



SLOVENSKI STANDARD SIST EN 13836:2007

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Plinski kotli za centralno gretje - Tip kotlov B z imensko močjo nad 300 kW do vključno 1000 kW

Gas fired central heating boilers - Type B boilers of nominal heat input exceeding 300 kW, but not exceeding 1 000 kW

Heizkessel für gasförmige Brennstoffe - Heizkessel des Typs B mit einer Nennwärmebelastung größer als 300 kW aber gleich oder kleiner als 1 000 kW

Chaudières de chauffage central utilisant les combustibles gazeux - Chaudières de type B dont le débit calorifique nominal est supérieur à 300 kW mais inférieur ou égal à 1 000 kW

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97.100.20	Plinski grelniki	Gas heaters

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EUROPEAN STANDARD

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English Version

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This European Standard was approved by CEN on 20 April 2006.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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EN 13836:2006 (E)**Foreword**

This European Standard (EN 13836:2006) has been prepared by Technical Committee CEN/TC 109 “Central heating boilers using gaseous fuels”, the secretariat of which is held by NEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by February 2007, and conflicting national standards shall be withdrawn at the latest by February 2007.

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.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

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 European Standard.

This standard covers only type testing.

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Boilers within the scope of this European Standard are typically installed in a room separated from living rooms and provided with appropriate ventilation directly to the outside. They need not be fitted with a combustion products discharge safety device but appropriate warnings on the packaging and in the instructions should clearly indicate the limit on the use of this type of boiler.

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 L 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.”

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

1 Scope

This European Standard 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 European Standard applies to boilers of type B, as listed in 4.2:

- that use one or more combustible gases of the three gas families at the pressures stated in Tables 16 and 17;
- that have a nominal heat input (on the basis of net calorific value) exceeding 300 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;
- that can give rise to condensation under certain circumstances;
- of the standard and low-temperature types.

This European Standard applies to boilers designed for sealed water systems or for open water systems.

This European Standard 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;
- where the combustion circuit is sealed with respect to the room where the boiler is installed;
- of the condensing type;
- intended to be connected to a common flue having mechanical extraction;
- fitted with a forced draught burner in accordance with EN 676 (see EN 303-7);
- producing hot water for domestic purposes.

This standard only covers type testing.

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

EN 13836:2006 (E)**2 Normative references**

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

EN 88, *Pressure governors for gas appliances for inlet pressures up to 200 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 297, *Gas-fired central heating boilers — Type B₁₁ and B_{11BS} boilers fitted with atmospheric burners of nominal heat input not exceeding 70 kW*

EN 298, *Automatic burner control systems for gas burners and gas burning appliances with or without fans*

EN 437:2003, *Test gases — Test pressures — Appliance categories*

EN 656, *Gas-fired central heating boilers — Type B boilers of nominal heat input exceeding 70 kW but not exceeding 300 kW*

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 burning 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 60335-1:2002, *Household and similar electrical appliances — Safety — Part 1: General requirements (IEC 60335-1:2001, modified)*

EN 60529, *Degrees of protection provided by enclosures (IP code) (IEC 60259:1989)*

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 3166-1:1997)*

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

3 Terms and definitions

For the purposes of this European Standard, the following terms and definitions apply.

3.1 Combustible gases

3.1.1

calorific value

quantity of heat produced by the complete combustion, at a constant pressure equal to 1 013,25 mbar, of 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.

A distinction is made between:

— gross calorific value: the water produced by combustion is assumed to be condensed

Symbol: H_s [SIST EN 13836:2007
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and

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

Symbol: H_i

NOTE The calorific value is 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.

3.1.2

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)

3.1.3

limit gases

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

EN 13836:2006 (E)**3.1.4****limit pressures**

pressures representative of the extreme variations in the appliance supply conditions.

Symbols: maximum pressure: p_{\max}

minimum pressure: p_{\min}

3.1.5**normal pressure**

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

Symbol: p_n

3.1.6**pressure couple**

combination of two distinct gas distribution pressures applied by reason of the significant difference existing between the Wobbe indices within a single family or group in which:

— higher pressure corresponds only to gases of low Wobbe index;

— lower pressure corresponds to gases of high Wobbe index

3.1.7**reference gases**

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

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3.1.8**reference conditions**

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

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3.1.9**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

3.1.10**test gases**

gases intended for the verification of the operational characteristics of appliances using combustible gases. They consist of the reference and the limit gases

3.1.11**test pressures**

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

3.1.12**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. The Wobbe index is said to be gross or net according to whether the calorific value used is the gross or net calorific value.

