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Plinski aparati z dekorativnim plamenom

Decorative fuel-effect gas appliances

Dekorative Gasgeräte mit Brennstoffeffekt

Appareils à effet décoratif de combustion utilisant les combustibles gazeux

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Decorative fuel-effect gas appliances

Appareils à effet décoratif de combustion utilisant les combustibles gazeux

Dekorative Gasgeräte mit Brennstoffeffekt

This European Standard was approved by CEN on 15 April 2024.

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

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European foreword

This document (EN 509:2024) 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of an identical text or by endorsement, at the latest by April 2025 and conflicting national standards shall be withdrawn at the latest by April 2025.

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 509:1999.

The main changes compared to EN 509:1999 are the following:

— Clause 1 - the Scope has been extended to cover Type B_{BS} appliances which are covered in a new Annex F;

— 3.2 - all terms and definitions related to gas in EN 509:1999, 3.2 have been deleted and replaced by reference to EN 437:2021;

— 3.4 and 3.5 have been deleted and the definitions, which were considered necessary, retained and included in 3.2 and 3.3 as appropriate;

— 3.6 has been deleted;

— 4.1 – original text has been replaced by reference to EN 437:2021;

— 4.2 – classification has been extended to type C_{31} and type C_{91} appliances;

— 5.1.1.4 has been deleted;

— 7.1.1 and 7.1.2 – original text has been replaced by reference to EN 437:2021;

— Annexes A, B, D and G have been deleted;

— Annex F has been added to cover Type B_{BS} appliances.

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 organizations 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, Türkiye and the United Kingdom.

1 Scope

This document specifies the requirements and test methods for the construction, safety, and marking of decorative fuel effect gas appliances not exceeding a nominal heat input of 20 kW (based on the net calorific value), thereafter referred to as appliances.

This document is applicable to appliances that are designed to simulate a solid fuel fire and incorporate a natural draught burner with or without an ignition burner, that uses one or more combustible gases of the three gas families at the pressures stated in EN 437:2021. The appliances are for decorative purposes only and are not heating appliances.

This document is applicable to type B_{AS}, as described in 4.2, decorative fuel effect gas appliances that are designed to be installed within a non-combustible builder's opening or a non-combustible fireplace recess.

NOTE 1 This document specifies special national conditions in Annex C for appliances of category I_{2E+}, marketed in Belgium.

NOTE 2 This document specifies special A-deviations in Annex D for appliances in Switzerland which require additional requirements for subclauses 6.6 and 6.7.

This document includes additional requirements for Type B_{BS} appliances which are specified in Annex F.

In addition, this document is applicable to decorative fuel-effect gas appliances that are designed to be installed under a non-combustible canopy which is independent or integral with a flue box, for which additional requirements are specified in Annex A.

The use of toxic gases is not covered.

This document is not applicable to:

— catalytic combustion appliances;

— appliances in which the supply of combustion air and/or the evacuation of products of combustion is achieved by mechanical means.

NOTE 3 Requirements concerning the rational use of energy have not been included in this document, because the appliances are for decorative purposes.

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 88-1:2022+A1:2023, *Safety and control devices for gas burners and gas burning appliances — Part 1: Pressure regulators for inlet pressures up to and including 50 kPa*

EN 125:2022, *Flame supervision devices for gas burning appliances — Thermoelectric flame supervision devices*

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

EN 161:2022, *Automatic shut-off valves for gas burners and gas appliances*

EN 298:2022, *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 — Part1: 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 1106:2022+A1:2023, *Manually operated taps for gas burning appliances*

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

EN 60335-1:2012,[1], *Household and similar electrical appliances — Safety — Part 1: General requirements (IEC 60335-1:2010)*

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 (IEC 60335-2-102:2004, IEC 60335-2-102:2004/A1:2008, IEC 60335-2-102:2004/A2:2012)*

EN 60529:1991,[2], *Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989)*

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)*

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

ISO 7-1:1994,[3], *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 document, the terms and definitions given in EN 437:2021 and the following apply.

ISO and IEC maintain terminology 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/

[1] As impacted by EN 60335-1:2012/A11:2014, EN 60335-1:2012/A13:2017, EN 60335-1:2012/A1:2019, EN 60335-1:2012/A14:2019, EN 60335-1:2012/A2:2019 and EN 60335-1:2012/A15:2021.

[2] As impacted by EN 60529:1991/A1:2000 and EN 60529:1991/A2:2013/AC:2019-02.

[3] As impacted by ISO 7-1:1994/Cor 1:2007.

3.1 Decorative fuel effect gas appliances

3.1.1
decorative fuel effect gas fire
appliance designed to simulate a solid fuel appliance for decorative purposes and intended to be installed so that the products of combustion pass unrestricted from the firebed to the chimney or flue

Note 1 to entry: A decorative fuel effect gas fire is illustrated in Figure 1.

3.1.2
working surface
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.

3.1.3
appliance guard
guard supplied integral with an appliance and intended to prevent direct contact with, or close approach to a heat source(s)

Note 1 to entry: An appliance guard is principally intended to reduce risk of accidental ignition of flammable materials; however, if personal contact occurs, it does not necessarily prevent a danger to the health and safety of persons exposed.

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 the 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 may be progressive (screw adjuster) or discontinuous (changing restrictors). The adjuster of an adjustable regulator is regarded as a gas rate adjuster.

Note 2 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
pan burner
main burner which utilizes a particulate medium (e.g. sand) for the distribution of gas over a specified area

3.2.2.3
pilot burner
burner intended to light the main burner and that supplements the main burner in providing a thermal function of the appliance

3.2.2.3.1
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

3.2.2.3.2
non-permanent pilot
pilot burner that is extinguished automatically when there is no heat demand

3.2.2.4
fixed primary aeration restrictor
non-adjustable device which limits the supply of primary air to a burner

3.2.2.5
flame picture adjuster
device operated by the user to vary the flame picture

Note 1 to entry: This is achieved by varying the aeration between maximum and minimum values which are specified by the design of the appliance.

3.2.3 Combustion products circuit

3.2.3.1
builder's opening
enclosure constructed to accommodate fireplace components

Note 1 to entry: See Figure 1.

3.2.3.2
fireplace opening
aperture formed in the face of the builder's opening, the fireplace recess or fire surround if fitted

Note 1 to entry: See Figure 1.

3.2.3.3
fireplace recess
recess formed by the inclusion of fireplace components in the builder's opening

Note 1 to entry: See Figure 1.

3.2.3.4
hearth
floor area in front of the plane of the builder's opening or fireplace opening

3.2.3.5
flue box
non-combustible enclosure that provides a substitute for the builder's opening or fireplace recess

3.2.3.6
canopy
enclosure situated at the base of a flue system and which is permanently fixed above the appliance to facilitate the passage of the products of combustion into the flue

3.2.4 Auxiliary equipment

3.2.4.1
pressure regulator
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
atmosphere sensing device
device that reacts to the lack of oxygen in the surrounding atmosphere

3.2.4.5
control knob
component designed to be moved by hand in order to operate an appliance control (tap, thermostat, etc.)

3.2.4.6
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.

3.2.4.7
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.

3.2.4.8
automatic burner control 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

3.2.4.9
non-automatic burner system
burner control system with an ignition device which is operated under manual supervision

3.3 Appliance performance

3.3.1
nominal heat input
Q_n
value of the heat input declared in the technical specifications

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 danger of flame lift or light-back