SLOVENSKI STANDARD

SIST EN 26

prva izdaja
december 1997

Plinski pretočni grelniki vode za sanitarno uporabo z atmosferskimi gorilniki (prevzet EN 26:1997 z metodo platnice)

Gas-fired instantaneous water heaters for sanitary uses production, fitted with atmospheric burners

Appareils de production instantanée d' eau chaude pour usages sanitaires équipés de brûleurs atmosphériques utilisant les combustibles gazeux

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Gasbeheizte Durchlauf-Wasserheizer für den sanitären Gebrauch mit atmosphärischen Brennern

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Deskriptorji: grelniki vode, sanitarne naprave, plinski aparati

ICS 91.140.65

Referenčna številka
SIST EN 26:1997 ((sl),en)

Nadaljevanje na straneh od I do IV in od 1 do 142

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UVOD

Standard SIST EN 26 ((sl),en), Plinski pretočni grelniki vode za sanitarno uporabo z atmosferskimi gorilniki, prva izdaja, 1997, ima status slovenskega standarda in je z metodo platnice prevzet evropski standard EN 26, Gas-fired instantaneous water heaters for sanitary uses production, fitted with atmospheric burners, 1997-01, v angleškem jeziku.

NACIONALNI PREDGOVOR

Evropski standard EN 26:1997 je pripravil tehnični odbor Evropskega komiteja za standardizacijo CEN/TC 48 Domestic gas-fired water heaters (Plinski grelniki vode za gospodinjstvo).

Evropski standard EN 26:1997 nadomeščajo EN 26:1977, EN 26:1977/A3:1984 in EN 26:1977/A4:1984.

Pripravo tega standarda sta CEN poverila Evropska komisija in Evropsko združenje za prosto trgovino. Ta evropski standard ustreza bistvenim zahtevam evropske direktive 90/396/EEC.

Normativni dodatki (B, C, D, J, K) so sestavni del standarda, medtem ko so informativni dodatki (A, E, F, G, H, ZA) namenjeni informaciji. Dodatek ZA prikazuje zvezo z zahtevami evropske direktive.

Odločitev za prevzem evropskega standarda EN 26:1997 po metodi platnice je dne 1997-06-20 sprejel tehnični odbor USM/TC PLN Plinske naprave za dom.

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Ta slovenski standard je dne 1997-12-05 odobril direktor USM.

NACIONALNI DODATEK

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Stran 28 - poglavje 5.1.1: V skladu z mednarodnim standardom ISO 3166 se za Slovenijo uporablja oznaka **SI**.

Naslednje tabele iz informativnega dodatka A se dopolnijo s parametri, ki veljajo v Sloveniji:

Stran 114 - tabela A.1.1: Kategorije aparatov, ki se prodajajo v posameznih državah

V Sloveniji se uporabljajo kategorije aparatov: I_{2H}, I_{2E}, $I_{3B/P}$, I_{3+}, I_{3P}.

Stran 115 - tabela A.1.2: Kategorije aparatov, ki se prodajajo v posameznih državah

V Sloveniji se uporabljajo kategorije aparatov: $II_{2H3B/P}$, II_{2H3+}, II_{2H3P}, $II_{2E3B/P}$, II_{2E3P}.

Stran 116 - tabela A.2: Običajni priključni tlaki za aparate

V Sloveniji se uporabljajo G20/20 mbar, G30/30 mbar, G31/30 mbar in (G30 + G31) tlačni par 28-30/37 mbar.

Stran 123 - tabela A.7: Vrste priključkov, ki se uporabljajo v posameznih državah

Za vse kategorije aparatov se uporabljajo navojni priključki, definirani v mednarodnih standardih ISO 7-1[1] in ISO 228-1.

[1] Zunanji konični in notranji cilindrični navoji

Stran 124 - tabela A.8: Vrste priključkov za vodo, ki se uporabljajo v posameznih državah

Uporabljajo se navojni priključki, definirani v mednarodnem standardu ISO 228-1.

Stran 125 - tabela A.9: Premeri dimnih cevi

V Sloveniji se uporabljajo naslednji notranji premeri dimnih cevi v mm: 60-70-80-90-110-120-130-150-200.

Naslednja tabela iz informativnega dodatka J se dopolni s parametri, ki veljajo v Sloveniji:

Stran 135 - tabela J.1: Napisna tablica

Oznaka kategorije, za katero je aparat prirejen.

V Sloveniji se uporabljata kategoriji aparatov: $II_{2H3B/P}$, $II_{2E3B/P}$.

