SLOVENSKI PREDSTANDARD

SIST EN 1:2000/oprA1:2005

julij 2005

Peči za ogrevanje na tekoča goriva z uparjalnimi gorilniki in priključkom na dimnik – Dopolnilo A1

Flued oil stoves with vaporizing burners – Amendment A1

ICS 97.100.40

Referenčna številka
SIST EN 1:2000/oprA1:2005(en)

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
EN 1:1998

prA1

May 2005

ICS

English version

Flued oil stoves with vaporizing burners

Poêles à combustible liquide avec brûleurs à vaporisation raccordés à un conduit évacuation des produits de la combustion

Heizöfen für flüssige Brennstoffe mit Verdampfungsbrenner und Schornsteinanschluss

This draft amendment is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 46.

This draft amendment A1, if approved, will modify the European Standard EN 1:1998. 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.

This draft amendment was established by CEN 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 Management Centre has the same status as the official versions.

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

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Ref. No. EN 1:1998/prA1:2005:2005: E

Foreword

This document (EN 1:1998/prA1:2005) has been prepared by Technical Committee CEN/TC 46 “Oil stoves”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This amendment to the European Standard EN 1:1998 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 the relation ship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

2 Scope

To replace clause 2 by the following:

This standard applies to flued oil stoves with one or more vaporizing burners (hereafter referred to as "stoves") as used for individual heating in the domestic field and having either a draught regulator or a combustion air limiter as defined in 3.13 and a nominal heating capacity of not more than 15kW.

This standard does not cover

- Built-in appliances

- appliances equipped with a fan assisted burner

- appliances connected to a water system

According to the type of fuels used in country of destination, the stoves are supplied for use with either:

- fuel oil with a maximum kinematic viscosity of 6,0mm²/s at 20°C

- or kerosene with a flash point of not less than 40°C

3 Normative references

To add the following:

EN ISO 9001	Quality systems – Model for quality assurance in design/development, production, installation and servicing
EN ISO 9002	Quality systems – Model for quality assurance in production, installation and servicing
EN 50165	Electrical equipment for non-electric appliances for household and similar purposes. Safety requirements
ISO 2859	Sampling procedures for inspection by attributes

4 Definitions

*A*dd the following *new definitions*:

3.21 Content of NO_X

Content of NO_X in the dry flue gases measured as volume in ppm, calculated as NO_2, expressed in mg/MJ.

3.22 Content of unburnt Hydrocarbons

Content of unburnt hydrocarbons in the dry flue gases measured as volume in ppm, calculated as C_3H_8, expressed in mg/MJ.

4.2 Materials

Add the following text:

The stove shall be fire-resistant and safe to operate, and shall be resistant to deformation and shall be such that:

- it can withstand the stresses arising during normal operation;

- the burner and the stove cannot become heated to create a hazard;

- dangerous accumulations of combustible gases (fuel mixed with air) in the combustion chamber and in the flues are prevented;

- gases cannot leak from the stove in dangerous quantities.

The stove shall be made of non-combustible materials except that combustible materials shall be allowed for the following:

- 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;

-thermal insulation (only asbestos-free materials are allowed).

Component parts of covers, operating, control and safety devices and electrical accessories shall be arranged in such a way that their surface temperatures, under steady state conditions, do not exceed those specified either by the manufacturer or in the component part standard.

4.10 Oilcontainer

Add the following text in the end of clause:

To ensure that any fire external to the stove is not transmitted to the contents of the storage tank or , if a fire does occur its effects are limited by either the tank being made of non-combustible materials e.g. metal or be enclosed with non-combustible fire resisting materials or construction. Any fuel lines from the tank to the burner shall also be fire resistant.

The filling orifice of the storage tank shall have a cap and shall be easily accessible and it shall be so arranged that when filling the tank with fuel it is not possible to ignite the fuel from any hot components.

5 Constructional requirements

The following clauses of EN 1 : 1998 are changed or supplemented.

5.4 Efficiency

Replace the clause as follows:

The value of the efficiency at nominal heat output shall be not less than 60 % and the requirements of table 1 shall be fulfilled as appropriate to the appliance class.

