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Gas-fired heating boilers - Part 1: General requirements and tests

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

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English Version

Gas-fired heating boilers - Part 1: General requirements and tests

Chaudières de chauffage central utilisant les
combustibles gazeux - Partie 1: Exigences générales et
essais

Heizkessel für gasförmige Brennstoffe - Teil 1:
Allgemeine Anforderungen und Prüfungen

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European foreword

This document (EN 15502-1:2021) 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of an identical text or by endorsement, at the latest by May 2022, and conflicting national standards shall be withdrawn at the latest by May 2022.

This document supersedes EN 15502-1:2012+A1:2015.

The main technical changes compared to EN 15502-1:2012+A1:2015 are the following:

- a) Technical changes related to ecodesign and energy labelling for appliances ≤ 400 kW:
 - 1) Deletion of the requirements that can be found in the legislation itself.
 - 2) Modification of the Annexes ZC and ZD
- b) New or generally reworded requirements:
 - 1) Separation between requirements and test methods in to different clauses;
 - 2) Moving additional common parts from EN 15502-2-1:2012+A1:2016 and/or EN 15502-2-2:2014 to this standard (for example all definitions used in the parts 2 are moved 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 the references of 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 standard;

- 7) Improved definitions 'ducts / circuits';
 - 8) Definition weighted value of the NO_x 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 B₁₄ and B₄ 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 B₁₁ appliances.

NOTE B₁₄ and B₄ 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;

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- 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 standard, 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 1000 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;

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

- *Part 1: General requirements and tests (this standard);*
- *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;*
- *Part 2-2: Specific standard for type B1 appliances.*

This document is to be used in conjunction with the specific Parts 2.

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) and Commission Regulations, see informative Annexes ZB, ZC and ZD, 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, Turkey 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 design 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.

This document is a first part of a series of standards that will describe the special requirements for specific appliance types of the boiler. This European Standard contains the common requirements that are applicable for the majority of the appliance types of the boiler.

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.

EN 15502-1:2021 (E)**1 Scope**

This document specifies the common requirements and test methods, as well as the classification, marking and energy labelling 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 to be used in conjunction with the specific Parts 2 (Part 2-1, Part 2-2 and following ones).

This document applies to boilers of types B and C:

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

- a) that use one or more combustible gases of the three gas families at the pressures stated in EN 437:2021;
- b) where the temperature of the water does not exceed 105 °C during normal operation;
- c) where the maximum operating pressure in the water circuit does not exceed 6 bar;
- d) which can give rise to condensation under certain circumstances;
- e) which are declared in the instructions for installation to be either a "condensing" boiler or a "low temperature boiler" or a "standard boiler" or an "other boiler". If no declaration is given the boiler is to be considered both a "standard boiler" and an "other boiler";
- f) which are intended to be installed inside a building or in a partially protected place;
- g) which are intended to produce also hot water either by the instantaneous or storage principle as a single unit.

This document applies to boilers designed for sealed water systems or for open water systems.

NOTE This general standard and the specific standards (see Part 2) provide requirements for boilers with known constructions. For boilers with any alternative constructions, which might not fully be covered by this standard or a specific standard, the risk associated with this alternative construction will need to be assessed.

An example of an assessment methodology, based upon risk assessment, is given in Clause 11.

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).

This document does not cover all the requirements for :

- aa) appliances above 1000 kW;
- ab) appliances designed and constructed to burn gas containing carbon monoxide or other toxic components;
- ac) appliance having a supplementary heater.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. 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+A1:2016, *Pressure regulators and associated safety devices for gas appliances - Part 1: Pressure regulators for inlet pressures up to and including 50 kPa*

EN 125:2010+A1:2015, *Flame supervision devices for gas burning appliances - Thermoelectric flame supervision devices*

EN 126:2012, *Multifunctional controls for gas burning appliances*

EN 161:2011+A3:2013, *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 437:2021, *Test gases - Test pressures - Appliance categories*

