SLOVENSKI STANDARD
oSIST prEN 303-1:2016

01-julij-2016

Kotli za gretje - 1. del: Kotli z ventilatorskimi gorilniki - Terminologija, splošne zahteve, preskušanje in označevanje

Heating boilers - Part 1: Heating boilers with forced draught burners - Terminology, general requirements, testing and marking

Heizkessel - Teil 1: Heizkessel mit Gebläsebrenner - Begriffe, Allgemeine Anforderungen, Prüfung und Kennzeichnung

Chaudières de chauffage - Partie 1 : Chaudières avec brûleurs à air soufflé - Terminologie, prescriptions générales, essais et marquage

Ta slovenski standard je istoveten z: **prEN 303-1**

ICS:

01.040.91	Gradbeni materiali in gradnja (Slovarji)	Construction materials and building (Vocabularies)
27.060.01	Gorilniki in grelniki vode na splošno	Burners and boilers in general
91.140.10	Sistemi centralnega ogrevanja	Central heating systems

oSIST prEN 303-1:2016 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
prEN 303-1

April 2016

ICS 01.040.91; 91.140.10

Will supersede EN 303-1:1999

English Version

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This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 57.

If this draft becomes a European Standard, 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.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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

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Contents

Page

European foreword

This document (prEN 303-1:2016) has been prepared by Technical Committee CEN/TC 57 “Central heating boilers”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

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, hand and automatically fired, with a nominal heat output of up to 300 kW — Terminology, requirements, testing and marking*

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

Concerning the required extension of the heat output from 300 kW up to 1 000 kW the following essential changes were agreed:

a) Construction requirements were adopted from EN 15034;

b) Terminology of EU-Regulations 811/2013 and 813/2013 adopted;

c) the document was completely revised technically;

d) the document was completely revised editorially.

WARNING — Other requirements and other EU Directives may be applicable to the products falling within the scope of this European Standard.

This document has been prepared under a standardization request M/535 and M/534 given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA and Annex ZB, which are integral parts of this document.

1 Scope

This European Standard applies to boilers used for central heating (heating boilers) with forced draught burners with a nominal heat output not exceeding 1 000 kW, which are operated either with negative pressure (natural draught boilers) or with positive pressure (pressurized boiler) in the combustion chamber, in accordance with the boiler manufacturer's instruction.

This standard specifies the necessary terminology, the requirements on the materials and testing of them, and marking requirements for heating boilers.

Particular requirements for boilers that can be used with open vented systems are contained in EN 303-4.

The requirements of this standard apply to heating boilers that are tested on an authorized test rig.

Boilers in accordance with this standard are designed for the heating of central heating installations in which the heat carrier is water, and the maximum allowable operating temperature of which is restricted to 100 °C. The maximum allowable operating pressure is 8 bar.

For boilers (storage or continuous flow heater) this standard only applies to the parts of the water heater that are necessarily subject to the operating conditions of the heating boiler (heating part).

This standard does not apply to gas boilers with atmospheric burners, boilers for solid fuels, boilers and boilers with oil vaporization burners. For these boilers there are further requirements.

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 226, *Atomizing oil burners - Connecting dimensions between burners and heat generators*

prEN 303-2:2016, *Heating boilers — Part 2: Heating boilers with forced draught burners — Special requirements for boilers with atomizing oil burners*

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*

prEN 304:2016, *Heating boilers — Test code for heating boilers for atomizing oil burners*

EN 10025-2, *Hot rolled products of structural steels - Part 2: Technical delivery conditions for non-alloy structural steels*

EN 10027-2, *Designation systems for steels - Part 2: Numerical system*

EN 10028-2:2009, *Flat products made of steels for pressure purposes - Part 2: Non-alloy and alloy steels with specified elevated temperature properties*

EN 10028-3:2009, *Flat products made of steels for pressure purposes - Part 3: Weldable fine grain steels, normalized*

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

EN 10088-2:2014, *Stainless steels - Part 2: Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purposes*

EN 10204:2004, *Metallic products — Types of inspection documents*

EN 13501-1, *Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests*

EN 14597, *Temperature control devices and temperature limiters for heat generating systems*

