

GAASKÜTTEGA KÜTTEKATLAD. OSA 1: ÜLDNÕUDED JA  
KATSED

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

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

<p>See Eesti standard EVS-EN 15502-1:2021+A1:2023 sisaldab Euroopa standardi EN 15502-1:2021+A1:2023 ingliskeelset teksti.</p> <p>Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.</p> <p>Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 13.12.2023.</p> <p>Standard on kättesaadav Eesti Standardimis- ja Akrediteerimiskeskusest.</p>	<p>This Estonian standard EVS-EN 15502-1:2021+A1:2023 consists of the English text of the European standard EN 15502-1:2021+A1:2023.</p> <p>This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.</p> <p>Date of Availability of the European standard is 13.12.2023.</p> <p>The standard is available from the Estonian Centre for Standardisation and Accreditation.</p>
--	---

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile [standardiosakond@evs.ee](mailto:standardiosakond@evs.ee).

ICS 27.060.30, 91.140.10

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardimis- ja Akrediteerimiskeskusele. Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardimis- ja Akrediteerimiskeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardimis- ja Akrediteerimiskeskusega: Koduleht [www.evs.ee](http://www.evs.ee); telefon 605 5050; e-post [info@evs.ee](mailto:info@evs.ee)

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation and Accreditation. No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation and Accreditation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation and Accreditation: Homepage [www.evs.ee](http://www.evs.ee); phone +372 605 5050; e-mail [info@evs.ee](mailto:info@evs.ee)

EUROPEAN STANDARD

EN 15502-1:2021+A1

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 2023

ICS 27.060.30; 91.140.10

Supersedes EN 15502-1:2021

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

This European Standard was approved by CEN on 25 July 2021 and includes Corrigendum 1 issued by CEN on 7 September 2022 and Amendment approved by CEN on 11 October 2023. This European Standard was corrected and reissued by the CEN-CENELEC Management Centre on 05 June 2024.

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, 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 United Kingdom.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

**Contents**

Page

<b>European foreword</b> .....	<b>9</b>
<b>Introduction</b> .....	<b>11</b>
<b>1 Scope</b> .....	<b>12</b>
<b>2 Normative references</b> .....	<b>13</b>
<b>3 Terms, definitions and symbols</b> .....	<b>15</b>
<b>4 Classification</b> .....	<b>36</b>
<b>4.1 Gases and categories</b> .....	<b>36</b>
<b>4.2 Mode of air supply and evacuation of the combustion products</b> .....	<b>36</b>
<b>4.3 Maximum water-side operating pressure</b> .....	<b>36</b>
<b>5 Construction</b> .....	<b>36</b>
<b>5.1 General</b> .....	<b>36</b>
<b>5.1.1 General requirements</b> .....	<b>36</b>
<b>5.1.2 General verification</b> .....	<b>37</b>
<b>5.2 Conversion to different gases</b> .....	<b>37</b>
<b>5.3 Materials</b> .....	<b>37</b>
<b>5.3.1 General</b> .....	<b>37</b>
<b>5.3.2 Materials and thicknesses of walls or tubes with water side operating pressure for boilers of pressure class-3</b> .....	<b>38</b>
<b>5.3.3 Domestic water connections</b> .....	<b>39</b>
<b>5.3.4 Thermal Insulation</b> .....	<b>39</b>
<b>5.3.5 Materials in contact with water for human consumption</b> .....	<b>39</b>
<b>5.3.6 Durability against corrosion of metallic combustion product circuits</b> .....	<b>40</b>
<b>5.4 Method of construction</b> .....	<b>41</b>
<b>5.4.1 Design</b> .....	<b>41</b>
<b>5.4.2 Checking the state of operation</b> .....	<b>42</b>
<b>5.4.3 Use and servicing</b> .....	<b>42</b>
<b>5.4.4 Connections to the gas and water pipes</b> .....	<b>43</b>
<b>5.4.5 Soundness</b> .....	<b>43</b>
<b>5.4.6 Supply of combustion air and evacuation of the combustion products</b> .....	<b>44</b>
<b>5.4.7 Dampers</b> .....	<b>44</b>
<b>5.4.8 Air proving</b> .....	<b>44</b>
<b>5.4.9 Gas/air ratio controls</b> .....	<b>45</b>
<b>5.4.10 Fan</b> .....	<b>46</b>

