SLOVENSKI STANDARD
SIST EN 1196:1999

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Plinski grelniki zraka – Dodatne zahteve za kondenzacijske grelnike

Domestic and non-domestic gas-fired air heaters - Supplementary requirements for condensing air heaters

Gasbefeuerte Warmlufterzeuger für den häuslichen und den nicht-häuslichen Gebrauch - Zusätzliche Anforderungen an kondensierende Warmlufterzeuger

Générateurs d'air chaud a usage domestique et non domestique utilisant les combustibles gazeux - Exigences complémentaires pour les générateurs d'air chaud a condensation

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English version

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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Foreword

This European Standard has been prepared by Technical Committe CEN/TC 179 "Gas-fired air heaters", the secretariat of which is held by NNI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by December 1998 and conflicting national standards shall be withdrawn at the latest by December 1998.

This European Standard 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 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, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This standard specifies the additional requirements and test methods for gas-fired air heaters which are so designed that water vapour condenses from combustion products. On this subject it extends the European standards EN 778 and EN 1319 for domestic, and EN 621 and EN 1020 for non-domestic air heaters.

This standard applies to gas-fired air heaters with or without a fan in the combustion circuit in one of the following constructional types:

- an integral air heater with at least one condensing heat exchanger;
- a non-condensing air heater with an integrated additional condensing heat exchanger;
- a non-condensing air heater, with an integrated additional condensing heat exchanger for the recovery of heat from combustion products and from ventilation air if appropriate.

This European Standard covers type-testing only.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 621	Non-domestic gas-fired forced convection air heaters for space heating not exceeding a net heat input of 300 kW, without a fan to assist transportation of combustion air and/or combustion products
EN 778	Domestic gas-fired forced convection air heaters for space heating not exceeding a net heat input of 70 kW, without a fan to assist transportation of combustion air and/or combustion products
EN 1020	Non-domestic gas-fired forced convection air heaters for space heating not exceeding a net heat input of 300 kW, incorporating a fan to assist transportation of combustion air and/or combustion products
EN 1319	Domestic gas-fired forced convection air heaters for space heating, with fan-assisted burners not exceeding a net heat input of 70 kW

3 Definitions

For the purposes of this standard, the following definitions apply and supplement the definitions in the aforementioned air heater standards:

3.1 condensing air heater: Air heater in which, under normal operating conditions, the water vapour in the combustion products is totally or partially condensed in order to make use of the latent heat in this water vapour for heating purposes.

3.2 condensate: The liquid formed from the combustion products during the condensation process.

3.3 condensate collecting device: The part of the appliance designed to collect the condensate in order that it can be drained.

4 Constructional and design requirements

4.1 General

All parts of the heat exchanger(s) and other parts of the appliance likely to come into contact with condensate under normal operating conditions at thermal equilibrium, shall be constructed from sufficiently corrosion resistant material or shall be sufficiently protected against corrosion, in order to ensure a reasonable life for an appliance that is installed, used and maintained in accordance with the manufacturer's instructions.

Connections at points where condensation may occur or condensate may be present, shall not give rise to corrosion.

The manufacturer shall provide evidence of evaluation, tests undertaken and/or experience gained to support the claim that the materials used and the construction methods adopted are suitable for the purpose intended.

4.2 Materials

Copper and copper based alloys shall not be used for condensate carrying components.

4.3 Access, assembly and disassembly of condensate carrying parts

A condensate collecting device or other means provided for condensate formed during normal operation to be continuously drained, shall be constructed in such a way that it can be cleaned in accordance with the manufacturer's instructions.

4.4 Condensate discharge

The appliance shall be equipped with one or more condensate drains. Drains within the appliance shall have an internal diameter of at least 13 mm. The main drain for connection to the external drain shall have an internal diameter of at least 25 mm.

Condensate drains shall be so designed and arranged that combustion products do not escape via the drains.

If the appliance is equipped with a sealed combustion chamber, the condensate formed both in the appliance and in the flue system shall be discharged through one or more condensate drains. The drains for the flue system may be the same as the drains for the appliance. Condensate formed in the flue system shall drain to a purposely designed drain.

Drains for removal of condensate shall be provided with a means, e.g. a water trap or siphon, to prevent leakage of combustion products or combustion air.

If the air heater's condensate outlet is blocked or if a pump for the discharge of condensate fails to operate, the construction shall be such that no hazardous situation can arise when the appliance is operating.

4.5 Condensate neutralization system

If the air heater is fitted with a condensate neutralization system, this system shall be designed in such a way that the reagents can be exchanged without dismantling any part of the appliance.

4.6 Limitation of the combustion products temperature

If the combustion products circuit contains materials that are likely to be affected by heat, the appliance shall incorporate a device to prevent the combustion products temperature from exceeding the maximum permissible temperature for the materials as declared by the manufacturer.

The device for limiting the combustion products temperature shall be fail-safe in operation, non-adjustable and shall not be accessible without the use tools.

5 Operational requirements

5.1 General

The following requirements complete or replace the requirements given in the air heater standards mentioned in clause 1.

5.2 Draining of condensate

When the appliance is installed in accordance with the test conditions of 6.2, condensate shall only form at the points intended for this purpose and shall be readily drained.

Condensate shall not run into parts of the appliance which are not designed for collection and discharge of condensate, neither shall the condensate interfere with the normal operation of the appliance.

5.3 Soundness of the condensate-carrying parts

Condensate shall not leak from the appliance condensate circuit.

5.4 Composition of the condensate

If the manufacturer states the chemical composition of the condensate, the measured composition shall be in accordance with the manufacturer's declaration.

5.5 Condensate neutralization system

If the air heater is fitted with a condensate neutralization system, the pH value of the neutralized condensate shall not be lower than 6.

5.6 Condensate discharge system

5.6.1 Capacity

The dimensions of the condensate discharge system or the capacity of a pump for the discharge of condensate shall be such that the maximum amount of condensate that may be formed under extreme conditions, as simulated in 6.6.1, can be drained.

5.6.2 Behaviour in the event of blockage or pump failure

Blockage of the condensate drain(s) or switching off the pump for the discharge of the condensate shall not lead to concentrations of CO in the combustion products higher than 0,1 %, and spillage of condensate shall not occur before safety shut-down or lock-out occurs.

5.6.3 Soundness of the combustion circuit

Under the conditions of 6.6.3, a water trap or syphon shall have a seal of at least 25 mm.

5.7 Limitation of combustion products temperature

If a device for limiting the combustion products temperature is provided as specified in 4.6, the temperature of the combustion products measured according to 6.7 shall not exceed the maximum allowable working temperature for the materials of the combustion circuit and the flue materials, specified by the appliance manufacturer.

Operation of this device shall cause a non-volatile lock-out.

5.8 Efficiency

Under the test conditions of 6.8, the appliance shall have an efficiency not lower than 90 % (on net calorific value).