

Plinski kotli za centralno ogrevanje - Tip kotlov C z imensko močjo do vključno 70 kW – Dopolnilo A4

Gas fired central heating boilers – Type C boilers of nominal heat input not exceeding 70kW – Amendment A4

ICS

English version

Gas fired central heating boilers - Type C boilers of nominal heat input not exceeding 70kW

Chaudières de chauffage central utilisant les combustibles gazeux - Chaudières des types C dont le débit calorifique nominal est inférieur ou égal à 70 kW

This draft amendment is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 109.

This draft amendment A4, if approved, will modify the European Standard EN 483:1999. If this draft becomes an amendment, 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.

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document has been prepared by the Technical Committee CEN/TC 109 "Gas-fired central heating boilers", the secretariat of which is held by NEN.

This document is currently submitted to the CEN Enquiry.

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.

As shown in annex ZA2 of this amendment the following essential requirements mentioned in mandate M105 are already covered by the essential requirements of the GAD.

- Fire resistance – integrity (I);
- Gas tightness/leakage;
- Flow resistance;
- Dimensioning;
- Flexural tensile strength;
- Compressive strength;
- Durability of tightness/leakage against chemicals/corrosion;
- Durability of flexural tensile strength against chemicals;
- Durability of compressive strength against chemicals
- Fire Reaction.

To fulfill the Gas appliance Directive this standard contains normative paragraphs specifying requirements for combustion products evacuation ducts, which are part of an appliance.

This draft Amendment has been prepared to amplify the requirements and test methods for flues supplied as an integral part of the boiler to support the EU Directive 89/106/EEC on construction products.

Additionally, this Amendment specifies requirements, test procedures and reporting of information necessary for flue design for boilers where the flue is not supplied as an integral part of the boiler.

Requirements and test methods for combustion products evacuation ducts made of metal are covered in the present version of this amendment. The introduction of combustion products evacuation ducts made of plastic and elastomeric seals are under preparation by TC109.

1 Scope

Delete the footnote no.1.

2 Normative references

EN 573-3, *Aluminium and aluminium alloys – Chemical composition and forms of wrought products – Part 3: Chemical composition*

EN 1856-1, *Chimneys – Requirements for metal chimneys – Part 1: System chimney products*

EN 1859, *Chimneys – Metal chimneys – Test methods*

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

EN 13501-2, *Fire classification of construction products and building elements – Part 2: Classification using data from fire resistance tests, excluding ventilation services*

EN 13216-1, *Chimneys – Test methods for system chimney – Part 1: General test methods*

EN 14471, *Chimneys – System chimneys with plastic flue liners – Requirements and test methods*

ISO 37:1994, *Rubber, vulcanized or thermoplastic – Determination of tensile stress-strain properties*

ISO 178:2001, *Plastics – Determination of flexural properties*

ISO 179:1997, *Plastics – Determination of Charpy impact properties*

ISO 188:1998, *Rubber, vulcanized or thermoplastic – Accelerated ageing and heat resistance tests*

ISO 527-1:1993, *Plastics – Determination of tensile properties – Part 1: General principles*

ISO 527-2:1993, *Plastics – Determination of tensile properties – Part 2: Test conditions for moulding and extrusion plastics*

ISO 815:1991, *Rubber, vulcanized or thermoplastic – Determination of compression set at ambient, elevated or low temperatures*

ISO 1183:1987, *Plastics – Methods for determining the density and relative density of non-cellular plastics*

ISO 1817:1999, *Rubber, vulcanized – Determination of the effect of liquids*

ISO 2781:1988, *Rubber, vulcanized – Determination of density*

ISO 6914:2004, *Rubber, vulcanized or thermoplastic – Determination of ageing characteristics by measurement of stress relaxation*

ISO 7619:1997, *Rubber – Determination of indentation hardness by means of pocket hardness meters*

ISO 9969:1994, *Thermoplastics pipes – Determination of ring stiffness*

ISO 10888:1999, *Keyless type three-jaw drill chucks – Specification*

Add a new definition 3.3.2.11 as follows:

3.3.2.11 Ducts support

accessory used to fix, or transfer the load of, air supply and combustion product evacuation ducts to structural elements (building, etc.)

