, of the Federal Immission Control Act in the version promulgated on 26 September 2002 (Federal Law Gazette I p. 3830), the Federal Government herewith issues the following Ordinance, having consulted the groups involved, and in observance of the rights of the *Bundestag*:

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Division 1

General provisions

Section 1 Scope

(1) The present Ordinance shall apply to the construction, characteristics and operation of firing installations not requiring a licence in accordance with section 4 of the Federal Immission Control Act (*Bundes-Immissionsschutzgesetz*), with the exception of firing installations for the combustion of gaseous or liquid fuels with a rated thermal input of 1 megawatt or more.

(2) Sections 4 to 20, as well as sections 25 and 26, shall not apply to

1. firing installations which, according to the state-of-the-art, may be operated without a device for discharging the waste gases, in particular infrared radiators,
2. firing installations intended to
 - a) dry goods by direct contact with hot waste gases,
 - b) bake food by direct contact with hot waste gases or prepare it in a similar manner,
 - c) manufacture alcohol in small distilleries with an annual production of not more than 10 hectolitres of alcohol and an annual operation period of not more than 20 days, or
 - d) produce hot water in bathroom boilers,
3. firing installations which according to the circumstances can be expected not to be operated in the same place for more than three months after being put into service.

In cases falling under the first sentence, no. 2 (b), sections 14 and 19 shall remain applicable to stationary firing installations for grilling or baking food for commercial purposes which are constructed or substantially modified from 20 June 2019 onwards and which use solid fuels in accordance with section 3 subsection (1).

Section 2 Definitions

The following definitions shall apply in the present Ordinance:

1. waste gas loss:
the difference between the heat content of the waste gas and the heat content of the combustion air, related to the calorific value of the fuel;
2. condensing boiler:
heat generator in which, due to its design, the evaporation heat of the water vapour contained in the waste gas is made usable by means of condensation;
3. single-room firing installation:
firing installation which is primarily used to heat the room in which it is placed, as well as stoves with or without an indirectly-heated baking device;

4. emissions:
air pollution emanating from a firing installation; concentrations relate to the waste gas volume in standard conditions (273 Kelvin, 1 013 hectopascal) after deduction of the moisture content of water vapour;
5. firing installation:
an installation in which heat is generated by burning fuels; the firing installation shall include the furnace and, where present, devices for combustion air intake, connecting piece and waste gas appliance;
6. rated thermal input:
the heat content of the fuel, related to the lower heating value, which can be input into a firing installation in continuous operation per unit of time;
7. wood preservative:
substances used in the treatment and processing of wood with a biocidal effect against xylophagous insects or fungi, as well as wood-discolouring fungi; furthermore, substances to reduce the flammability of wood;
8. core of the waste gas flow:
the part of the waste gas flow showing the highest temperature in a cross-section of the flue duct in the area of the measurement opening;
9. untreated wood:
wood which has been exclusively subject to mechanical treatment and which was not contaminated with harmful substances in its use more than only insignificantly;
10. rated heat output:
the largest useable quantity of heat per unit of time emitted by the firing installation in continuous operation; if the firing installation has been set up for a rated heat output range, the rated heat output shall be deemed to be the maximum useable heat output fixedly set within the limits of the rated heat output range and stated on an additional plate; in the absence of an additional plate, the rated heat output shall be deemed to be the maximum value of the rated heat output range;
11. degree of utilisation:
the ratio between the quantity of useable heat emitted by a firing installation to the heat content input into the firing installation with the fuel, related to a heating period with a fixed heat requirement frequency distribution in accordance with Annex 3 no. 1;
12. open-hearth fireplace:
furnace for solid fuels which can be operated open in accordance with its intended use, insofar as the furnace is not exclusively intended for the preparation of food;
13. masonry heater:
single-room firing installation as a heat storage oven made of mineral storage materials which are installed on the spot by a craftsperson;
14. oil derivatives:

semi-volatile organic substances depositing themselves on the filter paper when the smoke number is determined;

15. smoke number:
the benchmark figure for the blackening caused by the particulate matter emissions contained in the waste gas in the determination of the smoke number in accordance with DIN 51402 Part 1, edition October 1986; the benchmark for the blackening shall be optical reflectivity; a reduction in reflectivity by 10 percent shall be deemed to correspond to an increase in the smoke number by 1;
16. substantial modification:
a modification to a firing installation which may cause a significant change to the nature or volume of emissions; a substantial modification shall be deemed to exist as a rule in the case of the
 - a) conversion of a firing installation to a different fuel, unless the firing installation is already designed for the use of a variety of fuels,
 - b) the exchange of a boiler;
17. existing firing installations:
firing installations which were constructed prior to 22 March 2010.

Section 3 Fuels

(1) Only the following fuels may be used in firing installations in accordance with section 1:

1. hard coal, non-pitch-bonded hard coal briquettes, hard coal coke,
2. brown coal, brown coal briquettes, brown coal coke,
3. fuel peat, pellets made of fuel peat,
- 3a. barbecue charcoal, barbecue charcoal briquettes in accordance with DIN EN 1860, edition September 2005,
4. untreated chunky wood, including the attached bark, in particular in the shape of split logs and chips, as well as brushwood and cones,
5. untreated non-chunky wood, in particular in the shape of sawdust, shavings and sander dust, as well as bark,
- 5a. pellets made of untreated wood in the shape of wood briquettes in accordance with DIN 51731, edition October 1996, or in the shape of wood pellets in accordance with the requirements made of fuels by the DINplus Certification Scheme "Wood pellets for use in small furnaces in accordance with DIN 51731-HP 5" edition August 2007, as well as of other wood briquettes or wood pellets made of untreated wood of equivalent quality,
6. painted, lacquered or coated wood, as well as residues thereof, insofar as no wood preservatives were applied or are contained therein as the result of treatment, and coatings

do not contain any halogenorganic compounds or heavy metals,

7. plywood, chipboard, fibreboard or other glued wood, as well as residues thereof, insofar as no wood preservatives were applied or are contained therein as the result of treatment, and coatings do not contain any halogenorganic compounds or heavy metals,
8. straw and similar plant-based materials, cereals not intended as food such as cereal grains and broken cereal grains, whole grain plants, tailings, husks and cereal stalk remnants, as well as pellets made of the abovementioned fuels,
9. fuel oil EL in accordance with DIN 51603-1, edition August 2008, and other light heating oils of equivalent quality, as well as methanol, ethanol, untreated plant-based oils or plant-based oil methyl ester,
10. gases from public gas supply, untreated natural gas or petroleum gas with comparable sulphur contents, as well as liquid gas or hydrogen,
11. sewer gas with a volume content of sulphur compounds up to 1 per thousand, stated as sulphur, or biogas from agriculture,
12. coke oven gas, mine gas, steel gas, blast furnace gas, refinery gas and synthesis gas with a volume content of sulphur compounds up to 1 per thousand, stated as sulphur, as well as
13. other renewable raw materials insofar as they comply with the requirements in accordance with subsection (5).

