



# SLOVENSKI STANDARD SIST EN 419:2020

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SIST EN 419-1:2009

SIST EN 419-2:2006

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**Stropna plinska sevala z zgorevanjem na površini za gretje nestanovanjskih prostorov - Varnost in energijska učinkovitost**

Gas-fired overhead luminous radiant heaters for non-domestic use - Safety and energy efficiency

**iTeh STANDARD PREVIEW**

Sicherheit und Energieeffizienz gasbefeuerter Hellstrahlungsheizgeräte für nichthäusliche Einsatzbereiche (standards.itteh.ai)

[SIST EN 419:2020](#)

Appareils surélevés de chauffage à rayonnement lumineux au gaz à usage non domestique - Sécurité et efficacité énergétique (standards.itteh.ai)

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**ICS:**

97.100.20 Plinski grelniki Gas heaters

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English Version

**Gas-fired overhead luminous radiant heaters for non-  
domestic use - Safety and energy efficiency**

Appareils surélevés de chauffage à rayonnement  
lumineux au gaz à usage non domestique - Sécurité et  
efficacité énergétique

Gasbefeuerte Hellstrahlerheizgeräte für gewerbliche  
und industrielle Anwendungen - Sicherheit und  
Energieeffizienz

This European Standard was approved by CEN on 26 August 2019.

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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre 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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## European foreword

This document (EN 419:2019) has been prepared by Technical Committee CEN/TC 180 “Decentralized gas heating”, 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 April 2020, and conflicting national standards shall be withdrawn at the latest by April 2020.

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 419-1:2009 and EN 419-2:2006.

Aspects of safety and energy efficiency of appliances are brought together. Significant changes of the new document compared to the earlier standards are: incorporation recent state of the art of luminous heaters, incorporation of medium gas pressure appliances for industrial use, unique and more detailed description of method to determine radiant factor, incorporating terms and calculation scheme of Ecodesign Regulation (EU) No. 2015/1188.

The test gases, test pressures and appliance categories given in this European Standard are in accordance with those specified in EN 437:2018.

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 EC Directive(s).

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

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.

**EN 419:2019 (E)****1 Scope**

This document specifies the requirements and test methods for the construction, safety, rational use of energy, classification and marking of non-domestic gas-fired overhead luminous radiant heaters for environmental comfort, referred to in the body of the text as “appliances”.

This document is applicable to Type A<sub>1</sub> and Type A<sub>3</sub> appliances only (see 4.2.2) intended for use in other than residential dwellings:

- a) low gas pressure appliances operating at pressures up to and including 50 mbar;
- b) medium gas pressure appliances operating at pressures above 50 mbar and up to 2 bar.

This document is not applicable to:

- appliances designed for use in domestic dwellings;
- outdoor appliances;
- appliances of heat input in excess of 120 kW (based on the net calorific value of the appropriate reference gas);

This document is applicable to appliances which are intended to be type tested.

**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.

<https://standards.iteh.ai/catalog/standards/sist/96d05b99-973e-4692-a9bf>  
 EN 88-1:2011+A1:2016, *Pressure regulators and associated safety devices for gas appliances - Part 1: Pressure regulators for inlet pressures up to and including 50 kPa*

EN 88-2:2007, *Pressure regulators and associated safety devices for gas appliances - Part 2: Pressure regulators for inlet pressures above 500 mbar up to and including 5 bar*

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 161:2011+A3:2013, *Automatic shut-off valves for gas burners and gas appliances*

EN 298:2012, *Automatic burner control systems for burners and appliances burning gaseous or liquid fuels*

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

EN 1057:2006+A1:2010, *Copper and copper alloys - Seamless, round copper tubes for water and gas in sanitary and heating applications*

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 12067-2:2004, *Gas/air ratio controls for gas burners and gas burning appliances - Part 2: Electronic types*

EN 13410:2001, *Gas-fired overhead radiant heaters - Ventilation requirements for non-domestic premises*

EN 13611:2019, *Safety and control devices for burners and appliances burning gaseous and/or liquid fuels - General requirements*

EN 14459:2015, *Safety and control devices for burners and appliances burning gaseous or liquid fuels - Control functions in electronic systems - Methods for classification and assessment*

EN 14800:2007, *Corrugated safety metal hose assemblies for the connection of domestic appliances using gaseous fuels*

EN 60335-1:2012, *Household and similar electrical appliances - Safety - Part 1: General requirements*

EN 60335-2-102:2016, *Household and similar electrical appliances - Safety - Part 2-102: Particular requirements for gas, oil and solid-fuel burning appliances having electrical connections*