Add a new definition 3.4.17 as follows:

3.4.17 Overheat combustion products temperature

maximum temperature of the combustion products in case of overheat, at the exit of the boiler where it is intended to be connected to a duct, flue or chimney

5.3 Materials and thicknesses

5.3.1 General

Add in the first sentence of the first paragraph after the words ", ...of the boilers":

","including ducts, terminals and fitting pieces, if any,"

Delete the fourth paragraph of clause 5.3.1.

Remark; now included in a new clause 6.10.

5.3.5 Separate combustion product evacuation ducts

5.3.5.1 Stability under mechanical loading

This clause of EN 483 is not applicable.

Add a new clause:

"5.4.4.7 Dimensions and of air supply and combustion product evacuation ducts connection pieces

For boilers of types C₂, C₄, C₆ and C₈ where the boiler is to be connected to separately supplied air supply and combustion product evacuation ducts, the manufacturer shall quote the nominal size of ducts on the boiler or the fitting piece to which air supply and combustion product evacuation ducts are to be connected. These connections may be concentric or separate.

In cases where the ducts, spigots or sockets are not of a circular cross section a detailed dimensioned drawing shall be provided.

6.2.2.1 General

Modify

Alter the present 2nd sentence: Soundness is verified before and after all the tests of this standard, except the tests according to clause 7.10.

Add a new clause 6.2.2.7:

6.2.2.7 Durability against corrosion

The durability against corrosion of the combustion product evacuation duct is demonstrated by fulfilling either:

- the requirements in table A4-1 or
- the corrosion test method A1 from normative Annex A of EN 1856-1

Table A4-1 – Flue duct material specification (according to EN 10088-1 and EN 573-3)

Material Type	Material No.	Symbol	Minimal Thickness non-condensing mm	Minimal Thickness condensing mm
10	EN AW – 4047A	EN AW Al Si 12(B) and CU <0,1%, Zn<0,15% (cast aluminium)	0,5	1,5
11	EN AW – 1200A	EN AW-AL 99,0 (A)	0,5	1,5
13	EN AW-6060	EN AW-Al MgSi	0,5	1,5
40	1.4401	X5CrNiMo 17-12-2	0,4	0,6
50	1.4404 ^a	X2CrNiMo 17-12-2	0,4	0,6
60	1.4432	X2CrNiMo 17-12-3	0,4	0,6
70	1.4539	X1NiCrMoCu 25-20-5	0,4	0,6
^a Equivalent for material N° 1.4404 = 1.4571 (symbol X6CrNiMoTi 17-12-2).				

6.4.1 Limiting temperatures

Rename the existing clause 6.4.1.2 from

6.4.1.2 Limiting temperatures of the side walls, the front and the top

to

6.4.1.2 Limiting temperatures of the side walls, the front and the top of the outside of the boiler and of the ducts

Modify the existing clause 6.4.1.3 from

6.4.1.3 Limiting temperatures of the test panels and floor

to

6.4.1.3 Limiting temperatures adjacent to the boiler casing and ducts

Reword the text of clause 6.4.1.3 to:

The temperature of the floor on which the boiler is placed, where appropriate, that of the panels placed at the side of and behind the boiler and the surfaces adjacent to ducts and/or terminal shall not, at any point, exceed the ambient temperature by more than 80 K under the test conditions of 7.4.1.4.

When this temperature rise is between 60 K and 80 K, the manufacturer shall state in the technical instructions for the installer the nature of the protection which has to be applied between the boiler and the adjacent surfaces when these latter are made of inflammable materials.

This protection shall be supplied to the test laboratory, which shall check that, with the boiler fitted with it, the surface temperatures measured under the test conditions of 7.4.1.4 do not exceed the ambient temperature by more than 60 K.

