



SLOVENSKI STANDARD
kSIST FprEN 15420:2010

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Plinski kotli za centralno ogrevanje - Tip kotlov C z imensko močjo nad 70 kW do vključno 1000 kW

Gas-fired central heating boilers - Type C boilers of nominal heat input exceeding 70 kW, but not exceeding 1 000 kW

Heizkessel für gasförmige Brennstoffe - Heizkessel des Typs C mit einer Nennwärmebelastung größer als 70 kW aber gleich oder kleiner als 1 000 kW

Chaudières de chauffage central utilisant les combustibles gazeaux - Chaudières de type C dont le débit calorifique nominal est supérieur à 70 kW mais inférieur ou égal à 1 000 kW

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Gas-fired central heating boilers - Type C boilers of nominal heat input exceeding 70 kW, but not exceeding 1000 kW

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Heizkessel für gasförmige Brennstoffe - Heizkessel des Typs C mit einer Nennwärmebelastung größer als 70 kW aber gleich oder kleiner als 1000 kW

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COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This document (FprEN 15420:2010) has been prepared by Technical Committee CEN/TC 109 "Central heating boilers using gaseous fuels", the secretariat of which is held by NEN.

This document is currently submitted to the Unique Acceptance Procedure.

It was established to deal with aspects related to:

- safety;
- rational use of energy;
- fitness for purpose.

Other types of boilers are dealt with in separate standards.

For relationship with EU Directives 90/396/EEC "Approximation of the laws of Member States concerning gas appliances" and 92/42/EEC "Efficiency requirements for new hot water boilers fired with liquid or gaseous fuels" see informative Annex ZA, which is an integral part of this standard.

This standard covers only type testing.

Matters related to quality assurance systems, tests during production and to certificates of conformity to auxiliary devices are not dealt with in this standard.

It is impractical to use the full range of test gases to EN 437 for type testing since their availability, for inputs over 300 kW, may present problems for test houses and manufacturers. Informative Annex O gives guidance on the use of gases for tests in order to ensure conformity with EU Directive 90/396/EEC "Approximation of the laws of Member States concerning gas appliances".

FprEN 15420:2010 (E)**1 Scope**

This document specifies the requirements and test methods concerning, in particular, the construction, safety, fitness for purpose, and rational use of energy, as well as the classification and marking of gas-fired central heating boilers that are fitted with atmospheric burners, fan-assisted atmospheric burners or fully premixed burners, and are hereafter referred to as "boilers".

This document applies to boilers of type C, as listed in 4.2:

- that use one or more combustible gases of the three gas families at the pressures stated in Tables 14 and 15;
- that have a nominal heat input (on the basis of net calorific value) exceeding 70 kW, but not exceeding 1 000 kW, including modular boilers;
- where the temperature of the heat transfer fluid does not exceed 105 °C during normal operation;
- where the maximum operating pressure in the water circuit does not exceed 6 bar;
- which can give rise to condensation under certain circumstances.

The document applies to boilers designed for sealed water systems or for open water systems.

The document does not contain all the requirements necessary for boilers:

- intended to be installed in the open or in living rooms;
- permanently fitted with more than one flue outlet;
- of the condensing type;
- intended to be connected to a common flue having mechanical extraction;
- type C21, C41, C51, C61, C7 and C81 boilers;
- fitted with a forced draught burner in accordance with EN 676;
- producing hot water for domestic purposes.

This document only covers type testing.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 88-1, *Pressure regulators and associated safety devices for gas appliances — Part 1: Pressure regulators for inlet pressures up to and including 500 mbar*

EN 125, *Flame supervision devices for gas burning appliances — Thermo-electric flame supervision devices*