(2) The mass content of sulphur in the fuels designated in subsection (1) nos. 1 and 2 may not exceed 1 percent of the raw material. This condition shall be deemed to have been satisfied in the case of hard coal briquettes or brown coal briquettes if special pre-treatment ensures equivalent limiting of the emissions of sulphur dioxide in the waste gas.

(3) The fuels designated in subsection (1) nos. 4 to 8 and 13 may only be used in firing installations if their moisture content is less than 25 percent related to the dry weight of the fuel. The first sentence shall not apply to automatically-stoked firing installations which are suitable for fuels with higher moisture contents according to information from the manufacturer.

(4) Pellets made of fuels in accordance with subsection (1) nos. 5a to 8 and 13 must not have been manufactured using binding agents. Binding agents made of starch, vegetable stearin, molasses and cellulose fibre shall be excepted therefrom.

(5) Fuels within the meaning of subsection (1) no. 13 must satisfy the following requirements:

1. the fuel must be subject to standard quality requirements,
2. the emission limit values in accordance with Annex 4 no. 2 must be complied with under test conditions,
3. when the fuel is used in operation, no higher emissions of dioxins, furans and polycyclical aromatic hydrocarbons may occur than with the combustion of wood; this must be docu-

mented by a measurement programme carried out over at least one year on the type of firing installation designed for the deployment,

4. it must be possible to comply with the requirements in accordance with section 5 subsection (1) when the fuel is used in operation; this must be documented by a measurement programme carried out over at least one year on the type of firing installation designed for the deployment.

Division 2

Firing installations for solid fuels

Section 4 General requirements

(1) Firing installations for solid fuels may only be operated if they are in the proper technical condition. They may only be operated with fuels in accordance with section 3 subsection (1) for the use of which they are suitable according to information from the manufacturer. The construction and operation must comply with the information from the manufacturer.

(2) Emission ceilings shall relate to an oxygen volume content of 13 percent in the waste gas.

(3) Single-room firing installations for solid fuels, with the exception of masonry heaters and open-hearth fireplaces, which are constructed from 22 March 2010 onwards, may only be operated if it can be documented for the type of furnace of the single-room firing installations by a type test of the manufacturer that the requirements as to the emission limit values and the minimum efficiency in accordance with Annex 4 can be complied with under test conditions.

(4) Open-hearth fireplaces may only be operated occasionally. Only untreated pieces of chunky wood in accordance with section 3 subsection (1) no. 4, or pellets in the shape of wood briquettes in accordance with section 3 subsection (1) no. 5a, may be used in them.

(5) Masonry heaters which are constructed and operated subsequent to 31 December 2014 shall be equipped with downstream devices to reduce particulate matter according to the state-of-the-art. The first sentence shall not apply to installations for which compliance with the requirements in accordance with Annex 4 no. 1 on tiled stove heating inserts with fill fuelling in accordance with DIN EN 13229/A1, edition October 2005, is documented as follows:

1. with a measurement taken by a chimney sweep at the beginning of operation where the provisions contained in Annex 4 no. 3 are applied with the necessary modifications, or
2. as part of type test of the pre-fabricated combustion chamber, where the provisions contained in Annex 4 no. 3 are applied.

(6) The downstream devices for particulate matter reduction in accordance with subsection (5) may only be used if their suitability has been determined by the competent authority or a type approval has been obtained. The determination of suitability and the type approval shall not be required insofar as, in accordance with the building regulations regarding the use of construction products, the requirements of immission control legislation are also complied with.

(7) Firing installations for the fuels designated in section 3 subsection (1) nos. 8 and 13 which are constructed from 22 March 2010 onwards may only be operated if it is documented for the firing installation by a type test of the manufacturer that the requirements as to the emission limit values in accordance with Annex 4 no. 2 are complied with under test conditions.

(8) The operator of a hand-stoked firing installation for solid fuels shall seek the advice of a chimney sweep subsequent to construction, or to a change of operator, within one year as to the proper operation of the firing installation, the proper storage of the fuel, as well as the particularities related to handling solid fuels, in connection with other work performed by a chimney sweep.

Section 5 Firing installations with a rated heat output of 4 kilowatt or more

(1) Firing installations for solid fuels with a rated heat output of 4 kilowatt or more, excepting single-room firing installations, shall be constructed and operated in such a way that the mass concentrations calculated in accordance with Annex 2 do not exceed the following emission limit values for particulate matter and carbon monoxide (CO):

	Fuel in accordance with section 3 subsection (1)	Rated heat output (kilowatt)	Particulate matter (g/m ³)	CO (g/m ³)
Level 1: Installations constructed from 22 March 2010 onwards	Nos. 1 to 3a	$\geq 4 \leq 500$	0.09	1.0
		> 500	0.09	0.5
	Nos. 4 to 5	$\geq 4 \leq 500$	0.10	1.0
		> 500	0.10	0.5
	No. 5a	$\geq 4 \leq 500$	0.06	0.8
		> 500	0.06	0.5
	Nos. 6 to 7	$\geq 30 \leq 100$	0.10	0.8
		$> 100 \leq 500$	0.10	0.5
		> 500	0.10	0.3
	Nos. 8 and 13	$\geq 4 < 100$	0.10	1.0
Level 2: Installations constructed after 31 December 2014	Nos. 1 to 5a	≥ 4	0.02	0.4
	Nos. 6 to 7	$\geq 30 \leq 500$	0.02	0.4
		> 500	0.02	0.3
	Nos. 8 and 13	$\geq 4 < 100$	0.02	0.4

In derogation from the first sentence, in the case of firing installations in which exclusively fuels in accordance with section 3 subsection (1) no. 4 in the shape of split logs are used, the threshold values of level 2 shall only apply to installations which are constructed after 31 December 2016.

(2) The fuels designated in section 3 subsection (1) no. 6 or no. 7 may only be used in firing installations with a rated heat output of 30 kilowatt or more, and only in wood treatment and wood processing businesses.

(3) The fuels designated in section 3 subsection (1) nos. 8 and 13 may only be used in automatically-stoked firing installations which according to information from the manufacturer are suitable for these fuels and were tested as part of the type test in accordance with section 4 subsection (7) with the respective fuels. The fuels designated in section 3 subsection (1) no. 8, excepting straw and similar plant-based materials, may only be used in farming, forestry and horticultural businesses, and in businesses of the agricultural commerce sector handling cereals, in particular in milling and agricultural trading.

