



**SLOVENSKI STANDARD**  
**SIST EN 12815:2003**  
**01-januar-2003**

**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

Cuisinieres domestiques a combustible solide - Exigences et méthodes d'essai

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**ICS:**

97.040.20	97.040.20 97.040.20	Cooking ranges, working tables, ovens and similar appliances
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ICS 97.040.20

English version

## Residential cookers fired by solid fuel - Requirements and test methods

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

Herde für feste Brennstoffe - Anforderungen und Prüfung

This European Standard was approved by CEN on 7 April 2001.

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. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

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.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

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## Foreword

This European Standard has been prepared by Technical Committee CEN/TC 295 "Residential solid fuel burning appliances", 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of an identical text or by endorsement, at the latest by December 2001, and conflicting national standards shall be withdrawn at the latest by December 2002.

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, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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## 1 Scope

This European Standard specifies requirements relating to the design, manufacture, construction, safety and performance (efficiency and emission), instructions and marking together with associated test methods and test fuels for type testing residential cooking appliances fired by solid fuel.

This Standard is applicable to hand fired appliances 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. 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 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 <a href="https://standards.iteh.ai/catalog/standards/sist/b817e841-5de5-40dc-9431-1441e5117a2e/sist-b817e841-5de5-40dc-9431-1441e5117a2e-1993">https://standards.iteh.ai/catalog/standards/sist/b817e841-5de5-40dc-9431-1441e5117a2e/sist-b817e841-5de5-40dc-9431-1441e5117a2e-1993</a>
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
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

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### 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

#### **de-ashing**

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

### 3.16

#### **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.



### 3.17

#### **direct water system**

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

### 3.18

#### **draught regulator**

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

### 3.19

#### **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.

### 3.20

#### **efficiency**

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

### 3.21

#### **firebed ; fuelbed**

fuel contained in the firebox

### 3.22

#### **firebox; combustion chamber**

that part of the appliance in which fuel is burned

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### 3.23

#### **firebox opening**

aperture in the firebox through which an appliance may be fuelled

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### 3.24

#### **firedoor**

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

### 3.25

#### **flue draught**

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

### 3.26

#### **flue gases**

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

### 3.27

#### **flue gas adaptor**

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

### 3.28

#### **flue gas connector**

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

**3.29**

**flue gas mass flow**

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

**3.30**

**flue gas temperature**

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

**3.31**

**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

**3.32**

**flueway**

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

**3.33**

**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

**3.34**

**fuel regulator**

device for controlling the size of the firebed

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**3.35**

**heat input**

quantity of energy which the fuel provides to the appliance

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**3.36**

**heat output**

quantity of useful heat released by the appliance

**3.37**

**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

**3.38**

**maximum water operating pressure**

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

**3.39**

**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

**3.40**

**operating tool**

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

**3.41**

**oven shelf**

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

**3.42**

**primary air**

combustion air which passes through the fuel bed

**3.43**

**recovery capability**

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

**3.44**

**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

**3.45**

**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

**3.46**

**residue**

ashes, including combustibles, which collect in the ashpit

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**3.47**

**secondary air**

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

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**3.48**

**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

**3.49**

**slow combustion heat output**

heat output achieved during the test period under slow combustion conditions

**3.50**

**solid fuel**

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

**3.51**

**solid mineral fuel**

coal, lignite, coke and fuels derived from these

**3.52**

**space heating output**

heat output provided by convection and radiation to the room

**3.53**

**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

**3.54**

**steady-state condition**

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

**3.55**

**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

**3.56**

**test fuel**

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

**3.57**

**thermostat**

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

**3.58**

**type test pressure**

pressure to which all waterways of the test appliance are subjected

**3.59**

**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

**3.60**

**top plate**

top of the cooker including and surrounding the hotplate

**3.61**

**total heat output**

rate of useful heat released by the appliance

**3.62**

**water heating output**

heat output to water averaged during the test period

**3.63**

**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

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

### 3.64

#### 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

### 3.65

#### 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

To identify the appliance the manufacturer shall have available documents and/or scaled assembly drawings 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 nominal heat output in kW using fuels recommended by the manufacturer;

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

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.

No part of the appliance shall comprise of or contain asbestos. Hard solder, containing cadmium in its formulation, shall not be used.

Where thermal insulation is used, it shall be made of non-combustible material and shall not be a known hazard to health in its applied position.

NOTE The thermal insulation should withstand normal thermal and mechanical stresses.

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

Parts which act as a seal shall be located securely; for example by means of bolts, gaskets or welding; to prevent the ingress or leakage of air, water or combustion products.

Where a seal is made with fire cement, the cement shall be supported by adjacent metal surfaces.

If the appliance is fitted with a boiler the boiler shell and its materials of construction shall meet the requirements given in 4.3 to 4.6 as appropriate to the material of construction and intended usage.

The boiler, if fitted, shall be capable of operating safely at the permissible maximum water operating pressure declared by the manufacturer and shall meet the requirements specified in 5.5.

### **4.3 Boilers constructed of steel**

#### **4.3.1 Parts subject to water pressure**

One or more of the steel materials complying at least with the specifications given in Table 1 shall be used for the manufacture of those parts of the appliance subject to water pressure.

#### **4.3.2 Nominal minimum wall thicknesses**

Boilers constructed of non-alloyed steel shall have a nominal minimum thickness of 4 mm for water - backed surfaces in contact with the fire or products of combustion whilst surfaces elsewhere shall have a nominal minimum thickness of 3 mm.

Boilers constructed of alloyed or stainless steel shall have a nominal minimum thickness of 2 mm.

NOTE These nominal minimum wall thicknesses have been specified taking into consideration the following parameters:

- the permissible maximum water operating pressure (as stated by the manufacturer);
- the material properties;
- the heat transfer location.

The tolerances on the nominal minimum wall thicknesses for steels shall be as specified in EN 10029:1991.

**Table 1 - Steel material types**

European Standard References	Material Type	Material number in accordance with EN 10027-2:1992	
EN 10111:1998	DD 11	1.0332	
	DD 12	1.0398	
	DD 13	1.0335	
	DD 14	1.0389	
EN10025:1993	S235JR	1.0037	
	S235JRG2	1.0038	
	S235JO	1.0114	
	S235J2G3	1.0116	
	S275JR	1.0044	
	S275JO	1.0143	
	S275J2G3	1.0144	
	S355JR	1.0045	
	S355JO	1.0553	
	S355J2G3	1.0570	
	S355K2G3	1.0595	
	EN 10028-2:1992	P235GH	1.0345
P265GH		1.0425	
P295GH		1.0481	
P355GH		1.0473	
16Mo3		1.5415	
13CrMo4-5		1.7335	
10CrMo9-10		1.7380	
10CrMo9-10		1.7383	
EN 10120:1996		P245NB	1.0111
		P265NB	1.0423
	P3 IONB	1.0437	
	P355NB	1.0557	
EN 10088-2:1995	X5CrNi 18-10	1.4301	
	X6CrNi 17-12-2	1.4401	
	X6CrNiTi18-10	1.4541	
	X6CrNiNb 18-10	1.4550	
	X6CrNiMo Ti 17-12 -2	1.4571	
	X6CrNiMoNb 17-12 -2	1.4580	
	X3CrNiMo 17-3-3	1.4436	
NOTE Materials and wall thicknesses other than those specified may only be used on production of appropriate evidence as regards at least their equivalent corrosion resistance, heat resistance and strength to non-alloy steel at the material thicknesses specified in 4.3.2 for the particular application/usage.			