



SLOVENSKI STANDARD **oSIST prEN 15250:2012**

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Naprave na trdna goriva, ki počasi oddajajo toploto - Zahteve in preskusne metode

Slow release appliances fired by solid fuel - Requirements and test methods

Speicherfeuerstätten für feste Brennstoffe - Anforderungen und Prüfverfahren

Appareils de chauffage à combustible solide à libération lente - Exigences et méthodes d'essai

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ICS:

97.100.30	Grelniki na trdo gorivo	Solid fuel heaters
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Slow release appliances fired by solid fuel - Requirements and test methods

Appareils de chauffage à combustible solide à libération lente - Exigences et méthodes d'essai

Speicherfeuerstätten für feste Brennstoffe - Anforderungen und Prüfverfahren

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

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COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This document (prEN 15250:2012) 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 15250:2007.

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 ZA, which is an integral part of this document.

This document is a revision of the published standard EN 15250:2007 following comments received at its review.

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1 Scope

This European Standard is applicable to residential freestanding hand fuelled intermittent burning slow heat release appliances having thermal storage capacity such that they can provide heat for an extended period of time after the fire has gone out. These slow heat release appliances may be supplied either as an assembled appliance or as a manufacturer's pre-designed unit consisting of pre-fabricated components designed to be built on site in accordance with the manufacturer's specified assembly instructions. One off installations are not included as they are not covered by the scope of this standard.

This European standard is also applicable to appliances which are designed for operating under room sealed conditions and which are intended to be installed into a chimney not serving any other appliances.

NOTE: Appliances which receive their combustion air from outside by means of a pipe system which is not air tight are not considered room sealed in accordance with this standard.

This European Standard specifies requirements relating to the design, manufacture, construction, safety and performance (efficiency and emissions) together with associated test methods and test fuels for residential slow heat release appliances fired by solid fuel (hereafter referred to as "appliances"), 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 by radiation and/or convection into the space where they are installed. Additionally if fitted with a boiler or other heat exchanger these appliances may 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. Wood pellets which are specifically intended to be hand fuelled only may also be burned either on the existing appliance bottom grate or in a special basket arrangement which is placed by the user into the existing firebox.

This European Standard is not applicable to mechanically fed appliances. This European standard is also not applicable to appliances which are designed to be operated with ventilating systems which have pressure below (– 15 Pa) in relation to the outside atmosphere as measured in the room where the appliance is installed.

This European Standard covers also the NO_x, OGC/total hydrocarbons and particulate matter emission test methods; however it does not contain any limit values for these emissions.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

CEN/TS 15883:2009, Residential solid fuel burning appliances - Emission test methods

EN 1561:2011, Founding - Grey cast irons

EN 1563:2011, Founding - Spheroidal graphite cast iron

EN 1856-1, Chimneys - Requirements for metal chimneys. System chimney products;

EN 1856-2, Chimneys - Requirements for metal chimneys - Part 2: Metal flue liners and connecting flue pipes;

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 10028-2:2009, Flat products made of steels for pressure purposes: -Part 2:Non-alloy and alloy steels with specified elevated temperature properties

EN 10029:2010, Hot rolled steel plates 3 mm thick or above - Tolerances on dimensions, shape and mass

EN 10088-2:2005, Stainless steels - Part 2: Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purposes

EN 10111:2008, Continuously hot-rolled low carbon steel sheet and strip for cold forming - Technical delivery conditions

EN 10120:2008, Steel sheet and strip for welded gas cylinders

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- EN 13063-3, Chimneys - System chimneys with clay/ceramic flue liners - Part 3: Requirements and test methods for air flue system chimneys;
- EN 14774-1, Solid biofuels - Determination of moisture content - Oven dry method - Part 1: Total moisture - Reference method
- EN 14775:2009, Solid biofuels - Determination of ash content
- EN 14918:2009, Solid biofuels - Determination of calorific value
- EN 14989-2, Chimneys - Requirements and test methods for metal chimneys and material independent air supply ducts for roomsealed heating applications - Part 2: Flue and air supply ducts for room sealed appliances
- EN 15104:2011, Solid biofuels - Determination of total content of carbon, hydrogen and nitrogen - Instrumental methods
- EN 15148:2009, Solid biofuels - Determination of the content of volatile matter
- 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, Coal - Determination of moisture in the analysis sample - Direct gravimetric method
- ISO 334, Solid mineral fuels - Determination of total sulfur - Eschka method
- ISO 351, Solid mineral fuels - Determination of total sulfur - High temperature combustion method
- ISO 501, Hard coal - Determination of the crucible swelling number
- ISO 562, Hard coal and coke - Determination of volatile matter
- ISO 609, Solid mineral fuels - Determination of carbon and hydrogen - High temperature combustion method
- ISO 687, Solid mineral fuels - Coke - Determination of moisture in the general analysis test sample
- ISO 1171, Solid mineral fuels - Determination of ash
- ISO 1928, 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

3 Terms and definitions

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

3.1**absorption**

incorporation of a substance into the body of a liquid or solid

3.2**air grilles**

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

3.3**air inlet control**

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

3.4**appliance family**

group of appliances of similar construction and/or performance characteristics where it is permissible to test only selected appliances in accordance with the requirements of this standard

3.5**ash content of the fuel**

solid matter remaining after the complete combustion of solid fuel

3.6**ashpan**

removable receptacle shaped to receive the residue falling from the firebed

3.7**ashpit**

enclosed chamber designed to receive the residue or the ashpan

3.8**ashpit loss**

part of the residue which is combustible

3.9**basic firebed**

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

Note 1 to entry: The basic firebed may be specified by the manufacturer.

