
GdYWZL UWYnUd`]bg_YUdUUhY`bUi hY_c]b^Yb]bUzb]d`]b`E`D`]bg_]`dfcgkcgk^Y]
[cVUgh]`gYj Ub][fYb]_]VfYn`df]`1 _UbUX]a b]`nUn bUb^i dcfUvc`U]i dcfUvc
j`XcVfc`dfYnfU Yj Ub]`dfcgkcf]

Specification for dedicated liquefied petroleum gas appliances - Parasol patio heaters -
Flueless radiant heaters for outdoor or amply ventilated area use

Festlegungen für Flüssiggasgeräte - Terrassen-Schirmheizgeräte - Abzugslose
Terrassenheizstrahler zur Verwendung im Freien oder in gut belüfteten Räumen

Spécifications pour les appareils fonctionnant exclusivement aux gaz de pétrole liquéfiés
- Parasols pour chauffage de terrasse - Appareils de chauffage radiants non raccordés
utilisés a l'extérieur ou dans des espaces largement ventilés

Ta slovenski standard je istoveten z: EN 14543:2005

ICS:

97.100.20 Plinski grelniki Gas heaters

SIST EN 14543:2005 en,fr,de

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English version

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This European Standard was approved by CEN on 3 February 2005.

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.

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

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Foreword

This European standard (EN 14543:2005) 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of an identical text or by endorsement, at the latest by November 2005, and conflicting national standards shall be withdrawn at the latest by November 2005.

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 90/396/EEC.

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

According to the CEN/CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European standard: Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

Annex A is normative.

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Annexes B,C and ZA are informative.

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1 Scope

This European standard specifies the design, safety and marking requirements and test methods for flueless patio heaters for outdoor or amply ventilated area use only.

Although they are not covered by this standard, the requirements of this standard are applicable to appliances that may be used inside habitations which, in addition, shall have a heat input not exceeding 4,2 kW and comply with EN 449.

These appliances are for use exclusively with gases of the third family as defined in Clause 4.

This European standard applies to appliances that have a nominal heat input not exceeding 17 kW (based on the gross calorific value);

- fixed or,
- movable, including those which comprise a housing for a transportable and rechargeable liquefied petroleum gas cylinder.

This European standard does not apply to appliances equipped with a fan for either combustion or circulation of the convection air.

This European standard does not cover LPG containers for liquefied petroleum gas, neither their associated regulator nor tubing and flexible hoses which shall comply with national requirements in force.

This European standard does not lay down any specific requirements for the thermal efficiency of this type of appliances, but the requirements relating to combustion, which is a safety matter, ensure that the gas fuel will burn efficiently. However a method to measure the performance is described in informative Annex C.

This standard does not apply to appliances covered by EN 416-1, EN 419-1, EN 449, EN 461 and EN 521.

This European standard only covers type testing.

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

2 Normative references

The following referenced documents are indispensable for the application 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	<i>Flame supervision devices for gas burning appliances – Thermo-electric flame supervision devices</i>
EN 126	<i>Multifunctional controls for gas burning appliances</i>
EN 161	<i>Automatic shut-off valves for gas burners and gas appliances</i>
EN 257	<i>Mechanical thermostats for gas burning appliances</i>
EN 298	<i>Automatic gas burner control systems for gas burners and gas burning appliances with or without fans</i>
EN 437:2003	<i>Test gases - Test pressures - Appliance categories</i>

EN 14543:2005 (E)

EN 449	<i>Specification for dedicated liquefied petroleum gas appliances - Domestic flueless space heaters (including diffusive catalytic combustion heaters)</i>
EN 549	<i>Rubber materials for seals and diaphragms for gas appliances and gas equipment</i>
EN 751-1	<i>Sealing materials for metallic threaded joints in contact with 1st, 2nd and 3^d family gases and hot water – Part 1: Anaerobic jointing compounds</i>
EN 751-2	<i>Sealing materials for metallic threaded joints in contact with 1st, 2nd and 3^d family gases and hot water – Part 2: Non-hardening jointing compounds</i>
EN 751-3	<i>Sealing materials for metallic threaded joints in contact with 1st, 2nd and 3^d family gases and hot water – Part 3: Unsintered PTFE tapes</i>
EN 50165:1997	<i>Electrical equipment of non-electric appliances for household and similar purposes – Safety requirements</i>
EN 60335-1:2002	<i>Household and similar electrical appliances – Safety - Part 1: General requirements (IEC 60335-1:2001, modified)</i>
EN ISO 228-1:2003,	<i>Pipe threads where pressure-tight joints are not made on the threads — Part 1: Dimensions, tolerances and designation (ISO 228-1:2000)</i>
ISO 7-1:1994,	<i>Pipe threads where pressure-tight joints are made on the threads — Part 1: Dimensions, tolerances and designation.</i>

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3 Terms and definitions

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

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3.1

fixed heating appliance

appliance designed to be fixed, for example wall-mounted, on a table, ground-installed or suspended

3.2

movable heating appliance

self-powered heating appliance in which the gas cylinder can be fitted inside the body or chassis of the appliance, and designed to be moved without requiring lifting

3.3

amply ventilated area

volume in which the permanent opening directly connected to outdoors is at least 25 % of the walls surface

3.4

ignition device

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 (pilot, etc.)