5.4.11 Drainage.....	46
5.4.12 Operational safety in the event of failure of the auxiliary energy .....	46
5.4.13 Special provision for Low Temperature Boilers and Condensing Boilers .....	46
5.5 Burners.....	47
5.6 Pressure test points .....	48
5.7 Requirements for the application of control and safety devices.....	48
5.7.1 General.....	48
5.7.2 Adjusters and range-rating devices .....	48
5.7.3 Gas circuit.....	49
5.7.4 Gas pressure regulator .....	50
5.7.5 Ignition devices.....	51
5.7.6 Flame supervision devices .....	51
5.7.7 Gas/air ratio control tubes.....	52
5.7.8 Thermostats and water flow temperature limiting devices .....	52
5.7.9 Remote control .....	53
5.7.10 Expansion vessel and pressure gauge.....	54
5.7.11 Protection against frost for boilers intended to be installed in a partially protected place .....	54
5.7.12 Adjusting, control and safety devices for the domestic hot water circuit.....	55
6 Electrical and electromagnetic safety.....	55
7 Controls.....	55
7.1 General.....	55
7.2 Detailed specifications.....	56
7.2.1 Control and safety devices.....	56
7.2.2 Valves used in boilers.....	56
7.2.3 Not relevant aspects for controls tested in combination with the boiler .....	56
7.2.4 Relevant aspects for controls tested in combination with the boiler .....	57
7.3 Thermostats and flow temperature limiting devices .....	57
7.3.1 General.....	57
7.3.2 Construction requirements.....	58
7.3.3 Performance .....	59
8 Operational requirements .....	61
8.1 General.....	61
8.1.1 Characteristics of the reference and limit gases .....	61
8.1.2 General test conditions.....	62

<b>8.2</b>	<b>Soundness .....</b>	<b>66</b>
<b>8.2.1</b>	<b>Soundness of the gas circuit .....</b>	<b>66</b>
<b>8.2.2</b>	<b>Soundness of the combustion circuit .....</b>	<b>67</b>
<b>8.2.3</b>	<b>Soundness of the water circuit .....</b>	<b>67</b>
<b>8.2.4</b>	<b>Soundness of the domestic water circuit .....</b>	<b>68</b>
<b>8.3</b>	<b>Hydraulic resistance.....</b>	<b>68</b>
<b>8.3.1</b>	<b>Requirements .....</b>	<b>68</b>
<b>8.3.2</b>	<b>Test conditions.....</b>	<b>68</b>
<b>8.4</b>	<b>Heat inputs and heat output.....</b>	<b>69</b>
<b>8.4.1</b>	<b>Determination of the nominal heat input or the maximum and minimum heat input 69</b>	
<b>8.4.2</b>	<b>Adjustment of the heat input by the downstream gas pressure .....</b>	<b>71</b>
<b>8.4.3</b>	<b>Ignition rate.....</b>	<b>71</b>
<b>8.4.4</b>	<b>Nominal output .....</b>	<b>71</b>
<b>8.4.5</b>	<b>Verification of the nominal condensing output.....</b>	<b>71</b>
<b>8.4.6</b>	<b>Nominal domestic hot water heat input.....</b>	<b>72</b>
<b>8.4.7</b>	<b>Water pressure to obtain the nominal heat input for instantaneous combination boilers.....</b>	<b>72</b>
<b>8.4.8</b>	<b>Obtaining the domestic hot water temperature for instantaneous combination boilers.....</b>	<b>72</b>
<b>8.4.9</b>	<b>Heating-up time of the domestic hot water .....</b>	<b>73</b>
<b>8.5</b>	<b>Limiting temperatures.....</b>	<b>73</b>
<b>8.5.1</b>	<b>General .....</b>	<b>73</b>
<b>8.5.2</b>	<b>Limiting temperatures of the adjusting, control and safety devices .....</b>	<b>73</b>
<b>8.5.3</b>	<b>Limiting temperatures of the side walls, the front and the top .....</b>	<b>74</b>
<b>8.5.4</b>	<b>Limiting temperature of the test panels and the floor.....</b>	<b>74</b>
<b>8.6</b>	<b>Ignition, cross lighting, flame stability .....</b>	<b>75</b>
<b>8.6.1</b>	<b>General .....</b>	<b>75</b>
<b>8.6.2</b>	<b>Limit conditions .....</b>	<b>75</b>
<b>8.6.3</b>	<b>Special flue conditions.....</b>	<b>76</b>
<b>8.6.4</b>	<b>Reduction of the gas rate of the ignition burner .....</b>	<b>77</b>
<b>8.7</b>	<b>Reduction of the gas pressure.....</b>	<b>77</b>
<b>8.7.1</b>	<b>Requirements .....</b>	<b>77</b>
<b>8.7.2</b>	<b>Test conditions .....</b>	<b>77</b>
<b>8.8</b>	<b>Defective closure of the gas valve immediately upstream of the main burner.....</b>	<b>77</b>
<b>8.8.1</b>	<b>Requirements .....</b>	<b>77</b>