(4) With firing installations with a liquid heat transfer medium, excepting single-room firing installations, for use of the fuels designated in section 3 subsection (1) nos. 4 to 8 and 13 which are constructed from 22 March 2010 onwards, a water heat store is to be kept with a volume of twelve litres per litre of fuel chamber volume. At least a water heat store volume of 55 litres per kilowatt of rated heat output shall be used. In derogation from the first sentence, a water heat store with a volume of at least 20 litres per kilowatt of rated heat output shall be sufficient for automatically-stoked installations. In derogation from the first and second sentences, another heat store with the same capacity may be used. The first and second sentences shall not apply to

1. automatically-stoked firing installations which comply with the requirements in accordance with subsection (1) with the smallest adjustable output,
2. firing installations which are operated at full capacity to cover the base and medium load in a heat supply system and which cover peak and additional loads via a reserve boiler, as well as
3. firing installations which, due to their intended function, are only operated at full capacity.

Division 3

Oil and gas firing installations

Section 6 General requirements

(1) Oil and gas firing installations to heat buildings or rooms with water as the heat transfer medium and a rated thermal input of less than 1 megawatt which are constructed from 22 March 2010 onwards may only be operated if it is documented by a certification by the manufacturer for the boiler-burner units, boilers and burners used that the nitrogen oxide content in the waste gas, stated as nitrogen dioxide, depending on the rated heat output, does not exceed the following values under test conditions, determined in accordance with the procedure of Annex 3 no. 2:

1. where fuel oils EL within the meaning of section 3 subsection (1) no. 9 is used:

Rated heat output (kW)	Emissions in mg/kWh
≤ 120	110
> 120 ≤ 400	120
>400	185

2. where gases from public gas supply are used:

Rated heat output (kW)	Emissions in mg/kWh
≤ 120	60
> 120 ≤ 400	80
>400	120

The possibilities to further reduce the nitrogen oxide emissions by means related to firing technology in accordance with the state-of-the-art shall be exhausted.

(2) In oil and gas firing installations for heating buildings or rooms with water as the heat transfer medium which are constructed from 22 March 2010 onwards, or which are substantially modified by changing the boiler, heating boilers with a rated heat output of more than 400 kilowatt may only be used insofar as it can be documented by a certification from the manufacturer that their degree of utilisation does not fall short of the 94 percent calculated under test conditions in accordance with the procedure of Annex 3 no. 1.

(3) (repealed)

(4) For boiler-burner units, boilers and burners that were manufactured in a Member State of

the European Union or in another Contracting Party to the Agreement on the European Economic Area, the nitrogen oxide content of the waste gas may, in derogation from subsection (1), also be determined in accordance with a procedure equivalent to the procedure in line with Annex 3 no. 2, in particular in accordance with a procedure stipulated in a European standard.

Section 7 Oil firing installations with a vaporising burner

Oil firing installations with a vaporising burner shall be constructed and operated in such a way that

1. the blackening due to the particulate matter emissions in the waste gas, determined in accordance with the procedure of Annex 2 no. 3.2, does not exceed smoke number 2,
2. the waste gases are free of oil derivatives in accordance with the test carried out in accordance with the procedure of Annex 2 no. 3.3,
3. the limit values for the waste gas losses in accordance with section 10 subsection (1) are complied with, and
4. the carbon monoxide emissions do not exceed a value of 1 300 milligrams per kilowatt hour.

In derogation from the first sentence, no. 1, smoke number 3 may not be exceeded in the case of installations with a rated heat output of 11 kilowatt or less which were constructed prior to 1 November 1996.

Section 8 Oil firing installations with an atomising burner

Oil firing installations with an atomising burner shall be constructed and operated in such a way that

1. the blackening due to the particulate matter emissions in the waste gas determined in accordance with the procedure of Annex 2 no. 3.2 does not exceed smoke number 1,
2. the waste gases are free of oil derivatives in accordance with the test carried out in accordance with the procedure of Annex 2 no. 3.3,
3. the limit values for the waste gas losses in accordance with section 10 subsection (1) are complied with, and
4. the carbon monoxide emissions do not exceed a value of 1 300 milligrams per kilowatt hour.

In derogation from the first sentence, no. 1, smoke number 2 not may be exceeded in installations which were constructed prior to 1 October 1988, and in the territory designated in Article 3 of the Unification Treaty (*Einigungsvertrag*) prior to 3 October 1990, unless the installations have been substantially modified after these dates or are substantially modified.

Section 9 Gas firing installations

(1) An emission limit value for nitrogen oxide of 250 milligrams per kilowatt hour of waste gas shall apply for firing installations which as a rule are operated with gases from the public gas supply, and which are operated for a maximum of 300 hours per year with fuel oils EL within the meaning of section 3 subsection (1) no. 9, for all operation temperatures during operation with fuel oils EL.

(2) Gas firing installations shall be constructed and operated in such a way that the limit values for the waste gas losses in accordance with section 10 subsection (1) are complied with.

Section 10 Limiting waste gas losses

(1) In the case of oil and gas firing installations, the waste gas losses determined for the furnace in accordance with the procedure of Annex 2 no. 3.4 may not exceed the percentages designated below:

Rated heat output in kilowatt	limit values for the waste gas losses in percent
$\geq 4 \leq 25$	11
$> 25 \leq 50$	10
> 50	9

If, because of the type of the boiler, the limit value for waste gas losses in accordance with the first sentence cannot be complied with by an oil or gas firing installation which is equipped with a boiler that satisfies the requirements of Council Directive 92/42/EEC of 21 May 1992 on efficiency requirements for new hot-water boilers fired with liquid or gaseous fuels (OJ L 167 of 22.6.1992, p. 17, L 195 of 14.7.1992, p. 32), most recently amended by Directive 2008/28/EC (OJ L 81 of 20.3.2008, p. 48) as to the efficiency of the boiler, a value shall apply that is 1 percentage point higher if the boiler is shown in the declaration of conformity in accordance with Article 7 (2) of Directive 92/42/EEC as a standard boiler in accordance with Article 2 of Directive 92/42/EEC, and has been labelled with a CE mark in accordance with Article 7 (1) of Directive 92/42/EEC.

(2) Oil and gas firing installations where the limit values for the waste gas losses in accordance with subsection (1) cannot be complied with due to their intended functions shall be constructed and operated in such a way that they correspond to the state-of-the-art of the respective process or type.

(3) Subsection (1) shall not apply to

1. single-room firing installations with a rated heat output of 11 kilowatt or less, and
2. firing installations which are exclusively used for process water preparation and have a rated heat output of 28 kilowatt or less.

Section 11 (repealed)

Division 4 Monitoring

Section 12 Measurement opening

The operator of a firing installation for which measurements by a chimney sweep are prescribed in accordance with sections 14 and 15 shall create or shall have created a measurement opening meeting the requirements in accordance with Annex 1. If a firing installation has several connection parts, a measurement opening shall be created in each connection part. In cases other than those designated in the first sentence, the operator shall permit the measurement opening to be created on request by the competent authority.

