

This is a preview of "BS EN 26:2015". Click here to purchase the full version from the ANSI store.

BS EN 26:2015



BSI Standards Publication

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

bsi.

...making excellence a habit.™

This is a preview of "BS EN 26:2015". [Click here to purchase the full version from the ANSI store.](#)

This British Standard is the UK implementation of EN 26:2015. It supersedes BS EN 26:1998 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee GSE/29, Gas-fired central heating boilers (domestic and non-domestic) and domestic gas-fired water heaters.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2015.
Published by BSI Standards Limited 2015

ISBN 978 0 580 77034 0

ICS 91.140.10

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 May 2015.

Amendments/corrigenda issued since publication

Date	Text affected
------	---------------

This is a preview of "BS EN 26:2015". [Click here to purchase the full version from the ANSI store.](#)

EUROPÄISCHE NORM

May 2015

ICS 91.140.10

Supersedes EN 26:1997

English Version

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.

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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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 United Kingdom.



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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

This is a preview of "BS EN 26:2015". [Click here to purchase the full version from the ANSI store.](#)

Contents		Page
Foreword.....		7
1	Scope	9
2	Normative references	9
3	Terms and definitions	12
4	Classification of water heaters.....	25
4.1	General.....	25
4.2	Classification of gases.....	25
4.3	Appliance categories.....	26
4.4	Mode of supply of the combustion air and evacuation of the combustion products (appliance types).....	26
4.5	Water pressure.....	26
4.5.1	General.....	26
4.5.2	Low pressure appliances.....	26
4.5.3	Normal pressure appliances.....	26
4.5.4	High pressure appliances	26
5	Constructional requirements.....	26
5.1	Conversion to different gases	26
5.1.1	Introduction	26
5.1.2	General.....	26
5.1.3	Materials	27
5.1.4	Design - Assembly - Strength.....	29
5.1.5	Accessibility - Ease of maintenance - Fitting and removal	30
5.1.6	Gas connections	30
5.1.7	Means of achieving soundness.....	30
5.1.8	Supply of combustion air and evacuation of the combustion products	31
5.1.9	Checking the state of operation	35
5.1.10	Drainage.....	35
5.1.11	Electrical safety.....	35
5.1.12	Operational safety in the event of failure of the auxiliary energy.....	37
5.2	Adjusting, control and safety devices	37
5.2.1	General.....	37
5.2.2	Manual shut off valves and/or gas rate adjusters	38
5.2.3	Preset gas rate adjusters	38
5.2.4	Gas pressure regulator	39
5.2.5	Pressure test points	39
5.2.6	Automatic water-operated gas valve	39
5.2.7	Ignition devices.....	39
5.2.8	Flame supervision device	41
5.2.9	Atmosphere sensing device for type A _{AS} appliances	42
5.2.10	Combustion products discharge safety device for type B _{11BS} , B _{12BS} and B _{13BS} appliances.....	42
5.2.11	Protection against accidental overheating of thermostatic appliances	43
5.2.12	Composition of the gas circuit	43
5.2.13	Protection against frost for appliances intended to be installed in a partially protected place.....	43
5.2.14	Protection against the ingress of rain	44
5.3	Main burner	44
5.4	Supplementary requirements for condensing water heaters	44
5.4.1	Materials in contact with condensate.....	44
5.4.2	Discharge of condensate	44

This is a preview of "BS EN 26:2015". [Click here to purchase the full version from the ANSI store.](#)

