SLOVENSKI STANDARD
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Plinski grelniki z zaprtim kuriščem tipov B11, C11, C31 in C91

Independent closed-fronted gas-fired type B11, type C11, type C31 and type C91 heaters

Konvektions-Raumheizer für gasförmige Brennstoffe der Geräte Art B11, Art C11, Art C31 und Art C91

Appareils de chauffage indépendants à foyer fermé utilisant les combustibles gazeux de types B11, C11, C31 et C91

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (EN 613:2021) has been prepared by Technical Committee CEN/TC 62 "Independent gas-fired space heaters", the secretariat of which is held by BSI.

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of an identical text or by endorsement, at the latest by June 2022, and conflicting national standards shall be withdrawn at the latest by June 2022.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 613:2000.

The main changes compared to EN 613:2000 are the following:

- Clause 1 – the Scope has been extended to cover type C_{31} and type C_{91} appliances;
- Clause 3.2 – all terms and definitions related to gas in EN 613:2000, cl. 3.2, have been deleted and replaced by reference to EN 437;
- EN 613:2000, Clauses 3.4 and 3.5 – have been deleted;
- EN 613:2000, Clause 3.6 – has been deleted;
- Clause 4.1 – original replaced by reference to EN 437;
- Clause 4.2 – classification extended to type C_{31} and type C_{91} appliances;
- EN 613:2000, Clauses 5.1.1.4, 5.2.7 and 5.6 – have been deleted;
- Clauses 7.1.1 and 7.1.2 – original replaced by reference to EN 437;
- Clause 6.2.2.2 and 7.2.2.2 – have been extended to cover type C_{31} and type C_{91} appliances;
- Clause 6.5.2.3 and 7.5.4 – have been extended to cover type C_{31} and type C_{91} appliances;
- Clause 7.1.5.3 – has been extended to cover type C_{31} and type C_{91} appliances;
- Clause 7.5.2 – has been extended to cover type C_{31} and type C_{91} appliances
- Clause 7.7.1.2 and 7.7.3.3 – have been extended to cover type C_{31} and type C_{91} appliances;
- Clause 7.11.1.3 – has been extended to cover type C_{31} and type C_{91} appliances;
- EN 613:2000, Annexes A, B, F and L – have been deleted;
- Annex G – new Annex to cover arrangement for measuring the leakage rate.

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

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

1 Scope

This document specifies the requirements and test methods for the construction, safety, marking and rational use of energy.

This document is applicable to types B_{11AS}, B_{11BS}, B_{11CS}, C_{11}, C_{31} and C_{91} appliances (see 4.2) and those that:

— are closed-fronted;

— incorporate a natural draught burner;

— are connected directly to an open flue or to a device to evacuate the products of combustion (open-flued appliances, balanced-flued appliances);

— are wall mounted, free-standing or built-in;

— have a nominal heat input not exceeding 20 kW (based on the net calorific value).

This document is not applicable to:

— open fronted appliances as specified in EN 13278:2013;

— decorative fuel effect appliances as specified in EN 509:1999/A1:2003;

— catalytic combustion appliances;

— appliances in which the supply of combustion air and/or evacuation of products of combustion is achieved by mechanical means as specified in EN 1266:2002;

— ducted-air appliances;

— appliances installed by means of a closure plate (see 3.3.3.3).

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

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 88-1:2011+A1:2016, *Pressure governors for gas appliances for inlet pressure up to 200 mbar*

EN 125:2010+A1:2015, *Flame supervision devices for gas burning appliances — Thermoelectric flame supervision devices*

EN 126:2012, *Multifunctional controls for gas burning appliances*

EN 161:2011+A3:2013, *Automatic shut-off valves for gas burners and gas appliances*

EN 257:2010, *Mechanical thermostats for gas-burning appliances*

EN 298:2012, *Automatic burner control systems for burners and appliances burning gaseous or liquid fuels*

EN 437:2021, *Test gases — Test pressures — Appliance categories*

EN 751-1:1996, *Sealing materials for metallic threaded joints in contact with 1st, 2nd and 3rd family gases and hot water — Part 1: Anaerobic jointing compounds*

EN 751-2:1996, *Sealing materials for metallic threaded joints in contact with 1st, 2nd and 3rd family gases and hot water — Part 2: Non-hardening jointing compounds*

EN 10226-1:2004, *Pipe threads where pressure tight joints are made on the threads — Part 1: Taper external threads and parallel internal threads — Dimensions, tolerances and designation*

EN 10226-2:2005, *Pipe threads where pressure tight joints are made on the threads — Part 2: Taper external threads and taper internal threads — Dimensions, tolerances and designation*

EN 1106:2010, *Manually operated taps for gas burning appliances*

EN 10305-1:2016, *Steel tubes for precision applications — Technical delivery conditions — Part 1: Seamless cold drawn tubes*

EN 23166:1993, *Codes for the representation of names of countries (ISO 3166:1993)*

EN ISO 3166-1:2020, *Codes for the representation of names of countries and their subdivisions — Part 1: Country Codes (ISO 3166-1:2020)*

EN 60335-1:2012/A2:2019, *Household and similar electrical appliances — Part 1: Safety. General requirements*

EN 60335-2-102:2016, *Household and similar electrical appliances — Safety — Part 2-102: Particular requirements for gas, oil and solid-fuel burning appliances having electrical connections*

EN 60529:1991/A2:2013, *Degrees of protection provided by enclosures (IP code)*

EN IEC 60730-2-9:2019/A1:2019, *Automatic electrical controls — Part 2-9: Particular requirements for temperature sensing control*

EN 60730-1:2016, *Automatic electrical controls — Part 1: General requirements*

ISO 7-1:1994, *Pipe threads where pressure-tight joints are made on the threads — Part 1: Dimensions, tolerances and designation*

EN ISO 228-1:2003, *Pipe threads where pressure-tight joints are not made on the threads — Part 1: Dimensions, tolerances and designation (ISO 228-1:2000)*

CR 1404:1994, *Determination of emissions from appliances burning gaseous fuels during type-testing*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 437 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at https://www.electropedia.org/

— ISO Online browsing platform: available at https://www.iso.org/obp

3.1 Independent gas-fired heaters

3.1.1
closed-fronted appliance
appliance which does not have exposed flames or exposed incandescent areas

Note 1 to entry: Access to the flame is prevented by a panel made of glass, metal or a suitable material.

Note 2 to entry: Type C1 and type C3 appliances are room-sealed appliances.

3.1.2
forced gas-fired heater
appliance that incorporates a fan and thus allows an acceleration of the circulation of the air in contact with the heating body

Note 1 to entry: Such an appliance is designed to discharge heated air directly into the room in which the appliance is installed.

3.1.3
live fuel effect gas-firedheater

appliance which has a visual flame effect

3.1.4
working surfaces
area of the appliance that generates and emits heat

Note 1 to entry: Examples of working surfaces include fire bricks, refractories, imitation fuel, fire fronts, fire baskets, burners, burner trays and bracketry.

3.1.5
convection fan
device to assist in the distribution of heated air

3.2 Appliance construction

3.2.1 The gas circuit

3.2.1.1
inlet connection
part of the appliance intended to be connected to the gas supply

3.2.1.2
mechanical joint
connection device assuring soundness in an assembly of several parts, generally of metal

Note 1 to entry: For example the following:

— cone seat joints;

— flat joints;

— metal to metal joints.

3.2.1.3
gas circuit
part of an appliance that conveys or contains the gas between the appliance gas inlet connection and the burner(s)

3.2.1.4
gas restrictor
non-adjustable device which is placed in the gas circuit so as to create a pressure drop and thus reduce the gas pressure at the burner to a predetermined value for a given supply pressure and rate

3.2.1.5
gas rate adjuster
component intended to set the gas rate to each burner at a predetermined value according to the supply conditions

Note 1 to entry: The adjustment can be progressive (screw adjuster) or discontinuous (changing restrictors).

Note 2 to entry: The adjuster of an adjustable governor is regarded as a gas rate adjuster.

Note 3 to entry: The action of setting this device is called "setting the gas rate".

3.2.1.6
gas rate control
component allowing the user to open or close the gas supply to one or more burners

Note 1 to entry: It may also be used to adjust the gas rate of certain burners to a predetermined value, called the 'reduced rate'. This device can be a 'tap'.

3.2.1.7
injector
component that admits the gas into a burner, where the section of the outlet orifice is fixed

3.2.1.8
start gas
initial quantity of gas ignited to give a flame which is used to ignite the main burner

Note 1 to entry: It can be discharged through a separate ignition burner or part of the main burner.

3.2.2 Burner

3.2.2.1
main burner
burner that provides the primary thermal function of the appliance

3.2.2.2
pilot burner
burner intended to light the main burner and that supplements the main burner in providing a thermal function of the appliance

3.2.2.2.1
permanent pilot
pilot burner that operates continuously throughout the whole period that the appliance is in use, independent of the main burner, and has to be extinguished by manual intervention

3.2.2.2.2
non-permanent pilot
pilot burner that is extinguished automatically when there is no heat demand

3.2.2.2.3
fixed primary aeration restrictor
non-adjustable device which limits the supply of primary air to a burner

3.2.3 Combustion products circuit

3.2.3.1
flue outlet
part of a type B appliance that connects with a flue to evacuate the products of combustion

3.2.3.2
draught diverter
device placed in the combustion product's circuit to reduce the influence of flue-pull and to minimize the effect of down-draught on the burner flame stability and combustion

3.2.3.3
closure plate
non-combustible plate used to cover and seal the front plane of a builder's opening, or fireplace opening, such that when the appliance is installed, any air flowing from the room into the flue does so in accordance with the design requirements of the appliance

Note 1 to entry: This plate contains an aperture through which the flue outlet spigot of the appliance projects into the cavity of the builder's opening, or fireplace recess, but is not connected to the flue.

