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Incorporating corrigendum February 2015



BSI Standards Publication

Gas-fired central heating boilers

Part 2-1: Specific standard for type C appliances and type B2, B3 and B5 appliances of a nominal heat input not exceeding 1 000 kW

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This British Standard is the UK implementation of EN 15502-2-1:2012+A1:2016. It supersedes BS EN 15502-2-1:2012 which is withdrawn. Together with BS EN 15502-1:2012+A1:2015 and BS EN 15502-2-2:2014, it supersedes BS EN 297:1994 (including amendments), BS EN 677:1998, BS EN 15417:2006 and BS EN 625:1996, which will be withdrawn on 31 July 2017.

Annex V gives detailed information on the state of supersessions in the EN 15502 series.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to CEN text carry the number of the CEN amendment. For example, text altered by CEN amendment A1 is indicated by $\boxed{A1}$ $\langle A1 \rangle$.

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.

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Published by BSI Standards Limited 2017

ISBN 978 0 580 85148 3

ICS 27.060.30; 91.140.10

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 November 2012.

Amendments/corrigenda issued since publication

| Date | Text affected |
|------------------|---|
| 28 February 2015 | Supersession information in National foreword updated and National Annex NA inserted |
| 31 January 2017 | Implementation of CEN amendment A1:2016. National Annex NA removed as this has been replaced by Annex V of the standard |

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EUROPÄISCHE NORM

December 2016

ICS 91.140.10; 27.060.30

Supersedes EN 15502-2-1:2012

English Version

Gas-fired central heating boilers - Part 2-1: Specific standard for type C appliances and type B2, B3 and B5 appliances of a nominal heat input not exceeding 1 000 kW

Chaudières de chauffage central utilisant les combustibles gazeux - Partie 2-1 : Norme spécifique pour les appareils de type C et les appareils de types B2, B3 et B5 dont le débit calorifique nominal est inférieur ou égal à 1 000 kW

Heizkessel für gasförmige Brennstoffe - Teil 2-1: Heizkessel der Bauart C und Heizkessel der Bauarten B2, B3 und B5 mit einer Nennwärmebelastung nicht größer als 1 000 kW

This European Standard was approved by CEN on 18 August 2012 and includes Amendment 1 approved by CEN on 18 June 2016.

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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| Contents | Page |
|---|-------------|
| European foreword | 6 |
| Introduction..... | 8 |
| 1 Scope | 10 |
| 2 Normative references | 11 |
| 3 Terms, definitions and symbols | 13 |
| 3.1 Terms and definitions | 13 |
| 3.2 Symbols | 18 |
| 4 Classification | 18 |
| 5 Construction | 19 |
| 5.1 General | 19 |
| 5.2 Conversion to different gases | 19 |
| 5.3 Materials | 19 |
| 5.4 Method of construction | 20 |
| 5.4.1 Design | 20 |
| 5.4.2 Checking the state of operation | 20 |
| 5.4.3 Use and servicing | 21 |
| 5.4.4 Connections to the gas and water pipes | 21 |
| 5.4.5 Soundness | 21 |
| 5.4.6 Supply of combustion air and evacuation of the combustion products | 21 |
| 5.4.7 Dampers | 22 |
| 5.4.8 Air proving | 22 |
| 5.4.9 Gas/air ratio controls | 23 |
| 5.4.10 Fan | 23 |
| 5.4.11 Drainage | 23 |
| 5.4.12 Operational safety in the event of failure of the auxiliary energy | 23 |
| 5.4.13 Special provision for Low Temperature Boilers and Condensing Boilers | 23 |
| 5.5 Burners | 24 |
| 5.6 Pressure test points | 24 |
| 5.7 Requirements for the application of control and safety devices | 24 |
| 5.7.1 General | 24 |
| 5.7.2 Adjusters and range-rating devices | 24 |
| 5.7.3 Gas circuit | 25 |
| 5.7.4 Gas pressure regulator | 25 |
| 5.7.5 Ignition devices | 25 |
| 5.7.6 Flame supervision devices | 25 |
| 5.7.7 Gas/air ratio controls | 25 |
| 5.7.8 Thermostats and water temperature limiting devices | 25 |
| 5.7.9 Remote control | 25 |
| 5.7.10 Expansion vessel and pressure gauge | 25 |
| 5.7.11 Protection against frost for boilers intended to be installed in a partially protected place | 25 |
| 5.7.12 Adjusting, control and safety devices for the domestic hot water circuit | 25 |

This is a preview of "BS EN 15502-2-1:2012...". Click here to purchase the full version from the ANSI store.

