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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National foreword

This British Standard is the UK implementation of EN 15502-2-1:2022. It supersedes BS EN 15502-2-1:2012+A1:2016, which is withdrawn.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 committee manager.

BSI, as a member of CEN, is obliged to publish EN 15502-2-1:2022 as a British Standard. However, attention is drawn to the fact that during the development of this European Standard, the UK committee voted against its approval.

Comments raised by GSE/29 were addressed during the final vote except the proposal to change the wording in subclause 12.2.1.2 from a shall to a should. This was initially changed during the harmonization process by the consultant. The third comment raised by the mirror committee was mitigation for the inclusion of the requirement in that subclause to allow industry a longer period to implement the changes necessary to comply with subclause 12.2.1.2.

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This publication has been prepared under a mandate given to the European Standards Organizations by the European Commission and the European Free Trade Association. It is intended to support requirements of the EU legislation detailed in the European Foreword. A European Annex, usually Annex ZA or ZZ, describes how this publication relates to that EU legislation.

For the Great Britain market (England, Scotland and Wales), if UK Government has designated this publication for conformity with UKCA marking (or similar) legislation, it may contain an additional National Annex. Where such a National Annex exists, it shows the correlation between this publication and the relevant UK legislation. If there is no National Annex of this kind, the relevant Annex ZA or ZZ in the body of the European text will indicate the relationship to UK regulation applicable in Great Britain. References to EU legislation may need to be read in accordance with the UK designation and the applicable UK law. Further information on designated standards can be found at www.bsigroup.com/standardsandregulation.

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UK Government is responsible for legislation. For information on legislation and policies relating to that legislation, consult the relevant pages of www.gov.uk.

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

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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 24 July 2022.

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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.

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European foreword

This document (EN 15502-2-1:2022) 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 March 2023, and conflicting national standards shall be withdrawn at the latest by September 2025.

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

This document supersedes EN 15502-2-1:2012+A1:2016.

The main technical changes compared to EN 15502-2-1:2012+A1:2016 are the following:

I) Resulting from the revision of EN 15502-1:2012+A1:2015 into EN 15502-1:2021

a) Technical changes related to eco-design and energy labelling for appliances ≤ 400 kW:

   1) deletion of the requirements that can be found in the legislation itself;

   2) modification of Annexes ZC and ZD.

b) New or generally reworded requirements:

   1) separation between requirements and test methods into different clauses;

   2) moving of additional common parts from EN 15502-2-1:2012+A1:2016 and/or EN 15502-2-2:2014 to EN 15502-1:2021 (for example, all definitions used in the parts 2 are moved to part 1; therefore, most of the definitions in this part are now by reference to part 1);

   3) definitions added for instructions for installation, instructions for use and servicing, and technical documentation and consequently applied throughout the document;

   4) improved wording of definitions related to the air supply and combustion products circuit;

   5) improved references to the Annexes Z. The Annex Z referring to the GAD has been removed and an Annex Z referring to the GAR has been inserted;

   6) only “instructions for installation” and “instructions for use and servicing” are defined; therefore, these are the only instructions to be used in this document;

   7) improved definitions “ducts / circuits”;

   8) definition weighted value of the NOx concentration added. With regard to Ecodesign, it is clarified that the emissions declared are the emissions when using the references gases.

c) Limitation of the scope compared to the standards superseded by the EN 15502 series (that were cited in the OJEU under the GAD):

   1) Types B_{14} and B_4 appliances, as covered in EN 297:1994/A4:2004 are not covered by this standard as there seems to be a limited market for these appliances due to the introduction of the Ecodesign Directive that only has an exemption for B_{11} appliances.

NOTE B_{14} and B_4 are non-condensing appliances.

2) This document does not cover all the requirements for appliances designed and constructed to burn gas containing toxic components. In the past it was always considered that the gases were not toxic, however this was never clearly indicated in the scope. In fact, this is not a change of scope, but a clarification of the scope.

3) This document is not intended to cover appliances intended for connection to gas grids where the quality of the distributed gas is likely to vary to a large extent over the lifetime of the appliance (see Annex AB). In the past no big variation in gas quality occurred. Due to the EASEE-gas CBP wide variations of gas quality are considered. As these were never covered in this document, the scope is modified to make clear that these variations are not covered. In fact, this is not a change of scope, but a clarification of the scope.

4) This document does not cover all the requirements for appliances above 1 000 kW. In fact, this is not a change of scope, but a clarification of the scope.

5) This document does not cover all the requirements for appliances having a supplementary heater. In fact, this is not a change of scope, but a clarification of the scope as these appliances were never included in the past, however due to the Ecodesign Regulation it has become necessary to mention this more explicitly.