5.4.3	Control of the combustion products temperature	45
5.4.4	Chemical composition of the condensate	45
6	Operational requirements	45
6.1	General	45
6.1.1	Introduction	45
6.1.2	Characteristics of the test gases	45
6.1.3	Requirements for preparation of the test gases	45
6.1.4	Choice of test gases	45
6.1.5	Test pressures	45
6.1.6	General test conditions	46
6.2	Soundness	50
6.2.1	Soundness of the gas circuit	50
6.2.2	Soundness of the combustion circuit and evacuation of the combustion products	51
6.2.3	Soundness of the water circuit	56
6.3	Heat inputs	56
6.3.1	General	56
6.3.2	Nominal heat input	58
6.3.3	Minimum heat input	59
6.4	Temperature of the control knobs	59
6.4.1	Requirements	59
6.4.2	Test	59
6.5	Temperature of the adjusting, control and safety devices	60
6.5.1	Requirement	60
6.5.2	Test	60
6.6	Temperature of the appliance casing, the surface on which it is installed and adjacent surfaces and external temperature of the ducts	60
6.6.1	Requirements	60
6.6.2	Tests	61
6.7	Ignition - Cross-lighting - Flame stability	61
6.7.1	Operation in still air for all appliances	61
6.7.2	Supplementary tests for appliances of types A _{AS} and B ₁ except for B ₁₄	63
6.7.3	Supplementary tests for type C ₁₁ appliances and outdoors and/or partially protected appliances	64
6.7.4	Supplementary tests for type C ₂ appliances	65
6.7.5	Supplementary tests for appliances of types C ₁₂ , C ₁₃ , C ₃₂ , C ₃₃ , B ₄ and B ₅	66
6.7.6	Supplementary tests for type C ₄₂ and type C ₄₃ appliances	66
6.7.7	Supplementary tests for type C ₅₂ and type C ₅₃ appliances	67
6.7.8	Supplementary tests for type C ₆ appliances	67
6.7.9	Supplementary tests for type C ₇₂ and type C ₇₃ appliances	67
6.7.10	Supplementary tests for type C ₈₂ and type C ₈₃ appliances	67
6.7.11	Functioning of a permanent ignition burner when the fan stops during the standby time	68
6.7.12	Air proving device for fan assisted water heaters	68
6.7.13	Functioning of the fan of types C ₄₂ and C ₄₃ water heaters	72
6.7.14	Protection against the accumulation of gas in the combustion circuit	72
6.7.15	Leakage of combustion products from type C ₇ water heaters	73
6.7.16	Supplementary tests for type B ₁₄ , B ₂ and B ₃ water heaters	74
6.8	Adjusting, control and safety devices	74
6.8.1	General	74
6.8.2	Control devices	74
6.8.3	Closing mechanisms and the automatic water operated gas valve	75
6.8.4	Ignition devices	76
6.8.5	Safety times	77
6.8.6	Pressure regulator	80
6.8.7	Adjustment of the water rate - Maximum water temperature (all appliances)	81
6.8.8	Overheating of the water	81
6.8.9	Effectiveness of the protection against accidental overheating of thermostatic appliances	81

This is a preview of "BS EN 26:2015". [Click here to purchase the full version from the ANSI store.](#)

6.8.10	Atmosphere sensing device for type A _{AS} appliances	82
6.8.11	Combustion products discharge safety device of type B _{11BS} appliances	84
6.9	Combustion	86
6.9.1	Requirements	86
6.9.2	Test.....	86
6.9.3	Nitrogen oxides emissions	91
6.10	Soot deposition.....	93
6.10.1	Requirement	93
6.10.2	Test.....	93
6.11	Frost protection system for appliances intended to be installed in a partially protected place	93
6.12	Protection against ingress of rain.....	93
6.13	Supplementary tests for condensing water heaters	94
6.13.1	Formation of condensate	94
6.13.2	Temperature of combustion products.....	94
6.14	Electrical power measurements	95
6.14.1	General.....	95
6.14.2	Nominal and minimal conditions	95
6.14.3	Standby	95
6.15	Measurement of standby heat losses.....	95
7	Rational use of energy	95
7.1	General.....	95
7.2	Heat input of ignition burners	95
7.2.1	Requirement	95
7.2.2	Test.....	95
7.3	Efficiency	96
7.3.1	Requirement	96
7.3.2	Test.....	96
8	Fitness for purpose	97
8.1	General.....	97
8.2	Constructional characteristics	97
8.2.1	Water connections.....	97
8.2.2	Preset water rate adjuster	97
8.2.3	Temperature selector and summer-winter switch.....	97
8.2.4	Designation and measurement of reference temperatures of flue systems	97
8.2.5	Mechanical resistance and stability of ducts, terminal and fitting pieces.....	98
8.3	Requirements for plastic in the combustion product evacuation ducts, terminals and fitting pieces for appliances	100
8.3.1	Thermal resistance	100
8.3.2	Materials	100
8.4	Requirements for elastomeric seals and elastomeric sealants in the combustion product evacuation ducts, terminals and fitting pieces.....	105
8.4.1	Characterization.....	105
8.4.2	Long-term resistance to thermal load	106
8.4.3	Long-term resistance to condensate exposure.....	107
8.4.4	Cyclic condensate resistance test	108
8.4.5	Relaxation behaviour	108
8.4.6	Compression set.....	109
8.4.7	Low temperature resistance	109
8.4.8	Joints in elastomeric seals	109
8.5	Operational characteristics	110
8.5.1	Minimum heat input.....	110
8.5.2	Nominal and minimum useful outputs	110
8.5.3	Ignition of permanent ignition burners by a spark generator	110
8.5.4	Ignition opening time (T _{IA})	110
8.5.5	Automatic water-operated gas valve	111

