SLOVENSKI STANDARD
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Specifikacija za plinske aparate na utekočinjen naftni plin - Večnamenski kuhalni aparati za zunanjo uporabo

Specification for dedicated liquefied petroleum gas appliances - Multi purpose boiling burners for outdoor use

Festlegungen für Flüssiggasgeräte - Flüssiggasbetriebene Mehrzweckkochgeräte zur Verwendung im Freien

Spécifications pour les appareils fonctionnant exclusivement aux gaz de pétrole liquéfiés - Bruleurs a usages multiples

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English version

Specification for dedicated liquefied petroleum gas appliances - Multi purpose boiling burners for outdoor use

Spécifications pour les appareils fonctionnant exclusivement aux gaz de pétrole liquéfiés - Brûleurs à usages multiples, avec supports intégrés, utilisés en plein air

Festlegungen für Flüssiggasgeräte - Flüssiggasbetriebene Mehrzweckkochgeräte zur Verwendung im Freien

This European Standard was approved by CEN on 21 August 1997.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a 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 European Standard 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, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

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Foreword

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This European Standard has been prepared by Technical Committee CEN/TC 181 "Dedicated liquefied petroleum gas appliances", the secretariat of which is held by NSAI.

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 March 1998, and conflicting national standards shall be withdrawn at the latest by March 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.

This standard applies only to type testing.

Items relating to quality assurance systems, production testing and particularly certificates of conformity of auxiliary equipment are not covered by this standard.

Particular attention should be paid to the suitability of non-metallic materials used in the construction of these appliances. A European Standard specifying "Requirements for rubber materials for seals and diaphragms for gas appliances and equipment" has been prepared by CEN TC 108 (EN 549). A European Standard for "Flexible hose, tubing and assemblies for use with propane and butane in the vapour phase" is being prepared by CEN TC 218. These standards will be applicable to these types of appliances.

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 constructional and performance characteristics, safety specifications and rational use of energy, relevant test methods and marking of boiling burners burning liquefied petroleum gas and designed to heat up vessels containing liquids or food, or a heating plate. They are referred to in the body of the text as "appliances".

This standard covers appliances, generally floor standing, fitted with one or several burners with a total heat input not exceeding 14 kW, designed to be used outdoors and operating with the gases indicated in 4.1 according to the categories indicated in 4.2.

Appliances supplied with third family gas at pressures greater those defined in 4.2 are outside the field of application of this standard.

Appliances covered by this standard are not connected to a flue for the products of combustion and are not connected to the mains electrical supply.

Appliances with a nominal heat input below 1,16 kW and appliances which are not designed to receive the test vessel described in 7.1.4 in any of their configurations are not subject to any requirement concerning the rational use of energy.

This standard applies only to type testing.

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 their 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 125:1991	Flame supervision devices for gas burning appliances - Thermo-electric flame supervision devices
EN 437:1993	Test gases, test pressures, appliance categories
HD 1003:1990	Heating in contact with the front of the domestic cooking appliances burning gas

3 Definitions

For the purposes of this standard, the following definitions apply.

3.1 **detachable**: That which can be dismantled without using a tool.

3.2 **appliances incorporating a gas container**: An appliance whose body or support includes a compartment for a liquefied petroleum gas container, or a fixing or support device for this container.

3.3 **auxiliary equipment**: All the components and devices acting directly or indirectly on the gas rate.

3.4 **locking of an adjuster**: Locking of an adjuster by the manufacturer or by an installer, in its adjustment position by any means (a screw, etc.).

3.5 **burner**: A component that allows the gas to burn. It may be one of two types

- non-aerated burner, in which the air for combustion is entrained entirely at the burner outlet;

- aerated burner, in which part of the air for combustion, termed primary air, is entrained by the gas flow and mixed before the burner outlet. The remainder of the air, termed secondary air, is drawn in after the burner outlet.

3.6 **multi purpose boiling burner**: One or several non domestic burners, with their adjusters, which are part of a structure ensuring both the support of burners and that of vessels and generally used as floor standard appliance. They incorporate one device (or devices) which ensures one set position of the burner (or burners) in relation to the plane on which the appliance rests and to vessels or heating plates.
Figure 1 gives diagrams of this type of appliance, for information.