EN 60335-1, *Safety of household and similar electrical appliances — Part 1: General requirements (IEC 60335-1)*

EN 60529, *Degrees of protection provided by enclosures (IP Code) (IEC 60529)*

EN 60730-1:2011, *Automatic electrical controls for household and similar use - Part 1: General requirements (IEC 60730-1:2010)*

EN 60730-2-9:2010, *Automatic electrical controls for household and similar use — Part 2: Particular requirements for temperature sensing controls (IEC 60730-2-9:2008)*

EN 61000-6-2, *Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments (IEC 61000-6-2)*

EN 61000-6-3, *Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments (IEC 61000-6-3)*

EN ISO 4063, *Welding and allied processes - Nomenclature of processes and reference numbers (ISO 4063)*

EN ISO 6506, all parts, *Metallic materials* - Brinell hardness test

EN ISO 9606-1, *Qualification testing of welders - Fusion welding - Part 1: Steels (ISO 9606-1)*

EN ISO 9606-2, *Qualification test of welders - Fusion welding - Part 2: Aluminium and aluminium alloys (ISO 9606-2)*

EN ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories (ISO/IEC 17025)*

ISO 7-1, *Pipe threads where pressure-tight joints are made on the threads — Part 1: Dimensions, tolerances and designation*

ISO 7-2, *Pipe threads where pressure-tight joints are made on the threads — Part 2: Verification by means of limit gauges*

ISO 185, *Grey cast irons — Classification*

ISO 228-1, *Pipe threads where pressure-tight joints are not made on the threads — Part 1: Dimensions, tolerances and designation*

ISO 228-2, *Pipe threads where pressure-tight joints are not made on the threads — Part 2: Verification by means of limit gauges*

ISO 857, *Welding, brazing and soldering processes — Vocabulary*

ISO 2553, *Welding and allied processes — Symbolic representation on drawings — Welded joints*

ISO 7005-1, *Pipe flanges — Part 1: Steel flanges for industrial and general service piping systems*

ISO 7005-2, *Metallic flanges — Part 2: Cast iron flanges*

ISO 7005-3, *Metallic flanges — Part 3: Copper alloy and composite flanges*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
operating pressure
maximum allowable pressure at which the boiler is to be normally operated

Note 1 to entry: The operating pressure is less than the test pressure and the type test pressure.

3.2
test pressure
pressure to which all boilers and their parts are subjected during production in the works of the manufacturer or during setting up by the installer

3.3
type test pressure
pressure to which the pre-production heating boiler(s) and associated parts are subjected before start of mass production in the manufacturing works

3.4
operating temperature
maximum allowable temperature at which the boiler can be operated under normal operating conditions at the maximum setting of the boiler's water temperature controller

3.5
heat output ***P***
heat output range
amount of heat transferred to the heat carrier (water) per unit of time

Note 1 to entry: The heat output range is the span of output below the nominal heat output specified by the manufacturer over which the boiler meets the requirements of this standard and over which it can be used.

3.6
nominal heat output
P_N
continuous output specified by the manufacturer in accordance with the requirements of this standard. It is the maximum useful quantity of heat transferred to the heat carrier per hour

Note 1 to entry: the nominal heat output is equal to the rated heat output according to ErP (P_4)

3.7
heat input
Q_B
amount of heat in unit time which is supplied to the furnace of the heating boiler by the fuel based on its net calorific value

3.8
boiler efficiency
η
ratio of the heat output (P) to the heat input (Q_B) supplied by the fuel

$$\eta = \frac{P}{Q_B}$$

Note 1 to entry: η is equal to η_4 according to ErP, if P is equal to $P_N \left(\frac{full\ load}{100\ \%} \right)$

Note 2 to entry: η is equal to η_1 according to ErP, if P is equal to $0,3 \times P_N$

3.9
draught
pressure differential between the static air pressure in the place of installation and the static pressure of the exhaust gases, as measured in the exhaust gas measuring section, which is required for correct operation of the boiler at nominal output

3.10
flue gas side resistance
pressure differential between the combustion chamber and the boiler exit