EN 60529:1991, *Degrees of protection provided by enclosures (IP Code)*

ISO 7-1:1994, *Pipe threads where pressure-tight joints are made on the threads — Part 1: Dimensions, tolerances and designation*

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)*

EN ISO 3166-1:2014, *Codes for the representation of names of countries and their subdivisions - Part 1: Country codes (ISO 3166-1:2013)*

EN ISO/IEC 17025:2005, *General requirements for the competence of testing and calibration laboratories (ISO/IEC 17025:2005)*

### 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 Appliance and its constituent parts

##### 3.1.1

##### **overhead luminous radiant heater**

gas-fired appliance intended for installation at a height above head level, which is designed to heat the space beneath by radiation and in which the heat is produced by means of burning the

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fuel at or near the outer surface of a material such as a ceramic plaque or gauze, or by means of a burner heating a gauze or similar material

**3.1.2****atmospheric burner**

aerated burner in which the air for combustion is entrained at atmospheric pressure

**3.1.3****inlet connection**

part of the appliance intended to be connected to the gas supply

**3.1.4****mechanical joint**

means of ensuring the soundness of an assembly of several (generally metallic) parts without the use of liquids, pastes, tapes, etc

Note 1 to entry: For example the following:

- a) metal to metal joints;
- b) conical joints;
- c) toroidal sealing rings ("O" rings);
- d) flat joints.

**3.1.5****gas circuit**

part of the appliance that conveys or contains the gas between the appliance gas inlet connection and the burner(s)

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**3.1.6****restrictor**

device with an orifice, which is placed in the gas circuit so as to create a pressure drop and thus reduce the gas pressure at the burner to a predetermined value for a given supply pressure and rate

**3.1.7****gas rate adjuster**

component allowing to set the gas rate of the burner to a predetermined value according to the supply conditions

Note 1 to entry: Adjustment can be progressive (screw adjuster) or in discrete steps (by changing restrictors).

Note 2 to entry: The adjusting screw of an adjustable regulator is regarded as a gas rate adjuster.

Note 3 to entry: The action of adjusting this device is called "adjusting the gas rate".

Note 4 to entry: A factory sealed gas rate adjuster is considered to be non-existent.

Note 5 to entry: Immobilizing a gas rate adjuster by means as e.g. a screw is called "setting an adjuster".

Note 6 to entry: Arrangement in respect of the adjuster such that any attempt to change the adjustment breaks the sealing device or sealing material and makes this interference apparent is called "sealing an adjuster".

Note 7 to entry: A gas rate adjuster is considered to be non-existent if it has been factory sealed in a position such that it is not operational in the range of supply pressures corresponding to the appliance category.

Note 8 to entry: Putting an adjuster or a control (of temperature, pressure, etc.) out of action and sealing it in this position is called “putting an adjuster or a control out of service”; the appliance functions as if the adjuster or control had been removed.

### **3.1.8**

#### **injector**

component that admits the gas into a burner

### **3.1.9**

#### **main burner**

burner that is intended to ensure the thermal function of the appliance

Note 1 to entry: Main burner is generally called “the burner”

### **3.1.10**

#### **ignition burner**

burner whose flame is intended to ignite another burner

### **3.1.11**

#### **ignition device**

means (e.g. flame, electrical ignition device or other device) used to ignite the gas at the ignition burner or at the main burner

### **3.1.12**

#### **primary aeration adjuster**

device enabling the primary air to be set at the necessary value according to the supply conditions

### **3.1.13**

#### **low gas pressure appliance**

appliance operating at gas pressures up to and including 50 mbar

### **3.1.14**

#### **medium gas pressure appliance**

appliance operating at gas pressures above 50 mbar and up to 2 bar

## **3.2 Adjusting, control and safety devices**

### **3.2.1**

#### **automatic burner control system**

system comprising a programming unit and all the elements of a flame detector device

Note 1 to entry: The various functions of an automatic burner control system may be in one or more housings.

**EN 419:2019 (E)****3.2.2****programming unit**

device which executes the programme reacting to signals from control and safety devices, gives control commands, controls the start-up sequence, supervises the burner operation and causes controlled shut-down, and, if necessary, safety shut-down and lock-out

Note 1 to entry: The programming unit follows a predetermined sequence of actions and always operates in conjunction with a flame detector. Such a sequence of operations involving switching on, starting up, supervising and switching off the burner is called "programme".

**3.2.3****flame detector**

device by which the presence of a flame is detected and signalled

Note 1 to entry: The flame detector can consist of a flame sensor, an amplifier and a relay for signal transmission. These parts, with the possible exception of the actual flame sensor, may be assembled in a single housing for use in conjunction with a programming unit.