Section 13 Measurement devices

- (1) Measurements to determine the emissions and waste gas losses must be carried out using measurement procedures and devices corresponding to the state-of-the-art of measurement technology.
- (2) The measurements in accordance with sections 14 and 15 shall be carried out with suitable measurement devices.
- (3) The measurement devices used shall be tested on a six-monthly basis by a body announced by an authority that is competent in accordance with *Land law*.

Section 14 Monitoring new firing installations and substantially modified firing installations

- (1) The operator of a firing installation for solid fuels which is constructed or substantially modified from 22 March 2010 onwards shall see to it that compliance with the requirements of section 19 is ascertained by a chimney sweep prior to putting the installation into service; the ascertainment may also be carried out in connection with other chimney sweeping work.
- (2) The operator of a firing installation which is constructed or substantially modified from 22 March 2010 onwards with regard to which requirements are stipulated in section 3 subsection (3), section 4 subsections (1) as well as (3) to (7), section 5, section 6 subsection (1) or (2), or in sections 7 to 10, shall see to it that compliance with the respective requirements is ascertained by a chimney sweep within four weeks after putting the installation into service.
- (3) Subsection (2) shall not apply to

1. single-room firing installations for the use of liquid fuels with a rated heat output of 11 kilowatt or less,
2. firing installations with a rated heat output of 11 kilowatt or less exclusively used to heat process water,
3. firing installations where methanol, ethanol, hydrogen, biogas, sewer gas, mine gas, steel gas, blast furnace gas or refinery gas are used, as well as firing installations in which untreated natural gas or petroleum gas, respectively, are used at the place where they are extracted,
4. firing installations which are constructed as condensing boilers with regard to the requirements of section 10.

(4) The measurements in accordance with subsection (2) shall be carried out during the customary operation hours of a firing installation in accordance with Annex 2. The chimney sweep shall issue the operator of the firing installation with a certificate in accordance with Annex 2 nos. 4 and 5 regarding the results of the measurements and implementation of the monitoring in accordance with subsections (1) and (2).

(5) If an examination in accordance with subsection (2) reveals that the requirements are not satisfied, the operator shall remedy the fault and have a repeat examination carried out by a chimney sweep in order to ascertain compliance with the requirements. The Act on Chimney Sweeps (*Schornsteinfeger-Handwerksgesetz*) of 26 November 2008 (Federal Law Gazette I p. 2242) in the respectively valid version shall remain unaffected thereby.

Section 15 Recurrent monitoring

(1) The operator of a firing installation for the use of the fuels designated in section 3 subsection (1) nos. 1 to 8 and 13 with a rated heat output of 4 kilowatt or more, excepting single-room firing installations, shall have compliance with the requirements in accordance with section 5 subsection (1) and section 25 subsection (1), first sentence, ascertained from the dates stipulated in these provisions onwards once every two calendar years by means of measurements carried out by a chimney sweep. As part of the monitoring in accordance with the first sentence, compliance with the requirements as to fuels in accordance with section 3 subsection (3), section 4 subsection (1), and section 5 subsection (2) and (3), shall be examined.

(2) The operator of a single-room firing installation for solid fuels shall have compliance with the requirements in accordance with section 3 subsection (3) and section 4 subsection (1) examined in connection with the regular firing installation inspection (*Feuerstättenschau*) carried out by the district master chimney sweep.

(3) The operator of an oil or gas firing installation with a rated heat output of 4 kilowatt and more for which requirements are stipulated in sections 7 to 10 shall have compliance with the respective requirements ascertained

1. once every third calendar year for installations the putting into service or substantial modification in accordance with section 2 no. 16 (b) of which took place twelve years ago or less,

and

2. once every second calendar year for installations the putting into service or substantial modification in accordance with section 2 no. 16 (b) of which took place more than twelve years ago,

by means of measurements carried out by a chimney sweep.

In derogation from the first sentence, the operator of an installation with self-calibrating continuous adjustment control of the combustion process shall have compliance with the requirements ascertained once every fifth calendar year by means of measurements carried out by a chimney sweep.

(4) Sections (1) to (3) shall not apply to

1. firing installations in accordance with section 14 subsection (3), as well as to
2. gas firing installations with a balanced flue terminal constructed prior to 1 January 1985.

(5) Section 14 subsections (4) and (5) shall apply *mutatis mutandis*.

Section 16 Compilation of the measurement results

The district master chimney sweep shall report the results of the measurements in accordance with sections 14 and 15 to the competent *Land* guild association (*Landesinnungsverband*) on a calendar year basis in accordance with detailed instructions from the guild of chimney sweeps. The *Land* guild associations of chimney sweeps shall draw up for each calendar year overviews of the results of the measurements, and shall submit such overviews to the highest *Land* authority competent for immission control as part of the statutory obligations to provide information that are incumbent on the guilds of chimney sweeps, or to the authority competent in accordance with *Land* law, by 30 April of the following year. The competent central guild association of chimney sweeps shall draw up a corresponding cross-*Land* overview on a calendar year basis, and shall submit same to the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety by 30 June of the following year.

Section 17 Self-monitoring

(1) The tasks of chimney sweeps and district master chimney sweeps in accordance with sections 14 to 16 shall be carried out by bodies of the competent administration with regard to firing installations of the *Bundeswehr*, insofar as the implementation of the Federal Immission Control Act and of the legal ordinances based on that Act in accordance with section 1 of the Ordinance on Installations for National Defence (*Verordnung über Anlagen der Landesverteidigung*) of 9 April 1986 (Federal Law Gazette I p. 380) is incumbent on Federal authorities. Such bodies shall inform the *Land* authority with respective territorial competence for the implementation of the present Ordinance, and the district master chimney sweep, of the performance of self-monitoring.

(2) The bodies designated in subsection (1) shall address the certificates in accordance with

section 14 subsection (4), as well as the information in accordance with section 16, first sentence, to the competent administration. The latter shall keep comparable records in place of the chimney sweep's records (*Kehrbuch*).

(3) The competent administration shall draw up *Land*-wide overviews of the results of the measurements in accordance with sections 14 and 15, and shall inform the highest *Land* authorities competent for immission control, or the authorities competent in accordance with *Land* law, and the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety, within the periods in accordance with section 16, second and third sentences.

Section 18 (repealed)

Division 5

Common provisions

Section 19 Discharge conditions for waste gases

The outlet of chimneys of firing installations for solid fuels which are constructed or substantially modified from 22 March 2010 onwards

1. in the case of roof pitches
 - a) up to and including 20 degrees, must be at least 40 centimetres higher than the ridge or be at least 1 metre away from the surface of the roof,
 - b) of more than 20 degrees, must be at least 40 centimetres higher than the ridge or be at a horizontal distance of at least 2 metres and 30 centimetres from the surface of the roof;
2. in the case of firing installations with a total heat output of up to 50 kilowatt, must be at least 1 metre higher than the upper edges of ventilation openings, windows or doors within a 15 metre radius; the radius shall increase by 2 metres per further started 50 kilowatt, up to a maximum of 40 metres.