This is a preview of "BS EN 26:2015". [Click here to purchase the full version from the ANSI store.](#)

8.5.6	Adjustment of the water rate - Water temperature.....	112
8.5.7	Heating-up time	116
8.5.8	Specific rate	117
9	Marking and instructions.....	129
9.1	Appliance marking	129
9.1.1	Data plate.....	129
9.1.2	Supplementary markings.....	130
9.1.3	Supplementary marking and instructions in the case of water heaters to be installed in partially protected places	131
9.1.4	Packaging.....	131
9.1.5	Warnings on the appliance and the packaging	131
9.1.6	Other information	132
9.2	Instructions	132
9.2.1	Installation instructions	132
9.2.2	User's instructions	137
9.2.3	Conversion instructions	138
9.3	Presentation	138
10	Ecodesign Data.....	138
10.1	Water heating energy efficiency (η_{wh})	138
10.2	Nitrogen oxides emissions.....	138
10.3	Additional product information.....	139
11	Energy Labelling Data.....	139
11.1	General	139
11.2	Printed label	139
11.2.1	General	139
11.2.2	Annual Electricity Consumption (AEC).....	139
11.2.3	Annual Fuel Consumption (AFC).....	139
11.2.4	Sound power level (L_{WA})	139
11.3	Product fiche.....	140
11.4	Technical documentation	140
Annex A	(informative) National situations.....	141
Annex B	(normative) Test apparatus for type C ₁ , C ₃ , B ₄ and B ₅ water heaters (see 6.7.3.2)	144
Annex C	(normative) Test apparatus for type C ₂₁ appliances (see 6.7.4.2)	149
Annex D	(normative) Description of the sealed room for the tests of type A _{AS} appliances (see 6.8.10.1.2.1)	150
Annex E	(informative) Soundness of the gas circuit test - Volumetric method (see 6.1.6.5 and 6.2.1.3).....	151
Annex F	(informative) Principal symbols and abbreviations used.....	152
Annex G	(informative) Guidelines for extension to other categories	153
Annex H	(informative) A deviations	154
Annex I	(normative) Lists of materials currently used.....	155
Annex J	(normative) Test methods to determine the effects of to long-term thermal load, long-term condensate exposure, condensing/ non-condensing cycling and resistance to UV radiation.....	157
Annex K	(informative) NO _x conversion calculation	158
Annex L	(normative) Parts in copper or copper alloys.....	159
Annex M	(informative) Compilation of the test conditions for the various gas families	160

This is a preview of "BS EN 26:2015". [Click here to purchase the full version from the ANSI store.](#)

Annex N (informative) Alternative Method for the determination of the nominal heat input or the maximum and minimum heat input (according to 6.3.1) for appliances using a pneumatic gas/air ratio control system	162
Annex ZA (informative) Relationship between this European Standard and the requirements of EU Directive 2009/142/EC	163
Annex ZB (informative) Relationship between this European Standard and the requirements of Commission Regulation (EU) No 814/2013	166
Annex ZC (informative) Relationship between this European Standard and the requirements of Commission Delegated Regulation (EU) No 812/2013	167
Bibliography	168

This is a preview of "BS EN 26:2015". [Click here to purchase the full version from the ANSI store.](#)

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.

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;
- NO_x 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.

This is a preview of "BS EN 26:2015". [Click here to purchase the full version from the ANSI store.](#)

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.

This is a preview of "BS EN 26:2015". [Click here to purchase the full version from the ANSI store.](#)

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}, B₁₁, B_{11BS}, B₁₂, B_{12BS}, B₁₃, B_{13BS}, B₁₄, B₂₂, B₂₃, B₃₂, B₃₃, B₄₄, B₅₂, B₅₃, C₁₁, C₁₂, C₁₃, C₂₁, C₂₂, C₂₃, C₃₂, C₃₃, C₄₂, C₄₃, C₅₂, C₅₃, C₆₂, C₆₃, C₇₂, C₇₃, C₈₂ and C₈₃ 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 B₂₁, B₃₁, B₄₁, B₄₂, B₄₃ and B₅₁.

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*