



# SLOVENSKI STANDARD

## SIST EN 13229:2003

01-januar-2003

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### Odpri kamini in kaminski vložki na trdna goriva - Zahteve in preskusne metode

Inset appliances including open fires fired by solid fuels - Requirements and test methods

Kamineinsätze einschließlich offene Kamine für feste Brennstoffe - Anforderungen und Prüfung

Foyers ouverts et inserts a combustibles solides - Exigences et méthodes d'essai

Ta slovenski standard je istoveten z: **EN 13229:2001**

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#### **ICS:**

97.100.30      Grelniki na trdo gorivo      Solid fuel heaters

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ICS 97.100.30

English version

## Inset appliances including open fires fired by solid fuels - Requirements and test methods

Foyers ouverts et inserts à combustibles solides -  
Exigences et méthodes d'essai

Kamineinsätze einschließlich offene Kamine für feste  
Brennstoffe - Anforderungen und Prüfung

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

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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of an identical text or by endorsement, at the latest by December 2001, and conflicting national standards shall be withdrawn at the latest by December 2002.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 for type testing, residential open fires and inset appliances fired by solid fuel.

This standard is applicable to hand fired appliances which are listed under categories 1b, 1c, 2b, 2c, 3a, 3b and 3c of Table 1. The surround of the appliances is integrated with the building with the exception of free-standing appliances and inset appliances which are installed into a fireplace recess or enclosure.

This standard is not applicable to appliances with fan assisted combustion air.

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. They 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.

Open fireplace components such as a bottomgrate with associated firefront which the manufacturer supplies for installation into an existing heat resistant, insulated firebox are not covered by this standard.

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**Table 1 - Categorisation of appliances**  
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	a)	b)	c)
	Freestanding or inset appliances without functional modification	Freestanding or inset appliances which have functional modification	Inset appliances for fireplace recess and enclosure
1 appliances operating with firedoors closed	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 a modification of the surround of an appliance, that only changes the transmission of heat, without effect on 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 applies (including amendments).

- EN 1561:1997 Founding - Grey cast irons
- EN 1563:1997 Founding - Spheroidal graphite cast irons
- 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
- 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: Dimension, 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

### 3 Terms and definitions

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

#### 3.1 Appliances

##### 3.1.1

##### **appliance with boiler**

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

##### 3.1.2

##### **continuous burning appliance**

heating appliance designed to provide a source of heat by continuous burning and meeting the requirement of the slow combustion test

##### 3.1.3

##### **fireplace recess**

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

##### 3.1.4

##### **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 means of air grilles

##### 3.1.5

##### **freestanding appliance**

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

##### 3.1.6

##### **inset appliance**

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



### 3.1.7

#### **intermittent burning appliance**

heating appliance designed to provide a source of heat by intermittent burning and meeting the requirement of the reduced combustion test

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

### 3.1.8

#### **open fire**

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

### 3.1.9

#### **roomheater**

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

## 3.2 Functional characteristics

### 3.2.1

#### **ash content of the fuel**

solid matter remaining after the complete combustion of solid fuel

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### 3.2.2

#### **basic firebed**

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

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NOTE The basic firebed may be specified by the manufacturer.

### 3.2.3

#### **burning rate**

reduction in the mass of fuel per unit of time

### 3.2.4

#### **combustion air**

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

### 3.2.5

#### **combustion gases**

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

### 3.2.6

#### **efficiency**

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

### 3.2.7

#### **flue draught**

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

### 3.2.8

#### **flue gases**

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

### 3.2.9

#### **flue gas mass flow**

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

### 3.2.10

#### **flue gas temperature**

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

### 3.2.11

#### **heat input**

quantity of energy which the fuel provides to the appliance

### 3.2.12

#### **maximum water operating pressure**

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

### 3.2.13

#### **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

### 3.2.14

#### **operating tool**

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

### 3.2.15

#### **recovery capability**

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

### 3.2.16

#### **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 the test the basic firebed can be recovered

### 3.2.17

#### **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

### 3.2.18

#### **residue**

ashes, including combustibles, which collect in the ashpit

### 3.2.19

#### **routine test pressure**

pressure to which all waterways are subjected during production at the manufacturer's plant or during setting up by the installer