Section 20 Reporting and documentation

The operator of a firing installation shall ensure that the documentation of the execution of all work to be carried out by a chimney sweep is sent to the district master chimney sweep. The district master chimney sweep shall enter the work done in the chimney sweep's records (*Kehrbuch*).

Section 21 Further requirements

The power of the competent authority to issue other or more extensive orders on the basis of sections 24 and 25 of the Federal Immission Control Act shall remain unaffected.

Section 22 Allowance of exceptions

The competent authority may on request permit exceptions to the requirements of sections 3 to 10, 19, 25 and 26 insofar as these lead to unfair hardships in individual cases due to particular circumstances involving an inappropriate effort or other reasons, and no harmful impact on the environment is anticipated.

Section 23 Availability of the standards

DIN and DIN EN standards, as well as the standards of the Association of German Engineers (VDI), to which reference is made in the present Ordinance, have been published by Beuth Verlag GmbH, Berlin. The certification programme for wood pellets designated in section 3 subsection (1) no. 5a can be acquired from DIN CERTCO, Gesellschaft für Konformitätsbewertung mbH, Alboinstraße 56, D-12103 Berlin. The DIN and DIN EN standards, the VDI standards, as well as the certification programme for wood pellets, have been deposited and secured in the archive of the German Patent and Trademark Office in Munich.

Section 24 Regulatory offences

Anyone shall be deemed to have committed a regulatory offence within the meaning of section 62 subsection (1) no. 7 of the Federal Immission Control Act who, by intent or negligence,

1. in contravention of section 3 subsection (1), uses fuels other than those listed therein,
2. in contravention of section 4 subsection (1), second sentence, subsection (3) or subsection (7), operates a firing installation,
3. in contravention of section 5 subsection (1), section 7, section 8 or section 9 subsection (2), fails to correctly construct or operate a firing installation,
4. in contravention of section 5 subsection (2) or subsection (3), uses fuels in other firing installations or businesses than those listed therein,
5. in contravention of section 6 subsection (2), uses a heating boiler in a firing installation,
6. (repealed)
7. in contravention of section 12, third sentence, fails to permit a measurement opening to be created,

8. in contravention of section 14 subsection (2), section 15 subsections (1) and (2), or subsection (3), or section 25 subsection (4), first or second sentence, fails to have compliance with a requirement designated therein ascertained, examined or monitored, or fails to do so in good time,
9. (repealed),
10. (repealed),
11. (repealed),
12. (repealed),
13. (repealed),
14. (repealed),
15. in contravention of section 20, first sentence, fails to ensure that documentation designated therein is sent,
16. in contravention of section 25 subsection (1), first sentence, or section 26 subsection (1), first sentence, continues to operate a firing installation, or
17. in contravention of section 25 subsection (4), first sentence, fails to have compliance with a requirement designated therein monitored, or fails to do so in good time.

Division 6

Transitional arrangements

Section 25 Transitional arrangements for firing installations for solid fuels, excepting single-room firing installations

(1) Existing firing installations, excepting single-room firing installations, for solid fuels may only continue to be operated if the limit values of level 1 of section 5 subsection (1), first sentence, depending on the date of their construction, are complied with from the following dates onwards:

Date of construction	Date of compliance with the limit values of level 1 of section 5 subsection (1)
up to and including 31 December 1994	1 January 2015
from 1 January 1995 up to and including 31 December 2004	1 January 2019
from 1 January 2005 up to and including 21 March 2010	1 January 2025

The determination of the date from when the installations must comply with the limit values in accordance with the first sentence shall be effected by 31 December 2012 at the latest by the district master chimney sweep as part of the firing installation inspection (*Feuerstättenschau*). Insofar as no firing installation inspection (*Feuerstättenschau*) has been carried out by 31 December 2012, the determination of the date of construction may also be effected as part of other chimney sweeping work.

(2) The following threshold values, which shall be established in accordance with Annex 2, shall apply from 22 March 2010 onwards up to the dates designated in subsection (1), first sentence, to existing firing installations for solid fuels with a rated heat output of more than 15 kilowatt, excepting single-room firing installations, depending on the fuels used:

Fuel in accordance with section 3 subsection (1) Rated heat output in kW	Nos. 1 to 3a	Nos. 4 to 5a	
	Particulate matter [g/m ³]	Particulate matter [g/m ³]	CO [g/m ³]
> 15 ≤ 50	0.15	0.15	4
> 50 ≤ 150	0.15	0.15	2
> 150 ≤ 500	0.15	0.15	1
> 500	0.15	0.15	0.5

Fuel in accordance with section 3 subsection (1) Rated heat output in kW	Nos. 6 and 7	
	Particulate matter [g/m ³]	CO [g/m ³]
> 50 ≤ 100	0.15	0.8
> 100 ≤ 500	0.15	0.5
> 500	0.15	0.3

Fuel in accordance with section 3 subsection (1) Rated heat output in kW	No. 8	
	Particulate matter [g/m ³]	CO [g/m ³]
> 15 ≤ 100	0.15	4

In derogation from section 4 subsection (2), up to the dates designated in subsection (1), first sentence, the emission ceilings for fuels in accordance with section 3 subsection (1) nos. 1 to 3a, shall relate to an oxygen volume content of 8 percent in the waste gas. When the fuels designated in section 3 subsection (1) nos. 4 to 8 are used, hand-stoked firing installations without a buffer storage shall comply with the requirements while the inflow of combustion air is throttled.

(3) The limit values of level 1 of section 5 subsection (1) shall continue to apply after 1 January 2015 to firing installations for solid fuels with a rated heat output of 4 kilowatt and more, excepting single-room firing installations, which are constructed from 22 March 2010 onwards and prior to 1 January 2015.

(4) The operator of an existing firing installation for solid fuels for which requirements have been established in subsection (2) shall have compliance with the requirements monitored by a chimney sweep by 31 December 2011, and every two years thereafter. As part of the monitoring in accordance with the first sentence, compliance with the requirements in accordance with section 3 subsection (3), section 4 subsection (1) and section 5 subsection (2) and subsection (3),

first sentence, shall be examined. Section 14 subsections (3) and (5) shall apply mutatis mutandis.

(5) The operator of an existing hand-stoked firing installation for solid fuels must seek the advice of a chimney sweep in accordance with section 4 subsection (8) by 31 December 2014.

(6) The operator of a firing installation for solid fuels which is constructed or substantially modified from 22 March 2010 onwards shall not have the monitoring in accordance with section 14 subsection (2) examined for compliance with the requirements designated in section 5 subsection (1) for installations with a rated heat output of up to 15 kilowatt which are operated with the fuels designated in section 3 subsection (1) nos. 1 to 8 and 13 until six months after the announcement of a suitable measurement device within the meaning of section 13 subsection (2). Section 14 subsection (2) shall remain unaffected in other respects.