II) Additional changes, not resulting from the revision of EN 15502-1:2012+A1:2015 into EN 15502-1:2021

a) Technical changes related to eco-design and energy labelling for appliances ≤ 400 kW:

1) no changes.

b) New or generally reworded requirements:

1) separation between requirements and test methods in to different clauses;

2) changes resulting from moving additional common parts from EN 15502-2-1:2012+A1:2016 and/or EN 15502-2-2:2014 to EN 15502-1:2021 (for example all definitions used in the parts 2 are moved to part 1; therefore, most of the definitions in this part are now by reference to part 1);

3) the definitions for Instructions for installation, Instructions for use and servicing, and Technical documentation are now consequently applied throughout the document;

4) an Annex Z referring to the GAR has been inserted;

5) only “instructions for installation” and “instructions for use and servicing” are defined; therefore, these are the only instructions to be used in this document.

c) Limitation of the scope compared to the standards superseded by the EN 15502 series (that were cited in the OJEU under the GAD):

This revision only covers the update from the EN 15502-1 and an addition of an Annex Z referring to the GAR. This revision aimed not to introduce any new technical content. As some specific requirements are not covered in the EN 15502-2-1:2012+A1:2016. The scope has been modified to clarify this, stating that this standard does not include:

1) specific requirements on surface temperatures of external parts particular to children and elderly people;

2) specific requirements on appliances that are intended to burn natural gases of the second family where hydrogen is added to the natural gas;

3) specific requirements for appliances equipped with an adaptive combustion control function.

In fact, these changes are not a change of scope, but a clarification of the scope.

EN 15502 consists of the following parts under the general title "*Gas-fired heating boilers*":

— *Part 1: General requirements and tests;*

— *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 (this document);*

— *Part 2-2: Specific standard for type B1 appliances.*

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

This document is to be used in conjunction with EN 15502-1:2021 and follows the numbering structure of EN 15502-1:2021.

Where this European Standard states:

— shall be according to EN 15502-1:2021, (clause number) with the following modification;

— shall be according to EN 15502-1:2021, (clause number) with the following addition;

— EN 15502-1:2021, (clause number) is replaced by the following;

— EN 15502-1:2021, (clause number) is not applicable;

the relevant text of EN 15502-1:2021 is to be adapted accordingly.

This document adds clauses or subclauses to the structure of EN 15502-1:2021 which are particular to this Part 2 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 15502-1:2021 are numbered starting from 101, or designated as Annex XA, XB, XC, etc.

This document has been prepared under mandates M89/6 and M066, given to CEN by the European Commission and the European Free Trade Association, and 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.

This document has been prepared under the mandates M/534 and M/535, given to CEN by the European Commission and the European Free Trade Association to provide a means of conforming to:

— requirements of Commission Regulation (EC) 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;

— requirements of Commission Delegated Regulation (EC) No 811/2013 of 18 February 2013 supplementing Directive 2010/30/EC of the European Parliament and of the Council with regard to 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.

For relationship with EU Directive(s) / Regulation(s), see informative Annexes ZB, ZC, ZD and ZE which are integral parts of this document.

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

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

Introduction

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 can include in one design more than one function. It can include for example:

— a sanitary hot water function;

— a function to supply the combustion air from the outside/open air;

— a function to dispose the combustion products to the outside/open air.

The boiler can be supplied to the market in more than one part. If the boiler is supplied to the market in multiple parts, the boiler is the assembly of various parts according to the instructions for installation.

Boilers can be designed to be connected to specific parts of a building. Connection to a chimney and the means of combustion air supply is particularly relevant.

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.

1 Scope

This document specifies the requirements and test methods, 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".

This document is intended to be used in conjunction with EN 15502-1:2021.

This document covers gas-fired central heating boilers from the types C_1 up to $C_{(11)}$ and the types B_2, B_3 and B_5:

NOTE 1 For further background information on appliance types see EN 1749:2020.

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 437:2021;

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 can give rise to condensation under certain circumstances;

f) which are declared in the instructions for installation 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 inside a building or in a partially protected place;

h) which are intended to produce also hot water either by the instantaneous or storage principle 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.

k) which are from the types $C_{(10)}$ that are equipped with a gas-air ratio control and that have a $\mathbf{\Delta p_{max,\ saf(min)}}$ of 25 Pa, and $C_{(11)}$ that have condensing boiler modules that are equipped with a gas-air ratio control and that have a $\mathbf{\Delta p_{max,\ saf(min)}}$ of 25 Pa.

NOTE 2 This document 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, is given in Clause 11.

This document does not cover all the requirements for:

aa) appliances above 1 000 kW;

ab) appliances that are intended to be connected to gas grids where the quality of the distributed gas is likely to vary to a large extent over the lifetime of the appliance (see Annex AB of EN 15502-1:2021);

ac) appliances using flue dampers;

ad) appliances of the types B_{21}, B_{31}, B_{51}, C_{21}, C_{41}, C_{51}, C_{61}, C_{71}, C_{81}, $C_{(12)}$ and $C_{(13)}$;