SLOVENSKI STANDARD
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Štedilniki na trdna goriva - Zahteve in preskusne metode

Residential cookers fired by solid fuel - Requirements and test methods

Herde für feste Brennstoffe - Anforderungen und Prüfung

Cuisiniéres domestiques à combustible solide - Exigences et méthodes d'essai

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Residential cookers fired by solid fuel - Requirements and test methods

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Foreword

This document (prEN 12815:2011) 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 12815:2001.

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.

For relationship with EU Directive, see informative Annex ZA, which is an integral part of this document.

This document is a revision of the published standard EN 12815:2001 following comments received at its 5 year review.

1 Scope

This European Standard is applicable to hand fired residential cookers whose primary function is to cook and whose secondary function is to provide heat into the space in which they are installed. Additionally, where fitted with a boiler, they also provide domestic hot water and/or central heating.

This European Standard specifies requirements relating to the design, manufacture, construction, safety and performance (efficiency and emission) of residential cookers 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 products.

These appliances may burn either solid mineral fuels, lignite briquettes, 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 hopper fed or mechanically fired appliances or those appliances having fan assisted combustion air.

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 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 — 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: Designation, dimensions and tolerances*

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*

3 Terms and definitions

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

3.1
air inlet control
manual or automatic device to control the quantity of air supplied for combustion

3.2
ashpan
removable receptacle shaped to receive the residue falling from the firebed

3.3
ashpit
enclosed chamber designed to receive the residue or the ashpan

3.4
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.

3.5
boiler
vessel in which water is heated, intended for fitting in or forming an integral part of a solid fuel appliance

3.6
boiler waterways
space within a boiler which contains water

3.7
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

3.8
burning rate
reduction in the mass of fuel per unit of time

3.9
charging door
door which covers the refuelling opening

3.10
combustion air
air supplied to the fire-box, which is entirely or partially used to burn the fuel

3.11
combustion air selector
device for adjusting the primary and/or secondary air according to the type of fuel burnt

3.12
combustion control device
mechanism for setting the primary and/or secondary air in accordance with the burning rate required

3.13
combustion gases
compounds in gaseous form produced inside an appliance when fuel is burned

3.14
damper
mechanism to change the resistance to flow of the combustion gases

3.15
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

3.16
de-ashing
process of clearing a fuelbed and discharging the residue into the collecting receptacle

3.17
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.

3.18
direct water system
hot water system in which stored domestic hot water is heated directly by hot water circulating from the boiler

3.19
draught regulator
inlet device for admission of air downstream of the firebed, enabling the flue draught to be controlled

3.20
dry cooker
appliance which primarily provides the facility to cook by means of a hotplate and/or oven

NOTE It also provides heat to the room in which it is installed.

3.21
efficiency
ratio of total heat output to total heat input during the test period expressed as a percentage

3.22
firebed; fuelbed
fuel contained in the firebox

3.23
firebox; combustion chamber
that part of the appliance in which fuel is burned

3.24
firebox opening
aperture in the firebox through which an appliance may be fuelled

3.25
firedoor
door through which the fire may be viewed and which may be opened to allow refuelling of the firebed

3.26
flue draught
differential between the static air pressure in the place of installation and the static pressure at the flue gas measurement point

3.27
flue gases
gaseous compounds leaving the appliance flue spigot and entering the flue gas connector

3.28
flue gas adaptor
fitting which allows for variations in size and shape of the flue components

3.29
flue gas connector
duct through which flue gases are conveyed from the flue spigot of the appliance into the chimney flue

3.30
flue gas mass flow
mass of flue gas drawn off from the appliance per unit of time

3.31
flue gas temperature
temperature of the flue gas at the specified point in the measurement section

3.32
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

3.33
flueway
that part of the appliance designed to convey combustion gases from the firebox to the flue spigot

3.34
front firebars; deepening plate
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

3.35
fuel regulator
device for controlling the size of the firebed

3.36
heat input
quantity of energy which the fuel provides to the appliance

3.37
heat output
quantity of useful heat released by the appliance

3.38
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

3.39
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

3.40
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.

3.41
maximum water operating pressure
limiting water pressure up to which the boiler of an appliance can be safely operated

3.42
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

3.43
operating tool
device supplied with the appliance for handling movable, adjustable and/or hot components

3.44
oven shelf
a grid or plate for supporting cooking vessel(s) within the oven

3.45
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.

3.46
recovery capability
ability of the fire to re-ignite existing or newly charged fuel after a defined burning period without external assistance

3.47
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

3.48
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

3.49
residue
ashes, including combustibles, which collect in the ashpit

3.50
secondary air
air supplied for the purpose of completing the combustion of gases leaving the fuel bed

3.51
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 firebed can be recovered at the end of this period

3.52
slow combustion heat output
heat output achieved during the test period under slow combustion conditions

3.53
solid fuel
naturally occurring or manufactured solid mineral fuels, natural or manufactured wood logs and peat briquettes

3.54
solid mineral fuel
coal, lignite, coke and fuels derived from these

3.55
space heating output
heat output provided by convection and radiation to the room

3.56
start-up device
mechanism to divert the path of the heating gases and/or to change the combustion air opening cross section during the ignition period

3.57
steady-state condition
stage at which values to be measured in successive equal periods of time do not exhibit significant change

3.58
test fuel
fuel of commercial quality being characteristic of its type to be used for testing appliances

3.59
thermostat
temperature sensitive device which automatically changes the combustion air inlet cross-sectional area

3.60
type test pressure
pressure to which all waterways of the test appliance are subjected

3.61
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

3.62
top plate
top of the cooker including and surrounding the hotplate

3.63
total heat output
rate of useful heat released by the appliance

3.64
water heating output
heat output to water averaged during the test period

3.65
wet cooker
appliance that provides the facility to cook by means of a hotplate and/or an oven but which is also fitted with a boiler that provides hot water for central heating and/or domestic use

NOTE The cooker also provides heat to the room in which it is installed.

3.66
winter/summer mode operation
alternative methods of operating certain cookers by a suitable control or by adaptation to give a lower output for summer usage or a higher output in winter

3.67
working surfaces
all surfaces of an appliance designed to transmit heat to the surrounding atmosphere

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

4 Materials, design and construction

4.1 Production documentation

The type of appliance 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 8 and Table 9, (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;

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 General construction

4.2.1 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 in accordance with the provisions of appropriate test(s) and exposed to the associated mechanical, chemical and thermal stresses, the appliance shall operate reliably and safely such that during normal operation no combustion gases posing a hazard can escape into the room in which the appliance is installed nor can embers fall out.

Component parts such as covers, operating controls, safety devices and electrical accessories shall be arranged in such a way that their surface temperatures, under the test conditions described in A.4.9, do not exceed those specified either by the manufacturer or in the relevant component part standard.

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.