[EN 449:2002]

3.5

flame supervision device

device including a sensing element which causes the gas supply to a burner to be opened or closed according to the presence or absence of the flame which activates the sensing element

[EN 449:2002]

3.6**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. Such a device normally comprises a vitiation sensitive pilot in conjunction with a suitable flame supervision device

[EN 449:2002]

3.7**injector**

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

- calibrated injector: where the section of the outlet orifice is fixed ;
- adjustable injector: where the section of the outlet orifice is variable

[EN 449:2002]

3.8**burner**

component that allows the gas to burn

3.9**ignition delay time**

time between the moment when the gas is lit at the pilot (or main burner, if there is no pilot) and that when the flame supervision device acts

3.10**extinction delay time**

time between the moment when the pilot and burner are extinguished by shutting off the gas supply and the moment when, after restoring the supply, the flow of gas to the appliance ceases through the action of the flame supervision device

3.11**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

A distinction is made between:

- . the gross calorific value H_s : the water produced by combustion is assumed to be condensed;
- . the net calorific value H_i : the water produced by combustion is assumed to be in the vapour state

NOTE 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.

[EN 437:2003]

3.12**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

[EN 437:2003]

3.13

Wobbe index

gross Wobbe index W_g ; net Wobbe index W_n

ratio of the calorific value of a gas per unit volume and the square root of its relative density under the same reference conditions. The Wobbe index is said to be gross or net according to whether the calorific value used is the gross or net calorific value

NOTE The Wobbe indices are 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.

[EN 437:2003]

3.14

heat input

Q

quantity of energy used in unit time corresponding to the volumetric or mass flow rates, the calorific value used being either the net or gross calorific value

NOTE The heat input is expressed in kilowatts (kW)

[EN 437:2003]

3.15

nominal heat input

Q_n

value of the heat input declared by the manufacturer

[EN 437:2003]

3.16

mass flow rate

M

mass of gas consumed by the appliance in unit time during continuous operation

NOTE The mass flow rate is expressed in kilograms per hour (kg/h) or grams per hour (g/h)

[EN 437:2003]

3.17

volume flow rate

V

volume of gas consumed by the appliance in unit time during continuous operation

NOTE 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).

[EN 437:2003]

3.18

cold condition

state of the appliance when it is at ambient temperature

3.19**reference conditions**

these correspond to 15 °C, 1 013, 25 mbar, unless otherwise specified

[EN 437:2003]

4 Classification and designation

The appliances covered by this European Standard belong to 3rd family gas categories defined in 6.1.2.3 of EN 437:2003.

For national situations see Annex A.

5 Design requirements**5.1 General**

Unless otherwise specified, the design requirements shall be verified by examining the appliance and its operating instructions.

Depending on their operating height, and according to table 1 the patio heaters:

- shall not exceed the nominal heat input stated;
- shall be fitted with one or two grids to protect against accidental contact respectively with working surface and/or reflector.

For adjustable appliances the minimum operating position shall be considered.

Table 1 – Nominal heat input and protection grids relating to the height of the appliance

Minimum operating height : h m	Maximal nominal heat input kW (H_s) ^a	Grid required to prevent from contact with the working surface ^a (see 5.7.6)	Grid required to prevent from contact with the reflector ^b (see 5.10)
$h \leq 1,3$	6	YES	YES
$1,3 < h \leq 1,6$	10	YES	YES
$1,6 < h \leq 2,0$	15	YES	NO
$h > 2,0$	17	NO	NO

a The height h to be considered is the height of the lower rim of the working surface from the ground.

b The height h to be considered is the height of the lower rim of the reflector from the ground.

NOTE: For appliances to be fixed on a table the height h is the sum of the heights of the table and the appliance.

5.2 Suitability for various gases

The appliance shall be delivered for operation with only one category of gas and for only one operating pressure or pressure combination. Operation with another category of gas or pressure or pressure combination shall not be allowed.

No provision shall be made for adjusting any part of an appliance which has been pre-set by the manufacturer.

5.3 Materials

The quality and thickness of the materials used for the construction of an appliance shall be such that the performances are not impaired during use.