3.11
combustion circuit
comprises the combustion chamber, the heat exchanger, the air supply circuit and the combustion product circuit up to the flue exit

3.12
soundness of combustion circuit
soundness of the combustion circuit through which the exhaust gases flow

3.13
exit flue temperature
t_A
temperature measured at the flue exit of the boiler

3.14
flue gas loss
quantity of heat per unit time lost at the flue gas exit of the boiler

3.15
standby loss
q_B
quantity of heat which is necessary to maintain the boiler at a given temperature when no heat output is used. It is stated as (P_{stby} in relation to the heat input P_B)

3.16
water side resistance
pressure loss across the boiler measured at the flow and return connections of the boiler, with a volume flow corresponding to the nominal heat output

3.17
condensate
liquid formed from the combustion products during the condensation process

3.18
standard boiler
boiler for which the average water temperature can be restricted by design

3.19
low temperature boiler
LT
boiler which can work continuously with a water return temperature of 35 ° to 40 °C or lower, possibly producing condensation in certain circumstances without impairing the boiler's operation and without necessity of condensate drainage (no nozzle for condensate drainage foreseen)

3.20
condensing boiler
boiler that, under normal operating conditions and at certain operating water temperatures, partially condenses the water vapour in the combustion products in order to make use of the latent heat of water vapour for heating purposes (always with nozzle for condensate drainage)

3.21
electrical consumption at rated output
el_{max}
auxiliary electricity consumption at full load, expressed in kW

3.22
electrical consumption at part load
el_{min}
auxiliary electricity consumption at part load, expressed in kW

3.23
electrical consumption at standby
P_{SB}
standby mode power consumption' (P_{SB}) means the power consumption of a heater in standby mode, expressed in kW

3.24
seasonal space heating energy efficiency in active mode
$\eta_{,son}$
weighted average of the useful efficiency at rated heat output and the useful efficiency at 30 % of the rated heat output, expressed in % (active mode)

[SOURCE: EU Regulation 813/2013 Annex I, Definition 11]

3.25
seasonal space heating energy efficiency
$\eta_{,s}$
weighted average of the useful efficiency at rated heat output and the useful efficiency at 30 % of the rated heat output, expressed in %

[SOURCE: EU Regulation 813/2013, §2 (20)]

3.26
temperature sensing control type TR
thermostat or modulating thermostat used in heat generating systems for controlling the temperature of liquid or/and gaseous media, which has provisions for setting by the user and which, if equipped with an electrical output, provides at least type 1B action

Note 1 to entry: See 2.2.4 and 2.2.6 of EN 60730–1:2011 and see 2.2.105 of EN 60730–2-9:2010.

Note 2 to entry: In the following this device is designated by the device code TR.

3.27
temperature sensing control type STB
safety temperature limiter (thermal cut out, protective control) for heat generating systems which can only be reset manually or by a tool and which provides at least the following actions: type 2B, type 2K, type 2P and type 2V and optionally any of the following actions: type 2F and type 2N; the settings of this control are unchangeably fixed or can be fixed with a tool or a special tool

Note 1 to entry: Type 2K action will be considered to be provided if type 2N action is provided.

3.28
nominal condensing output
P
value of useful output declared by the manufacturer, in kW and corresponding to the operation of the boiler in a 50 °C/30 °C water temperature regime

[SOURCE: EN 15034, Definition 3.2]

4 Requirements

4.1 Construction requirements

4.1.1 General requirements

4.1.1.1 Introduction

Boilers shall be fire-resistant and safe to operate. They shall be made of non-combustible materials and shall be resistant to deformation and shall be such that:

— they can withstand the stresses arising during normal operation;

— the burner and the boiler cannot become heated to create a hazard;

— dangerous accumulations of combustible gases (fuels mixed with air) in the combustion chamber and in the flues are prevented and

— gases cannot leak from the boiler in dangerous quantities.

Combustible materials are allowable for

— components of accessories e.g. burner covers, if the parts are fitted outside of the boiler;

— internal components of controls and safety equipment;

— operating handles;

— electrical equipment;