3.7 **ignition burners**: Small burners whose flame is designed to light another burner. They are called "pilots" in this standard.

3.8 **covered burners**: Hotplate burner where the pans or food being heated are screened from direct flame contact by the interposition of a surface on which they rest.
A covered burner may be :

- permanent, that is designed to be used only with the plate in position ;

- with two functions : that is designed to be capable of being used as open burner after removal of a detachable plate.

3.9 **open burners**: Hotplate burner where the pans being heated are in direct contact with the flames.

3.10 **sooting**: Phenomenon appearing during incomplete combustion and characterized by a deposit of carbon on surfaces in con tact with the flame or the products of combustion.

3.11 **pressure couple**: Set of two separate supply gas pressures applied because of the large difference between the Wobbe indexes within a gas family or a gas group:

- the highest pressure applies only with gases of low Wobbe index;

- the lowest pressure applies only with gases of high Wobbe index.

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3.12 **shut down lid**: A lid intended to be shut down over the hotplate.

3.13 **heat input**: The product of the volume or mass rate and the calorific value of the gas, brought to the same reference conditions. It is expressed in kilowatts (kW). Symbol: *Q*. For the purposes of this standard, only heat inputs calculated from the gross calorific value are considered (see 3.28).

3.14 **nominal heat input of a burner**: The value of the heat input of this burner, as declared by the manufacturer. Symbol: Q_n.

3.15 **mass rate**: The mass of gas passed in unit time. It is expressed in kilograms per hour (kg/h) or in grams per hour (g/h). Symbol: *M*.

3.16 **volume rate**: The volume of gas passed in unit time. It is expressed in cubic metres per hour (m^3/h) or in cubic decimetres per hour (dm^3/h), the gas being dry and under the reference test conditions. Symbol: *V*.

3.17 **flame lift**: Phenomenon characterized by the partial or total movement of the base of the flame away from the burner port.

3.18 **removable**: That which can only be removed with a tool.

3.19 **relative density**: The ratio of the mass of a volume of dry gas to an equal volume of dry air under the same temperature and pressure conditions.

3.20 **ignition device**: A device to ignite one or more burners directly or indirectly, for instance through a flash tube.

It may be :

- either electric (resistance, spark, etc.);

- or thermal (flame, pilot, etc.).

3.21 flame supervision device: A device which, due to the presence of a flame on the sensing element, keeps open the gas flow to the burner and pilot and which cuts off the gas supply to the burner and pilot in the case of extinction of the supervised flame.

3.22 wobbe index: The ratio of the calorific value of a gas, by unit of volume, and the square root of the density of the same gas. The Wobbe index is called gross when the calorific value considered is the gross calorific value (see 3.28). It is expressed in megajoules per cubic metre (MJ/m^3). Symbol: gross Wobbe index W_s.

3.23 injector: A component part that admits the gas into an aerated burner. There are two types of injectors :

- calibrated injectors where the section of the outlet orifice is fixed;

- adjustable injectors where the section of the outlet orifice is variable.

3.24 control handle: A component designed to be operated manually so as to control the movement of a control of the appliance, such as a tap, etc.

3.25 means of sealing: Any static or dynamic device designed to ensure soundness, for example : flat-faced joints, O-ring joints, conical joints, diaphragms, grease, pastes, putties...

3.26 primary air adjuster: A device allowing the aeration rate of a burner to be set at a predetermined value according to the supply conditions.
The action consisting in operating this device is termed "primary air adjustment".

3.27 gas rate adjuster: A device allowing the gas rate to a burner to be set at a predetermined value according to the supply conditions.
The adjustment can be continuous (adjustment screw) or discontinuous (changing the calibrated orifices). The operation of changing the setting of this device is termed the "adjustment of the gas rate".

3.28 calorific value: The quantity of heat produced by complete combustion at a constant pressure equal to 1 013,25 mbar, of unit volume or mass of the gas, the components of the fuel mixture being at 15 °C, 1 013,25 mbar and the products of combustion being brought to the same conditions.

