SLOVENSKI STANDARD
SIST EN 17476:2021

01-julij-2021

Specifikacije za plinske aparate na utekočinjeni naftni plin - Aparati na UNP, ki delujejo s parnim tlakom in vsebujejo vodoravno kartušo v ohišju

Specifications for dedicated liquefied petroleum gas appliances - LPG vapour pressure appliances incorporating an horizontal cartridge in the chassis

Festlegungen für Flüssiggasgeräte - Mit Dampfdruck betriebene Flüssiggasgeräte, die eine waagerechte Kartusche im Gehäuse enthalten

Spécifications pour les appareils fonctionnant exclusivement aux gaz de pétrole liquéfiés - Appareils GPL à pression de vapeur incorporant une cartouche horizontale dans leur châssis

Ta slovenski standard je istoveten z: **EN 17476:2021**

ICS:

23.020.35	Plinske jeklenke	Gas cylinders

SIST EN 17476:2021 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 17476

May 2021

ICS 23.020.35

English Version

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

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Ref. No. EN 17476:2021 E

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European foreword

This document (EN 17476:2021) has been prepared by Technical Committee CEN/TC 181 “Appliances and leisure vehicle installations using liquefied petroleum gas and appliances using natural gas for outdoor use”, 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of an identical text or by endorsement, at the latest by November 2021, and conflicting national standards shall be withdrawn at the latest by November 2021.

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 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 Regulation (EU) 2016/426 of the European Parliament and of the Council of 9 March 2016 on appliances burning gaseous fuels and repealing Directive 2009/142/EC.

For relationship with EU Regulation (EU) 2016/426, see informative Annex ZA, which is an integral part of this document.

Appliances covered by this document differ from the ones covered by EN 521:2019+AC:2019 by the fact that the gas cartridge is incorporated inside the appliance body in a position which can create particular situations which need different approach than these used in EN 521:2019+AC:2019.

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 construction characteristics, performances and marking related to safety and the rational use of energy of portable, flat gas appliances directly supplied at the LPG vapour pressure, incorporating a gas cartridge complying with EN 417:2012, inserted horizontally in the chassis.

NOTE 1 These appliances are referred to in the body of the text as "appliances".

This document covers appliances for outdoor or in well ventilated areas uses only.

This document does not cover appliances supplied by an external gas source.

For example, the following types of appliances are covered:

a) cooking appliances (stoves, barbecues);

b) heating appliances.

This document specifies the requirements applicable to these appliances or their functional sections whether or not the latter are independent or incorporated into an assembly.

Appliances covered by this document are not connected to a flue for the discharge of products of combustion and are not connected to the mains electricity supply.

This document covers neither appliances supplied with LPG in the liquid phase nor appliance with fixed integral container which could be refilled by the user.

This document does not cover appliances of direct pressure propane category.

Requirements for rational use of energy have been considered for stove burners.

NOTE 2 However, such requirements have not been considered for the other types of appliances because:

— for barbecues, this type of cooking varies according to the type of food and region where the appliance is used;

— for heating appliances, all the heat produced is discharged into the environment.

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 30-1-1:2008+A3:2013, *Domestic cooking appliances burning gas — Part 1-1: Safety — General*

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

EN 437:2018, *Test gases — Test pressures — Appliance categories*

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

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:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
stove
cooking appliance incorporating one or several burners and a pan support(s) designed in such a way that it(they) can support the vessels containing the food

3.2
flat portable gas appliance
flat appliance operating with a gas cartridge horizontally placed in the chassis

3.2.1
flat portable gas stove
flat portable gas appliance for which the length and/or width is bigger than its height

Note 1 to entry: Figure 1 gives an example of flat portable gas stoves (single and double burners).

3.2.2
flat portable gas heater
flat portable gas appliance intended to heat environment

Note 1 to entry: Figure 2 gives an example of flat portable gas heater.

3.2.3
barbecue
flat portable gas appliance the main function of which is to roast and/or grill food

Note 1 to entry: Cooking is carried out by radiant heat and, possibly, by convection and conduction.

Note 2 to entry: Figure 4 gives an example of barbecue covered by this document.

3.3
vapour pressure appliance
appliance for which the pressure at the gas inlet is equal to the pressure in the gas cartridge

Note 1 to entry: A pressure reducing device may be incorporated in the gas circuit, between the gas inlet and the injector.

3.4
gas cartridge
non-refillable container with a maximum capacity of 1 000 ml filled with gas or a gas mixture

Note 1 to entry: An example of gas cartridges to be horizontally inserted in appliances is given in Figure 3.

Note 2 to entry: Gas cartridges are not fittings.

