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Prostostoječi plinski grelniki z odprtim kurilnim

Open fronted gas-fired independent space heaters

Konvektions-Raumheizer für gasförmige Brennstoffe mit offener Verbrennungskammer

Appareils de chauffage indépendants a foyer ouvert utilisant les combustibles gazeux

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Open fronted gas-fired independent space heaters

Appareils de chauffage indépendants à foyer ouvert utilisant les combustibles gazeux

Konvektions-Raumheizer für gasförmige Brennstoffe mit offener Verbrennungskammer

This European Standard was approved by CEN on 29 November 2002.

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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 Management Centre has the same status as the official versions.

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

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Contents

Foreword

This document (EN 13278:2003) 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of an identical text or by endorsement, at the latest by August 2003, and conflicting national standards shall be withdrawn at the latest by August 2003.

The appliance classifications are based on the definitions given in CR 1749. This classifies appliances according to the method of evacuation of the products of combustion.

This document 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 Directive(s), see informative annex ZB, which is an integral part of this document.

Annexes A, C, D, F and ZA are informative. Annexes B, E, G, H and I are normative.

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

1 Scope

This European Standard specifies the requirements and test methods for the construction, safety, marking and rational use of energy of open fronted gas-fired independent space heaters with and without a fan to assist with the transportation of flue gases, hereafter referred to as appliances. Although the fan may be mounted outdoors, this standard only covers appliances where the body of the appliance is indoors.

This standard applies to types B_{11AS}, B_{11BS}, B_{14AS}, and B_{14BS} (commonly referred to in this standard as type B_1 appliances) open fronted gas-fired independent space heating appliances:

— that incorporate an atmospheric burner;

— that are connected directly to an open flue (see Figure 1), or to a device to evacuate the products of combustion (open-flued appliances);

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

— that are delivered with the gas-carrying components, burner(s), combustion chamber and heat exchanger fully assembled.

It does not apply to:

— closed-fronted appliances;

— decorative fuel effect appliances as specified in EN 509;

— catalytic combustion appliances;

— ducted-air appliances;

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

This standard is only applicable to appliances which are intended to be type tested.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

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

EN 437:1993, *Test gases — Test pressures —- Appliance categories.*

EN 1057:1996, *Copper and copper alloys - Seamless, round copper tubes for water and gas in sanitary and heating applications.*

EN 50165, *Electrical equipment of non-electric appliances for household and similar purposes — Safety requirements.*

EN 60068-2-75, *Environmental testing — Part 2: Tests — Test Eh: Hammer tests (IEC 60068-2-75:1997).*

EN 60335-1: 1994, *Safety of household and similar electrical appliances — Part 1: General requirements (IEC 60335-1: 1991, modified).*

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: Particular requirements for temperature sensing controls (IEC 60730-2-9:2000, modified).*

EN ISO 3166-1*, Codes for the representation of names of countries and their subdivisions — Part 1: Country codes (ISO 3166-1:1997).*

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

CR 1749, *European scheme for the classification of gas appliances according to the method of evacuation of the products of combustion (Types).*

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

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

3 Terms and definitions

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

3.1 Open fronted gas-fired independent space heaters

3.1.1
convection heater
appliance that is designed to heat a room mainly by the emission of air heated by convection. Such an appliance can also contain radiant heating elements provided that it complies with all the requirements of this standard

3.1.2
forced convection heater
convection appliance that incorporates a fan and thus allows an acceleration of the circulation of the air in contact with the heating body. Such an appliance is designed to discharge air directly into the room in which the appliance is installed and not to be connected to a warm air distribution system

3.1.3
live fuel-effect convection heater
convection appliance which simulates the visual effect of a solid fuel appliance

3.1.4
open-fronted appliance
appliance which has exposed flames or exposed incandescent areas

3.1.5
closed-fronted appliance
appliance which does not have exposed flames or exposed incandescent areas

3.1.6
working surfaces
those parts of an appliance, which, due to the nature of the appliance, have temperatures exceeding the limits specified in 6.4.1 excluding parts that are likely to be touched during operations carried out in the normal use of the appliance, for example, the area adjacent to control knobs

Working surfaces do not include that part of any surface within 25 mm of parts that have to be touched or removed during normal operation of the appliance

3.2 Gases

3.2.1
reference conditions

for calorific values, temperature: 15 °C;

for gas and air volumes dry, brought to 15 °C and to an absolute pressure of 1 013,25 mbar

3.2.2
calorific value
quantity of heat produced by the combustion, at a constant pressure of 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:

the gross calorific value in which the water produced by combustion is assumed to be condensed;

Symbol: H_s

the net calorific value in which the water produced by combustion is assumed to be in the vapour state;

Symbol: H_i

Units: either

megajoules per cubic metre (MJ/m^3) of dry gas at reference conditions; or

megajoules per kilogram (MJ/kg) of dry gas.