(7) In derogation from subsection (4), as well as from section 15 subsection (1), firing installations for solid fuels with the exception of

1. mechanically-stoked firing installations for use of the fuels designated in section 3 subsection (1) nos. 1 to 5a, 8 or no. 13 with a rated heat output of more than 15 kilowatt, and
2. firing installations for use of the solid fuels designated in section 3 subsection (1) no. 6 or no. 7 with a rated heat output of more than 50 kilowatt

shall not be examined for compliance with the requirements in accordance with subsections (1) and (2), as well as with section 5 subsection (1), until six months after the announcement of a suitable measurement device within the meaning of section 13 subsection (2). Section 15 subsection (1), second sentence, shall remain unaffected.

Section 26 Transitional arrangement for single-room firing installations for solid fuels

(1) Single-room firing installations for solid fuels which were constructed and in operation prior to 22 March 2010 may only be further operated if the following limit values are not exceeded:

1. particulate matter: 0.15 gram per cubic metre,
2. carbon monoxide: 4 gram per cubic metre.

The documentation of compliance with the limit values may be provided

1. by submitting a test bench certificate of the manufacturer, or
2. by a measurement carried out by a chimney sweep with regard to which the provisions contained in Annex 4 no. 3 are applied with the necessary modifications.

(2) Should it not be possible to provide documentation of compliance with the limit values by 31 December 2013, existing single-room firing installations shall be retrofitted with a device to reduce particulate matter emissions in accordance with the state-of-the-art, or shall be decommissioned, on the following dates depending on the date on the type plate:

Date on the type plate	Date of retrofitting or decommissioning
up to and including 31 December 1974 or date no longer ascertainable	31 December 2014
1 January 1975 to 31 December 1984	31 December 2017
1 January 1985 to 31 December 1994	31 December 2020
1 January 1995 up to and including 21 March 2010	31 December 2024

Section 4 subsection (6) shall apply mutatis mutandis.

(3) Subsections (1) and (2) shall not apply to

1. cook stoves and baking ovens not used for commercial purposes with a rated heat output of less than 15 kilowatt,
2. open-hearth fireplaces in accordance with section 2 no. 12,
3. masonry heaters in accordance with section 2 no. 13,
4. single-room firing installations in residential units heated exclusively via this installation, as well as
5. single-room firing installations the operator of which is able to make a plausible case to the district master chimney sweep that they were manufactured or constructed prior to 1 January 1950.

(4) Subsection (2) shall not apply to fireplace inserts, tiled stove inserts or comparable oven inserts which are embedded in masonry. These shall be equipped with downstream devices to reduce particulate matter emissions according to the state-of-the-art by the dates stated in subsection (2), first sentence, at the latest. Section 4 subsection (6) shall apply mutatis mutandis.

(5) The operator of an existing single-room firing installation shall have the date on the type plate of the installation ascertained by the district master chimney sweep by 31 December 2012 as part of the firing installation inspection (*Feuerstättenschau*). If no firing installation inspection (*Feuerstättenschau*) is carried out by 31 December 2012, the ascertainment of the date on the type plate may also be effected in connection with other chimney sweeping work. Documentation in accordance with subsection (1), second sentence, must be submitted to the district master chimney sweep by 31 December 2012. The district master chimney sweep shall inform the oper-

ator of the installation as part of the firing installation inspection (*Feuerstättenschau*), or in connection with other chimney sweeping work, two years prior to the date of the retrofitting or decommissioning.

(6) The level 1 limit values of Annex 4 no. 1 shall continue to apply subsequent to 1 January 2015 to single-room firing installations for solid fuels which are constructed from 22 March 2010 onwards and prior to 1 January 2015.

(7) In accordance with section 4 subsection (8), the operator of an existing hand-stoked single-room firing installation for solid fuels must seek the advice of a chimney sweep by 31 December 2014 in connection with other chimney sweeping work.

Section 27 Transitional arrangement for chimney sweeping work subsequent to 1 January 2013

The authorised district chimney sweeps in accordance with section 48, first sentence, of the Act on Chimney Sweeps shall replace the district master chimney sweeps from 1 January 2013 onwards.

Division 7

Final provision

Section 28 Entry into force, expiry

The present Ordinance shall enter into force on 22 March 2010. The Ordinance on Small and Medium-Sized Firing Installations (*Verordnung über kleine und mittlere Feuerungsanlagen*) in the version of the notification of 14 March 1997 (Federal Law Gazette I p. 490), most recently amended by Article 4 of the Ordinance of 14 August 2003 (Federal Law Gazette I p. 1614), shall cease to apply at the same time.

Final formula

The *Bundesrat* has consented.

Annex 1 (re section 12) Measurement opening

(Source: Federal Law Gazette I 2010, 50)

1. The measurement opening shall as a matter of principle be made in the connecting piece between the heat generator and the flue behind the last heat exchanger. If the firing installation is operated in conjunction with a waste gas cleaning device, the measurement opening shall be made behind the waste gas cleaning device. The measurement opening is to be made at a distance of roughly twice the diameter of the connecting piece, behind the waste gas outlet of the heat exchanger or the waste gas cleaning device.
2. A measurement opening in a place other than in accordance with no. 1 shall be permissible if reproducible flow circumstances are prevalent and no greater heat losses occur in the inlet section than in accordance with no. 1.
3. The measurement opening must be free of particulate matter or soot deposits which may have a major impact on the measurements.

Annex 2 (re section 5 subsection (1), sections 7, 8, 10, 14 subsection (4), section 15 subsection (5) and section 25 subsection (2)) Requirements as to the implementation of the measurements during operation

(Source: Federal Law Gazette I 2010, pp. 51-53)

1. General requirements

Measurement of the moisture content

The determination of the moisture content shall be effected with measurement devices which measure electrical conductivity. Other equivalent measurement methods may be used to determine the moisture content.

Measurement of waste gas parameters

- 1.1 The measurements shall be carried out at the measurement opening in the core of the waste gas flow. If a firing installation has several measurement openings, the measurements shall be carried out at each measurement opening.
- 1.2 The functionality of the measurement devices shall be verified prior to the measurements being taken. The manufacturer's instructions in the operating manuals shall be complied with.
- 1.3 The measurements shall be carried out in an undisturbed, continuous operating mode of the firing installations at the rated heat output, alternatively at the highest adjustable heat output, in such a way that the results are representative and comparable with one another in the case of comparable firing installations and operating conditions.
- 1.4 The pressure differential between waste gas and ambient air, as well as the temperature

of the waste gas, shall be measured in order to judge the operating mode. The result of the temperature measurement in accordance with no. 3.4.1 may be used. The temperature of the heat transfer medium inside or behind the heat generator displayed by operational measurement devices shall be recorded. In case of firing installations with multi-level burners or burners with infinite adjustment, the output set for the measurement shall be recorded.

- 1.5 The measurement programme shall always be carried out in full. It is not to be discontinued if an individual measurement is negative.