Symbol: gross Wobbe index: W_s

net Wobbe index: W_i

The Wobbe indices are expressed:

- either in megajoules per cubic metre (MJ/m³) of dry gas under the reference conditions;
- or in megajoules per kilogram (MJ/kg) of dry gas

3.2 Constituent parts of the boiler

3.2.1 Gas supply

3.2.1.1

gas circuit

assembly of parts of the boiler that carry or contain the combustible gas between the boiler gas inlet connection and the burner(s)

3.2.1.2

gas inlet connection

part of the boiler intended to be connected to the gas supply

3.2.1.3

gas rate adjuster

component allowing the gas rate of the burner to be brought to a predetermined value according to the supply conditions.

The action of operating this component is called "adjustment of the gas rate"

3.2.1.4

injector

component that admits gas into the burner

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3.2.1.5

primary aeration adjuster

device enabling the primary aeration of a burner to be set to the desired value according to the supply conditions

3.2.1.6

putting an adjuster or a control out of service

action intended to put an adjuster or control (rate, pressure etc.) out of service

3.2.1.7

range rating device

component on the boiler intended to be used by the installer to adjust the heat input of the boiler, within the range of maximum and minimum heat inputs stated by the manufacturer, to suit the actual heat requirements of the installation

3.2.1.8

restrictor

device with one or more orifices, which is placed in the gas circuit so as to create a pressure drop and thus bring the gas pressure at the burner to a predetermined value for a given supply pressure and given rate

3.2.1.9

sealing an adjuster or a control

arrangements made to make evident any attempt to change its adjustment (e.g. breakage of a device or of a sealing material).

A control or adjuster which is sealed is considered to be non-existent

EN 13836:2006 (E)**3.2.1.10 Burners****3.2.1.10.1****alternating ignition burner**

ignition burner which is extinguished as soon as ignition of the main burner is effected. It re-ignites at the main burner flame just before the latter goes out

3.2.1.10.2**automatic ignition device**

automatic device which ignites the ignition burner or the main burner directly

3.2.1.10.3**ignition burner**

burner intended to ignite a main burner

3.2.1.10.4**ignition device**

means (flame, electrical ignition device or other device) used to ignite the gas at the ignition burner or at the main burner

3.2.1.10.5**intermittent ignition burner**

ignition burner that is ignited before and extinguished at the same time as the main burner

3.2.1.10.6**interrupted ignition burner**

ignition burner which operates only during the ignition sequence

3.2.1.10.7**main burner**

burner that is intended to assure the thermal function of the boiler and is generally called "the burner"

3.2.1.10.8**manual ignition device**

device by means of which the burner is ignited following manual intervention

3.2.1.10.9**permanent ignition burner**

ignition burner that operates continuously throughout the whole period that the boiler is in use

3.2.1.10.10**premixed burner**

burner in which the gas and a quantity of air at least equal to that theoretically necessary for complete combustion are mixed before the flame ports

3.2.2 Combustion circuit**3.2.2.1****combustion chamber**

enclosure inside which combustion of the air-gas mixture takes place

3.2.2.2**combustion products circuit**

circuit including the combustion chamber, the heat exchanger and the circuit permitting evacuation of the combustion products to the flue, up to and including the flue outlet

3.2.2.3**damper**

device placed in the air inlet duct or the flue products outlet duct to control the volume flow

3.2.2.4**draught diverter**

device, placed in the combustion products circuit of the boiler, that is intended to maintain the quality of combustion within certain limits and to keep the combustion stable under certain conditions of updraught and downdraught

3.2.2.5**flue outlet**

part of the boiler through which the combustion products are evacuated to the flue system

3.2.2.6**flue stabilizer**

opening in the combustion products circuit which serves to stabilize the flow of combustion products.

It is fitted with a device which monitors the evacuation of combustion products in order to maintain the quality of combustion within certain limits and to keep the combustion stable under certain conditions of updraught and downdraught

3.2.3 Adjusting, control and safety devices**3.2.3.1****adjustable control thermostat**

control thermostat that permits the operator to adjust setting temperatures between a minimum and a maximum value

3.2.3.2**adjustable pressure regulator**

pressure regulator fitted with a means of adjusting the adjuster of the downstream pressure.

This means is considered as an "adjusting device"

3.2.3.3**automatic burner control system**

system that comprises a programming unit and all the elements of a flame detector. All the functions of an automatic burner control system may be assembled in one or more housings

3.2.3.4**automatic shut-off valve**

valve which opens when energized and closes automatically when de-energized

3.2.3.5**breather hole**

orifice that allows atmospheric pressure to be maintained in a compartment of variable volume

3.2.3.6**closure member**

movable part of the valve or the thermoelectric device that opens, varies or shuts off the gas way

3.2.3.7**control knob**

component intended to be moved by hand in order to act on a boiler control (tap, thermostat etc.)