<b>8.8.2 Test conditions .....</b>	<b>78</b>
<b>8.9 Pre-purge .....</b>	<b>78</b>
<b>8.10 Functioning of a permanent ignition burner when the fan stops during the standby time 78</b>	
<b>8.10.1 Requirements.....</b>	<b>78</b>
<b>8.10.2 Test conditions .....</b>	<b>78</b>
<b>8.11 Adjustment, control and safety devices .....</b>	<b>78</b>
<b>8.11.1 Requirement.....</b>	<b>78</b>
<b>8.11.2 Test method for determining the operating temperature range .....</b>	<b>78</b>
<b>8.11.3 Combination Boilers .....</b>	<b>79</b>
<b>8.11.4 Control devices .....</b>	<b>82</b>
<b>8.11.5 Ignition devices.....</b>	<b>82</b>
<b>8.11.6 Flame supervision device .....</b>	<b>84</b>
<b>8.11.7 Gas pressure regulator .....</b>	<b>87</b>
<b>8.11.8 Thermostats and flow temperature limiting devices .....</b>	<b>88</b>
<b>8.12 Carbon monoxide.....</b>	<b>90</b>
<b>8.12.1 General.....</b>	<b>90</b>
<b>8.12.2 Limit conditions.....</b>	<b>92</b>
<b>8.12.3 Special conditions.....</b>	<b>92</b>
<b>8.12.4 Sooting.....</b>	<b>93</b>
<b>8.12.5 Condensate discharge blockage test.....</b>	<b>94</b>
<b>8.13 NO<sub>x</sub>.....</b>	<b>94</b>
<b>8.13.1 Requirement.....</b>	<b>94</b>
<b>8.13.2 Test methods .....</b>	<b>95</b>
<b>8.13.3 Calculation of emissions of NO<sub>x</sub> in mg/kWh based on GCV.....</b>	<b>97</b>
<b>8.14 Special provisions for boilers intended to be installed in a partially protected place 98</b>	
<b>8.14.1 Frost protection system for boilers intended to be installed in a partially protected place 98</b>	
<b>8.14.2 Protection against the ingress of rain .....</b>	<b>98</b>
<b>8.15 Formation of condensate .....</b>	<b>98</b>
<b>8.15.1 Requirements.....</b>	<b>98</b>
<b>8.15.2 Test conditions .....</b>	<b>98</b>
<b>8.16 Temperature of combustion products .....</b>	<b>99</b>
<b>8.16.1 Requirements.....</b>	<b>99</b>
<b>8.16.2 Test conditions .....</b>	<b>99</b>

8.17	Sound power level $L_{WA}$ .....	99
9	Useful efficiencies .....	99
9.1	General .....	99
9.1.1	Correction of measured efficiency to reference conditions.....	99
9.1.2	Use of the general test conditions .....	100
9.2	Useful efficiency at the nominal heat input.....	100
9.2.1	Requirements .....	100
9.2.2	Tests .....	100
9.3	Useful efficiency at part load .....	102
9.3.1	Requirements .....	102
9.3.2	Tests .....	102
9.4	Heat output, Seasonal energy efficiency and energy consumption.....	109
9.4.1	Rated heat output ( $P_{rated}$ and $P_A$ ).....	109
9.4.2	Useful heat output at 30% of rated heat output and low-temperature regime ( $P_1$ ) 109	
9.4.3	Useful efficiency (GCV) at rated heat output and high-temperature regime ( $\eta_4$ )	109
9.4.4	Useful efficiency (GCV) at 30% of rated heat output and low-temperature regime ( $\eta_1$ )	110
9.4.5	Ignition burner power consumption (GCV) ( $P_{ign}$ ).....	110
9.4.6	Calculation of the seasonal space heating energy efficiency ( $\eta_s$ ).....	110
9.4.7	Calculation of the annual energy consumption for space heating ( $Q_{HE}$ ) (GCV).....	112
9.4.8	Water heating energy efficiency and energy consumption of combination boilers for water heating mode.....	112
10	Electric auxiliary energy .....	113
10.1	Auxiliary energy consumption .....	113
10.1.1	General.....	113
10.1.2	System boundaries.....	113
10.1.3	Auxiliary energy at nominal heat input .....	113
10.1.4	Auxiliary energy at part load .....	114
10.1.5	Auxiliary energy at stand-by .....	114
10.2	Auxiliary electricity consumption measurements required for eco-design and labelling regulations .....	114
10.2.1	General.....	114
10.2.2	System boundaries.....	114
10.2.3	Auxiliary electricity consumption [kW] at nominal heat input.....	115
10.2.4	Auxiliary electricity consumption at part load [kW].....	115
10.2.5	Auxiliary electricity consumption at stand by [kW].....	115

