SLOVENSKI STANDARD
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Specifikacija za plinske aparate na utekočinjen naftni plin - Žar za zunanjo uporabo

Specification for dedicated liquefied petroleum gas appliances - Barbecues for outdoor use

Festlegungen für Flüssiggasgeräte - Grillgeräte zur Verwendung im Freien

Spécifications pour les appareils fonctionnant exclusivement aux gaz de pétrole liquéfiés - Barbecues utilisés en plein air

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97.040.20	Štedilniki, delovni pulti, pečice in podobni aparati	Cooking ranges, working tables, ovens and similar appliances

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English version

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

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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

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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Foreword

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of an identical text or by endorsement, at the latest by March 1998, and conflicting national standards shall be withdrawn at the latest by March 1998.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 the essential requirements of EU Directive(s).

For relationship with EU Directives, 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 quality of nonmetallic 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 assembles for use with butane or propane 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, relevant test methods and marking of barbecues burning liquefied petroleum gas, referred to in the body of the text as "appliances".

This standard covers barbecues as defined in 3.6, used outdoors and operating with the gases indicated in 4.1 according to the categories indicated in 4.2. They are fitted with at least one cooking device.

This standard applies to these appliances and their functional sections whether or not the latter are independent or incorporated into an assembly.

This standard also applies to appliances designed to be built-in.

This standard only applies to type testing.

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

During the consideration of this text, it was apparent that the concept of thermal efficiency with regard to appliances such as barbecues was not appropriate.

This is because:

- during cooking, there is an additional transfer of heat due to the meat juices falling onto the refractories;

- there is no relation between the item to be cooked and the useful area;

- the barbecue is an outdoor appliance in which the action of the wind is important in relation to efficiency;

In consequence there is no specific requirement covering thermal efficiency for this type of appliance.

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 safety devices for gas burning appliances - Thermoelectric flame supervision devices
EN 126:1993	Multifunctional controls for gas-burning appliances.
EN 437:1993	Test gases, test pressures, appliance categories

EN 60335-1	Safety of household and similar electrical appliances - Part 1: general requirements (IEC 335-1:1983, modified)
ISO 7-1:1994	Pipe threads where pressure-tight joints are made on the threads - Part 1: Designation, dimensions and tolerances
ISO 228-1:1994	Pipe threads where pressure-tight joints are not made on the threads - Part 1: Designation, dimensions and tolerances

3 Definitions

For the purposes of this standard, the following terminology applies.

3.1 **cooking devices**: Component parts of the appliance designed to hold or receive the food to be cooked (grids, turnspits, plates, etc.).

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

3.3 **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.

3.4 **built-in appliance**: An appliance designed to be built into a brick or similar structure.

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

3.6 **barbecue**: An appliance principally designed to roast and/or grill foodstuffs. Cooking is achieved by the action of radiant heat and, possibly by convection.

3.7 **mobile barbecue**: A barbecue fitted with at least one wheel enabling it to be moved easily on the ground.

3.8 **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.).

3.9 **turnspit**: A cooking device enabling the rotation of the food to be roasted. Its rotation can be effected manually or using a mechanical or electrical motor.

3.10 **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.

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

3.12 sooting: Phenomenon appearing during incomplete combustion and characterized by a deposit of carbon on surfaces in contact with the flame or the products of combustion.

3.13 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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3.14 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 3.32).

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

3.16 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*.

3.17 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*.

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

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

3.20 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.

3.21 **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.).

3.22 **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.

3.23 **grid**: A cooking device designed to hold the food to be cooked. Its useful component(s) can be rigid or flexible.
A grid with flexible useful components (called a "wallet" grid) is made up of two jointed components enabling tight gripping of the food to be cooked. Each component consists of a rigid frame on which metallic wires are fixed and form a flexible mesh inside the frame distorting around the food.

3.24 **glass panel**: Transparent surface allowing the inside of the appliance to be seen.

3.25 **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 3.32). It is expressed in megajoules per cubic metre (MJ/m^3). Symbol: gross Wobbe index W_s.

3.26 **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.

3.27 **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.

3.28 **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...

3.29 **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".

3.30 **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".

3.31 useful part of a cooking device: Part of the device in contact with the food during cooking. In particular, the useful length of the turnspit is the maximum length which is capable of coming in contact with the foodstuff.

3.32 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).

3.33 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).

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

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

3.36 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.

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

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

3.39 **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.

3.40 **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.

3.41 **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 in group P (propane), without adjustment at a nominal operating pressure of 37 mbar;

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

An appliance capable of using third family gases in 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 the conditions of use specified in the instructions, without requiring any intervention on the internal gas circuit or the adjusters of the appliance.

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 grids supporting radiant lava rocks or 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.