



SLOVENSKI STANDARD
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Grelniki prostorov na trdna goriva - Zahteve in preskusne metode

Room heaters fired by solid fuel - Requirements and test methods

Raumheizer für feste Brennstoffe - Anforderungen und Prüfungen

Poêles à combustible solide - Exigences et méthodes d'essai

Ta slovenski standard je istoveten z: prEN 13240

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Room heaters fired by solid fuel - Requirements and test methods

Poêles à combustible solide - Exigences et méthodes d'essai

Raumheizer für feste Brennstoffe - Anforderungen und Prüfungen

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 295.

If this draft becomes a European Standard, 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.

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

Management Centre: Avenue Marnix 17, B-1000 Brussels

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Foreword

This document (prEN 13240:2011) has been prepared by Technical Committee CEN/TC 295 “Residential solid fuel burning appliances”, the secretariat of which is held by BSI.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 13240:2001.

This document has been prepared under the mandate M/129 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 ZA, which is an integral part of this document.

This document is a revision of the published standard EN 13240:2001 following comments received at its 5 year review.

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prEN 13240:2011 (E)

1 Scope

This European Standard is applicable to freestanding or inset roomheaters fired by solid fuel, without functional modification, that operate with fire doors either as closed only or as closed or open and which are listed under categories 1a and 2a of Table 1. This European Standard is also only applicable to non-mechanically fired roomheaters as listed under categories 1a and 2a of Table 1.

This European Standard specifies requirements relating to the design, manufacture, construction, safety and performance (efficiency and emission) of roomheaters fired by solid fuel (hereafter referred to as “appliance(s)”) and provides instructions for them. Furthermore, it also gives provisions for evaluation of conformity i.e. initial type testing (ITT) and factory production control (FPC) and marking of these appliances.

These appliances provide heat into the space where they are installed. Additionally, where fitted with a boiler, they also provide domestic hot water and/or central heating. These appliances may burn either solid mineral fuels, peat briquettes, natural or manufactured wood logs or be multi-fuel in accordance with the appliance manufacturer’s instructions.

This standard is not applicable to appliances with fan assisted combustion air or appliances that are mechanically fired.

Table 1 — Categorisation of appliances

	a) Freestanding or inset appliances without functional modification	b) Freestanding or inset appliances which have functional modification	c) Inset appliances for fireplace recess and enclosure
1) Appliances operating with firedoors closed	oSIST prEN 13240:2011 EN 13240	EN 13229	EN 13229
2) Appliances operating with firedoors closed or open	EN 13240	EN 13229	EN 13229
3) Open fires without firedoors	EN 13229	EN 13229	EN 13229
NOTE Without functional modification means “conversion of a free standing appliance into an insert appliance by modifications that do not affect combustion”.			

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 1561:1997, *Founding — Grey cast irons*

EN 1563:1997, *Founding — Spheroidal graphite cast iron*

EN 10025:1993, *Hot rolled products of non-alloy structural steels — Technical delivery conditions*

- EN 10027-2:1992, *Designation systems for steels — Part 2: Numerical system*
- EN 10028-2:1992, *Flat products made of steels for pressure purposes — Part 2: Non-alloy and alloy steels with specified elevated temperature properties*
- EN 10029:1991, *Hot rolled steel plates 3 mm thick or above — Tolerances on dimensions, shape and mass*
- EN 10088-2:1995, *Stainless steels — Part 2: Technical delivery conditions for sheet/plate and strip for general purposes*
- EN 10111:1998, *Continuously hot-rolled low carbon steel sheet and strip for cold forming — Technical delivery conditions*
- EN 10120:1996, *Steel sheet and strip for welded gas cylinders*
- EN 60335-2-102, *Household and similar electrical appliances — Safety — Part 2-102: Particular requirements for gas, oil and solid-fuel burning appliances having electrical connections*
- ISO 7-1:1994, *Pipe threads where pressure-tight joints are made on the threads — Part 1: Dimensions, tolerances and designation*
- ISO 7-2:2000, *Pipe threads where pressure-tight joints are made on the threads — Part 2: Verification by means of limit gauges*
- ISO 228-1:2000, *Pipe threads where pressure-tight joints are not made on the threads — Part 1: Dimensions, tolerances and designation*
- ISO 228-2:1987, *Pipe threads where pressure-tight joints are not made on the threads — Part 2: Verification by means of limit gauges*
- ISO 331:1983, *Coal — Determination of moisture in the analysis sample — Direct gravimetric method*
- ISO 334:1992, *Solid mineral fuels — Determination of total sulfur — Eschka method*
- ISO 351:1996, *Solid mineral fuels — Determination of total sulfur — High temperature combustion method*
- ISO 501:1981, *Coal — Determination of the crucible swelling number*
- ISO 562:1998, *Hard coal and coke — Determination of volatile matter*
- ISO 609:1996, *Solid mineral fuels — Determination of carbon and hydrogen — High temperature combustion method*
- ISO 687:1974, *Coke — Determination of moisture in the analysis sample*
- ISO 1171:1997, *Solid mineral fuels — Determination of ash content*
- ISO 1928:1995, *Solid mineral fuels — Determination of gross calorific value by the bomb calorimetric method, and calculation of net calorific value*
- ISO 2859 (all parts), *Sampling procedures for inspection by attributes*
- CEN/TS 15883:2009, *Residential solid fuel burning appliances — Emission test methods*

