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Specifikacija za plinske aparate na utekočinjeni 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 - Brûleurs à usages multiples

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Specification for dedicated liquefied petroleum gas appliances - Multi purpose boiling burners for outdoor use - Cooking vessels with a diameter greater than 300 mm

Spécifications pour les appareils fonctionnant exclusivement aux gaz de pétrole liquéfiés - Brûleurs à usages multiples, avec supports intégrés, utilisés en plein air - Récipients de cuisson avec un diamètre supérieur à 300 mm

Festlegungen für Flüssiggasgeräte - Flüssiggasbetriebene Mehrzweckkochgeräte zur Verwendung im Freien

This European Standard was approved by CEN on 26 December 2021.

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European foreword

This document (EN 497:2022) has been prepared by Technical Committee CEN/TC 181 “Dedicated liquefied petroleum gas appliances”, the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by December 2022, and conflicting national standards shall be withdrawn at the latest by December 2023.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 497:1997.

The main changes with respect to the previous edition are listed below:

— Addition of a complementary element in the title for vessel of diameter greater than 300 mm

— Extension of the scope to paella burners

— Addition of requirements and tests for appliances with gas containers compartments

— Harmonization/correction of test pressures and test conditions

This document has been prepared under a Standardization Request given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s) / Regulation(s).

For relationship with EU Directive(s) / Regulation(s), see informative Annex ZA, which is an integral part of this document.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This document specifies the constructional and performance characteristics, safety specifications and rational use of energy, relevant test methods and marking of burners burning liquefied petroleum gas and designed to heat up vessels of diameter greater than 300 mm, containing liquids or food.

They are referred to in the body of the text as “appliances”.

This document covers appliances, generally floor standing, fitted with one or several open burners, designed to be used outdoors and operating with the gases corresponding to the categories indicated in 4.

Appliances supplied with third family gas at other pressures than those defined in 4 are outside the field of application of this document.

Appliances covered by this document 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 are not subject to any requirement concerning the rational use of energy due to their low rate.

For appliance having multiple concentric burners, burners greater than 56 cm diameter are not subject to any requirement concerning the rational use of energy for safety reasons due to handling of the vessel.

This document does not cover LPG containers for liquefied petroleum gas, their associated regulator, tubing and flexible hoses used for gas supply of appliances covered by this document.

NOTE Regulator, tubing and flexible hoses are covered by other standards (EN 16129, EN 16436-1+A3 and EN 16436-2, etc.) and national regulations.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 125:2010+A1:2015, *Flame supervision devices for gas burning appliances - Thermoelectric flame supervision devices*

EN 126:2012, *Multifunctional controls for gas burning appliances*

EN 437:2021, *Test gases - Test pressures - Appliance categories*

EN 549:2019, *Rubber materials for seals and diaphragms for gas appliances and gas equipment*

EN 1106:2010, *Manually operated taps for gas burning appliances*

EN 10226-1:2004, *Pipe threads where pressure tight joints are made on the threads - Part 1: Taper external threads and parallel internal threads - Dimensions, tolerances and designation*

EN 10226-2:2005, *Pipe threads where pressure tight joints are made on the threads - Part 2: Taper external threads and taper internal threads - Dimensions, tolerances and designation*

EN 60584-1:2013, *Thermocouples - Part 1: EMF specifications and tolerances*

EN ISO 228-1:2003, *Pipe threads where pressure-tight joints are not made on the threads - Part 1: Dimensions, tolerances and designation (ISO 228-1:2000)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1
multi-purpose boiling burner
one or several burners which are part of a structure ensuring both the support of burners and that of vessels and generally used as floor standing appliance

Note 1 to entry: 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. Figure 1 gives diagrams of this type of appliance, for information.

3.2
appliance incorporating a gas container
appliance whose body or support includes a fixing or support device for a liquefied petroleum container

3.3
burner
component that allows the gas to burn

Note 1 to entry: It may be:

— 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.

3.4
open burner
burner where the pans being heated are in direct contact with the flames

3.5
injector
component part that admits the gas into an aerated burner

Note 1 to entry: 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

3.6
ignition device
device to ignite one or more burners directly or indirectly, for instance through a flash tube

Note 1 to entry: It may be:

— either electric (resistance, spark, etc.)