EN 126, *Multifunctional controls for gas burning appliances*

- EN 161, *Automatic shut-off valves for gas burners and gas appliances*
- EN 257, *Mechanical thermostats for gas-burning appliances*
- EN 298, *Automatic gas burner control systems for gas burners and gas burning appliances with or without fans*
- EN 437:2003, *Test gases — Test pressures — Appliance categories*
- EN 483, *Gas-fired central heating boilers — Type C boilers of nominal heat input not exceeding 70kW*
- EN 1057, *Copper and copper alloys — Seamless, round copper tubes for water and gas in sanitary and heating applications*
- EN 1092-1, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated – Part 1: Steel flanges*
- EN 1092-2, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated — Part 2: Cast iron flanges*
- EN 1092-3, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated — Part 3: Copper alloy flanges*
- EN 1561, *Founding — Grey cast irons*
- EN 1643, *Valve proving systems for automatic shut off valves for gas burners and gas appliances*
- EN 1854, *Pressure sensing devices for gas burners and gas burning appliances*
- EN 10029, *Hot rolled steel plates 3 mm thick or above — Tolerances on dimensions, shape and mass*
- EN 12067-1, *Gas/air ratio controls for gas burners and gas burning appliances — Part 1: Pneumatic types*
- EN 12067-2, *Gas/air ratio controls for gas burners and gas burning appliances — Part 2: Electronic types*
- EN 50165, *Electrical equipment of non-electric appliances for household and similar purposes — Safety requirements*
- EN 60335-1:1991, *Safety of household and similar electrical appliances — Part 1: General requirements*
- EN 60529, *Degrees of protection provided by enclosures (IP code) (IEC 60529:1989)*
- EN 60730-2-9, *Automatic electrical controls for household and similar use — Part 2-9: Particular requirements for temperature sensing controls (IEC 60730-2-9:2000, modified)*
- EN ISO 228-1, *Pipe threads where pressure-tight joints are not made on the threads — Part 1: Dimensions, tolerances and designation (ISO 228-1:2000)*
- EN ISO 3166-1, *Codes for the representation of names of countries and their subdivisions — Part 1: Country codes (ISO 3166-1:2006)*
- EN ISO 4063, *Welding and allied processes — Nomenclature of processes and reference numbers (ISO 4063:2009)*

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ISO 7-1, *Pipe threads where pressure-tight joints are made on the threads — Part 1: Dimensions, tolerances and designation*

ISO 857, *Welding, brazing and soldering processes — Vocabulary — Bilingual edition*

ISO 2553, *Welded, brazed and soldered joints — Symbolic representation on drawings*

CR 1404, *Determination of emissions from appliances burning gaseous fuels during type testing*

CR 1472, *General guidance for the marking of gas appliances*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply:

3.1 Combustible gases**3.1.1****test gases**

gases that are intended for the verification of the operational characteristics of appliances using combustible gases and that consist of reference gases and limit gases

3.1.2**reference gases**

test gases with which appliances operate under nominal conditions, when they are supplied at the corresponding normal pressure

3.1.3**limit gases**

test gases representative of the extreme variations in the characteristics of the gases for which appliances have been designed

3.1.4**reference conditions**

conditions corresponding to 15 °C 1 013,25 mbar, unless otherwise specified

3.1.5**relative density**

ratio of the masses of equal volumes of dry gas and dry air under the same conditions of temperature and pressure, 15 °C or 0 °C and 1 013,25 mbar

Symbol: d

3.1.6**calorific value**

quantity of heat produced by the complete combustion, at a constant pressure equal to 1 013,25 mbar, of a unit volume or mass of gas, the constituents of the combustible mixture being taken at reference conditions and the products of combustion being brought back to the same conditions

NOTE A distinction is made between:

- a) The gross calorific value: the water produced by combustion is assumed to be condensed

Symbol: H_s

b) The net calorific value: the water produced by combustion is assumed to be in the vapour state

Symbol: H_i

c) Unit:

- 1) Either in megajoules per cubic metre (MJ/m^3) of dry gas under the reference conditions;
- 2) Or in megajoules per kilogram (MJ/kg) of dry gas.

3.1.7

Wobbe index

ratio of the calorific value of a gas per unit volume and the square root of its relative density under the same reference conditions, that is said to be gross or net according to whether the calorific value used is the gross or net calorific value

Symbols: gross Wobbe index: W_s

net Wobbe index: W_i

NOTE The Wobbe indices are expressed:

- either in megajoules per cubic metre (MJ/m^3) of dry gas under the reference conditions;
- or in megajoules per kilogram (MJ/kg) of dry gas.

3.1.8

gas pressure

static pressure of the moving gas, relative to the atmospheric pressure, measured at right angles to the direction of flow of the gas

Symbol: p

Unit: millibar (mbar)

3.1.9

test pressures

gas pressures used to verify the operational characteristics of appliances using combustible gases and consisting of normal and limit pressures.

[EN 437:2003, 3.5]

3.1.10

normal pressure

pressure under which the appliances operate in nominal conditions when they are supplied with the corresponding reference gas

Symbol: p_n

3.1.11

limit pressures

pressures representative of the extreme variations in the appliance supply conditions

Symbols: maximum pressure: p_{\max}

minimum pressure: p_{\min}