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3 Terms and definitions

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

3.1

air grilles

components in the inlet and outlet openings to distribute and direct convection air flow

3.2

air inlet control

manual or automatic device which controls the quantity of air supplied for combustion

3.3

appliance with boiler

heat generator consisting of a room heating component and a water heating component in one unit

3.4

ash content of the fuel

solid matter remaining after the complete combustion of solid fuel

3.5

ashpan

removable receptacle shaped to receive the residue falling from the firebed

3.6

ashpit

enclosed chamber designed to receive the residue or the ashpan

3.7

ashpit loss

part of the residue which is combustible

3.8

basic firebed

quantity of glowing embers which ensures ignition of the test fuel to be charged

NOTE The basic firebed may be specified by the manufacturer.

3.9

boiler

vessel in which water is heated, intended for fitting in or forming an integral part of a solid fuel appliance

3.10

boiler flueway

portion of the flueway formed wholly or in part by the surfaces of the boiler

3.11

bottomgrate

part of the appliance at the base of the firebox which supports the firebed through which the residue falls into the ashpan or ashpit and through which combustion air and/or combustion gases may be drawn

3.12

bottomgrate bars; firebars

bars supporting the fuelbed, separate or integral with a surrounding frame

3.13**charging door**

door which covers the refuelling opening

3.14**combustion air**

air supplied to the firebox which is entirely or partially used to burn the fuel

3.15**combustion gases**

compounds in gaseous form produced inside an appliance when fuel is burned

3.16**continuous burning appliance**

heating appliance designed for slow burning over an extended period of time (e.g. overnight) and meeting the requirements of the slow combustion test

3.17**de-ashing**

process of clearing a fuelbed and discharging the residue into the collecting receptacle

3.18**de-ashing mechanism**

device to agitate or disturb the ash to facilitate its removal from the firebed

NOTE

It may also be used to change the bottomgrate operating position on some appliances.

3.19**direct water system**

hot water system in which stored domestic hot water is heated directly by hot water circulating from the boiler

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3.20**draught regulator**

inlet device for admission of air downstream of the firebed, enabling the flue draught to be controlled

3.21**efficiency**

ratio of total heat output to total heat input during the test period expressed as a percentage during the test period

3.22**firebox; combustion chamber**

that part of the appliance in which the fuel is burned

3.23**firebox opening**

aperture in the firebox through which an appliance may be fuelled

3.24**firedoor**

door through which the fire may be viewed and which may be opened to allow refuelling of the firebed

3.25**fireplace enclosure**

assembly consisting of walls and ceiling of non combustible materials which is built on site to surround a heat generator and heat exchanger and to form a space from which hot convection air is emitted into the living space, e.g. by air grilles

prEN 13240:2011 (E)**3.26****fireplace recess**

space formed in a wall or chimney breast constructed from non combustibile materials and into which a heating appliance may be installed and from which a chimney flue leads

3.27**flue by-pass device**

device which in the open position allows flue gases to pass directly to the flue spigot/socket

NOTE This can be used as a preheating aid to overcome chimney condensation.