— or thermal (flame, pilot, etc.).

3.7
flame supervision device
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

3.8
detachable
which can be dismantled without using a tool

3.9
removable
which can only be removed with a tool

3.10
fittings
safety devices, controlling devices or regulating devices and sub-assemblies, incorporated into the appliance

Note 1 to entry: For example: tap, flame supervision device, ignition device...

3.11
control handle
component designed to be operated manually so as to control the movement of a control of the appliance, such as a tap, etc

3.12
gripping area
area of the appliance designed to be manipulated during normal use

3.13
tap
device designed to isolate a burner from the gas supply pipework and to adjust its rate during use

Note 1 to entry: There are two types of taps:

— Taps with marked positions: taps for which specific positions are presset (lighting, reduced rate, closed position)

— Taps with variable positions: taps with a continuous setting without specific position

3.14
ignition delay time
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

3.15
extinction delay time
time which elapses between the extinction of the supervised flame and the closure of the gas supply controlled by the flame supervision device

3.16
soft solder
solder for which the lowest temperature of the melting range, after application, is less than 450 °C

3.17
pan support
support placed above an open burner, and designed to support the pan being heated

3.18
reference conditions
conditions which correspond to 15 °C, 1 013, 25 mbar, unless otherwise specified

[SOURCE: EN 437:2021]

3.19
pressure couple
combination of two distinct gas distribution pressures applied by reason of the significant difference existing between the Wobbe indices within a single family or group in which

— the higher pressure corresponds only to gases of low Wobbe index;

— the lower pressure corresponds to gases of high Wobbe index

Note 1 to entry: The pressure couple is indicated by using the symbol (⇆).

[SOURCE: EN 437:2021]

3.20
calorific value
quantity of heat produced by the complete combustion, at a constant pressure equal to 1 013,25 mbar, of a unit volume or mass of gas, the constituents of the combustible mixture being taken at reference conditions and the products of combustion being brought back to the same conditions

Note 1 to entry: A distinction is made between:

— the gross calorific value Hs: the water produced by combustion is assumed to be condensed;

— the net calorific value Hi: the water produced by combustion is assumed to be in the vapour state.

Note 2 to entry: The calorific value is expressed:

— either in megajoules per cubic metre (MJ/m^3) of dry gas under the reference conditions;

— or in megajoules per kilogram (MJ/kg) of dry gas.

Note 3 to entry: For the purposes of this European Standard only the gross calorific value is used.

[SOURCE: EN 437:2021 modified with additional note 3]

3.21
heat input
Q
quantity of energy used in unit time corresponding to the volume flow rate or mass flow rate, the calorific value used being either the net or gross calorific value

Note 1 to entry: The heat input is expressed in kilowatts (kW).

[SOURCE: EN 437:2021]

3.22
nominal heat input
Q_n
value of the heat input of the appliance declared in the instructions

Note 1 to entry: Adapted from EN 437:2021

3.23
mass flow rate
M
mass of gas consumed by the appliance in unit time during continuous operation

Note 1 to entry: The mass flow rate is expressed in kilograms per hour (kg/h) or grams per hour (g/h).

[SOURCE: EN 437:2021]

3.24
volume flow rate
V
volume of gas consumed by the appliance in unit time during continuous operation

Note 1 to entry: The volume flow rate is expressed in cubic metres per hour (m^3/h), litres per minute (l/min), cubic decimetres per hour (dm^3/h) or cubic decimetres per second (dm^3/s).

[SOURCE: EN 437:2021]

3.25
relative density
d
ratio of the masses of equal volumes of dry gas and dry air under the same conditions of temperature and pressure: 15 °C or 0 °C and 1 013, 25 mbar

[SOURCE: EN 437:2021]

3.26
wobbe index
gross Wobbe index
W_s;
net Wobbe index
W_i
ratio of the calorific value of a gas per unit volume and the square root of its relative density under the same reference conditions

Note 1 to entry: The Wobbe index is said to be gross (Ws) or net (Wi) according to whether the calorific value used is the gross or net calorific value, respectively is used.

Note 2 to entry: The Wobbe index is expressed:

— either in megajoules per cubic metre (MJ/m^3) of dry gas under the reference conditions;

— or in megajoules per kilogram (MJ/kg) of dry gas.