| | | |
|--------|---|----|
| 6 | Electrical safety | 26 |
| 7 | Controls | 26 |
| 8 | Operational requirements | 26 |
| 8.1 | General | 26 |
| 8.1.1 | Characteristics of the reference and limit gases | 26 |
| 8.1.2 | General test conditions..... | 26 |
| 8.2 | Soundness..... | 30 |
| 8.2.1 | Soundness of the gas circuit..... | 30 |
| 8.2.2 | Soundness of the combustion circuit..... | 30 |
| 8.2.3 | Soundness of the water circuit | 34 |
| 8.2.4 | Soundness of the domestic water circuit | 34 |
| 8.3 | Hydraulic resistance..... | 34 |
| 8.4 | Heat inputs and heat output | 34 |
| 8.5 | Limiting temperatures..... | 35 |
| 8.5.1 | General | 35 |
| 8.5.2 | Limiting temperatures of the adjusting, control and safety devices..... | 35 |
| 8.5.3 | Limiting temperatures of the side walls, the front and the top | 36 |
| 8.5.4 | Limiting temperature of the test panels and the floor | 36 |
| 8.6 | Ignition, cross lighting, flame stability | 36 |
| 8.6.1 | General | 36 |
| 8.6.2 | Limit conditions | 36 |
| 8.6.3 | Ⓐ) Special flue conditions Ⓐ) | 37 |
| 8.6.4 | Reduction of the gas rate of the ignition burner | 40 |
| 8.7 | Reduction of the gas pressure..... | 40 |
| 8.8 | Defective closure of the gas valve immediately upstream of the main burner..... | 40 |
| 8.9 | Pre-purge..... | 40 |
| 8.10 | Functioning of a permanent ignition burner when the fan stops during the standby time | 43 |
| 8.11 | Adjustment, control and safety devices..... | 44 |
| 8.11.1 | General | 44 |
| 8.11.2 | Boilers intended to be installed in a partially protected place..... | 44 |
| 8.11.3 | Combination Boilers..... | 44 |
| 8.11.4 | Control devices | 44 |
| 8.11.5 | Ignition devices | 44 |
| 8.11.6 | Flame supervision device | 44 |
| 8.11.7 | Gas pressure regulator | 44 |
| 8.11.8 | Thermostats and water temperature limiting devices..... | 44 |
| 8.12 | Carbon monoxide | 47 |
| 8.12.1 | General | 47 |
| 8.12.2 | Limit conditions | 47 |
| 8.12.3 | Special conditions..... | 48 |
| 8.12.4 | Sooting..... | 51 |
| 8.12.5 | Supplementary test for low temperature boilers and condensing boilers | 51 |
| 8.13 | NO _x | 51 |
| 8.14 | Special provisions for boilers intended to be installed in a partially protected place | 51 |
| 8.15 | Formation of condensate | 51 |
| 8.16 | Temperature of combustion products..... | 51 |
| 8.17 | Sound power level..... | 52 |
| 9 | Useful efficiencies..... | 69 |
| 10 | Electric auxiliary energy | 69 |

This is a preview of "BS EN 15502-2-1:2012...". Click here to purchase the full version from the ANSI store.

| | | |
|-------------------------------|---|------------|
| 11 | Risk assessment | 69 |
| 12 | Marking and instructions | 69 |
| 12.1 | Boiler marking | 69 |
| 12.1.1 | Supplementary markings | 69 |
| 12.2 | Instructions | 69 |
| 12.2.1 | Technical instructions | 69 |
| 12.2.2 | Users instructions | 76 |
| 12.3 | Presentation | 76 |
| 12.4 | Supplementary marking and instructions in the case of boilers to be installed in partially protected places | 76 |
| 13 | Requirements for Eco-design Regulation (No 813/2013) and Energy Labelling Regulation (No 811/2013) | 76 |
| 101 | Figures | 76 |
| 102 | Listing of tables and numbers | 89 |
| 103 | Annexes | 89 |
| Annex V (informative) | Standards replaced by this standard in combination with part 1 | 90 |
| Annex XA (normative) | Test apparatus for type C₂ boilers | 92 |
| Annex XB (normative) | Test methods to determine the effects of long-term thermal load, long-term condensate exposure, condensing/ non- condensing cycling and resistance to UV radiation | 93 |
| Annex XC (informative) | Variations in gas quality | 94 |
| XC.1 | Introduction | 94 |
| XC.2 | Considerations if boilers are intend to be used with larger variations in the gas quality | 96 |
| XC.2.1 | Specification of the acceptable variations | 96 |
| XC.2.2 | Impact of the claimed range around a set value for the normal distributed gases | 96 |
| XC.2.3 | Impact of the declared values | 97 |
| XC.2.4 | Relation between the RG, the DLG and the ELG | 98 |
| XC.2.5 | Self adapting appliances | 98 |
| Annex XD (informative) | Example on calculation of common duct system for type C₍₁₁₎ boilers | 99 |
| Annex ZB (informative) | Clauses of this European Standard addressing the methods for the verification of the efficiency of the EU Directive 92/42/EEC, relating to the efficiency of new hot boilers with an output of (4 – 400) kW | 102 |
| Annex ZC (informative) | Relationship between this European Standard and the Requirements of COMMISSION REGULATION (EU) No 813/2013 of 2 August 2013 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for space heaters and combination heaters | 103 |