EN 573-1:2004, *Aluminium and aluminium alloys - Chemical composition and form of wrought products - Part 1: Numerical designation system* EN 1057:2006+A1:2010, *Copper and copper alloys - Seamless, round copper tubes for water and gas in sanitary and heating applications*

EN 1092-1:2018, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated - Part 1: Steel flanges*

EN 1092-2:1997, *Flanges and their joints - Circular flanges for pipes, valves, fittings and accessories, PN designated - Part 2: Cast iron flanges*

EN 1092-3:2003, *Flanges and their joints - Circular flanges for pipes, valves, fittings and accessories, PN designated - Part 3: Copper alloy flanges*

EN 1092-4:2002, *Flanges and their joints - Circular flanges for pipes, valves, fittings and accessories, PN designated - Part 4: Aluminium alloy flanges*

EN 1561:2011, *Founding - Grey cast irons*

EN 1749:2020, *Classification of gas appliances according to the method of supplying combustion air and of evacuation of the combustion products*

EN 1856-1:2009, *Chimneys - Requirements for metal chimneys - Part 1: System chimney products*

EN 10029:2010, *Hot-rolled steel plates 3 mm thick or above - Tolerances on dimensions and shape*

EN 10088-1:2014, *Stainless steels - Part 1: List of stainless steels* EN 10226-1:2004, *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 10226-2:2005, *Pipe threads where pressure tight joints are made on the threads - Part 2: Taper external threads and taper internal threads - Dimensions, tolerances and designation*

EN 12067-2:2004, *Gas/air ratio controls for gas burners and gas burning appliances - Part 2: Electronic types*

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EN 13203-1:2015, Gas fired domestic appliances producing hot water - Part 1: Assessment of performance of hot water deliveries

EN 13203-2:2018, *Gas-fired domestic appliances producing hot water — Part 2: Assessment of energy consumption*

EN 13611:2019, *Safety and control devices for gas burners and gas burning appliances - General requirements*

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

EN 15456:2008, *Heating boilers - Electrical power consumption for heat generators - System boundaries - Measurements*

EN 16830:2017, *Safety and control devices for burners and appliances burning gaseous or liquid fuels - Control functions in electronic systems - Temperature Control function*

EN 60335-1:2012+AC:2014+A1:2019+A2:2019+A11:2014+A13:2017+A14:2019, *Household and similar electrical appliances - Safety - Part 1: General requirements*

EN 60335-2-102:2016, *Household and similar electrical appliances - Safety - Part 2-102: Particular requirements for gas, oil and solid-fuel burning appliances having electrical connections (IEC 60335-2-102:2004,MOD; IEC 60335-2-102:2004/A1:2008,MOD; IEC 60335-2-102:2004/A2:2012,MOD)*

EN 60529:1991+A2:2013+AC1:2019, *Degrees of protection provided by enclosures (IP code) (IEC 60529:1989+A1:2001+A2:2013/C2:2015,IDT)*

EN IEC 60730-2-9:2019+A1:2019+A2:2020, *Automatic electrical controls — Part 2-9: Particular requirements for temperature sensing controls*

EN ISO 228-1:2003, *Pipe threads where pressure-tight joints are not made on the threads - Part 1: Dimensions, tolerances and designation (ISO 228-1:2000)*

EN ISO 2553:2019, *Welding and allied processes — Symbolic representation on drawings — Welded joints (ISO 2553:2019,IDT)*

EN ISO 3166-1:2014, *Codes for the representation of names of countries and their subdivisions — Part 1: Country codes (ISO 3166-1:2013,IDT)*

EN ISO 4063:2010, *Welding and allied processes — Nomenclature of processes and reference numbers (ISO 4063:2009, Corrected version 2010-03-01)*

ISO 857-1:1998, *Welding and allied processes — Vocabulary — Part 1: Metal welding processes*

ISO 857-2:2005, *Welding and allied processes — Vocabulary — Part 2: Soldering and brazing processes and related terms*

koniec náhľadu – text ďalej pokračuje v platenej verzii STN