[EN 437:1993]

3.2.3
relative density
ratio of the masses of equal volumes of dry gas and dry air at the same conditions of temperature and pressure

Symbol: d

3.2.4
Wobbe index
ratio of the calorific value of a gas per unit volume to 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

Units: either:

megajoules per cubic metre (MJ/m^3) of dry gas at the reference conditions; or

megajoules per kilogram (MJ/kg) of dry gas.

[EN 437:1993]

3.2.5
test pressures
gas pressures used to verify the operational characteristics of appliances using combustible gases. They consist of normal and limit pressures

They are expressed in millibar (mbar)

NOTE 1 mbar = 100 Pa.

3.2.6
normal pressure
pressure under which appliances operate in nominal conditions, when they are supplied with the corresponding reference gas

Symbol: p_n.

3.2.7
limit pressures
pressures representative of the extreme variations in the appliance supply conditions

Symbols: maximum pressure: p_{max}

minimum pressure: p_{min}

3.2.8
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:

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

and

the lower pressure corresponds to gases of high Wobbe index.

[EN 437:1993]

3.3 Appliance construction

3.3.1 The gas circuit

3.3.1.1
inlet connection
part of the appliance intended to be connected to the gas supply

3.3.1.2
mechanical joint
connection device assuring soundness in an assembly of several parts, generally of metal

NOTE For example the following:

- cone seated joints
- torroidal sealing rings ('O' rings)
- flat joints
- metal to metal joints

3.3.1.3
gas circuit
part of an appliance that conveys or contains the gas between the appliance gas inlet connection and the burner(s)

3.3.1.4
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

3.3.1.5
gas rate adjuster
component intended for the manufacturer or installer to set the gas rate to each burner at a predetermined value according to the supply conditions

The adjustment can be progressive (screw adjuster) or discontinuous (changing restrictors)

The adjuster of an adjustable governor is regarded as a gas rate adjuster

The action of setting this device is called 'setting the gas rate'.

3.3.1.6
gas rate control
component allowing the user to open or close the gas supply to one or more burners. It can 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'

3.3.1.7
injector
component that admits the gas into a burner

3.3.1.8
start gas
initial quantity of gas ignited to give a flame which is used to ignite the main burner. It can be discharged through a separate ignition burner or part of the main burner

3.3.2 Burner

3.3.2.1
main burner
burner that assures the thermal function of an appliance. It is usually called simply 'burner'

3.3.2.2
pan burner
main burner which utilises a particulate medium (e.g. sand) for the distribution of gas over a defined area

3.3.2.3
ignition burner
separate burner intended to light the main burner

3.3.2.3.1
permanent ignition burner
ignition burner that operates continuously throughout the whole period that the appliance is in use

3.3.2.3.2
intermittent ignition burner
ignition burner that is ignited before and extinguished at the same time as the main burner

3.3.2.4
fixed primary aeration restrictor
non-adjustable device which limits the supply of primary air to a burner

3.3.3 Combustion products circuit

3.3.3.1
flue outlet
part of a type B appliance (see 4.2) that connects with a flue to evacuate the products of combustion

3.3.3.2
draught diverter
part of the combustion products circuit to reduce the influence of flue-pull and to minimise the effect of down-draught on the burner flame stability and combustion

3.3.3.3
closure plate (see Figure 2)
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

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

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

3.3.3.4
builder's opening
enclosure constructed by the builder to accommodate fireplace components

3.3.3.5
fireplace opening
aperture formed in the face of the builder's opening, the fireplace recess or fire surround if fitted

3.3.3.6
fireplace recess
recess formed by the inclusion of fireplace components in the builder's opening

3.3.3.7
hearth
floor area in front of the plane of the builder's opening or fireplace opening

3.3.3.8
flue box
non-combustible enclosure that provides a substitute builder's opening or fireplace recess

3.3.4 Auxiliary equipment

3.3.4.1
pressure governor
device that maintains, within a fixed range, a constant downstream pressure, independent of the upstream pressure and/or the gas rate

3.3.4.2
ignition device
device that ignites one or more burners

3.3.4.3
flame supervision device

device, including a sensing element, that causes the gas supply to a burner to be opened or closed according to the presence or absence of the flame that activates the sensing element

3.3.4.4
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

3.3.4.5
atmosphere sensing device
device designed to shut off the gas supply before the combustion products of the surrounding atmosphere reaches a set value

3.3.4.6
control knob
component designed to be moved by hand in order to operate an appliance control (tap, thermostat, etc.)

3.3.4.7
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. The programming unit follows a predetermined sequence of actions and always operates in conjunction with a flame detector device

3.3.4.8
flame detector device
device by which the presence of a flame is detected and signalled

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, can be assembled in a single housing for use in conjunction with a programming unit

3.3.4.9
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

3.3.4.10
non-automatic burner system
burner system with an ignition device which is operated under manual supervision

3.3.4.11
restart interlock (manual)

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

3.3.4.12
flue gas monitoring device
device intended to cause safety shut-down in the event of abnormal conditions of air admission or of combustion products evacuation

3.3.4.13
remote control
device used to operate an appliance from a distance. This can be achieved by utilising a hand-held transmitter which communicates by electromagnetic or sonic means with a receiver that is part of the appliance