BS EN 303-5:2021+A1:2022

BSI Standards Publication

Heating boilers

Part 5: Heating boilers for solid fuels, manually and automatically stoked, nominal heat output of up to 500 kW — Terminology, requirements, testing and marking

bsi.

National foreword

This British Standard is the UK implementation of EN 303-5:2021+A1:2022. It supersedes BS EN 303-5:2021, which is withdrawn.

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 ⟩A1⟨.

The UK participation in its preparation was entrusted to Technical Committee RHE/10, Heating boilers.

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

The UK committee advises users that installation and operation of solid fuel heating boilers may be subject to UK legislation, specifically the Clean Air Act 1993 (and equivalent in Northern Ireland) and the Environmental Permitting (England & Wales) Regulations 2016 (and equivalents in Scotland and Northern Ireland).

National Annex NA (informative) outlines the UK's A-deviation from specific parts of EN 303-5:2020, where instead the UK legislation applies.

http://www.legislation.gov.uk/ukpga/1993/11/contents

Environmental Permitting (England & Wales) Regulations 2016

http://www.legislation.gov.uk/uksi/2016/1154/contents/made

Contractual and legal considerations

This publication has been prepared in good faith, however no representation, warranty, assurance or undertaking (express or implied) is or will be made, and no responsibility or liability is or will be accepted by BSI in relation to the adequacy, accuracy, completeness or reasonableness of this publication. All and any such responsibility and liability is expressly disclaimed to the full extent permitted by the law.

This publication is provided as is, and is to be used at the recipient's own risk.

The recipient is advised to consider seeking professional guidance with respect to its use of this publication.

This publication is not intended to constitute a contract. Users are responsible for its correct application.

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.

For the Northern Ireland market, UK law will continue to implement relevant EU law subject to periodic confirmation. Therefore Annex ZA/ZZ in the European text, and references to EU legislation, are still valid for this market.

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

Published by BSI Standards Limited 2023

ISBN 978 0 539 29128 5

ICS 01.040.91; 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 January 2022.

Amendments/corrigenda issued since publication

Date	Text affected
30 November 2023	Implementation of CEN amendment A1:2022

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 303-5:2021+A1

November 2022

ICS 91.140.10

Supersedes EN 303-5:2021

English Version

Heating boilers - Part 5: Heating boilers for solid fuels, manually and automatically stoked, nominal heat output of up to 500 kW - Terminology, requirements, testing and marking

Chaudières de chauffage - Partie 5 : Chaudières spéciales pour combustibles solides, à chargement manuel et automatique, puissance utile inférieure ou égale à 500 kW - Définitions, exigences, essais et marquage

Heizkessel - Teil 5: Heizkessel für feste Brennstoffe, manuell und automatisch beschickte Feuerungen, Nennwärmeleistung bis 500 kW - Begriffe, Anforderungen, Prüfungen und Kennzeichnung

This European Standard was approved by CEN on 15 February 2021 and includes Amendment 1 approved by CEN on 14 September 2022.

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

European foreword

This document (EN 303-5:2021+A1:2022) has been prepared by Technical Committee CEN/TC 57 “Central heating boilers”, the secretariat of which is held by DIN.

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 2023, and conflicting national standards shall be withdrawn at the latest by May 2023.

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 includes Amendment 1 approved by CEN on 14 September 2022.

This document supersedes ▌A1⟩ EN 303-5:2021 ⟨A1▌.

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

This document has been prepared under a Standardization Request given to CEN by the European Commission and the European Free Trade Association and supports essential requirements of EU Directive(s) / Regulation(s).

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

In comparison with EN 303-5:2012, the following technical changes have been made:

— the scope was extended to condensing boilers with a heat output of ≤ 500 kW;

— the scope was extended to boilers with outside combustion air supply at a heat output of ≤ 100 kW;

— requirements for materials, weld joints and wall thicknesses have been revised and adapted to condensing and room sealed operations;

— general and electrical safety requirements have been revised and adapted to condensing and room sealed applications;

— tests were revised and new tests for condensing boilers, outside combustion air supply, secondary emission reduction systems and safety requirements were added;

— Annexes were re-structured;

— Consideration was given to the essential requirements of the Machinery Directive 2006/42/EC and REGULATION (EU) 2015/1189 (Eco-design) and COMMISSION REGULATION (EU) 2015/1187 (Energy labelling).

The following structure is intended for the European Standards for heating boilers:

— EN 303-1, *Heating boilers — Part 1: Heating boilers with forced draught burners — Terminology, general requirements, testing and marking*;

— EN 303-2, *Heating boilers — Part 2: Heating boilers with forced draught burners — Special requirements for boilers with atomizing oil burners*;

— EN 303-3, *Heating boilers — Part 3: Gas-fired central heating boilers — Assembly comprising a boiler body and a forced draught burner*;

— EN 303-4, *Heating boilers — Part 4: Heating boilers with forced draught burners — Special requirements for boilers with forced draught oil burners with outputs up to 70 kW and a maximum operating pressure of 3 bar — Terminology, special requirements, testing and marking*;

— EN 303-5, *Heating boilers — Part 5: Heating boilers for solid fuels, manually and automatically stoked, nominal heat output of up to 500 kW — Terminology, requirements, testing and marking*;

— EN 303-6, *Heating boilers — Part 6: Heating boilers with forced draught burners — Specific requirements for the domestic hot water operation of combination boilers with atomizing oil burners of nominal heat input not exceeding 70 kW*;

— EN 303-7, *Heating boilers — Part 7: Gas-fired central heating boilers equipped with a forced draught burner of nominal heat output not exceeding 1 000 kW*;

— EN 304, *Heating boilers — Test code for heating boilers for atomizing oil burners*.

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 organizations 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

This document is a type-C standard as stated in EN ISO 12100:2010.

The machinery concerned, and the extent to which hazards, hazardous situations and hazardous events are covered, are indicated in the scope of this document.

This document does deal with boilers which are within the Scope Machinery Directive and boilers that are outside of the Scope Machinery Directive.

The manufacturer is responsible for identifying all additional hazards outside of the scope of this document.

When provisions of this type-C standard are different from those which are stated in type-A or -B standards, the provisions of this type-C standard take precedence over the provisions of the other standards, for machines that have been designed and built according to the provisions of this type-C standard.

1 Scope

1.1 General

This document applies to heating boilers including safety devices up to a nominal heat output of 500 kW which are designed for the burning of solid fuels only and are operated according to the instructions supplied with the boiler and misuse reasonably foreseeable by the manufacturer.

This document applies also for solid fuel boilers taking the combustion air from outside the building and room sealed appliances.

This document does deal with significant hazards, hazardous situations and events relevant to heating boilers used as intended and under the conditions specified in the technical documentation of the boiler (see Clause 4).

The boilers may operate under natural draught or forced draught. The fuel feed may work manually or automatically. The boilers may operate in non-condensing operation or condensing operation.

NOTE 1 This document does deal with boilers which are within the scope of the Machinery Directive 2006/42/EC or outside of the scope of the Machinery Directive 2006/42/EC (manual stoked natural draught boiler).

NOTE 2 There is a risk of freezing condensate in the condensate drainage at low temperatures.

This document contains requirements and test methods for safety, combustion performance, operating characteristics, marking and maintenance of heating boilers. It also covers all external equipment that influences the safety systems (e.g. back burning safety device, integral fuel hopper).

This document covers only boilers that include burners as a unit. The document applies to the combination of a boiler body with a solid fuel burner according to EN 15270:2007 as a unit only when the whole unit is tested in accordance with this document.

Heating boilers in accordance with this document are designed for central heating installations where the heat carrier is water and the maximum allowable temperature is 110 °C, and which can operate at a maximum allowable operating pressure of 6 bars. For heating boilers with a built-in or attached water heater (storage or continuous flow heater), this document only applies to those parts of the water heater which are necessarily subject to the operating conditions of the heating boiler (heating part).

This document does not apply to:

— heating boilers and other heating appliances which are also designed for the direct heating of the place of installation, also according to the European regulation 2015/1185/EU;

— cooking appliances;

— the design and construction of external fuel storage and transportation devices prior to the safety devices of the boiler;

— manual stoked straw bale boilers;

— CHP appliances (combined heat and power).

This document specifies the necessary terminology for solid fuel heating boilers, the control and safety related requirements, the design requirements, the technical heating requirements (considering the environmental requirements) and testing, as well as the marking requirements.

This document is not applicable to heating boilers which are tested before the date of its publication as an EN (European Standard).

For evaluation of the requirements of this document test results of former versions of the standard may be used if applicable.

NOTE 3 This document can be used as a reference for boilers > 500 kW for safety evaluation.

This document does deal with all significant machine hazards, hazardous situations and events relevant to solid fuel boilers, when they are used as intended and under conditions of misuse which are reasonably foreseeable, except noise hazards.

NOTE 4 The document contains requirements regarding noise but not in its full extent to cover the Essential Health and Safety Requirements (EHSR, Annex I of the Machinery Directive 2006/42/EC).

1.2 Fuels

These boilers may burn either fossil fuels, biogenic fuels or other fuels such as peat, as specified for their use in the technical documentation, in accordance with the requirements of this document.

Solid fuels included in this document are categorized as follows.

Biogenic fuels

Biomass in a natural state, in the form of:

— **log wood** with moisture content ≤ M25, according to EN ISO 17225-5:2014;

— **chipped wood ≤ M35** with moisture content from M15 to M35, according to EN ISO 17225-4:2014;

— **chipped wood > M35** with moisture content exceeding M35, according to EN ISO 17225-4:2014;

— **wood pellets** according to EN ISO 17225-2:2014;

— **wood briquettes** according to EN ISO 17225-3:2014;

— **sawdust** with moisture content ≤ M20;

— **sawdust** with moisture content M20 to M50;

— **sawdust** with moisture content ≤ M20 is dangerous against back burning;

— **non-woody biomass**, such as straw, miscanthus, reeds, kernels and grains according to EN ISO 17225-6:2014.

Fossil fuels

— **a** bituminous coal;

— **b** brown coal;

— **c** coke;

— **d** anthracite.

Other solid fuels

— Other solid fuels such as peat or processed fuels according to EN ISO 17225-1:2014.