

English Version

## Heating boilers - Part 2: Heating boilers with forced draught burners - Special requirements for boilers with atomizing oil burners

Chaudières de chauffage - Partie 2 : Chaudières avec brûleurs à air soufflé - Prescriptions spéciales pour chaudières avec brûleurs fioul à pulvérisation

Heizkessel - Teil 2: Heizkessel mit Gebläsebrennern - Spezielle Anforderungen an Heizkessel mit Ölzerstäubungsbrennern

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

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## European foreword

This document (prEN 303-2:2023) has been prepared by Technical Committee CEN/TC 57 “Central heating boilers”, the secretariat of which is held by DIN.

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 and ZB, which is an integral part of this document.

This document supersedes EN 303-2:2017.

The main technical changes compared to EN 303-2:2017 are the following:

- a) new Annex AA for information in regard to the labelling was added;
- b) new clause marking and instructions was added;
- c) technical and editorial changes related to ecotest were introduced in order to bring in more clarity and less deviations of test results;
- d) updated references;
- e) updated normative references.

The following structure is intended for the 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 304, *Heating boilers — Test code for heating boilers for atomizing oil burners*
- 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*

## 1 Scope

This document is applicable to boilers used for central heating in accordance with EN 303-1:2017 up to a nominal heat output of 1 000 kW and EN 303-4:1999 up to a nominal heat output of 70 kW with forced draught burners in accordance with EN 267:2020 that are designed for operating with liquid fuels.

The performance requirements of this document apply to type testing to heating boilers (standard, low temperature and condensing boilers) which are tested on a test rig in accordance with the test code given in EN 304:2017.

This document applies also to room sealed boilers as defined in EN 15035 regarding efficiency and emissions.

This document can also be used as the basis for evaluation of boiler-/burner units.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 267:2020, *Forced draught burners for liquid fuels*

EN 303-1:2017, *Heating boilers — Part 1: Heating boilers with forced draught burners - Terminology, general requirements, testing and marking*

EN 304:2017, *Heating boilers — Test code for heating boilers for atomizing oil burners*

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

EN 15316-4-1:2017, *Energy performance of buildings — Method for calculation of system energy requirements and system efficiencies — Part 4-1: Space heating and DHW generation systems, combustion systems (boilers, biomass), Module M3-8-1, M8-8-1*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 303-1:2017 and the following apply.

### 3.1 General terms and definitions

#### 3.1.1

##### **range rated boiler**

appliance where the heat output is fixed in a given range

#### 3.1.2

##### **modulating boiler**

appliance where the heat output is varying in a given range automatically

#### 3.1.3

##### **standby heat loss**

##### **$P_{stby}$**

heat loss of a boiler space heater, boiler combination heater in operating mode without heat demand, expressed in kW

### 3.1.4

#### **combination boiler (combi boiler)**

boiler designed both for central heating and for the production of domestic hot water

Note 1 to entry: Depending on its type of domestic hot water production, the combination boiler is classified in accordance with the manufacturer's declaration as instantaneous type or storage type.

## **3.2 Terms and definitions relevant to eco-design and labelling regulations terms**

### 3.2.1

#### **sound power level**

##### **$L_{WA}$**

A-weighted sound power level, indoors, expressed in dB(A)

### 3.2.2

#### **package**

unit of boilers or combination boilers, temperature control and/or solar devices means a package offered to the end-user containing one or more boilers or combination boilers combined with one or more temperature controls and/or one or more solar devices

Note 1 to entry: Definition based on Labelling Regulation 811/2013 Article 2 - (19) and (20).

Note 2 to entry: Informative Annex AA (and its Tables AA.1 and AA.2) provides a copy of table 1 of Annex II of COMMISSION REGULATION (EU) No 813/2013 that uses many of the definitions given in this document.

## **4 Performance requirements**

### **4.1 General**

All the following performance tests are carried out using an oil forced draught burner in accordance with EN 267:2020.

Multi-stage or modulating burners shall operate within the output range of the boiler.

If the boiler was already tested with a forced draught burner for gaseous fuels in accordance with EN 303-1:2017 and EN 303-3:2006, the tests described in 4.2 and 4.6 need not be performed.

For assembly criteria see Annex A.

### **4.2 Boiler efficiency**

#### **4.2.1 Air ratio for efficiency measurement**

The air ratio  $\lambda$  for the efficiency measurement shall comply with the following:

- less than 100 kW: with the requirements of Figure 1 in the tolerance  $\pm 10\%$  of  $\lambda$ ;
- from 100 kW up to 1 000 kW:  $1,18 \leq \lambda \leq 1,22$ .

#### **4.2.2 Boilers of heat output $\leq 70$ kW**

The seasonal space heating energy efficiency ( $\eta_s$ ) shall not fall below 86 % based on GCV.

#### **4.2.3 Boilers of heat output $> 70$ kW and $\leq 400$ kW**

The useful efficiency at nominal heat output ( $\eta_4$ ) shall not fall below 86 % based on GCV, and the useful efficiency at 30 % of the nominal heat output ( $\eta_1$ ) shall not fall below 94 % based on GCV.