2. Measurements taken on firing installations for solid fuels

- 2.1 In order to comply with the requirements in accordance with no. 1.3, the measurements shall be carried out with a boiler temperature of at least 60 degrees Celsius. With hand-stoked firing installations, furthermore, the measurements are to be commenced five minutes after the largest volume of fuel stated by the manufacturer in the operating manual was applied on a layer of embers that is sufficient for ignition.
- 2.2 The emissions shall be measured at the same time as the oxygen content in the waste gas as a quarter-hourly mean. The emissions shall be determined with a measurement device that has been tested for its suitability. The emissions measured shall be converted to the reference oxygen content in accordance with the equation

$$E_B = \frac{21 - O_{2B}}{21 - O_2} \times E_M$$

Abbreviations used:

E_B = emissions, related to the reference oxygen content

E_M = measured emissions

O_{2B} = reference oxygen content as a percentage of volume

O_2 = oxygen volume content in the dry waste gas.

- 2.3 Subsequent to conversion to standard conditions and the reference oxygen content of the waste gas, the result of the measurements shall be ascertained to one decimal point more than the numerical value of the emission limit value stipulated. It shall be rounded in accordance with no. 4.5.1 of DIN 1333, edition February 1992. The emission limit value shall be deemed to have been complied with if the measured value does not exceed it, allowing for measurement uncertainty.
- 2.4 The following procedure shall be followed with measurements at partial load in accordance with section 25 subsection (2):
- 2.4.1 In the case of firing installations without a combustion air fan, the measurement shall be taken in the first five minutes with an open combustion air flap, and in the remaining ten minutes with a closed combustion air flap.
- 2.4.2 In the case of firing installations with an unregulated combustion air fan (on/off

control), the measurement shall be taken for five minutes with the fan running and for ten minutes with the fan turned off.

- 2.4.3 In the case of firing installations with a controlled combustion air fan (speed control, step control, control of air volume using a baffle, orifice plate or throttle flap or similar), the measurement shall be taken for 15 minutes with reduced input of combustion air.

3. Measurements taken on oil and gas firing installations

- 3.1 In order to comply with the requirements in accordance with no. 1.3, in the case of oil firing installations with an atomising burner and with gas firing installations, the measurements are to be commenced at the earliest two minutes after the burner has been switched on, and with oil firing installations with a vaporising burner at the earliest two minutes after the rated heat output has been set. In the case of hot water heating installations, the boiler water temperature is to be at least 60 degrees Celsius when the measurements are commenced. This shall not apply to hot water heating installations where the boiler is operated at temperatures below 60 degrees Celsius in accordance with its intended use (condensing boilers, low-temperature boilers with closed-loop control).
- 3.2 The smoke number shall be determined visually in accordance with the procedure of DIN 51402, Part 1, edition October 1986. Three individual measurements shall be carried out. A further individual measurement shall be carried out in each case if the loaded filter paper became noticeably damp as a result of the formation of condensate, or shows an uneven degree of blackening. The arithmetic mean shall be formed from the individual measurements. The result, rounded to the next whole number, shall be deemed to comply with the present Ordinance if the smoke number as set is not exceeded.
- 3.3 The test of the waste gas for the presence of oil derivatives shall be carried out using the loaded filter papers when determining the smoke number. The loaded filter papers shall in each case be initially examined with the naked eye for oil derivatives. If a discolouration is discovered in this process, the filter shall be discarded for determining the smoke number. If it is not possible to make an unambiguous decision, a fluid means test in accordance with DIN 51402 Part 2, edition March 1979, shall be carried out once the smoke number has been determined. The requirements of the present Ordinance shall be deemed to be complied with if no oil derivatives are found on any of the three filter samples.
- 3.4 Determining the waste gas losses
- 3.4.1 The oxygen content of the waste gas, as well as the waste gas temperature, shall be determined as a quasi-continuous mean over a period of 30 seconds simultaneously at the same point. The temperature of the combustion air shall be measured close to the intake opening of the heat generator, in case of balanced-flue firing installations at a suitable place in the supply pipe. The waste gas loss shall be calculated from the means of the quasi-continuous measurement of the waste gas temperature and the oxygen content, as well as

from the measured values for the oxygen content and temperature of the combustion air, in accordance with the following formula

$$q_A = (t_A - t_L) \times \left(\frac{A}{21 - O_{2,A}} + B \right)$$

Abbreviations used:

q_A = waste gas loss in percent

t_A = waste gas temperature in degrees Celsius

t_L = combustion air temperature in degrees Celsius

$O_{2,A}$ = oxygen volume content in the dry waste gas in percent

	EL heating oil, untreated plant-based oils, plant-based oil methyl esters	Gases of the public gas supply	Coke oven gas	Liquid gas and liquid gas-air mixtures
A =	0.68	0.66	0.60	0.63
B =	0.007	0.009	0.011	0.008

3.4.2 No. 2.3 shall apply mutatis mutandis.

4. Content of the certificate of monitoring measurements on firing installations for liquid and gaseous fuels

The certificate in accordance with section 14 subsection (4) or section 15 subsection (5) shall contain the following information as a minimum:

General information

Name and address of the chimney sweep or district master chimney sweep

Name and address of the owner

Location of the installation

Legal basis for the examination

Heat exchangers: manufacturer, type, year of construction, output range and rated output

Burner: manufacturer, type, year of construction, output range and output when measured

Type of burner (with fan, without fan, vaporising burner)

Fuel used (designation and no. in accordance with section 3 subsection (1))

Type of installation (e.g. central heating, single-room firing installation, heating with hot water generation, hot water generation)

Measurement result

Heat transfer medium temperature

Combustion air temperature

Waste gas temperature

Oxygen content of the waste gas

Pressure differential

Determined waste gas loss, stating measurement uncertainty

In case of installations with liquid fuels: smoke number from all individual measurements, as well as the mean of the smoke number

In case of installations with liquid fuels: result of the review for oil derivatives

Limit values of the present Ordinance relevant to the installation

Other monitoring activities

Information on the examination of the requirements in accordance with section 6 subsection (2) (manufacturer's certificate)

5. Content of the certificate of monitoring measurements on firing installations for solid fuels

The certificate in accordance with section 14 subsection (4) or section 15 subsection (5) shall contain the following information as a minimum:

General information

Name and address of the chimney sweep or district master chimney sweep

Name and address of the owner

Location of the installation

Legal basis for the examination and measurement

Furnace: manufacturer, type, year of construction, output range and rated output, type of furnace, type of stoking

Fuel used (designation and no. in accordance with section 3 subsection (1))

Type of installation (e.g. central heating, single-room firing installation, heating with hot water generation, hot water generation)

Measurement result

Heat transfer medium temperature

Waste gas temperature

Oxygen content of the waste gas

Pressure differential

Measured particulate matter content in the waste gas, stating measurement uncertainty