Add a new sub clause 6.5.7.4:

6.5.7.4 Overheat combustion products temperature

For the purpose of flue design, the overheat temperature of the combustion products shall be recorded at the outlet of the boiler. The test shall be carried out according to 7.5.7.4.

Add a new clause 6.10

6.10 Mechanical resistance and stability of ducts, terminal and fitting pieces

Where the air supply and combustion product evacuation ducts are supplied or specified by the manufacturer the ducts, terminal and fitting pieces shall meet the following conditions.

6.10.1 Compressive Strength

6.10.1.1 Duct sections and fittings

Where compressive stresses occur in the air supply or combustion products evacuation ducts, due to the weight of the duct components, the ducts shall show no permanent deformation when tested in accordance with 7.10.1.1.

6.10.1.2 Ducts support

When tested in accordance with 7.10.1.2, the maximum displacement of the ducts at the support shall not be greater than 5 mm in the direction of the load.

6.10.1.3 Vertical terminals

When tested in accordance with 7.10.1.3, the terminal shall show no permanent deformation.

6.10.2 Lateral strength

6.10.2.1 Flexural tensile strength

When the manufacturer declares the air supply and combustion product evacuation ducts to be suitable for non-vertical installation, these ducts are tested in accordance with 7.10.3.1. The deflection of any part shall not be more than 2 mm per meter in distance between supports.

6.10.2.2 Components subject to wind load

When the manufacturer declares a certain length of the air supply and combustion product evacuation ducts to be suitable for external installation, the ducts shall show no permanent deformations when tested in accordance with 7.10.2.2.”

Add a new clause 6.11

6.11 Requirements for plastic in the combustion product evacuation ducts, terminals and fitting pieces for boilers

6.11.1 Performance requirements

6.11.1.1 Fire resistance

For the resistance from external to external the performance criteria of integrity and insulation shall be declared in accordance with EN 13501-2 in relation to the outer wall.

6.11.1.2 Thermal resistance

If the thermal resistance is not declared to be zero, the thermal resistance value of the chimney section declared by the manufacturer shall be verified by testing in accordance with 7.11

6.11.2 Materials

6.11.2.1 Characterisation

The material shall be identified by the thermal, mechanical and physicochemical behaviour.

The characterisation shall include the density and at least 5 more properties. At least one property has to be taken of each off the three groups of methods in Annex A of PrEN 14471.

The characterisation methods shall be chosen in such a way that the characterisation include the relevant properties of the material. Examples are given in Annex B. of PrEN 14471.

6.11.2.2 Long-term resistance to thermal load

The material shall be capable of withstanding exposure to the nominal working temperature as described in 7.11.2.2.

The tensile modulus and the yield stress shall be measured in all cases.

In case of thermosetting plastics the flexural modulus and flexural strength shall also be determined.

In case of flexible tubes the ring stiffness shall also be determined.

Other relevant properties like the density or the impact of strength shall be measured additional before and after the period of exposure, if they are relevant to evaluate the deterioration of the material.

The properties shall be determined in accordance with the methods as listed in Annex Q.

The properties shall not change more than the values as listed in Table A4 -2

Table A4-2 — Criteria for testing long-term resistance to thermal load

Property	Value
Impact strength	≤ 50 %
Tensile modulus	≤ 50 %
Yield stress	≤ 50 %
Density	≤ 2 %
Flexural modulus	≤ 50 %
Flexural strength	≤ 50 %
Ring stiffness	≤ 50 %

NOTE If these values are not met, it is allowed to take new reference values obtained after 24 h exposure in air at nominal working temperature (conditioning) to release processing pressures/effects.

These effects are covered by the requirements for the mechanical stability of chimneys in accordance with and 6.10.

6.11.2.3 Long-term resistance to condensate exposure

The combustion evacuation duct with the terminal and fitting pieces should be designed so that no condensate remains. The material shall be capable of withstanding exposure to condensate as described in 7.11.2.3.