3.10**batch charge**

proportion of the test load as declared by the manufacturer that can be added at specified intervals during the test period of the burning rate performance test

3.11**boiler**

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

3.12**boiler flueway**

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

3.13**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

3.14**bottomgrate bars; firebars**

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

3.15**burn rate**

The mass of test fuel burnt per hour on dry fuel basis.

3.16**calibration**

set of operations that establish the relationship between values of quantities indicated by a measuring instrument or measuring system, or values represented by a material measure or a reference material, and the corresponding values realized by standards

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prEN 15250:2012 (E)**3.17****charging door**

door which covers the refuelling opening

3.18**combustion air**

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

3.19**combustion air inlet**

Integral component of the fireplace for the connection to the combustion air pipe.

3.20**combustion gases**

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

3.21**constant volume sampling**

Method to sample all exhaust gases of an appliance at constant flow rate by diluting with air.

3.22**de-ashing**

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

3.23**de-ashing mechanism**

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

Note 1 to entry: It may also be used to change the bottomgrate operating position on some appliances.

3.24**dew point**

temperature at, or below which, the condensation from the gas phase will occur

3.25**dilution ratio**

The dilution ratio is defined as the volume ratio of the total diluted gas volume and the undiluted flue gas volume at standard conditions on dry basis.

3.26**dilution tunnel**

Sampling duct to allow constant volume sampling of the appliance exhaust gases with dilution air.

3.27**dilution tunnel flow volume**

The total volume of the diluted gas in the dilution tunnel during a test cycle.

3.28**dilution tunnel gas flow rate**

Flow rate of the diluted gases in the dilution tunnel.

3.29**direct water system**

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

3.30**draught regulator**

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

3.31 efficiency

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

3.32 emission sampling section

Section in the dilution tunnel where the particulate emission sampling train is attached.

3.33 extraction fan

Fan installed in the dilution tunnel downstream of the emission sampling section capable of gathering and moving all flue-gases and entrained dilution air from the dilution tunnel extraction cowl to the dilution tunnel exhaust having sufficient flow to maintain dilution rate specifications.

3.34 firebox; combustion chamber

part of the appliance in which the fuel is burned

3.35 firebox opening

aperture in the firebox through which an appliance may be fuelled

3.36 firedoor

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

3.37 flue by-pass device

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

Note 1 to entry: This can be used as a preheating aid to overcome chimney condensation.

3.38 flue damper

mechanism to change the flow of the combustion gases

3.39 flue draught

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

3.40 flue gases

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

3.41 flue gas connector

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

3.42 flue gas mass flow

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

3.43 flue gas temperature

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

3.44 flue outlet

Integral component of the fireplace for the connection to the connector

prEN 15250:2012 (E)**3.45****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

3.46**flueway**

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

3.47**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

3.48**gas sample**

portion of gaseous material on which observations can be made in order to provide data on the gaseous material from which it has been removed

Note 1 to entry: A sample is taken as being representative of the gaseous material if the same observations are supplied on any other samples taken from this gaseous material to furnish the same data within preset intervals.

3.49**hydrocarbon (THC) emissions**

When measured in accordance with A.4.7, at the manufacturer's declared nominal heat output the mean hydrocarbon concentration calculated to 13 % oxygen (O₂) content in the flue gas shall be measured and the value shall be given by the manufacturer.

3.50**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

3.51**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

3.52**leak tightness**

Volumetric flow that might spill into the installation room, at a certain inside pressure, through parts of the fireplace that are not tight, maybe at the connector or the combustion air pipe. The air flow rate that shall be supplied, when a defined overpressure in the fireplace is reached, in order to keep this overpressure.

Note 1 to entry: In this case, the limit of system depends on the type of fireplace (see clause 4).

3.53**line**

gas-tight system of tubing equipped with accessories such a valves, manometers, etc. enabling gas to be transported from one point to another

3.54**maximum water operating pressure**

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

3.55**measure of thermal-shock resistance**

for method A the number of quench cycles withstood under the test conditions, and for method B the residual cold modulus of rupture (MOR) and residual sonic velocity after 5 quench cycles under the conditions of the test

3.56**measured value**

estimated value of the air quality characteristics derived from an output signal; this usually involves calculations related to the calibration process and conversion to required quantities

3.57**nominal heat output**

declared heat output of an appliance achieved under defined test conditions when burning the specified test fuel in accordance with the European standard relevant to that appliance

or

nominal heat output

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

3.58**NO_x emissions**

When measured in accordance with A.4.7, at the manufacturer's declared nominal heat output the mean NO_x concentration calculated to 13 % oxygen (O₂) content in the flue gas shall be measured and the value shall be given by the manufacturer.

3.59**operating tool**

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

3.60**particulate emission sample gas volume**

The total volume of gas collected during a test cycle in the particulate emission sampling train.

3.61**particulate emission sampling train**

apparatus to withdraw part of the flue gas to determine the particulate mass

3.62**particulate matter (PM)**

particles of various shape, structure and density scattered in the gaseous phase of the flue gas

3.63**particulate matter (PM) emissions**

When measured in accordance with A.4.7, at the manufacturer's declared nominal heat output the mean particulate matter concentration calculated to 13 % oxygen (O₂) content in the flue gas shall be measured and the value shall be given by the manufacturer.

3.64**primary air**

combustion air which passes through the fuel bed

3.65**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

3.66**reference material**

material or substance one or more of whose property values is sufficiently homogeneous and well established to be used for the calibration of an apparatus, the assessment of measurement method, or for assigning values to materials

3.67**residue**

ashes, including combustibles, which collect in the ashpit