

SLOVENSKI STANDARD
SIST EN 303-3:1999/A2:2004
01-junij-2004

Kotli za ogrevanje - 3. del: Plinski kotli za ogrevanje – Sestav kotla in gorilnika s prisilnim vlekem - Dopnilo A2

Heating Boilers - Part 3 : Gas-fired heating boilers - Assembly comprising a boiler body and a forced draught burner

Heizkessel - Teil 3 : Zentralheizkessel für gasförmige Brennstoffe - Zusammenbau aus Kessel und Gebläsebrenner

Chaudières de chauffage - Partie 3 : Chaudières de chauffage central utilisant les combustibles gazeux - Assemblage d'un corps de chaudière et d'un brûleur à air soufflé

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Ta slovenski standard je istoveten z: EN 303-3:1998/A2:2004

ICS:

91.140.10 Sistemi centralnega ogrevanja Central heating systems

97.100.20 Plinski grelniki Gas heaters

SIST EN 303-3:1999/A2:2004 **en,fr,de**

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EUROPEAN STANDARD

EN 303-3:1998/A2

NORME EUROPÉENNE

EUROPÄISCHE NORM

April 2004

ICS 91.140.10

English version

Heating Boilers - Part 3 : Gas-fired heating boilers - Assembly comprising a boiler body and a forced draught burner

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This amendment A2 modifies the European Standard EN 303-3:1998; it was approved by CEN on 3 November 2003.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for inclusion of this amendment into the relevant national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This amendment 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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

Management Centre: rue de Stassart, 36 B-1050 Brussels

EN 303-3:1998/A2:2004 (E)**Foreword**

This document (EN 303-3:1998/A2:2004) has been prepared by Technical Committee CEN/TC 109 " Central heating boilers using gaseous fuels ", the secretariat of which is held by NEN.

This Amendment to the European Standard EN 303-3:1998 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2004, and conflicting national standards shall be withdrawn at the latest by October 2004.

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

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

For relationship with EU Directive(s), see informative annex ZA, which is an integral part of this document.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

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NOTE once constructional requirements for low-temperature boilers have been included within EN 303-1 they will replace the constructional requirements of this amendment, <https://standards.iteh.ai/catalog/standards/sist/acd0e973-f02a-453a-a1a1-670e9c033-jtc-en-303-3-1999-a2-2004>
amendment A1 to European Standard EN 303-3 does not exist. The draft worked out under the reference EN 303-3:1998/prA1 is now referenced prEN 303-7.

Contents

Delete annex H.

1 Scope

Replace the second paragraph by the following text :

"This European Standard applies to standard boilers and low-temperature boilers with a nominal heat output not exceeding 1000 kW and with a water temperature at normal operation not exceeding 105 °C."

Replace the 2nd dash of the third paragraph by the following text :

"- condensing boilers;"

Delete the last but one paragraph of EN 303-3 :

"This European Standard does not contain all the necessary requirements for low temperature boilers. Nevertheless, the testing methods defined by this European Standard for the determination of useful efficiencies can be used for low temperature boilers, after being adapted in accordance with annex H."

3 Definitions

Add:

3.8

condensate

liquid formed from the combustion products during the condensation process

3.9

standard boiler

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

3.10

low-temperature boiler

boiler which can work continuously with a water supply temperature of 35 °C to 40 °C, possibly producing condensation in certain circumstances"

4.1 General principles

At the end of the clause, add:

"For low-temperature boilers, all parts of the heat exchanger(s) and other parts of the boiler likely to come into contact with condensate shall be constructed of sufficiently corrosion resistant materials or materials protected by a suitable coating in order to ensure a reasonable life for a boiler that is installed, used and maintained in accordance with the manufacturer's instructions.

Surfaces in contact with condensate (except purpose provided drains, water traps and siphons) shall be designed to prevent condensate retention."

Add the following clause:

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EN 303-3:1998/A2:2004 (E)**4.4 Condensate discharge for low-temperature boilers**

For low-temperature boilers, a means of condensate discharge shall be provided if the condensate:

- impairs safety or correct operation;
- results in spillage from the appliance;
- causes deterioration of materials.

A pipe or pipes shall be used to discharge condensate when this is necessary. The internal diameter of the outside connection of the condensate discharge system shall be at least 13 mm.

The disposal system, forming part of the boiler or supplied with the boiler, shall be such that:

- it can be easily inspected and cleaned in accordance with the manufacturer's instructions;
- it cannot transmit combustion products into the room where the boiler is installed; this requirement is satisfied if the disposal system incorporates a water trap;
- a water trap has a seal of at least 25 mm at the maximum pressure in the combustion chamber at the maximum flue length specified by the manufacturer."

5.3.4 Operation of control and safety thermostats

Replace the text by the following:

"Under the conditions of 6.3.4, the safety thermostat shall interrupt the operation of the boiler at the value stated by the manufacturer, which shall be less than 110 °C, or 120° C if the manufacturer states in his instructions that the boiler shall only be used to equip heating installations designed for failure temperatures of at least 120° C."