Table 1 – Appliance Classes

Appliance Class	CO mg/MJ	C_nH_m mg/MJ	NO_x mg/MJ	Efficiency at nominal heat output %		Smoke number	
				appliances < 4 kW	appliances ≥ 4 kW	Heating gas oil	Kerosene
1[1)]	20	6	35	78	81	1	1
2[2)]	400	—	—	75	75	3	2
3[2)]	400	—	—	70	70	3	2
4[2)]	400	—	—	60	60	—	—

[1)] measured at nominal heat output and low rate only

[2)] measured in the whole heat output range

5.5 Smoke number

Replace the clause as follows:

For appliances of the classes 1, 2 and 3 according to table 1, in the whole heat output range the smoke number shall not exceed 3 for heating gas oil and 2 for kerosene. For appliances of class 1 according to table 1, at nominal heat output and at low rate only the smoke number shall not exceed 1 for both heating gas oil and kerosene.

The flue gases shall not contain oil rest particles.

Under the test conditions of 6.5.1.2, 6.5.1.4 and 6.5.3.1 for heating gas oil, the smoke number may be one more.

5.7 CO in the flue gases

Add as 3rd para:

In addition for appliances of class 1 according to table 1, the content of CO measured at nominal heat output and at low rate shall not exceed 20 mg/MJ.

To add the following clauses:

5.13 Electrical safety

„The tests described in clause 19 of EN 50165 shall not apply for safety relevant circuits when the mechanical components ensure that any failure or interruption of the electronic circuits does not affect the safe operation of the appliance.“

5.14 NO_X and unburnt hydrocarbons (C_nH_m) in the flue gases

In addition for appliances of class 1 only according to table 1, measured at nominal heat output and at low rate the content of NO_x must not exceed 35 mg/MJ and the content of unburnt hydrocarbons must not exceed 6 mg/MJ.

6 Test methods

The following clauses of EN 1 : 1998 are changed or supplemented :

6.1.1 General

Add the following new measurement equipment after the measurement equipment for CO in the flue gases:

NO_x-content in the flue gases

Continuously recording instrument for the measurement of NO_x-content with an inaccuracy of maximal ± 5 ppm

C_nH_m- content in the flue gases

Continuously recording instrument for the measurement of C_nH_m-content with an inaccuracy of maximal ± 5 ppm

6.5.2.1 nominal heat output

Add the following new indents:

- NO_x-content in the flue gases (for class 1 appliances only)
- C_nH_m-content in the flue gases (for class 1 appliances only)

6.5.2.2 low rate

Add the following new indents:

- NO_x-content in the flue gases (for class 1 appliances only)
- C_nH_m-content in the flue gases (for class 1 appliances only)

Add the new clauses 6.6.4 and 6.6.5 as detailed below and renumber clauses 6.6.4 flue gas mass rate in 6.6.6 and 6.6.5 formula signs and units in 6.6.7.

6.6.4 NO_X in the flue gas

During the tests at nominal heat output 6.5.2.1 and at low rate 6.5.2.2, the flue gas composition and the mean NO_x-content in the flue gases (in ppm) shall be measured.

The NO_x-content in the flue gases in (mg/MJ) shall be calculated by the following equations:

$$NO_x\left[\frac{mg}{MJ}\right] = \left(NO_{xref} - 0{,}2 \cdot \left(N_{meas} - N_{ref}\right)\right)$$

$$NO_{xref}\left[\frac{mg}{MJ}\right] = NO_{xrech} + \left(h_{meas} - 10\right) \cdot \left(\frac{0{,}02 \cdot NO_{xrech} - 0{,}34}{1 - 0{,}02 \cdot \left(h_{meas} - 10\right)}\right) + 0{,}85 \cdot \left(20 - T_{meas}\right)$$

$$NO_{xrech}\left[\frac{mg}{MJ}\right] = \frac{1}{3{,}6} \cdot \left(NO_{xppm} \cdot 2{,}056 \cdot \left(\frac{21}{21 - O_{2meas}}\right) \cdot \left(\frac{V_{A,th,tr,\min}}{H_i}\right)\right)$$

Where

NO_x	NO_x – content in mg/MJ, corrected nitrogen content (N) in the oil For the test, the nitrogen content (N) in the oil shall be analysed and should be between 70 and 200 mg/kg.
NO_{xref}	NO_x – value in mg/MJ corrected according reference conditions for air humidity of 10 g/kg and room temperature of 20°C
NO_{xrech}	From the measurement calculated NO_x – value in mg/MJ
NO_{xppm}	measured NO_x-content in the flue gases in ppm
O_{2meas}	measured O_2-content in the flue gases in %
h_{meas}	measured air humidity in g/kg dry air during the NO_{xppm} measurement (between 5 and 15 g/kg)
t_{meas}	measured combustion air temperature in °C during the NO_{xppm} measurement (between 15 and 30 °C)
N_{meas}	measured nitrogen content (N) in the oil in mg/kg
2,056	Specific gravity of NO_2 in kg/m³
H_i	net calorific value of the oil = 11,86*3,6 MJ/kg (mean value)
$V_{A,th,tr,min}$	Theoretical flue gas volume, dry = 10,46 m³/kg (mean value)
N_{ref}	Reference value for nitrogen content (N) in the oil = 140 mg/kg (mean value)

Note: The analysed values for the test oil can be used.