3.28**flue damper**

mechanism to change the flow of the combustion gases

3.29**flue draught**

differential between the static pressure in the place of installation and the static pressure at the flue gas measurement point

3.30**flue gases**

gaseous compounds leaving the appliance flue spigot or socket and entering the flue gas connector

3.31**flue gas connector**

duct through which flue gases are conveyed from the flue spigot of the appliance into the chimney flue

3.32**flue gas mass flow**

mass of flue gas drawn off from the appliance per unit of time

3.33**flue gas temperature**

temperature of the flue gas at the specified point in the measurement section

3.34**flue spigot; flue socket**

integral part of the appliance for connecting the flue gas connector thus permitting the deliberate escape of products of combustion into the chimney flue

3.35**flueway**

that part of an appliance designed to convey combustion gases from the firebox to the flue spigot/socket

3.36**freestanding appliance**

appliance designed to operate without needing to be built into a fireplace recess or fireplace enclosure and which is not connected to the building except by the flue gas connector

3.37**front firebars**

grating or plate fitted at the front of the firebox opening to prevent spillage of fuel and ash or to change the firebox capacity, or both

3.38**fuel hopper**

fuel store integral with the appliance from which fuel is fed to the firebox

3.39**heat input**

quantity of energy which the fuel provides to the appliance

3.40**heat output**

quantity of useful heat released by the appliance

3.41**indirect water system**

hot water system in which stored domestic hot water is heated by a primary heater through which hot water from the boiler is circulated without mixing of the primary (heating) water and the stored domestic hot water

3.42**inset appliance**

appliance with or without doors designed to be installed into a fireplace recess or an enclosure, or into a firebox of an open fire

3.43**integral fuel storage container**

enclosed area forming part of the appliance, but not connected directly to the fuel charging area, in which fuel is stored prior to it being physically transferred by the user to the fuel charging position

3.44**intermittent burning appliance**

heating appliance designed for unrestricted burning at nominal heat output and which is not intended for operating at reduced combustion for any specified period of time unless this is clearly stated by the manufacturer

NOTE

An appliance may be either a continuous burning appliance or an intermittent burning appliance according to the fuel used.

3.45**maximum water operating pressure**

limiting water pressure at which the boiler of an appliance can be safely operated

3.46**nominal heat output**

total heat output of the appliance quoted by the manufacturer and achieved under defined test conditions when burning the specified test fuel

3.47**open fire**

appliance which is built as an inset and designed to be connected to the building and surrounded by non combustible materials

3.48**operating tool**

device supplied with the appliance for handling movable and/or hot components

3.49**primary air**

combustion air which passes through the fuel bed

NOTE

Primary air does not necessarily have separate inlets neither does it necessarily pass through a bottomgrate.

prEN 13240:2011 (E)**3.50****recommended fuel**

fuel of commercial quality, listed in the appliance manufacturer's instructions, and shown to achieve the claimed performance when tested in accordance with this European Standard

3.51**recovery capability**

ability of the fire to re-ignite existing or newly charged fuel after a defined burning period without external assistance

3.52**reduced combustion capability**

ability of an intermittent burning appliance to continue burning for a minimum period, dependent on appliance type and fuel burned, without any input of fuel and without any external interference with the combustion process, in such a manner that at the end of this period, the firebed can be recovered

3.53**refuelling interval**

period of time for which the combustion may be maintained in the appliance with a single load of fuel, without intervention by the user

3.54**residue**

ashes, including combustibles, which collect in the ashpit

3.55**roomheater**

appliance having a fully enclosed firebox with firedoor(s) which are normally closed, that distributes heat by radiation and/or convection and also provides hot water when fitted with a boiler

3.56**safety heat exchanger**

device which allows excess heat to be released from an appliance

3.57**slow combustion capability**

ability of an appliance to continue operating at a low burning rate for a specified minimum period without any input of fuel and without any interference with the combustion process, in such a manner that the basic firebed can be recovered at the end of this period

3.58**solid fuel**

naturally occurring or manufactured solid mineral fuels, natural or manufactured wood logs and peat briquettes

3.59**solid mineral fuel**

coal, lignite, coke and fuels derived from these

3.60**space heating output**

heat output provided by convection and radiation to the room

3.61**steady-state condition**

stage at which values to be measured in successive equal periods of time do not exhibit significant change

3.62**surround**

outside components or assembly enclosing the appliance or parts of it

3.63**test fuel**

fuel of commercial quality being characteristic of its type to be used for testing appliances

3.64**thermal discharge control**

mechanical device controlled by the water flow temperature which opens a drain in the water circuit of a safety heat exchanger when a specified flow temperature is attained

3.65**thermostat**

temperature sensitive device which automatically changes the air inlet cross-sectional area

3.66**water heating output**

heat output to water, averaged during the test period

3.67**working surfaces**

all surfaces of an appliance designed to transmit heat to the surrounding atmosphere

NOTE All external surfaces of a roomheater including the flue gas connector in accordance with this standard are classified as working surfaces because they are designed to transmit heat into the room in which they are installed.