**3.2.4****flame signal**

signal given by the flame detector, normally when the flame sensor senses a flame

**3.2.5****flame supervision device**

device that, in response to a signal from the flame detector, keeps the gas supply open and shuts it off in the absence of the supervised flame

**3.2.6****pressure regulator**

device which maintains the outlet pressure constant independent of the variations in inlet pressure within defined limits

**3.2.7****adjustable pressure regulator**

regulator provided with means for changing the outlet pressure setting

**3.2.8****volume regulator**

device which maintains the gas rate constant within a given tolerance, independent of the upstream pressure

**3.2.9****range-rating device**

component on the appliance intended to be used by the installer to adjust the heat input of the appliance within a range of heat inputs stated by the manufacturer, to suit the actual heat requirements of the installation

Note 1 to entry: This adjustment may be progressive (e.g. by use of a screw adjuster) or in discrete steps (e.g. by changing restrictors).

**3.2.10****automatic shut-off valve**

valve designed to open when energized and to close automatically when de-energized

**3.2.11****gas/air ratio control**

device that automatically adapts the combustion air rate to the gas rate or vice versa

**3.3 Operation of the appliance****3.3.1****heat input****Q**

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

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

[SOURCE: EN 437:2018]

**3.3.2****nominal heat input** **$Q_n$** 

value of the heat input (kW) declared by the manufacturer

**3.3.3****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 m<sup>3</sup>/h, l/min, dm<sup>3</sup>/h or dm<sup>3</sup>/s.

[SOURCE: EN 437:2018]

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**3.3.4****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 kg/h or g/h.

[SOURCE: EN 437:2018]

**3.3.5****start gas**

gas that is supplied at the start gas rate either at the main burner or at a separate ignition burner

**3.3.6****start gas rate**

restricted gas flow rate admitted either to a separate ignition burner or to the main burner during start up

**3.3.7****start gas flame**

flame established at the start gas rate either at the main burner or at a separate ignition burner

**EN 419:2019 (E)****3.3.8****flame stability**

characteristic of flames which remain on the burner ports or in the flame reception zone intended by the construction

**3.3.9****flame lift**

total or partial lifting of the base of the flame away from the burner port or the flame reception zone provided by the design

Note 1 to entry: Flame lift may cause the flame to blow out, i.e. extinction of the air-gas mixture.

**3.3.10****light-back**

entry of a flame into the body of the burner

**3.3.11****light-back at the injector**

ignition of the gas at the injector, either as a result of light-back into the burner or by the propagation of the flame outside the burner

**3.3.12****sooting**

phenomenon appearing during incomplete combustion and characterized by deposits of soot on the surfaces or parts in contact with the combustion products or with the flame

**3.3.13****first safety time**

interval between the ignition burner valve, start gas valve or main gas valve, as applicable, being energized and the ignition burner valve, start gas valve or main gas valve, as applicable, being de-energized if the flame detector signals the absence of a flame at the end of this interval

Note 1 to entry: Where there is no second safety time, this is called the safety time.

**3.3.14****second safety time**

being a first safety time applicable to either an ignition burner or to a start gas flame only, the second safety time is the interval between the main gas valve being energized and the main gas valve being de-energized if the flame detector signals the absence of a flame at the end of this interval

**3.3.15****running condition of the system**

condition in which the burner is in normal operation under the supervision of the programming unit and its flame detector

**3.3.16****controlled shut-down**

process by which the power to the automatic shut-off valve(s) is removed immediately as a result of the action of a controlling function

**3.3.17****safety shut-down**

process which is effected immediately following the response of a safety control or sensor or the detection of a fault in the burner control system and which puts the burner out of operation by immediately removing the power from the automatic shut-off valve(s) and the ignition device

**3.3.18****non-volatile lock-out**

safety shut-down condition of the system such that a restart can only be accomplished by a manual reset of the system and by no other means

**3.3.19****volatile lock-out**

safety shut-down condition of the system such that a restart can only be accomplished by either the manual reset of the system, or an interruption of the mains electrical supply and its subsequent restoration

**3.3.20****spark restoration**

process by which, following loss of the flame signal, the ignition device will be switched on again without total interruption of the gas supply

Note 1 to entry: This process ends with the restoration of the running condition or, if there is no flame signal at the end of the safety time, with volatile or non-volatile lock-out.

**3.3.21****automatic recycling**

process by which, after loss of flame during the running condition or accidental interruption of the operation of the appliance the gas supply is interrupted and the complete start sequence is automatically re-initiated

NOTE This process ends with the restoration of the running condition or, if there is no flame signal at the end of the safety time, or if the cause of the accidental interruption has not disappeared, with volatile or non-volatile lock-out.

**3.3.22****ignition opening time**

time interval between ignition of the supervised flame and the moment when the valve is held open