3.5
cooking device
device supplied with the appliance designed to hold or receive the food to be cooked

3.6
useful part of a cooking device
part of the device in contact with food during cooking

3.7
grid
cooking device part of a barbecue holding the food to be cooked designed in such a way that most part of the food is directly heated by the flames

3.8
griddle
part of a barbecue consisting of the plate placed above a burner, that allows the cooking of food by direct contact with the surface of the plate which is brought to a high temperature

3.9
pan support
support placed above an open stove burner and designed to support the pan to be heated

3.10 safety device

3.10.1
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 any pilot and which cuts off the gas supply to the burner and possibly a pilot in the event of extinction of the supervised flame

3.10.2
pressure sensitive safety device
device which automatically shuts off the gas supply to the burner in the event of overpressure in the cartridge

3.11
ignition delay time
time between the ignition of the supervised flame and the moment when the effect of this flame is sufficient to keep the closing device open

3.12
extinction delay time
time between the extinction of the supervised flame and the closure of the gas supply to the burner and possibly a pilot

3.13
tap
controlling device, part of the appliance, designed to isolate a burner from the internal gas pipework and possibly to adjust its rate during use

3.14
control handle
component designed to be operated manually so as to operate a control of the burner

3.15
gripping area
outside part of the appliance designed to be handled during use

3.16
burner
component that allows the gas to burn

3.17
injector
component part that admits the gas into a burner

Note 1 to entry: An injector is said to be calibrated when the section of the outlet orifice is fixed.

3.18
ignition device
device to ignite one or more burners directly or indirectly

3.19
means of sealing
static or dynamic device designed to ensure leak tightness

EXAMPLE Flat-faced joints, O-ring or conical joints, diaphragms, grease, pastes, putties, etc.

3.20
detachable
possible to dismantle without using a tool

3.21
removable
removal only possible with a tool

3.22
soft solder
solder for which the lowest temperature of the melting range, after application, is less than 450 °C

3.23
flame stability
flames are stable at the burner ports when the phenomena of flame lift or light back do not occur

3.24
flame lift
phenomenon characterized by the partial or total movement of the base of the flame away from the burner port

3.25
light back
phenomenon characterized by the return of the flame inside the body of the burner

3.26
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.

[SOURCE: EN 437:2018]

3.27
gas supply pressure
difference between the static pressure measured at the gas inlet connection of the appliance and the atmospheric pressure

Note 1 to entry: It is expressed in bar.

3.28
atmosphere sensing device
device that is designed to shut off the gas supply when the carbon dioxide concentration of the surrounding atmosphere exceeds a given level

Note 1 to entry: Such a device normally comprises a vitiation sensitive pilot in conjunction with a suitable flame supervision device.

4 Classification of appliances

For the purpose of this document appliances are classified in two groups according to the gas pressures they are designed for:

a) Butane appliances:

Appliance using mixture of hydrocarbons containing mainly butanes and butenes having a maximum pressure of 8 bar gauge at 50 °C; called “category direct pressure – butane”;

b) Butane-propane mixt appliances:

Appliance using mixture of hydrocarbons containing mainly butanes, butenes, propane and propene having a pressure between 8 bar gauge and 12 bar gauge at 50 °C; called “category direct pressure - butane-propane mixture”.

5 Safety requirements

5.1 General

The test methods and the means of verification are indicated in Clause 6.

The design shall make it impossible to incorrectly fit or refit any user-removable or replaceable part(s) or component(s) that can have an adverse effect on combustion or cause CO emissions to exceed limits in 5.26.

5.2 Adjustment of the burner

Not any adjustment of the burner shall be possible.

5.3 Materials

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.

Rubber based materials shall comply with EN 549:2019 class A2 minimum, and LPG resistant.

Asbestos or asbestos based materials shall not be used.

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.

5.4 Assembly, cleaning and maintenance

5.4.1 Assembly

The entire appliance gas circuit, including the injector shall be factory assembled. If clamps are used, they shall be of the machine formed type. Removable clamps are not permitted.

Parts, whose assembly is carried out by the user, shall only be able to be assembled correctly by following the instructions given in the instructions.

It shall not be possible to dismantle parts which are adjusted at the factory, which are not intended to be dismantled by the user and whose dismantling would affect safety, without using tools. If dismantling is possible using an open ended spanner or a screwdriver, direct access to such nuts and screw heads shall not be possible, unless they are sealed.

For flat portable gas stoves, it shall not be possible to operate the appliance if the pan support is not in the cooking position.

The appliance design shall prevent any accidental blockage of any safety device by contamination by ground materials

NOTE Contamination by ground materials could include sand, grass, soil.

5.4.2 Cleaning, maintenance

All parts of the appliance requiring frequent cleaning by the user shall be easily accessible. It shall be possible to put these parts back correctly.

There shall be no sharp corners and edges on the accessible parts of an appliance which could give rise to injury.

5.5 Strength and stability

5.5.1 Strength

5.5.1.1 General

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 safe operation will not occur.

5.5.1.2 Stove pan supports

The application of a mass as described in 6.5.1.2 on the pan support shall not cause any breakage or permanent distortion of the pan support exceeding 1 mm.

5.5.2 Stability

If the appliance is fitted with a foldable support, it shall be possible to lock this in the position of use.