There are two calorific values :

- the gross calorific value (symbol H_s): the water produced by combustion is assumed to be condensed;

- the net calorific value (symbol H_i): the water produced by combustion is assumed to be retained in the vapour state.

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For the purposes of this standard only the gross calorific value is used.

The calorific values are expressed in units of energy referred :

- either to the unit volume of dry gas measured under normal reference conditions: 15 °C, 1 013,25 mbar. It is expressed in megajoules per cubic metre (MJ/m^3);

- or to the unit mass of dry gas. It is then expressed in megajoules per kilogramme (MJ/kg).

3.29 gas supply pressure: The difference between the static pressure measured at the gas inlet connection of the appliance and the atmospheric pressure. It is expressed in millibars (mbar).

3.30 light back: Phenomenon characterized by the return of the flame inside the body of the burner.

3.31 tap: A device designed to isolate a burner from the gas supply pipework and to adjust its rate during use.

3.32 locking: Any means of locking an adjuster, such that any attempt to change the adjustment causes the breaking of the sealing device or sealing material and makes the interference with the adjuster apparent. The adjuster is said to be sealed in the adjusted position. An adjuster sealed at the factory is considered as non existent.

3.33 soft solder: Solder for which the lowest temperature of the melting range, after application, is less than 450 °C.

3.34 stability of flames: Condition of flames when the phenomena of flame lift or light back do not occur.

3.35 pan support: A component placed above an open burner de signed to support the vessel being heated while maintaining it at a set distance from the burner.

3.36 hotplate: The part of an appliance incorporating one or several covered or open burners, with a pan support on top or a contact grill or a heating plate.

3.37 ignition delay time: The time between the ignition of the flame supervised, the appliance being at room temperature, and the moment when the effect of this flame is sufficient to keep the closing member open.

3.38 **extinction delay time**: The time between the extinction of the flame supervised and the closure of the gas supply to the burner and to the pilot.

3.39 **gripping area**: An area of the appliance designed to be manipulated during normal use.

4 Classification

4.1 Classification of gases used

Gases used are classified in families and groups according to their Wobbe number.

The third family, grouping liquefied petroleum gases, covers Wobbe indexes between 72,9 MJ/m^3 and 87,3 MJ/m^3 (W_S). It is subdivided into two groups, group P which covers the range of Wobbe indexes between 72,9 MJ/m^3 and 76,8 MJ/m^3 and group B which covers the range of Wobbe indexes between 81,8 MJ/m^3 and 87,3 MJ/m^3.

Group B is not covered by this standard.

4.2 Classification of appliances

Appliances are classified into categories according to the gases that they use. However, for each country, only some of the categories mentioned below are applicable, on account of local gas supply conditions (types of gas and supply pressures). For these categories, no requirement different from those defined in this standard shall be applied.

The gas supply conditions and types of connection applicable to each country are given in Annex A.

Appliances within the field of application of this standard belong to the following categories:

a) Category $I_{3B/P(30)}$

An appliance capable of using third family gases (propane, butane or their mixtures), without adjustment at nominal operating pressures from 28 mbar to 30 mbar;

b) Category $I_{3B/P(50)}$

An appliance capable of using third family gases (propane, butane or their mixtures),without adjustment at nominal operating pressures of 50 mbar;

c) Category $I_{3+(28-30/37)}$

An appliance capable of burning third family gases (butane and propane), and operating without adjustment on the appliance using a pressure couple. For butane, appliances in this category may be used without adjustment at nominal operating pressures from 28 mbar to 30 mbar, for propane they are used at a nominal operating pressure of 37 mbar.

d) Category $I_{3P(37)}$

An appliance capable of using third family gases of group P (propane), without adjustment at a nominal operating pressures of 37 mbar;

e) Category $I_{3P(50)}$

An appliance capable of using third family gases of group P (propane), without adjustment at a nominal operating pressure of 50 mbar.

5 Constructional characteristics

NOTE: The test methods for verifying the compliance of the appliance to the requirements of this clause are indicated in 7.2.