### 3.2.20

#### **slow combustion capability**

ability of a continuous 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 the basic firebed can be recovered at the end of this period

### 3.2.21

#### **slow combustion heat output**

heat output achieved under slow combustion conditions during the test period

### 3.2.22

#### **space heating output**

heat output furnished by convection and radiation to the room

### 3.2.23

#### **steady-state condition**

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

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### 3.2.24

#### **temperature in the fuel storage container**

temperature at the hottest point, measured in the area of possible fuel storage

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### 3.2.25

#### **total heat output**

rate of useful heat released by the appliance

### 3.2.26

#### **type test pressure**

pressure to which all waterways of the test appliance are subjected

### 3.2.27

#### **water flow temperature**

temperature of the heated water exiting the appliance

### 3.2.28

#### **water heating output**

heat output to water, averaged during the test period

### 3.2.29

#### **water return temperature**

temperature of the cooled water entering the return tapping connectors of the appliance

### 3.3 Characteristics

#### 3.3.1

##### **air inlet control**

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

#### 3.3.2

##### **air grilles**

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

#### 3.3.3

##### **ashpan**

removable receptacle shaped to receive the residues falling from the firebed

#### 3.3.4

##### **ashpit**

enclosed chamber designed to receive the residues or the ashpan

#### 3.3.5

##### **boiler**

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

#### 3.3.6

##### **boiler flueway**

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

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#### 3.3.7

##### **bottomgrate**

part of the appliance at the base of the firebox which supports the firebed and through which the ash fall into the ashpan and combustion air and/or combustion gases may pass

#### 3.3.8

##### **charging door**

door which covers the refuelling opening

#### 3.3.9

##### **combustion air selector**

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

#### 3.3.10

##### **combustion area**

Surface covered with fuel which may have openings for the passage of the combustion air or combustion gases

#### 3.3.11

##### **combustion control device**

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

### 3.3.12

#### **combustion gas baffle**

device to change the direction of flow of the combustion gases

### 3.3.13

#### **cut-off device**

mechanism to block the flue when the appliance is not in use

### 3.3.14

#### **damper**

mechanism to change the resistance to flow of the combustion gases

### 3.3.15

#### **de-ashing mechanism**

mechanism to agitate or disturb the residues to facilitate their removal from the firebed

NOTE May also be used to change the bottomgrate operating positions on some appliances.

### 3.3.16

#### **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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### 3.3.17

#### **draught regulator**

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

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### 3.3.18

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

that part of the appliance in which the fuel is burned

### 3.3.19

#### **firebox opening**

aperture in the firebox through which the appliance may be fuelled

### 3.3.20

#### **firedoor**

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

### 3.3.21

#### **flue gas adaptor**

fitting between the flue spigot of an appliance and the inlet to the flue gas connector or chimney flue which allows for variations in size and shape of components

### 3.3.22

#### **flue by-pass device**

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

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

### 3.3.23

#### **flue gas connector**

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

### 3.3.24

#### **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

### 3.3.25

#### **flueway**

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

### 3.3.26

#### **front firebars/deepening plate**

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

### 3.3.27

#### **fuel hopper**

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

### 3.3.28

#### **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 primary (heating) water and the stored domestic hot water

### 3.3.29

#### **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

### 3.3.30

#### **primary air**

combustion air which passes through the fuel bed

### 3.3.31

#### **safety heat exchanger**

device which allows excess heat to be released from an appliance

### 3.3.32

#### **secondary air**

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

### 3.3.33

#### **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

### 3.3.34

#### **thermostat**

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

### 3.3.35

#### **working surfaces**

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

NOTE All external surfaces of an appliance 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.

## 3.4 Fuels

### 3.4.1

#### **recommended fuels**

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

### 3.4.2

#### **solid fuel**

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

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### 3.4.3

#### **solid mineral fuels**

coal, lignite, coke and fuels derived from these

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### 3.4.4

#### **test fuel**

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

## 4 Materials, design and construction

### 4.1 Production documentation

The manufacturer shall state the type of appliance which he submits for type testing and the test laboratory shall test the appliance using the provisions appropriate to that claim.

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;