SLOVENSKI STANDARD
SIST EN 656:2001/A1:2006

01-september-2006

Plinski kotli za centralno gretje – Tip kotlov B z imensko močjo nad 70 kW do vključno 300 kW – Dopolnilo A1

Gas-fired central heating boilers - Type B boilers of nominal heat input exceeding 70 kW, but not exceeding 300 kW

Heizkessel für gasförmige Brennstoffe - Heizkessel der Bauart B mit einer Nennwärmebelastung größer als 70 kW aber gleich oder kleiner als 300 kW

Chaudieres de chauffage central utilisant les combustibles gazeux - Chaudieres de type B dont le débit calorifique nominal est supérieur a 70 kW mais inférieur ou égal a 300 kW

Ta slovenski standard je istoveten z: **EN 656:1999/A1:2006**

ICS:

91.140.10	Sistemi centralnega ogrevanja	Central heating systems
97.100.20	Plinski grelniki	Gas heaters

SIST EN 656:2001/A1:2006 **en,fr,de**

EUROPEAN STANDARD

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EN 656:1999/A1

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ICS 91.140.10

English Version

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This amendment A1 modifies the European Standard EN 656:1999; it was approved by CEN on 20 March 2006.

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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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

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

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Contents

Foreword

This document (EN 656:1999/A1:2006) has been prepared by Technical Committee CEN/TC109 “Central heating boilers using gaseous fuels”, the secretariat of which is held by NEN.

This Amendment to the European Standard EN 656:1999 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 2007, and conflicting national standards shall be withdrawn at the latest by January 2007.

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).

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

With this amendment, the requirements and test methods for low temperature boilers and for standard boilers possibly producing condensate in certain circumstances are introduced in EN 656:1999.

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

1 Scope

Add to the first list of indents:

— of the standard type possibly producing condensation in certain circumstances;

— of the low-temperature type;

Delete in the second list of indents:

— of the low-temperature type;

3 Definitions

Amend clause 3.3.1.5 as follows:

Change "Symbol: Q_i" to "Symbol Q_{ign}"

Add:

3.2.5
condensate
liquid formed from the combustion products during the condensation process

4 Classification of boilers

Insert a new clause as follows:

4.3 Type of technologies

4.3.1
gas condensing boiler
boiler designed to condense permanently a large part of the water vapour contained in the combustion gases

4.3.2
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

4.3.3
standard boiler
boiler for which the average water temperature can be restricted by design

Add a footnote to the clause 4.1 as follows:

These definitions are in accordance with 92/42/EEC, however, in this standard, definition 4.1.2 is limited to gas

Add a footnote to the new clause 4.3.3 as follows:

Specific requirements and test methods for condensing boilers with heat inputs exceeding 70 kW will be the scope of a new standard

5.3.1 General

At the end of the clause, add the following:

If there is a risk of condensation in the combustion products circuit, 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.

5.4.1 General

Replace the second and third paragraphs with the following:

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

Low-temperature boilers are considered to be designed to give rise to condensation.

If condensation is produced at start-up, this shall not:

— affect the operational safety;

— drop outside the appliance.

Insert new clauses as follows:

5.8.5 Removal of condensate for low temperature boilers

For low temperature boilers a 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.

5.16 Chemical composition of the condensate for low-temperature boilers

The manufacturer shall communicate the probable chemical composition of the condensate (pH, heavy metals, etc.) if the composition is required by national regulations.

Amend clause 6.5.3.3.1 c) as follows:

In the line starting "for Q_n…" change the formula "$T_{SA,max} \leq 5\ Q_n / Q_i$ s ;" to "$T_{SA,max} \leq 5\ Q_n / Q_{ign}$ s"

In the line starting "for 150 kW..." change the formula " $T_{SA,max} \leq 5$ x 150/ Q_i s" to " $T_{SA,max} \leq 5$ x 150/ Q_{ign} s"

Change "where Q_i is the ignition rate" to "where Q_{ign} is the ignition rate.

Insert a new clause as follows:

6.5.9 Condensate discharge blockage

Under the test conditions of clause 7.5.9, the formation of condensate shall not impair the correct operation of the boiler.

By choice of the manufacturer, the boiler shall meet one of the following requirements:

a) when the condensate discharge is blocked, the gas supply shall be shut off before the CO concentration exceeds 0,20 %; or

b) when the condensate discharge is blocked, causing a restriction in the flow of combustion products or air for combustion, resulting in a CO concentration equal to or greater than 0,10 % at equilibrium, restart shall not be possible from cold.

In either case, there shall be no spillage of condensate from the boiler.

6.7.1 Useful efficiency at the nominal heat input

Replace this clause by the following text:

Under the test conditions of 7.7.1 the useful efficiency at the nominal heat input shall be in accordance with Table 10.

Table 10

Boiler type	Efficiency at nominal output %
Standard	$\geq 84 + 2 \log_{10} P_n$ [a)]
Low-temperature	$\geq 87{,}5 + 1{,}5 \log_{10} P_n$ [1)]
[a)] P_n is the nominal output expressed in kilowatt (kW).	

6.7.2 Useful efficiency at part load

Replace with the following text:

Under the test conditions of 7.7.2, the useful efficiency for a load corresponding to 30 % of the nominal heat input shall be in accordance with Table 11.

Table 11

Boiler type	Efficiency at 30 % nominal output %
Standard	$\geq 80 + 3 \log_{10} P_n$ [a)]
Low-temperature	$\geq 87{,}5 + 1{,}5 \log_{10} P_n$ [a)]
[a)] P_n is the nominal output expressed in kilowatts (kW).	

6.8 Non-condensation in the flue

Replace this clause with the following text:

6.8 Criteria for condensation in the flue for standard boilers

For standard boilers it is determined whether condensation occurs in the flue. Condensation may occur when one of the following criteria, depending on the manufacturer's choice is met:

a) flue losses are less than 8 % under the test condition of 7.8.1;

b) temperature of the combustion products is less than 80 °C under the test conditions of 7.8.2.

6.9.1 General

At the end of the clause, add the following:

Corrosion resistant coatings shall show no sign of damage after the pressure tests described in 7.9.

Add a new clause as follows:

6.12 Condensation in a standard boiler

If condensation occurs in the flue of a standard boiler, according to one of the criteria of 6.8, additional tests are carried out to determine whether condensation also occurs in the boiler.

Under the test conditions of 7.12, it is checked whether formation of condensate occurs in the boiler.

If there is condensation in the boiler, the appropriate requirements for low-temperature boilers in 5.3.1, 5.8.5, 5.16, 6.5.9, 6.9.1, 7.5.9, and 8.2.1 shall be met.