[SOURCE: EN 437:2021 modified to comply with CEN rules for definition wording]

3.27
stability of flames
condition of flames when the phenomena of flame lift or light back do not occur

3.28
flame lift
phenomenon characterized by the partial or total movement of the base of the flame away from the burner port

3.29
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

3.30
light back
phenomenon characterized by the return of the flame inside the body of the burner

4 Classification

4.1 Classification of gases used

Gases are classified into families, groups and ranges in accordance with EN 437:2021.

According to EN 437:2021, the third family, grouping liquefied petroleum gases, covers Wobbe indexes between 72,9 MJ/m³ and 87,3 MJ/m³ (Ws). It is subdivided into three groups, group P which covers the range of Wobbe indexes between 72,9 MJ/m³ and 76,8 MJ/m³, group B/P which covers the range of Wobbe indexes between 72,9 MJ/m³ and 87,3 MJ/m³ and group B which covers the range of Wobbe indexes between 81,8 MJ/m³ and 87,3 MJ/m³.

NOTE Appliances of group B are not existing.

4.2 Classification of appliances

Appliances are classified into categories in accordance with EN 437:2021.

The gas supply conditions and types of connection are given in Annex A.

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

Category $I_{3B/P}$

Appliance capable of using third family gases (propane, butane or their mixtures), without adjustment at nominal operating at the prescribed supply pressure;

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

Appliance capable of using third family gases of group P and B/P. The gases of group P are used under the same conditions as for category I3P. The gases of group B/P are used under the same conditions as for category I3B/P at the prescribed supply pressure;

Category I_{3+}

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 the prescribed supply pressure.

Category I_{3P}

Appliance capable of using third family gases of group P (propane), without adjustment at the prescribed supply pressure.

5 Constructional characteristics

5.1 Conversion to different gases

The appliance shall operate under normal supply conditions (type of gas and corresponding supply pressure) specified in the instructions for use, without requiring any intervention on the internal gas circuit or the adjusters of the appliance.

Adjusters shall be locked.

5.2 Materials

Elastomeric material shall comply with EN 549:2019 classes B2/H2 minimum.

The accessible parts during use or service of the appliance, the outer profile and the parts of the appliance with which the flexible hose may be in contact shall be free of sharp corners or edges.

Non-metallic materials used as radiant elements in appliances (for example ceramics) shall resist to all tests of this documents without alteration.

The quality and thickness of materials used in the construction of appliances shall be such that the constructional and performance characteristics are not altered in use. In particular all the parts of the appliance shall withstand mechanical, chemical and thermal actions to which they may be submitted during use. In normal conditions of operation, of cleaning or of adjustment, they shall not be liable to any alterations which might impair their safety.

Sheet-metal parts, not made of corrosion-resistant material, shall be effectively protected against corrosion. This requirement does not apply to cooking devices.

Seals and joining compounds shall have characteristics suited to their use.

With the exception of seals, membranes, parts in contact with gas shall be made of metallic materials.

Material intended to be in contact with food shall be:

— corrosion resistant;

— non toxic.

The materials shall:

— not transfer undesirable odours, colours or taint to the food ;

— not contribute either to the contamination of food or have any adverse influence on the food.

NOTE For information see EN 1672-2:2020, Annex C

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 for use.

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 materials used, the construction and the assembly of the body of the appliance shall be such that the application of a load on the appliance placed on a horizontal plane under the test conditions described in 7.2.4 shall not cause any fracture or any permanent deformation greater than 2 mm.

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 of the appliance

5.6.1 Stability of the appliance on a horizontal surface

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;

5.6.2 Stability of the appliance placed on a slope

When testing according to 7.2.6.2, the appliance shall not fall over and the parts shall not move inadvertently, the test vessel placed on the burner shall remain stable.

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.

Under the test conditions described in 7.2.6.3: the test vessel shall remain stable, the appliance and the burner shall not fall over, the parts, in particular the pan support, shall not move.

5.7 Construction 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 ensured by means of metal-to-metal joints or joints with seals (for example, flat-faced joints, 0-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.

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 instructions, if necessary after changing a gasket if mentioned in the instructions. This requirement is verified under test 7.3.1.

These requirements are verified by inspection and based on technical documentation.