This is a preview of "BS EN 15502-2-1:2012...". Click here to purchase the full version from the ANSI store.

| | |
|---|------------|
| Annex ZD (informative) ⌘ Relationship between this European Standard and the Requirements of COMMISSION DELEGATED REGULATION (EU) No 811/2013 of 18 February 2013 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to the energy labelling of space heaters, combination heaters, packages of space heater, temperature control and solar device and packages of combination heater, temperature control and solar device ⌘ | 104 |
| Bibliography | 106 |

European foreword

This document (EN 15502-2-1:2012+A1:2016) has been prepared by Technical Committee CEN/TC 109 "Central heating boilers using gaseous fuels", the secretariat of which is held by NEN.

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 June 2017, and conflicting national standards shall be withdrawn at the latest by June 2017.

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 includes Amendment 1 approved by CEN on 18 June 2016.

This document supersedes $\boxed{A_1}$ EN 15502-2-1:2012 $\boxed{A_1}$.

The start and finish of text introduced or altered by amendment is indicated in the text by tags $\boxed{A_1}$ $\boxed{A_1}$.

This document has been prepared under $\boxed{A_1}$ Mandates M/535 and M/066 given to CEN $\boxed{A_1}$ 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 $\boxed{A_1}$ informative Annexes ZB, ZC and ZD $\boxed{A_1}$, which are integral parts of this document.

It supports essential requirements as meant in Article 3 of EU Directive 2009/142/EC, relating to appliances burning gaseous fuels and the verification methods valid for production and measurements, as meant in Article 5.2 of EU Directive 92/42/EEC, relating to the efficiency requirements for new hot water boilers fired with liquid or gaseous fuels, with an output of (4 – 400) kW.

Changes in this standard:

Many minor changes are introduced due to the harmonisation between the various standards. This includes the definitions that are used. Some definitions are modified as some standards mentioned the same words with a different meaning.

The user is advised to compare the text he is used to (including the definitions) with the current version.

Most aspects were already introduced for some boiler types, but are now valid for a larger group of boilers.

a) Examples of modifications due to harmonisation:

- 1) Requirements for materials used for the flue function (8.101, 8.102, 8.103);
- 2) The soundness of the combustion circuit (8.2.2);

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b) New or generally reworded requirements:

- 1) Air proving (5.4.8, 5.4.9, 8.11.101);
- 2) Adjustment of gas air ration controllers (8.11.101);
- 3) Risk assessment (11);
- 4) Auxiliary energy use (10);
- 5) A_1 Variation in gas quality (Annex XC) A_1 ;
- 6) The water trap requirements for condensing boilers (5.4.13);
- 7) Requirements for boiler cascades (8.101);

A_1

- 8) The requirements for type $C_{(10)}$ and $C_{(11)}$ boilers with a $\Delta p_{\max, \text{saf}(\min)}$ of 25 Pa which are now added to this standard. A_1

EN 15502 is composed of the following parts:

- EN 15502-1, *Gas-fired heating boilers — Part 1: General requirements and tests*;
- EN 15502-2-1, *Gas-fired central heating boilers — Part 2-1: Specific standard for type C appliances and type B2, B3 and B5 appliances of a nominal heat input not exceeding 1 000 kW (the present document)*;
- prEN 15502-2-2, *Gas-fired central heating boilers — Part 2-2: Specific standard for type B1 appliances of a nominal heat input not exceeding 70 kW*.

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.

Introduction

A gas-fired heating boiler is an appliance using gas as fuel designed to heat water with the purpose of providing heat to a building (or portion of a building) from one point to multiple rooms using heat emitters such as radiators and convectors to transmit the heat from the water to the room. The boiler may also be used to provide domestic hot water via an indirect hot water storage tank.

The basic function of gas-fired heating boiler is to generate heat by direct heat transfer in a heat exchanger, from the combustion gasses to the water.

The boiler may include in one design more than one function. It may include for example:

- a) a sanitary hot water function;
- b) a function to supply the combustion air from the outside of the building;
- c) a function to dispose the combustion products to the outside of the building.