5.4.1 Useful efficiency at the maximum nominal heat input

Replace the existing Table 1 with the following table:

| Range of nominal heat input | Type of boiler | Expression of the useful efficiency requirement at maximal nominal heat input (%) |
|---|-----------------|---|
| $4 \text{ kW} \leq P_n \leq 400 \text{ kW}$ | Standard | $84 + 2 \log P_n$ (1) |
| | Low-temperature | $87,5 + 1,5 \log P_n$ (1) |
| $400 \text{ kW} < P_n \leq 1\,000 \text{ kW}$ | Standard | 89,2 |
| | Low-temperature | 91,4 |

(1) P_n is the maximal nominal heat input in kiloWatts (kW)

5.4.2 Useful efficiency at part load

Replace the existing Table 2 with the following table:

| Range of nominal heat input | Type of boiler | Expression of the useful efficiency requirement at partial load (%) |
|---|-----------------|---|
| $4 \text{ kW} \leq P_n \leq 400 \text{ kW}$ | Standard | $80 + 3 \log P_n$ (1) |
| | Low-temperature | $87,5 + 1,5 \log P_n$ (1) |
| $400 \text{ kW} < P_n \leq 1\,000 \text{ kW}$ | Standard | 87,8 |
| | Low-temperature | 91,4 |

(1) P_n is the maximal nominal heat input in kiloWatts (kW)

Add the following clauses:

5.6 Condensation

Low-temperature boilers can be designed to give rise to condensation.

For standard boilers and low-temperature boilers which are designed not to give rise to condensation, there shall be no indication of condensation at the operating temperatures provided by the controls.

5.7 Resistance of the materials to pressure

For low-temperature boilers, corrosion resistant coatings shall show no sign of damage after the tests of resistance of the materials to pressure."

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6 Test methods

6.3.4 Checking the operation of control and safety thermostats

Replace the third paragraph by the following:

"The same test is repeated after short-circuiting the control thermostat. The operation of the safety thermostat is checked."

6.4.2.2.1 Operating mode No. 1

Replace the second paragraph with the following:

"The boiler return temperature is held constant, with a maximum variation in this temperature of $\pm 1 \text{ K}$ during the measurement period at the appropriate temperatures:

- $(47 \pm 1) \text{ }^\circ\text{C}$ for standard boilers, and
- $(37 \pm 1) \text{ }^\circ\text{C}$ for low-temperature boilers."

6.4.2.2.2 Operating mode No. 2

Replace the third paragraph with the following:

"The average water temperature shall not be less than the temperatures given below:

- $50 \text{ }^\circ\text{C}$ for standard boilers, and
- $40 \text{ }^\circ\text{C}$ for low-temperature boilers."

6.4.2.3 Indirect method

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Replace the existing text by the following:

6.4.2.3 Indirect method**6.4.2.3.1 Measurements****6.4.2.3.1.1 Useful efficiency at the nominal heat input**

The test of 6.4.1, at the maximum nominal heat input, is repeated with the following flow and return temperatures:

| | Flow temperature (°C) | Return temperature (°C) | Mean temperature (°C) |
|------------------------|--------------------------|----------------------------|--------------------------|
| Standard boiler | 60 ± 2 | 40 ± 1 | 50 ± 1 |
| Low-temperature boiler | 50 ± 2 | 30 ± 1 | 40 ± 1 |

The measured value η_1 is noted.

6.4.2.3.1.2 Useful efficiency at the minimum controlled rate

Replace the 1st paragraph by the following:

"If the boiler is fitted with a control system incorporating a main burner reduced rate, a test is carried out at the minimum heat input allowed by the control at the following flow and return temperatures:

| | Flow temperature (°C) | Return temperature (°C) | Mean temperature (°C) |
|------------------------|--------------------------|----------------------------|--------------------------|
| Standard boiler | 55 ± 2 | 45 ± 1 | 50 ± 1 |
| Low-temperature boiler | 45 ± 2 | 35 ± 1 | 40 ± 1 |

6.4.2.3.1.3 Standby loss

Replace the 4th and 5th paragraphs by the following text:

"The boiler water temperature is brought to a mean temperature rise above ambient temperature of (30 ± 5) K for standard boilers or (20 ± 5) K for low-temperature boilers. The gas supply is then shut off, the pump (11) and the boiler pump, if any, are stopped, the exchanger circuit (12) is shut off.

With water circulating continuously by means of the pump (5) of the test rig, the thermal contribution of the electric boiler is adjusted so as to obtain, in the steady state condition, a difference between the mean water temperature and the ambient temperature of (30 ± 5) K for standard boilers or (20 ± 5) K for low-temperature boilers.

Replace the last paragraph by the following:

"The standby losses P_s , expressed for an ambient temperature of 20 °C, are given, in kilowatts (kW), by:

$$P_s = P_m \left[\frac{30}{T - T_A} \right]^{1,25}, \text{ for standard boilers, for a mean water temperature of } 50 \text{ } ^\circ\text{C, and}$$

$$P_s = P_m \left[\frac{20}{T - T_A} \right]^{1,25}, \text{ for low-temperature boilers, for a mean water temperature of } 40 \text{ } ^\circ\text{C.}"$$

6.4.2.3.2 Calculation

Replace the 1st paragraph by the following:

"The useful efficiency for a load of 30 % of the maximum nominal heat input at an average water temperature of 50 °C for standard boilers and of 40 °C for low-temperature boilers, is calculated for a control cycle."

Table 5 : replace "50 °C" by "50 °C or 40 °C".

7 Instructions

Add after the 1st paragraph the following text:

"Individual manuals for boiler bodies and burners shall at least include the following information:

- the maximum water temperature in °C (≤ 105 °C);
- a warning for boilers with a normal operation temperature exceeding 90 °C;
- that the boiler resulting from their assembly shall only be used to equip heating installations designed for failure temperatures of at least 110 °C or 120° C, as appropriate.

For low-temperature boilers, the manufacturer shall communicate the possible chemical composition of the condensate (pH, heavy metals, etc.), if the composition is required by national regulations."

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