Naslednje tabele iz normativnega dodatka K se dopolnijo s parametri, ki veljajo v Sloveniji:

Stran 137 - tabela K.1: Označevanje aparatov in embalaže - Vrste plina glede na uporabo v Sloveniji

G20 Zemeljski plin
G30 Utekočinjen naftni plin - Butan-B
G31 Utekočinjen naftni plin - Propan-P

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1) Pomen simbolov glede na vrsto plina mora biti natančno pojasnjen v tehničnih navodilih. Vse dodatne označbe na aparatu in embalaži, ki jih proizvajalec uporablja kot simbole, morajo biti skladne z opisom v tabeli. Če sta tlačna para dva, mora proizvajalec navesti oba opisa družin.

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ZVEZE S STANDARDI

S prevzemom tega evropskega standarda veljajo poleg standardov, navedenih v izvirniku, še naslednje zveze:

SIST EN 88/A1:1997 (en)	Tlačni regulator za plinske aparate za vstopne tlake do 200 mbar - Dodatek A.1
SIST EN 125:1997 (en)	Naprave za nadzor plamena pri plinskih aparatih - Termoelektrična varovala
SIST EN 125/A1:1997 (en)	Naprave za nadzor plamena pri plinskih aparatih - Termoelektrična varovala - Dodatek A.1
SIST EN 126:1997 (en)	Večnamenski krmilniki za plinske aparate
SIST EN 161:1997 (en)	Samodejni zaporni ventili za plinske gorilnike in plinske aparate
SIST EN 161/A1:1997 (en)	Samodejni zaporni ventili za plinske gorilnike in plinske aparate - Dodatek A.1

SIST EN 549:1996 (en)	Gumeni materiali za tesnila in membrane v plinskih aparatih in plinskih napravah
SIST EN 298:1997 (en)	Samodejni kontrolnik za plinske gorilnike in plinske aparate z ventilatorjem ali brez njega
SIST EN 437:1997 (en)	Preskusni plini - Preskusni tlaki - Kategorije aparatov
SIST EN 437/A1:1997 (en)	Preskusni plini - Preskusni tlaki - Kategorije aparatov - Dodatek A.1
SIST EN 60335-1:1995 (en)	ni prevoda naslova
SIST EN 60742:1995 (en)	ni prevoda naslova
SIST ISO 7-1:1995 (en)	Cevni navoji, pri katerih je tesnjenje izvedeno z navojem - 1. del: Mere, tolerance in označevanje
SIST ISO 228-1:1995 (en)	Cevni navoji, pri katerih tesnjenje ni izvedeno z navojem - 1. del: Mere, tolerance in označevanje
SIST ISO 262:1995 (en)	Metrični vijačni navoji ISO za splošno uporabo - Izbrane velikosti vijakov in matic
SIST ISO 3166:1996 (sl)	Kode za predstavljanje imen držav in drugih ozemelj

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OSNOVA ZA IZDAJO STANDARDA

- Prevzem standarda EN 26:1997

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OPOMBI

- Povsod, kjer se v besedilu standarda uporablja izraz "evropski standard", v SIST EN 26:1997 to pomeni "slovenski standard".
- Uvod in nacionalni predgovor nista sestavni del standarda.

Po mnenju Ministrstva za informiranje Republike Slovenije z dne 18. februarja 1992, štev. 23/96-92, spada ta publikacija med proizvode informativne narave iz 13. točke tarifne številke 3, za katere se plačuje 5-odstotni prometni davek.

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 26

January 1997

ICS 91.140.65

Supersedes EN 26:1977

Descriptors: water heaters, sanitary appliances, gas appliances

English version

Gas-fired instantaneous water heaters for sanitary uses production, fitted with atmospheric burners

Appareils de production instantanée d'eau chaude pour usages sanitaires équipés de brûleurs atmosphériques utilisant les combustibles gazeux

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This European Standard was approved by CEN on 1996-11-15. 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 Central Secretariat or to any CEN member.

The European Standards exist 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 Central Secretariat has the same status as the official versions.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart,36 B-1050 Brussels

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 48 "Domestic gas-fired water heaters", the secretariat of which is held by AFNOR.

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 July 1997, and conflicting national standards shall be withdrawn at the latest by July 1997.

It has been established to deal with the aspects related to :

- safety, rational use of energy ;

- and fitness for purpose.

Whilst awaiting common specifications for methods of sampling and measuring NOX, which are being prepared, this document does not specify particular provisions applicable to these substances. This matter will be dealt with eventually.

This European Standard supersedes EN 26:1977, EN 26:1977/A.:1984 and EN 26:1977/A4:1984.

The different significant technical terms are as follows :

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"Normative" annexes are an integral part of the standard. "Informative" annexes are only given for information. In this standard, annexes B, C, D, J, K are normative and annexes A, E, F, G, H, ZA are informative.

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This European Standard 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 standard.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This European Standard defines the specifications and test methods concerning the construction, safety, rational use of energy and fitness for purpose, and also the classification and marking of gas-fired instantaneous water heaters for sanitary uses, hereafter called "water heaters".

This European Standard applies to water heaters :

- of types A_{AS}, B_{11}, B_{11BS}, C_{11} and C_{21} ;

- fitted with atmospheric burners ;

- using one or more combustible gases corresponding to the three gas families in accordance with table 2 and at the pressures stated in tables 5 and 6 of 3.1.4 ;

- of nominal heat input not exceeding 45 kW ;

- with an ignition burner or with direct ignition of the main burner.

In this European Standard, the heat inputs are expressed in relation to the net calorific value (H_i).

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This European Standard does not contain all the requirements necessary for :

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- boiling water appliances ;

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- appliances fitted with a fan ;

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- appliances intended to be connected to a mechanical means of evacuating the combustion products ;

- appliances which fulfil a dual role of space heating and heating water for sanitary use ;

- appliances making use of the heat of condensation of the water contained in the combustion products ;

This European Standard :

- does not apply to appliances not intended to be connected to a flue when they are not fitted with an atmosphere sensing device ;

- takes account of the information given in Technical report CR 1472 with respect to marking ;

- only covers type testing.

Matters which relate to quality assurance systems, production tests and the certification of auxiliary controls are not dealt with in this European Standard.

If the manufacturer indicates that the appliance has been tested in accordance with EN 26, the appliance must conform completely with the requirements of this European Standard.

Type B appliances shall be fitted with a combustion products discharge safety device to comply with essential requirement 3.4.3 of the EC Directive. In this European Standard, the appliance is identified as type B_{11BS}.

Appliances intended to be installed outdoors or in a room separate from inhabited rooms and provided with appropriate ventilation are not required to have this combustion products discharge safety device but, in this case, appropriate warnings on the packaging, and in the instructions shall clearly define the limited authorised use for this type of appliance. In this European Standard, the appliance is identified as type B_{11}.

The main symbols used in this European Standard are summarised in annex F.

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.

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EN 88:1991	Pressure governors for gas appliances for inlet pressures up to 200 mbar
EN 125:1991	Specification for flame supervision devices for gas burning appliances - Thermoelectric types
EN 126:1993	Multifunctional controls for gas burning appliances
EN 161:1991	Automatic shut-off valves for gas burners and gas appliances
EN 549:1995	Rubber materials for seals and diaphragms for gas appliances and gas equipment
EN 298:1993	Automatic gas burner systems for gas burners and gas burning appliances with or without fans
EN 437:1993	Test gases, test pressures, appliance categories
CR 1472:1994	General guidance for the marking of gas appliances
prEN 50165:1995	Electrical equipment of non-electric heating appliances for household and similar purposes. Safety requirements
EN 60335-1:1991	Safety of household and similar electrical appliances - General requirements
EN 60529:1991	Degrees of protection provided by enclosures (IP code)

EN 60730-2-9:1994	Automatic electrical controls for household and similar use. Part 2 : Particular requirements for heat sensing controls
EN 60742:1989	Isolating transformers and safety isolating transformers - Requirements
ISO 7-1:1982	Pipe threads where pressure-tight joints are made on the threads - Part 1 : Designation, dimensions and tolerances
ISO 228-1:1982	Pipe threads where pressure-tight joints are not made on the threads - Part 1 : Designation, dimensions and tolerances
ISO 262:1973	ISO general purpose metric screw threads - Selected sizes for screws, bolts and nuts
ISO 274:1975	Copper tubes of circular section - Dimensions
ISO 301:1981	Zinc alloy ingots intended for casting
ISO 1817:1985	Rubber, vulcanised - Determination of the effects of liquids
EN 23166:1988	Codes for the representation of names of countries
ISO/DIS 6976:1992	Natural gas - Calculation of the calorific value, volumetric mass and density
ISO 7005:1992	Metallic flanges
IEC 335-2-14:1994	Safety of household and similar electrical appliances - Part 2 : Particular requirements for electric kitchen machines
IEC 479-1:1984	Effects of current passing through the human body - Part 1 : General aspects. Chapter 1 : Electrical impedance of the human body. Chapter 2 : Effects of alternating current in the range 15 Hz to 100 Hz. Chapter 3 : Effects of direct current.
IEC 479-2:1987	Effects of current passing through the human body - Part 2 : Special aspects. Chapter 4 : Effects of alternating current with frequencies above 100 Hz. Chapter 5 : Effects of special waveforms of current. Chapter 6 : Effects of unidirectional single impulse currents of short duration.

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3 Definitions

For the purpose of this European Standard, the following definitions apply :

3.1 instantaneous water heater

Appliance where the heating of water is directly dependent on the draw off.

3.1.1 instantaneous water heater with fixed output

Appliance where the burner operates at a fixed heat input.