A1 Boilers may be designed to be connected to specific parts of a building, for instance to create a function as described above under b) and c). Especially the connections to building parts to provide the functions mentioned under b) and c) are relevant.

The boiler may be designed to be supplied in more than one part. If the boiler is designed to be supplied in multiple parts, the boiler is the assembly of various parts according to the technical instructions. **A1**

This European Standard was established to deal with aspects related to:

- d) safety;
- e) rational use of energy;
- f) fitness for purpose.

Matters related to quality assurance systems, tests during production, and certificates of conformity of auxiliary devices are not dealt with in this series of European Standards.

Relationship between this document and EN 15502-1, Gas-fired heating boilers — Part 1: General requirements and tests:

This European Standard is to be used in conjunction with **A1** EN 15502-1:2012+A1:2015 **A1** and follows the numbering structure of **A1** EN 15502-1:2012+A1:2015 **A1**.

This European Standard refers to clauses of **A1** EN 15502-1:2012+A1:2015 **A1** or adapts clauses by stating in the corresponding clause:

- shall be according to **A1** EN 15502-1:2012+A1:2015 **A1**, (clause number) with the following modification
- shall be according to **A1** EN 15502-1:2012+A1:2015 **A1**, (clause number) with the following addition
- **A1** EN 15502-1:2012+A1:2015 **A1**, (clause number) is replaced by the following;
- **A1** EN 15502-1:2012+A1:2015 **A1**, (clause number) is not applicable.

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A1) This European Standard adds clauses or subclauses to the structure of EN 15502-1:2012+A1:2015 which are particular to this standard. It should be noted that these clauses and subclauses are not indicated as an addition. Clauses, subclauses and annexes which are additional to those in EN 15502-1:2012+A1:2015 are numbered starting from 101, or designated as Annex XA, XB, XC, etc.

Annex V lists those existing standards which are replaced by this standard in combination with EN 15502-1.

After the DOW on 2015-10-31 (3 years after the DAV of both EN 15502-1 and EN 15502-2-1) the standards specified in Annex V, for the appliance types covered in EN 15502-2-1, were withdrawn by CEN.

Annex V also lists those existing appliance types for which CEN/TC 109 standards are intended to be replaced by EN 15502-2-2. The standards (that are intended to be replaced by EN 15502-2-2) listed in Annex V will be used until EN 15502-2-2 specifies that the standards are withdrawn for the appliance types indicated. **A1)**

1 Scope

This European Standard specifies, the requirements and test methods concerning, in particular, the construction, safety, fitness for purpose, and rational use of energy, as well as the classification and marking of gas-fired central heating boilers that are fitted with atmospheric burners, fan assisted atmospheric burners or fully premixed burners, and are hereafter referred to as "boilers".

Where the word boiler is used, it needs to be read as the boiler including its connecting ducts, ducts and terminals, if any.

A1 This European Standard covers gas-fired central heating boilers from the types C₁ up to C₉ and the types B₂, B₃ and B₅:

NOTE For further background information on appliance types see CEN/TR 1749:2014. **A1**

- a) that have a nominal heat input (on the basis of net calorific value) not exceeding 1 000 kW;
- b) that use one or more combustible gases of the three gas families at the pressures stated in EN 437;
- c) where the temperature of the heat transfer fluid does not exceed 105 °C during normal operation;
- d) where the maximum operating pressure in the water circuit does not exceed 6 bar;
- e) which may or may not give rise to condensation under certain circumstances;
- f) which are declared in the installation instructions to be either a "condensing" boiler or a "low temperature boiler" or a "standard boiler"; if no declaration is given the boiler is to be considered a "standard boiler";
- g) which are intended to be installed either indoors or outdoors in a partially protected place;
- h) which may include the facility to produce hot water, either by the instantaneous or storage principle, the whole being marketed as a single unit;
- i) which are designed for either sealed water systems or for open water systems;
- j) which are either modular boilers, or non- modular boilers.

A1 This European Standard also covers gas-fired condensing central heating boilers from the types C₍₁₀₎ that are equipped with a gas-air ratio control and that have a $\Delta p_{\max, \text{saf}(\min)}$ of 25 Pa, and C₍₁₁₎ boilers that have condensing boiler modules that are equipped with a gas-air ratio control and that have a $\Delta p_{\max, \text{saf}(\min)}$ of 25 Pa. **A1**

This European Standard provides requirements for boilers with known constructions. For boilers with any alternative constructions, which might not fully be covered by this standard, the risk associated with this alternative construction needs to be assessed.

An example of an assessment methodology, based upon risk assessment and which covers the essential requirements of the Gas Appliance Directive, is given in Clause 11.