



# SLOVENSKI STANDARD

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### Pretočni plinski grelniki vode za pripravo sanitarne tople vode

Gas-fired instantaneous water heaters for the production of domestic hot water

Gasbeheizte Durchlauf-Wasserheizer für den sanitären Gebrauch

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

Ta slovenski standard je istoveten z: **EN 26:2015**

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## Gas-fired instantaneous water heaters for the production of domestic hot water

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

Gasbeheizte Durchlauf-Wasserheizer für den sanitären Gebrauch

This European Standard was approved by CEN on 29 November 2014.

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 CEN-CENELEC Management Centre or to any CEN member.

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## Foreword

This document (EN 26:2015) 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of an identical text or by endorsement, at the latest by November 2015 and conflicting national standards shall be withdrawn at the latest by November 2015.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 26:1997.

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, Annex ZB or Annex ZC, which are integral parts of this document.

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).

This document deals with:

- safety;
- rational use of energy;
- fitness for purpose.

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It gives specific requirements or disposals relative to:

- requirements and test methods for type C water heaters with a fan incorporated in the combustion air supply circuit or in the combustion products evacuation circuit;
- combustion products evacuation ducts which are part of a water heater;
- condensing water heaters;
- water heaters installed indoors and/or partially protected place;
- requirements and test procedures for resistance to freezing;
- NOx measurement;
- the metallic, plastic and other non-metallic materials that are used in water heaters and which come into contact with water intended for human consumption. It is intended to ensure that products of this kind complying with these requirements meet current technological development and requirements with regard to the service life of the water heaters and their physiological suitability.

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According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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## 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<sub>AS</sub>, B<sub>11</sub>, B<sub>11BS</sub>, B<sub>12</sub>, B<sub>12BS</sub>, B<sub>13</sub>, B<sub>13BS</sub>, B<sub>14</sub>, B<sub>22</sub>, B<sub>23</sub>, B<sub>32</sub>, B<sub>33</sub>, B<sub>44</sub>, B<sub>52</sub>, B<sub>53</sub>, C<sub>11</sub>, C<sub>12</sub>, C<sub>13</sub>, C<sub>21</sub>, C<sub>22</sub>, C<sub>23</sub>, C<sub>32</sub>, C<sub>33</sub>, C<sub>42</sub>, C<sub>43</sub>, C<sub>52</sub>, C<sub>53</sub>, C<sub>62</sub>, C<sub>63</sub>, C<sub>72</sub>, C<sub>73</sub>, C<sub>82</sub> and C<sub>83</sub> according to CEN/TR 1749;
- fitted with atmospheric burners;
- equipped with atmospheric burners assisted by a fan for the supply of combustion air or evacuation of combustion products or fully premix burners;
- using one or more combustible gases corresponding to the three gas families and at the pressures stated in accordance to EN 437;
- of nominal heat input not exceeding 70 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 ( $H_i$ ).

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

- boiling water appliances;
- 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;
- water heaters of types B<sub>21</sub>, B<sub>31</sub>, B<sub>41</sub>, B<sub>42</sub>, B<sub>43</sub> and B<sub>51</sub>.

This European Standard only covers water heaters where the fan, if any, is an integral part of the appliance.

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 1472:1994 with respect to marking.

The main symbols used in this European Standard are summarized in Annex F.

## 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.

EN 88-1:2011, *Pressure regulators and associated safety devices for gas appliances — Part 1: Pressure regulators for inlet pressures up to and including 50 kPa*

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- EN 125, *Flame supervision devices for gas burning appliances — Thermoelectric flame supervision devices*
- EN 126, *Multifunctional controls for gas burning appliances*
- EN 161, *Automatic shut-off valves for gas burners and gas appliances*
- EN 298:2012, *Automatic burner control systems for burners and appliances burning gaseous or liquid fuels*
- EN 437, *Test gases, test pressures, appliance categories*
- EN 513, *Unplasticized polyvinylchloride (PVC-U) profiles for the fabrication of windows and doors — Determination of the resistance to artificial weathering*
- EN 549, *Rubber materials for seals and diaphragms for gas appliances and gas equipment*
- EN 573-1, *Aluminium and aluminium alloys — Chemical composition and form of wrought products — Part 1: Numerical designation system*
- EN 1057, *Copper and copper alloys Seamless, round copper tubes for water and gas in sanitary and heating applications*
- EN 1443, *Chimneys — General requirements*
- CEN/TR 1749, *European scheme for the classification of gas appliances according to the method of evacuation of the combustion products (types)*
- EN 1856-1:2009, *Chimneys — Requirements for metal chimneys — Part 1: System chimney products*
- EN 1856-2, *Chimneys — Requirements for metal chimneys — Part 2: Metal flue liners and connecting flue pipes*
- EN 1859:2009+A1:2013, *Chimneys — Metal chimneys — Test methods*
- EN 10088-1:2014, *Stainless steels — Part 1: List of stainless steels*
- EN 10226-1, *Pipe threads where pressure tight joints are made on the threads — Part 1: Taper external threads and parallel internal threads — Dimensions, tolerances and designation*
- EN 13203-1, *Gas-fired domestic appliances producing hot water — Appliances not exceeding 70 kW heat input and 300 l water storage capacity — Part 1: Assessment of performance of hot water deliveries*
- EN 13216-1, *Chimneys — Test methods for system chimneys — Part 1: General test methods*
- EN 13501-1, *Fire classification of construction products and building elements — Part 1: Classification using data from reaction to fire tests*
- EN 13611:2007+A2:2011, *Safety and control devices for gas burners and gas burning appliances — General requirements*
- EN 14241-1:2013, *Chimneys — Elastomeric seals and elastomeric sealants — Material requirements and test methods — Part 1: Seals in flue liners*
- EN 14459, *Control functions in electronic systems for gas burners and gas burning appliances — Methods for classification and assessment*
- EN 14471:2013+A1:2015, *Chimneys — System chimneys with plastic flue liners — Requirements and test methods*