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4 Materials, design and construction

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4.1 Production documentation

The type of appliance in accordance with Table 1 submitted for testing shall be stated and the appliance shall be tested using the standard appropriate to that claim.

The parameters and characteristics considered in making the decisions in relation to either the family or range of appliances to be submitted for initial type testing (see 8.2.1) shall be recorded. Where changes are made to an appliance in the design, the raw material, the supplier of the components, or in the production process, which would significantly alter the performance characteristics of the appliance, especially in respect of one or more of the list of characteristics detailed in Table 9 and Table 10, (see 8.2.2) these shall be recorded. A copy of the parameters and characteristics considered in making the decisions shall be included in the production documentation for each appliance.

To identify the appliance, related documents and/or scaled assembly drawings shall be available showing the basic design and construction of the appliance. The documentation and/or the drawings shall include at least the following information:

- the specification of the materials used in the construction of the appliance;
- the manufacturer's declared nominal heat output in kW using fuels recommended by the manufacturer together with the declared minimum refuelling intervals for these fuels.

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If the appliance is fitted with a boiler, then the following additional details shall also be specified:

- the welding process used in the manufacture of the boiler shell;

NOTE The symbol for the type of weld used is sufficient.

- the permissible maximum operating water temperature, in °C;
- the permissible maximum operating pressure, in bar;
- the type test pressure, in bar;
- the water heating output, in kW.

4.2 Construction**4.2.1 General construction****4.2.1.1 Design, manufacture and assembly**

The shape and dimensions of the components and equipment and the method of design and manufacture and, if assembled on site, the method of assembly and installation, shall ensure that, when operated as specified in accordance with the test procedures of this standard and exposed to the associated mechanical, chemical and thermal stresses, the appliance shall operate reliably and safely such that during normal operation no combustion gas posing a hazard can escape into the room in which the appliance is installed nor can embers fall out. Non-combustible materials shall be used, except that it shall be permissible to use combustible materials for the following applications:

- components or accessories fitted outside the appliance;
- internal components of controls and safety equipment;
- operating handles;
- electrical equipment.

No part of the appliance shall comprise any material known to be harmful.

When fired with solid mineral fuels, the appliance shall have a bottomgrate and an ashpan.

Component parts, which require periodic replacement and/or removal shall be either so designed or marked for identification to ensure correct fitting.

NOTE 1 Because the entire heat dissipating surfaces of the appliance including the flue spigot/socket and the flue gas connector are working surfaces, there is no requirement for limiting the surface temperature of the appliance.

NOTE 2 All operations which the user carries out, including loading and emptying of the appliance, adjusting controls and de-ashing should be easy, safe and effective.

4.2.1.2 Durability

The durability aspects of the appliance shall be deemed to be satisfied if it is shown to meet the constructional requirements specified in 4.2.2 to 4.2.13, the safety requirements specified in Clause 5 and the performance requirements specified in Clause 6.

NOTE The long practice with these products shows that such an approach for dealing with durability is sufficient.

4.2.2 Integral boiler

4.2.2.1 General

The boiler shell shall be constructed from cast iron and/or steel and shall be capable of operating at the maximum operating pressure declared by the manufacturer. The integral boiler shall meet the requirements of A.4.7.

The materials and dimensions for the integral boiler construction shall be in accordance with the specifications given in Tables 2 to 7. If alternative materials are used, then written evidence of similar performance is required.

Provision shall be made for parts, which form a seal, to be located securely by means of bolts, gaskets or welding to prevent the leakage of air/water or combustion products. Adjacent surfaces between metal components in the firebox or the flueways shall be gastight. Where a seal is made with fire-cement, cement shall be well supported by adjacent metal surfaces.

4.2.2.2 Boilers constructed of steel

4.2.2.2.1 Welding and welding materials

The materials used shall be suitable for welding.

NOTE The materials listed in Table 3, are suitable and do not require any additional heat treatment after welding.

4.2.2.2.2 Nominal minimum wall thicknesses (steel)

Boilers constructed of steel shall have the appropriate wall thicknesses set out in Table 2.

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