3.1.2 instantaneous water heater with adjustable output

Appliance where the heat input can be reduced by operation of the manual gas rate control incorporated in the appliance.

3.1.3 instantaneous water heater with automatic output variation (AVO)

Appliance where the gas rate varies automatically so as to keep the hot water temperature within a predetermined range when the water delivery rate varies.

Depending on the method of automatic control, two distinct kinds of appliances with automatic output variation are recognised :

3.1.3.1 thermostatic appliance

Appliance where the gas rate is varied by a thermostatic device controlling the water temperature, the set point of this device being adjustable or non-adjustable.

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3.1.3.2 proportioning appliance

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Appliance where the gas rate is varied proportionally to the water rate, the factor of proportionality may be adjustable.

3.1.4 range of automatic output variation

Range of the manufacturer's declared useful outputs of an appliance with automatic output variation inside which the subordination of the gas rate to the water rate maintains the hot water temperature within a predetermined range when the water rate varies.

3.2 characteristics of the gas and electricity supplies

3.2.1 reference conditions

Dry gas at a temperature of 15 °C, at an absolute pressure of 1 013,25 mbar.

3.2.2 test gases

Gases intended to check the operational characteristics of the appliances using combustible gases. They comprise reference and limit gases.

Table 2 of this European Standard gives the characteristics of the reference and limit gases.

3.2.2.1 reference gases

Test gases with which appliances operate in nominal conditions, when they are supplied at the corresponding normal pressure.

3.2.2.2 limit gases

Test gases representative of the extreme variations of the characteristics of the gases for the use of which the appliances have been designed.

3.2.3 calorific value

Quantity of heat produced by the complete combustion of unit volume or mass of gas at a constant pressure of 1 013,25 mbar, the constituents of the combustible mixture being taken under reference conditions and the products of combustion being brought back to these same conditions.

A distinction is made between two types of calorific value :

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- gross calorific value : the water produced by combustion is assumed to be condensed ;

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Symbol : H_s

- net calorific value : the water produced by combustion is assumed to be in the vapour state ;

Symbol : H_i

Units :

- either megajoules per cubic metre of dry gas taken under reference conditions (MJ/m^3) ;

- or megajoules per kilogram of dry gas (MJ/kg).

3.2.4 relative density

Ratio of the masses of equal volumes of gas and dry air under reference conditions.

Symbol : d

3.2.5 Wobbe number

Ratio of the calorific value of the gas per unit volume to the square root of its relative density, under the same reference conditions. The Wobbe number is said to be gross or net according to whether the calorific value used is the gross or net calorific value.

Symbols :

- gross Wobbe number : W_s ;

- net Wobbe number : W_i.

Units :

- either megajoules per cubic metre of dry gas taken under reference conditions (MJ/m^3) ;

- or megajoules per kilogram of dry gas (MJ/kg).

3.2.6 gas pressures

All the pressures are static pressures of the moving gas, relative to the atmospheric pressure, measured at right angles to the direction of flow of the gas.

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Symbol : p

Unit : millibar (mbar)

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NOTE : 1 mbar = 10^2 Pa.

3.2.6.1 test pressures

Gas pressures used to check the operational characteristics of appliances using combustible gases. They include the normal and limit pressures.

The test pressures are given in tables 6 and 7 of 7.1.4.

3.2.6.2 normal pressure

Pressure at which the appliances operate in nominal conditions, when they are supplied with the corresponding reference gas.

Symbol : p_n

3.2.6.3 limit pressures

Pressures representative of the extreme variations in the appliance supply pressures.

Symbols :

- maximum pressure : p_{max} ;

- minimum pressure : p_{min}.

3.2.6.4 pressure couple

Set of two distinct gas distribution pressures applied because of the big difference that exists between the Wobbe numbers within a single family or group :

- the highest pressure corresponds only to the low Wobbe number gases ;

- the lowest pressure corresponds to the high Wobbe number gases.

3.2.7 direct country of destination

Country for which the appliance has been certified and which is specified by the manufacturer as the intended country of destination. At the time of putting the appliance on the market and/or of installation, the appliance shall be capable of operating, without adjustment or modification, with one of the gases distributed in the country concerned, at the appropriate supply pressure.

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More than one country can be specified if the appliance, in its current state of adjustment, can be used in each of these countries.

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3.2.8 indirect country of destination

Country for which the appliance has been certified, but for which,in its present state of adjustment, it is not suitable. Subsequent modification or adjustment is essential in order that it can be used safely and correctly in this country.

3.2.9 rated voltage

Voltage or range of voltages specified by the manufacturer at which the appliance will operate normally.

3.3 gas circuit

All the parts of the appliance conveying or containing the combustible gas, included between the appliance gas supply connection and the burner(s).