EN 15036-1:2006, *Heating boilers — Test regulations for airborne noise emissions from heat generators — Part 1: Airborne noise emissions from heat generators*

EN 60335-1:2012, *Household and similar electrical appliances — Safety — Part 1: General requirements (IEC 60335-1:2010, modified)*

EN 60335-2-102, *Household and similar electrical appliances — Safety — Part 2-102: Particular requirements for gas, oil and solid-fuel burning appliances having electrical connections (IEC 60335-2-102)*

EN 60529:1991, *Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989)*

EN 60730-2-9, *Automatic electrical controls for household and similar use — Part 2-9: Particular requirements for temperature sensing controls (IEC 60730-2-9)*

EN ISO 178, *Plastics — Determination of flexural properties (ISO 178)*

EN ISO 179-1, *Plastics — Determination of Charpy impact properties — Part 1: Non-instrumented impact test (ISO 179-1)*

EN ISO 228-1, *Pipe threads where pressure-tight joints are not made on the threads — Part 1: Dimensions, tolerances and designation (ISO 228-1)*

EN ISO 527-1, *Plastics — Determination of tensile properties — Part 1: General principles (ISO 527-1)*

EN ISO 527-2, *Plastics — Determination of tensile properties — Part 2: Test conditions for moulding and extrusion plastics (ISO 527-2)*

EN ISO 1183 (all parts), *Plastics — Methods for determining the density of non-cellular plastics (ISO 1183)*

EN ISO 3166-1, *Codes for the representation of names of countries and their subdivisions — Part 1: Country codes (ISO 3166-1)*

EN ISO 9969, *Thermoplastics pipes — Determination of ring stiffness (ISO 9969)*

ISO 37, *Rubber, vulcanized or thermoplastic — Determination of tensile stress-strain properties*

ISO 188, *Rubber, vulcanized or thermoplastic — Accelerated ageing and heat resistance tests*

ISO 262, *ISO general purpose metric screw threads — Selected sizes for screws, bolts and nuts*

ISO 301, *Zinc alloy ingots intended for castings*

ISO 815-1, *Rubber, vulcanized or thermoplastic — Determination of compression set — Part 1: At ambient or elevated temperatures*

ISO 1817, *Rubber, vulcanized or thermoplastic — Determination of the effect of liquids*

ISO 2781, *Rubber, vulcanized or thermoplastic — Determination of density*

ISO 6914, *Rubber, vulcanized or thermoplastic — Determination of ageing characteristics by measurement of stress relaxation in tension*

ISO 7005, *Pipe flanges*

ISO 7619 (all parts), *Rubber, vulcanized or thermoplastic — Determination of indentation hardness*

## EN 26:2015 (E)

### 3 Terms and definitions

For the purpose of this document, the following terms and 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
- 3.1.3.1 thermostatic appliance**  
appliance with automatic output variation 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
- 3.1.3.2 proportioning appliance**  
appliance with automatic output variation where the gas rate is varied proportionally to the water rate, the factor of proportionality may be adjustable
- 3.1.4 condensing instantaneous water heater**  
appliance in which under normal operating conditions and for normal inlet water temperatures the water vapour of the combustion products is partially condensed in order to use the latent heat of this water vapour to produce hot water
- 3.1.5 range of automatic output variation**  
range of 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
- 3.1.6 condensate**  
liquid formed from the combustion products during the condensation process
- 3.2 characteristics of the gas and electricity supplies**
- 3.2.1 reference condition**  
these correspond to 15 °C, 1 013, 25 mbar, unless otherwise specified

[SOURCE: EN 437:2003+A1:2009, 3.9]

**3.2.2****test gas**

gases intended for the verification of the operational characteristics of gas appliances. They consist of reference gases and limit gases

[SOURCE: EN 437:2003+A1:2009, 3.2]

**3.2.2.1****reference gas**

test gases with which appliances operate under nominal conditions when they are supplied at the corresponding normal pressure

[SOURCE: EN 437:2003+A1:2009, 3.3]

**3.2.2.2****limit gas**

test gases representative of the extreme variations in the characteristics of the gases for which appliances have been designed

[SOURCE: EN 437:2003+A1:2009, 3.4]

**3.2.3****calorific value**

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

A distinction is made between: (standards.iteh.ai)

- the gross calorific value  $H_s$ : the water produced by combustion is assumed to be condensed;
- the net calorific value  $H_i$ : the water produced by combustion is assumed to be in the vapour state

Note 1 to entry: The calorific value is expressed:

- either in megajoules per cubic metre ( $\text{MJ}/\text{m}^3$ ) of dry gas under the reference conditions;
- or in megajoules per kilogram ( $\text{MJ}/\text{kg}$ ) of dry gas.

[SOURCE: EN 437:2003+A1:2009, 3.11]

**3.2.4****relative density**

$d$

ratio of the masses of equal volumes of dry gas and dry air under the same conditions of temperature and pressure: 15 °C or 0 °C and 1 013, 25 mbar

[SOURCE: EN 437:2003+A1:2009, 3.10]

**3.2.5****Wobbe number**

gross Wobbe index  $W_s$ ; net Wobbe index  $W_i$

ratio of the calorific value of a gas per unit volume or mass unit and the square root of its relative density under the same reference conditions. The Wobbe index is said to be gross or net according to whether the calorific value used is the gross or net calorific value

Note 1 to entry: The Wobbe indices are expressed: