
**Plinski kotli za centralno gretje - 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 70 kW

Heizkessel für gasförmige Brennstoffe - Heizkessel des Typs C mit einer Nennwärmebelastung gleich oder kleiner als 70 kW

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

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EUROPEAN STANDARD
NORME EUROPÉENNE
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EN 483:1999/A4

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ICS 91.140.10

English Version

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This amendment A4 modifies the European Standard EN 483:1999; it was approved by CEN on 2 November 2007.

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 CEN Management Centre 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 CEN Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 483:1999/A4:2007) has been prepared by the 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 483:1999 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2008, and conflicting national standards shall be withdrawn at the latest by June 2008.

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).

As shown in informative Annex S 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 fulfil the Gas Appliance Directive this standard contains normative paragraphs specifying requirements for combustion air supply and combustion products evacuation ducts, which are part of an appliance.

This Amendment has been prepared to amplify the requirements and test methods for air supply and combustion products evacuation duct designed by the boiler manufacturer and marketed 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 related to boilers that are to be connected to air supply and combustion products evacuation ducts that are not supplied as an integral part of the boiler.

If declared by the appliance manufacturer, air supply and combustion products evacuation ducts complying with the relevant harmonised standards of CEN/TC166 for chimneys, can also be used. It is essential that the combination of appliance and its ducts still fulfil all relevant requirements of this standard.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, 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.

EN 483:1999/A4:2007 (E)**1 Modification to the scope**

Delete footnote n°.1.

2 Modification to Clause 2 “Normative references”

Add the following normative references in Clause 2:

EN 513, *Unplasticized polyvinylchloride (PVC-U) profiles for the fabrication of windows and doors — Determination of the resistance to artificial weathering*

EN 13216-1:2004, *Chimneys — Test methods for system chimneys— Part 1: General test methods*

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

EN 14241-1: 2005, *Chimneys — Elastomeric seals and elastomeric sealants — Material requirements and test methods — Part 1: Seals in flue liners*

EN 14471:2005, *Chimneys — System chimneys with plastic flue liners — Requirements and test methods*

EN ISO 178, *Plastics — Determination of flexural properties (ISO 178:2001)*

EN ISO 179-1, *Plastics — Determination of Charpy impact properties — Part 1: Non-instrumented impact test (ISO 179-1:2000)*

EN ISO 527-1, *Plastics — Determination of tensile properties — Part 1: General principles (ISO 527-1:1993 including Corr 1:1994)*

EN ISO 527-2, *Plastics — Determination of tensile properties — Part 2: Test conditions for moulding and extrusion plastics (ISO 527-2:1993 including Corr 1:1994)*

EN ISO 1183, *Plastics — Methods for determining the density of non-cellular plastics*

EN ISO 9969, *Thermoplastics pipes — Determination of ring stiffness (ISO 9969:1994)*

ISO 37, *Rubber, vulcanized or thermoplastic — Determination of tensile stress-strain properties*

ISO 188, *Rubber, vulcanized or thermoplastic — Accelerated ageing and heat resistance tests*

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

ISO 1817, *Rubber, vulcanized — Determination of the effect of liquids*

ISO 2781, *Rubber, vulcanized — Determination of density*

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

ISO 7619, *Rubber, vulcanized or thermoplastic — Determination of indentation hardness*

In the original Clause 2 replace the following three standards:

prEN 1856-1, Chimneys — Performance requirements for metal chimneys — Part 1: System chimney products

prEN 1856-2, Chimneys — Performance requirements for metal chimneys — Part 2: Metal liners and connecting flue pipes products

EN 1859, Chimneys — Metal chimneys — Test methods

with:

EN 1856-1:2003, *Chimneys — Requirements for metal chimneys — Part 1: System chimney products*

EN 1856-2, *Chimneys — Requirements for metal chimneys — Part 2: Metal liners and connecting flue pipes*

EN 1859:2000, *Chimneys — Metal chimneys — Test methods*

3 Modification to Clause 3 “Terms and definitions”

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

Add a new definition 3.4.18 as follows:

3.4.18

nominal working combustion products temperature

maximum temperature of the combustion products in case of normal functioning, at the exit of the boiler where it is intended to be connected to a duct or chimney. Normal functioning is considered to reflect the situation of running the boiler at inlet/outlet temperatures of 70/90 °C, and just at the point that the control thermostat is switching. (See also 7.4.1.1)

3.4.19

condensing operation mode of flue system

operation mode where, under normal operation conditions, flue gas condensate is available

5 Modification to Clause 5 “Constructional requirements”

5.3.1 General

Add in the first sentence of the first paragraph after the words “, ...of the boilers” — “, including connecting ducts, ducts and terminals , if any,”

Delete the fourth paragraph of 5.3.1.

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Remark; now included in a new subclause 6.10.

5.3.5 Separate combustion product evacuation ducts

5.3.5.1

Stability under mechanical loading

Delete this subclause.

6 Modification to Clause 6 “Operational requirements”

6.2.2.1 General

Replace the 3rd sentence with the following: “Soundness is verified before and after all the tests of this standard, except the tests specified in 7.10.”

Add a new subclause 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
- a corrosion test method from normative Annex A of EN 1856-1:2003.

Table A4-1 — Flue duct material specification
(standards.iteh.ai)

	Material	Symbol	Minimum Nominal Thickness non-condensing ^{b)}	Minimum nominal Thickness condensing ^{b)}
			mm	mm
	EN AW – 4047A	EN AW Al Si 12 (A), and CU <0,1%, Zn<0,15% (cast aluminium)	0,5	1,5
	EN AW – 1200A	EN AW-AL 99,0 (A)	0,5	1,5
	EN AW-6060	EN AW-Al MgSi	0,5	1,5
	1.4401	X5CrNiMo 17-12-2	0,4	0,4
	1.4404 ^{a)}	X2CrNiMo 17-12-2	0,4	0,4
	1.4432	X2CrNiMo 17-12-3	0,4	0,4
	1.4539	X1NiCrMoCu 25-20-5	0,4	0,4
	1.4401	X5CrNiMo 17-12-2	0,11 ^{c)}	0,11 ^{c)}
	1.4404 ^{a)}	X2CrNiMo 17-12-2	0,11 ^{c)}	0,11 ^{c)}
	1.4432	X2CrNiMo 17-12-3	0,11 ^{c)}	0,11 ^{c)}
	1.4539	X1NiCrMoCu 25-20-5	0,11 ^{c)}	0,11 ^{c)}
^{a)}	Equivalent for material N° 1.4404 = 1.4571 (symbol X6CrNiMoTi 17-12-2).			
^{b)}	According to declaration of manufacturer, see definition 3.4.19			
^{c)}	Flexible liners only allowed when installed in an existing chimney			

The actual minimum thickness of the materials shall always be greater than 90 % of the minimum nominal thicknesses.

6.4.1 Limiting temperatures

Rename the existing subclause 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 subclause 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 subclause 6.4.1.3 to

The temperature of the floor on which the boiler is eventually 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.

If 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 subclause 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 as prescribed in 7.5.7.4.

Add a new subclause 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 requirements:

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

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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****Resistance to bending under load**

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 7.10.2.1. 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 subclause 6.11

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

(standards.iteh.ai)

6.11.1. Performance requirements

[SIST EN 483:2001/A4:2008](https://standards.iteh.ai/catalog/standards/sist/14f20fe9-eb1f-47de-b472-3178e09cef10/sist-en-483-2001-a4-2008)

6.11.2**Thermal resistance**

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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

6.11.3 Materials**6.11.3.1 Characterization**

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

The characterization shall include the density and at least 5 more properties. At least one property has to be taken of each of the three groups of methods in Annex A of EN 14471:2005.

The characterization methods shall be chosen in such a way that the characterization includes the relevant properties of the material. Examples are given in Annex B of EN 14471:2005.

6.11.3.2 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 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 of Annex R.

Alterations to the properties shall not exceed those set out in Table A4-2.

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

Property	Maximum permitted variation
Impact strength	≤ 50 %
Tensile modulus	≤ 50 %
Yield stress	≤ 50 %
Density	≤ 2 %
Flexural modulus	≤ 50 %
Flexural strength	≤ 50 %
Ring stiffness	≤ 50 %

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 6.10.

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6.11.3.3 Long-term resistance to condensate exposure

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

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

The properties shall be determined in accordance with the methods of Annex R.

Alterations to the properties shall not exceed those set out in Table A4-3