In particular, all components of the appliance shall be capable of withstanding any mechanical, chemical and thermal effects to which they may be subjected during use. Under normal operating, cleaning and adjustment conditions, the materials shall not suffer any permanent distortion which could impair proper operation. Metal parts shall be effectively protected against corrosion.

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

Materials containing asbestos shall not be used.

5.4 Assembly – Sturdiness

The design of the appliance shall be such that under normal operating conditions, maintenance, and transport for movable appliances, no displacement of parts, distortion or damage likely to impair proper operation is detected.

In particular, the appliances for which the height is adjustable shall be fitted with a blocking device of the burner/deflector assembly, which cannot be unintentionally deactivated.

5.5 Stability of the appliance

5.5.1 In the case of wall-mounted, suspended or ground-installed appliances, the laboratory shall be able to assess this stability by performing a visual and mechanical inspection.

5.5.2 In the case of movable appliances or appliances intended to be put on the ground or on a table, the appliance shall not tilt over when placed in the most unfavourable position on a 10° inclined plane. For appliances equipped with their own gas supply, the stability test shall be carried out successively without gas cylinder, then with the gas cylinders full and empty, these being of the maximum and minimum sizes recommended by the manufacturer of the appliance. The cylinder shall not become dislodged during the test.

For appliances intended to be incorporated or installed in/on a table:

- if the table is supplied by the manufacturer with the appliance the whole assembly of the two components shall comply with the 10° stability test.
- if the appliance may be separated from the table it shall comply with the 10° stability test without the table.
- if the table is not supplied by the manufacturer with the appliance, the appliance alone shall comply with the 10° stability test.
- for appliances to be fixed on a table, the table corresponding to the worst case described in the instructions (weight, dimensions...) shall be supplied to the laboratory by the manufacturer with the appliance for the 10° stability test. The instructions and packaging will give information relating to the table (see 8.3 and 8.4)

5.5.3 All the appliances, excepted those defined in 3.1, shall in addition be fitted with a safety device which shuts off the gas supply to the burner if the appliance is overturned.

5.5.4 In the case of movable wheel- or roller-mounted appliances, means shall be provided to prevent accidental displacement of the appliance during normal use.

The locking device, if any, shall not be liable to accidental activation.

5.5.5 The requirements set out in this clause shall be verified under the test conditions described in 7.2.1.

5.6 Gas circuit

The functioning of any safety device shall not be overruled by that of any control device.

Parts which are adjusted at the stage of manufacture and which should not be manipulated by the user shall be appropriately protected.

Holes for screws, lugs, etc., up-stream of the injector ports and intended for assembly of the components shall not lead into spaces specifically intended for the circulation of gas.

Soundness of shut-off devices or threaded elements of the gas circuit shall be ensured by mechanical means (for example, metal seals, O-rings, etc.), i.e. excluding the use of sealing materials in the thread. However, for those parts which do not require dismantling during normal maintenance, for example valves, injectors, the use of suitable sealing materials in the thread conforming with EN 751 serial standards shall be acceptable.

Sealing materials according to EN 549 shall not be subject to ageing, nor to any deformation (reduction or increase in volume) likely to impair safety under normal operating conditions.

None of the sealing joints in the gas circuit shall be made by soft soldering or any other process in which the lowest temperature of the melting range is below 450 °C. Parts which can be dismantled shall remain leakproof after dismantling and reassembly, and after possible replacement of the seal if specified in the operating instructions.

Sealing washers, according to EN 549, and hoses, made of non metallic materials, shall be suitable for their intended use, specially concerning their resistance to LPG and the temperatures encountered during the use of the appliance.

Any tube or flexible hose complying with a recognised standard, used under its approved service conditions and according to the national regulations in force may be used.

Depending on the various national situations (see Annex A) the end of the supply pipework shall be fitted either with:

- a nozzle allowing the connection of a tubing; the nozzle may be fixed or removable;
- a fixed or removable cylindrical, smooth and clean part, at least 30 mm long allowing connection by means of a gastight compression fitting;
- a thread in accordance with EN ISO 228-1:2003 or ISO 7-1:1994.

During normal conditions of use connections shall not come loose unintentionally.

Tubing or flexible hose of the length recommended by the manufacturer and connected in accordance with the instructions, shall not come into contact with a part of the appliance whose temperature is higher than that guaranteed by the tubing or flexible hose manufacturer.

Disconnection of the internal piping is acceptable for the purpose of assembling or installing the appliance, provided the installation instructions mention the precautions to be taken when performing this operation in particular to ensure that the gas circuit remains leak-proof.

5.7 Burner

5.7.1 Burner design

The burner position shall be fixed in relation to the body of the appliance; it shall not be possible to reassemble it in a position other than that intended by the manufacturer. The component materials of the burner shall be such that the burner is not liable to melting, deformation or damage which could impair its normal operation, even after the induced internal combustion test defined in 7.3.3.1.