Measured carbon monoxide content in the waste gas, stating measurement uncertainty

Limit values of the present Ordinance relevant to the installation

Other monitoring activities

Determined moisture content of the fuels designated in section 3 subsection (1) nos. 4, 5 and 6 to 8

Information on the examination of the requirements in accordance with section 4 subsection (1)

Only when putting into service

Information on the provision of advice in accordance with section 4 subsection (8)

Information on the examination of the requirements in accordance with section 4 subsections (3) and (6), section 6 subsection (1) (manufacturer's certificate)

Annex 3 (re section 2 no. 11, section 6)

Determination of the degree of utilisation and of the nitrogen oxide content under test conditions

(Source: Federal Law Gazette I 2010, 54)

1. Determination of the degree of utilisation

- 1.1 The degree of utilisation shall be determined in accordance with the procedure of DIN EN 303-5, edition June 1999.
- 1.2 The determination of the degree of utilisation may be carried out for the type of the heating boiler on a test bench, or for individual heating boilers on an already-constructed firing installation. If the determination is carried out on an already-constructed firing installation, the provisions applying to the test on the test bench shall be applied *mutatis mutandis*.
- 1.3 The uncertainty of the determination method may not exceed 3 percent of the degree of utilisation determined. The requirements as to the degree of utilisation shall be deemed to have been complied with if the determined values, plus the uncertainty in accordance with the first sentence, are not below the threshold values determined.

2. Determination of the nitrogen oxide content

- 2.1 The emission test shall be carried out for the type of the burner in accordance with DIN EN 267, edition November 1999, or on the test flame tube with application of this standard with the necessary modifications. The type of the boiler with a tested burner to be selected by the manufacturer, as well as the boiler-burner units, shall be tested on a test bench with application of this standard with the necessary modifications.
- 2.2 The tests in accordance with no. 2.1 may also be carried out for individual burners or burner-boiler combinations on already-constructed firing installations in line with DIN EN 267, edition November 1999.
- 2.3 Certified calibration gases shall be used to calibrate the measurement devices. In case of gas burners and with gas burner-boiler combinations, G20 (methane) shall be used as a test gas.
- 2.4 The requirements as to the nitrogen oxide content of the waste gas shall be deemed to be complied with if, taking the measurement tolerances in accordance with DIN EN 267, edition November 1999, into account,
 - a) in case of one-stage burners, the values calculated in the testing points of the working field do not exceed the stipulated limit values,
 - b) in case of boilers and boiler-burner units, the standard emission factor EN determined in accordance with DIN EN 303-5, edition June 1999, and in the case of multi-stage or

modulating burners, determined in line with this standard, does not exceed the stipulated limit values.

Annex 4 (re section 3 subsection (5) no. 2, section 4 subsections (3), (5) and (7), section 26 subsection (1), second sentence, no. 2, subsection (6))

Requirements for type testing

(Source: Federal Law Gazette I 2010, 55-56)

1. Emission limit values and minimum efficiency for single-room firing installations for solid fuels (requirements for type testing)

Type of furnace	Technical standards	Level 1: Construction from 22 March 2010 onwards		Level 2: Construction after 31 December 2014		Construction from 22 March 2010 onwards
		CO [g/m ³]	Particulate matter [g/m ³]	CO [g/m ³]	Particulate matter [g/m ³]	
Room heater with flat fuelling	DIN EN 13240 (edition October 2005) non-continuous burning	2.0	0.075	1.25	0.04	73
Room heater with fill firing	DIN EN 13240 (edition October 2005) continuous burning	2.5	0.075	1.25	0.04	70
Individual storage firing installations	DIN EN 15250/A1 (edition June 2007)	2.0	0.075	1.25	0.04	75
Fireplace insert	DIN EN 13229	2.0	0.075	1.25	0.04	75

(closed operation)	(edition October 2005)					
Tiled stove inserts with flat fuelling	DIN EN 13229/A1 (edition October 2005)	2.0	0.075	1.25	0.04	80
Tiled stove inserts with fill firing	DIN EN 13229/A1 (edition October 2005)	2.5	0.075	1.25	0.04	80
Cook stoves	DIN EN 12815 (edition September 2005)	3.0	0.075	1.50	0.04	70
Heating and cooking stoves	DIN EN 12815 (edition September 2005)	3.5	0.075	1.50	0.04	75
Pellet stoves without water compartment	DIN EN 14785 (edition September 2006)	0.40	0.05	0.25	0.03	85
Pellet stoves with water compartment	DIN EN 14785 (edition September 2006)	0.40	0.03	0.25	0.02	90

Other single-room firing installations for heating which are not attributable to one of the types of furnace or technical standards designated in the table must comply with the requirements of the room heaters with flat fuelling (DIN EN 13240, edition October 2005).

Other single-room firing installations for cooking and baking, or for cooking, baking and heating, which are not attributable to one of the types of furnace or technical regulations designated in the table must comply with the requirements for cook stoves (DIN EN 12815, edition September 2005).

Type tests may only be implemented by designated bodies which may carry out tests in accordance with the standards in line with Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of the Member States relating to construction products (OJ L 40 of 11.2.1989, p. 12), most recently amended by Regulation (EC) No 1882/2003 (OJ L 284 of 31.10.2003, p. 1).

2. Limit values for installations with fuels designated in section 3 subsection (1) nos. 8 and 13 (requirements for type testing)

Dioxins and furans: 0.1 ng/m³

Nitrogen oxides:

Installations constructed from 22 March 2010 onwards: 0.6 g/m³

Installations constructed after 31 December 2014: 0.5 g/m³

Carbon monoxide: 0.25 g/m³.

3. Implementation of the measurements and determination of the efficiency:

3.1 Carbon monoxide

The carbon monoxide emissions shall be determined at rated heat output as a mean over the combustion period in accordance with the relevant standards. In case of installations for fuels in accordance with section 3 subsection (1) no. 8, the carbon monoxide emissions shall be measured in parallel to the measurement of nitrogen oxide emissions.

3.2 Particulate matter

The particulate matter emissions shall be determined at rated heat output as a half-hourly mean (measurement commencing three minutes after fuel is added) in accordance with the standard VDI 2066 page 1, edition November 2006, or in accordance with the DINplus certification programme in line with VDI 2066 page 1, edition November 2006. Other equivalent procedures may also be used.

3.3 Efficiency

Efficiency shall be determined at rated heat output via waste gas loss and fuel throughput in accordance with the relevant standards.

3.4 Nitrogen oxides

These shall be determined in accordance with DIN EN 14792, edition April 2006. The duration of sampling shall be half an hour at rated heat output; at least three determinations shall be carried out for each type of fuel.

3.5 Dioxins and furans

These shall be determined in accordance with DIN EN 1948, edition June 2006. The duration of sampling shall be six hours at rated heat output; at least three determinations shall be carried out for each type of fuel.