Note 2 to entry: The plate can be a separate component, or an integral part of the appliance, e.g. the back panel, but in either case it is to be considered as part of the appliance.

3.2.3.4
builder's opening
enclosure constructed to accommodate fireplace components

3.2.3.5
fireplace opening
aperture formed in the face of the builder's opening, the fireplace recess or fire surround if fitted

3.2.3.6
fireplace recess
recess formed by the inclusion of fireplace components in the builder's opening

3.2.4 Auxiliary equipment

3.2.4.1
pressure governor
device that maintains, within a fixed range, a constant downstream pressure, independent of the upstream pressure and/or the gas rate

3.2.4.2
ignition device
device that ignites one or more burners

3.2.4.3
flame supervision device
device that senses the absence or presence of a flame

3.2.4.4
combustion products discharge safety device
device that automatically shuts off the gas supply to the main burner, and perhaps to the ignition burner, when there is unacceptably high spillage of combustion products from the draught diverter

3.2.4.5
atmosphere sensing device
device that reacts to the lack of oxygen in the surrounding atmosphere

3.2.4.6
control knob
component designed to be moved by hand in order to operate an appliance control (tap, thermostat, etc.)

3.2.4.7
programming unit
unit which reacts to signals from control and safety devices, gives control commands, controls the start-up sequence, supervises the burner operation and causes controlled shut-down, and if necessary safety shut-down and lock-out

Note 1 to entry: The programming unit follows a predetermined sequence of actions and always operates in conjunction with a flame detector device.

3.2.4.8
flame detector device
device by which the presence of a flame is detected and signalled

Note 1 to entry: It can consist of a flame sensor, an amplifier and a relay for signal transmission. These parts, with the possible exception of the actual flame sensor, may be assembled in a single housing for use in conjunction with a programming unit.

3.2.4.9
automatic burner system
burner system in which, when starting from the completely shut-down condition, the gas is ignited and the flame is detected and proved and the main gas valve(s) is actuated without manual intervention

3.2.4.10
restart interlock
device which prevents the restoration of the gas supply to the main burner, or to the main burner and ignition burner, until the end of the extinction delay time

3.3 Appliance performance

3.3.1 Gas rates

3.3.1.1
nominal heat input
$\boldsymbol{Q_n}$
value of the heat input declared in the technical specification

Note 1 to entry: Unit: kilowatt (kW).

3.3.2 Gas combustion

3.3.2.1
flame stability
state of the flames resting in a stable manner on the burner ports or the flame contact area provided by the design with no flame lift or light-back

3.3.2.2
flame lift
phenomenon characterized by the total or partial lifting of the base of the flame from the burner port or the flame contact area provided by the design

3.3.2.3
light-back
phenomenon characterized by the entry of a flame into the body of a burner

3.3.2.4
light-back at the injector
phenomenon characterized by ignition of the gas at the injector, either as a result of the flame entering the burner or by the propagation of a flame around the outside of the burner

3.3.2.5
sooting
phenomenon characterized by deposits of soot on the surfaces of parts of the appliance in contact with the products of combustion or with the flame, or as particulate matter in the combustion products

3.3.2.6
yellow tipping
phenomenon characterized by the appearance of yellow colouring at the top of the blue cone of an aerated flame

3.3.3
safety time
interval between the ignition burner gas valve, the start gas valve or main gas valve, as applicable, being energized and the ignition burner gas valve, start gas valve or main gas valve, as applicable, being de-energized if the flame detector signals the absence of a flame

3.3.4
extinction delay time
time that elapses between the disappearance of the flame and the interruption of the gas supply

3.3.5
ignition delay time
time that elapses between ignition of the supervised flame and the moment when the closure element is held open by the flame signal

Note 1 to entry: This applies to a thermoelectric flame supervision device.

3.3.6
thermal equilibrium
operating state of the appliance, corresponding to a particular setting of the input, in which the flue gas temperature does not change by more than ± 2 K over a period of 10 min

3.3.7
controlled shutdown
process by which a control device (on the appliance or external to it) causes the gas supply to the main burner to be stopped immediately

3.3.8
safety shutdown
process which is initiated immediately in response to the signal from a limiting device or sensor and which causes any burner to shut down

3.3.9
non-volatile lockout
shutdown condition so that a start can only be accomplished by a manual reset

3.3.10
volatile lockout
shutdown condition so that a start can be accomplished by restoration of the electrical supply after its loss

3.3.11
smoke number
qualitative scale of the soot emission

4 Classification of appliances

4.1 Classification according to the nature of the gases used (categories)

4.1.1 Classification of gases

Gases are classified into three families, possibly divided into groups as a function of the Wobbe index in accordance with the values given in EN 437:2021, Table 1.

4.1.2 Appliance categories

Appliance are classified into categories defined according to the gases and the pressures for which they are designed as given in EN 437:2021, 6.1.