6.6.5 Unburnt *h*ydrocarbons in the flue gas

During the tests at nominal heat output 6.5.2.1 and at low rate 6.5.2.2, the flue gas composition and the mean C_nH_m-content in the flue gases (in ppm) shall be measured.

The content of the unburnt hydrocarbons (C_nH_m) in the flue gases (in mg/MJ) as propane-equivalent ~~is~~ shall be calculated by the following equation:

$$C_nH_m\left[\frac{mg}{MJ}\right] = \frac{V_{tr,\min}}{H_u} \cdot \frac{M_{HC}}{22{,}4} \cdot CH_{meas}$$

Where

C_nH_m	Value of unburnt Hydrocarbons (C_nH_m) in the flue gases as propan-equivalent in mg/MJ
$V_{tr,min}$	Theoretical flue gas volume, dry (Propane) = 21,8 m^3/m^3_{Br}
H_u	net calorific value (Propane) = 93,2 MJ/m^3_{Br}
M_{HC}	Mol mass of unburnt Hydrocarbons (C_nH_m) in the flue gases = 36,75 kg/kmol (mean value)
CH_{meas}	measured mean C_nH_m-content in the flue gases in ppm

Amend Clause 7 as follows:

7 Instructions and marking of the appliance

The following clauses of EN 1:1998 are changed or supplemented :

7.1 General

Instructions written in the language of the country of intended destination shall accompany the appliance and shall describe the installation, operation, maintenance and, if assembled on site, the assembly of the appliance. The instructions shall not be in contradiction to the requirements or test results in accordance with this standard.

7.2 Installation instructions

The installation instructions shall contain at least the following information:

- a statement to the fact that all local regulations, including those referring to national and European standards need to be complied with when installing the appliance;
- the type (model or number) of the appliance;
- class of the appliance after table 1 with the number of this European standard like:
  flued oil stove EN 1 – class x
- the nominal output in kW, from ... (lowest) kW to ... (highest) kW or W;
- the right fitting removable Parts.
- horizontal assembly
- chimney connection;
- the safety clearances against combustible materials, and the other protective measures that shall be taken to protect the building construction;
- the requirements for the supply of combustion air, for the simultaneous operation with other appliances and for the operation of exhaust air devices;

  NOTE – Extractor fans when operating in the same room or space as the appliance, may cause problems.
- the need of any air inlet grilles to be so positioned that they are not liable to blockage;
- the mass of the appliance in kg;
- the minimum flue draught (in Pa) for nominal heat output;
- the flue gas mass flow in g/s;
- whether the appliance is suitable for installation in a shared flue system;
- the flue gas temperature directly downstream of the flue spigot/socket in °C, under nominal heat output conditions;
- the appliance shall be installed on floors with an adequate load-bearing capacity. If an existing construction doesn't meet this prerequisite, suitable measures (e.g. load distributing plate) shall be taken to achieve it;
- advice on the need to provide access for cleaning the appliance, the flue gas connector and the chimney flue;
- the installation of the damper device, if applicable;
- the assembly of the appliance on-site, if applicable;

7.3 User operating instructions

The operating instructions shall contain at least the following information:

- a statement to the fact that all local regulations, including those referring to national and European standards need to be complied with when installing the appliance;
- kind of fuel (appropriate commercial identification of the country of destination)
- details of the method of refuelling the appliance and the maximum filling height and typical refuelling intervals at nominal heat output;
- a description of the correct instructions for safe and efficient operation of the appliance including the ignition procedure;
- advice on the purity of the air;
- advice on the measure to reignition after safety shutdown;
- warning advice: "Don't ignite the flued oil stove in a warm condition";
- advice on the maximum working pressure from 300 mbar with integrated oilcontainer;
- give an advice that flued oil stove with feed pressure limiter with locking are lock-out release when from the manufacturer given maximum feed pressure in the chimney exceed.
- the operation of all adjusting devices, dampers and controls;
- ventilation requirements for simultaneous operation with other heating appliances, where applicable;