<b>11 Risk assessment.....</b>	<b>115</b>
<b>12 Marking and instructions .....</b>	<b>116</b>
<b>12.1 Boiler marking.....</b>	<b>116</b>
<b>12.1.1 Data plate.....</b>	<b>116</b>
<b>12.1.2 Markings related to the state of adjustment.....</b>	<b>117</b>
<b>12.1.3 Packaging.....</b>	<b>117</b>
<b>12.1.4 Warnings notices on the boiler and the packaging .....</b>	<b>117</b>
<b>12.1.5 Other information.....</b>	<b>118</b>
<b>12.2 Instructions.....</b>	<b>119</b>
<b>12.2.1 Instructions for installation.....</b>	<b>119</b>
<b>12.2.2 Instructions for use and servicing .....</b>	<b>124</b>
<b>12.2.3 Conversion instructions .....</b>	<b>124</b>
<b>12.3 Presentation .....</b>	<b>125</b>
<b>Annex A (normative) Properties of carbon and stainless steels .....</b>	<b>133</b>
<b>Annex B (normative) Minimum requirements for cast iron .....</b>	<b>134</b>
<b>Annex C (normative) Parts in aluminium and aluminium alloys.....</b>	<b>135</b>
<b>Annex D (normative) Parts in copper or copper alloys .....</b>	<b>136</b>
<b>Annex E (normative) Minimum thicknesses for rolled parts .....</b>	<b>137</b>
<b>Annex F (normative) Nominal minimum thicknesses of boiler sections of cast materials under water pressure.....</b>	<b>138</b>
<b>Annex G (normative) Parameters for welded joints and welding processes.....</b>	<b>139</b>
<b>Annex H (informative) Examples of the composition of the gas circuit according to 5.7.3.2 144</b>	
<b>Annex I (informative) Compilation of the test conditions for the various gas families ..</b>	<b>153</b>
<b>Annex J (normative) Calculation of conversions of NO<sub>x</sub>.....</b>	<b>155</b>
<b>Annex K (informative) Example of calculation of the weighting factors NO<sub>x</sub>.....</b>	<b>157</b>
<b>Annex L (informative) Practical method of calibrating the test rig to enable the heat loss D<sub>p</sub> to be determined .....</b>	<b>159</b>
<b>Annex M (informative) Means of determining the ignition time at full rate.....</b>	<b>160</b>
<b>Annex N (informative) Determination of the heat losses from the test rig of the indirect method and the contributions of the circulating pump of the test rig .....</b>	<b>161</b>
<b>Annex O (informative) Example of a risk assessment method.....</b>	<b>162</b>
<b>Annex P (informative) Examples of risk assessment with a method described in Annex O165</b>	
<b>Annex Q (informative) Realisation of a protective measure.....</b>	<b>170</b>
<b>Annex R (informative) Overall classification of a basic risk .....</b>	<b>172</b>
<b>Annex S (informative) Not exhaustive list of classification examples.....</b>	<b>175</b>

<b>Annex T (normative) Correction for the determined efficiency in the low water temperature test of low temperature boilers (LTB) and condensing boilers (CB).....</b>	<b>178</b>
<b>Annex U (normative) Use of test gases .....</b>	<b>180</b>
<b>Annex V (informative) Alternative method for heat output as enthalpy difference.....</b>	<b>181</b>
<b>Annex AA (informative) Product Information related to Eco-design Regulation and Labelling Regulation .....</b>	<b>184</b>
<b>Annex AB (informative) Variations in gas quality.....</b>	<b>188</b>
<b>Annex AC (normative) Non-exhaustive list of materials used in contact with drinking water</b>	<b>193</b>
<b>Annex ZA (informative) Left empty on purpose.....</b>	<b>195</b>
<b>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.....</b>	<b>196</b>
<b>Annex ZC (informative) Relationship between this European Standard and the ecodesign requirements of Commission Regulation (EU) No 813/2013 L 239/136 aimed to be covered</b>	<b>197</b>
<b>Annex ZD (informative) Relationship between this European Standard and the energy labelling requirements of Commission Delegated Regulation (EU) No 811/2013 L 239/1 aimed to be covered .....</b>	<b>200</b>
<b>Annex ZE (informative) Relationship between this European Standard and the essential requirements of Regulation (EU) 2016/426 of the European Parliament and of the Council of 9 March 2016 on appliances burning gaseous fuels and repealing Directive 2009/142/EC aimed to be covered .....</b>	<b>203</b>
<b>Bibliography.....</b>	<b>213</b>

## European foreword

This document (EN 15502-1:2021+A1:2023) 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 2024, and conflicting national standards shall be withdrawn at the latest by June 2024.

The start and finish of text introduced or altered by corrigendum is indicated in the text by tags AC AC.

This document supersedes A1 EN 15502-1:2021 A1.

This document includes Amendment 1, approved by CEN on 2023-10-11.

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 A1

A1 *deleted paragraphs* A1

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.

This document is a preview generated by EVS

## 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.

## 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*

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