The stability of an appliance designed to rest on a table or on the ground shall allow safe use on level ground. In addition, the appliance shall not tilt or fall over when it is placed on a slope of 10° in any configuration.

This requirement shall also be met when the appliance is fitted with any optional parts listed in the instructions.

These requirements shall be met under the test conditions described in 6.5.2.

5.6 Soundness of the gas circuit assembly

Holes for screws, pins, etc. 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, O-rings or gaskets), i.e. excluding the use of any product which ensures soundness in the threads. For parts that do not require to be dismantled during normal maintenance, for example taps, the use of thread sealing compounds is permitted.

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

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.

Under the test conditions defined in 6.6.1, during each of the tests n 1 and 2, the leak shall not exceed 0,07 l/h (1 013 mbar, 20 °C). This requirement shall also be met after all the tests on the appliance have been carried out, but before any dismantling of parts subjected to the soundness tests.

5.7 Connections

When following the instructions, connection of the appliance to the gas cartridge shall be easy without gas leakage during more than 2 s.

5.8 Transport, fixing and mobility devices

It shall not be possible to place any gas cartridge anywhere other than in the gas cartridge compartment even for the purposes of transport or storage.

5.9 Taps

Each burner shall be controlled by a tap or device allowing the opening and closing of its supply.

Taps shall incorporate two stops, one on the closed position and one at the end of travel.

Taps shall be so placed in such a way that their strength, their operation, their manipulation and their accessibility undergo no change from actions to which they are subjected in normal use.

Taps shall be mounted in such a way that no accidental movement relative to fixed gas supply pipework is possible.

It shall not be possible by unscrewing to remove the closing device from the tap when opening the tap.

Taps shall comply with the requirements given in Annex B.

5.10 Pressure sensitive safety device

Each appliance may be fitted with a pressure sensitive safety device.

If any it shall not be possible to bypass accidentally the pressure sensitive safety device.

After action of the device its reactivation shall only be possible by a specific action (different from normal installation of the cartridge).

In case of a failure of the pressure sensitive safety device, if any, the appliance shall not operate unless the appliance is fitted with two independent pressure sensitive safety devices.

Under the test condition of 6.10 the gas supply shall be stopped between 4 and 6 bar.

5.11 Control handles

5.11.1 Construction

It shall be obvious which burner is controlled by each control handle.

They shall be so arranged relative to one another that the movement of one handle does not cause inadvertent movement of an adjacent one.

Control handles shall be so designed that they neither be fitted in the wrong position nor move by themselves.

If control handles operate by turning, the closing direction shall be clockwise.

5.11.2 Marking

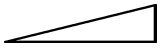
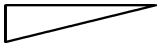
The closed, open and, if applicable, reduced rate positions shall be marked in a visible, legible and durable fashion.

The closed position shall be marked by a full disc or a circle at least 3 mm in diameter. It shall be the same for all the taps.

Ignition position, if any shall be marked (e.g. with a stylised star).

The identification of the closed position of each tap shall not give rise to any possibility of confusion with the identification of an open position.

For other positions, the following symbols may be used:

Full rate position	Large flame			
Reduced rate position	Small flame			
Rate range	Triangle		or	
Scale		1 2 3 4	or	4 3 2 1

Other symbols, other than letters, are permitted provided that they give similar information clearly.

Additional markings are permitted provided that they do not create confusion for the appliance user.

The meaning of the symbols used shall be given in the instructions.

5.12 Injectors

The gas rate shall be controlled by an injector of which the outlet orifice is fixed.

Removable injectors shall carry an indelible marking allowing their identification, which shall be given in the instructions.

5.13 Ignition devices

When an ignition device is fitted, it shall be designed and constructed in such a way that it provides rapid and safe ignition.

The components of the ignition device shall be designed to avoid damage and displacement during use. The relative positions of the ignition device and the burner shall be sufficiently well defined to ensure safe operation of the assembly.

5.14 Flame supervision devices

Any flame supervision device when existing shall comply with EN 125:2010+A1:2015.

Heating appliances shall be fitted with a flame supervision device.

When flame supervision devices are fitted, they shall be designed in such a way that, in the case of the failure of any of the components indispensable to their performance, the supply of the gas to the burner and to the pilot controlled by the device is cut off automatically and can only be restored by manual operation. They shall be so mounted as to ensure satisfactory performance.

The appliance shall not incorporate any device that allows the flame supervision device to be overridden. During the ignition period, a brief passage of unlit gas is permitted under the conditions given in 6.23.

Under the test conditions described in 6.23, the ignition delay time shall not exceed 20 s and the extinction delay time shall be less than 60 s.

5.15 Burners and radiant elements

Burners and radiant elements shall be designed in such a way that they cannot move inadvertently during use or movement of the appliance.

The parts of a burner or a radiant element which require cleaning shall be removable and their cleaning shall be easy unless this is possible without dismantling.

It shall not be possible to reassemble removable burner parts incorrectly and they shall not be interchangeable if, by design, they are not identical. This shall be carried out in accordance with the information given in the instructions.