5.1 Conversion to different gases

The appliance shall operate under normal supply conditions specified in the instructions, without requiring any intervention on the internal gas circuit or the adjusters of the appliance.

Gas rate adjusters shall be locked and sealed by the manufacturer.

5.2 Materials

The quality and thickness of materials used in the construction of an appliance shall be such that the constructional and performance characteristics are not altered in use.

In normal conditions of operation, cleaning or transport, the parts of the appliance :

- shall withstand the mechanical, chemical and thermal actions to which they may be submitted;

- shall not be liable to any alteration which might impair their operation.

Metallic parts not made of corrosion-resistant materials shall be covered with an effective protection against corrosion. This requirement does not apply to cast parts and cooking devices.

Asbestos or asbestos based material shall not be used.

The surface treatment and finish of materials likely to be in contact with food shall be such that they cannot contaminate or affect the food.

5.3 Ease of cleaning

All the parts of the appliance requiring frequent cleaning by the user (for example: cooking devices) shall be easily accessible without having to use a tool for dismantling. It shall be possible to put these parts back correctly and without difficulty by following the instructions.

Sharp corners and edges which could give rise to injury, for example during the cleaning of appliances, shall be avoided.

It shall not be possible for the gas container, the connection tube and the parts of the gas circuit to be soiled by the spillage of cooking juices.

The appliance shall be designed in such a way that cooking juices do not impair the safety of operation.

Any part of the appliance installed or adjusted at the factory and which does not need to be manipulated by the user shall be protected in appropriate fashion. To this end paint may be used provided that it withstands the heat to which it is exposed during the normal operation of the appliance.

5.4 Strength

The construction of an appliance shall be such that, during normal conditions of use:

- any displacement of parts;

- any distortion;

- any deterioration

likely to impair its good performance will not occur.

The materials used, the construction and the assembly of the body of the appliance shall be such that the application of a load on the grid of the appliance placed on a horizontal plane under the test conditions described in 7.2.4 shall not cause any fracture or any permanent distortion greater than 1 mm at any point in the components of the appliance.

5.5 Assembly

All components which require assembly by the user shall be designed in such a way that their incorrect mounting is not possible if the instructions are followed.

5.6 Stability

5.6.1 Stability of the appliance on a horizontal plane

The appliance being placed on a horizontal surface, the tests described in 7.2.6.1 shall be carried out without:

- the appliance falling over;

- any of its component parts becoming loose or moving in such a way that its operation is impaired;

- lids falling accidentally from their raised position.

5.6.2 Stability of the appliance placed on a slope

Under the test conditions of 7.2.6.2, the appliance when placed on a slope of 10 ° from the horizontal shall not fall over and the parts shall not move inadvertently, the test vessel placed on the burner shall remain stable and the lid shall not fall accidentally.

None of the gas containers indicated in the instructions shall fall during this test, whatever its gas content, when placed as recommended in the instructions.

5.6.3 Vessel stability

There shall be an adequate points of support for vessels to rest level in a stable fashion on their support.

The test vessel described in 7.1.4 shall remain stable when it is displaced off centre by 50 mm, under the test conditions described in 7.2.6.3: the appliance and the burner shall not fall over, the parts, in particular the pan support, shall not move.

5.7 Soundness of the gas circuit assembly

Holes for screws, pins, etc. placed upstream of the injector ports and intended for the assembly of components shall not open into the space reserved for the gas ways leading to the injector.

The soundness of parts and assemblies connected to the gas circuit shall be assured by means of metal-to-metal joints or joints with seals (for example, flat-faced joints, O-rings), i.e. excluding the use of any product which ensures soundness in the threads.

For parts that do not require dismantling during normal maintenance, for example taps, injectors, the use of appropriate thread sealing compounds is permitted.

Soft solder shall not be used to ensure the soundness of the gas circuit. However it is permitted for internal connections within the gas circuit when they do not involve soundness.

Joints and sealing compounds shall have characteristics suited to their use.

Removable components or the threaded parts of the gas pipework which may be dismantled during normal maintenance shall remain sound after five disconnections and reconnections in accordance with the manufacturers instructions, if necessary after changing a gasket if mentioned in the instructions.