



# SLOVENSKI STANDARD

## SIST EN 257:1997

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### Mehanski termostati za plinske aparate

Mechanical thermostats for gas-burning appliances

Mechanische Temperaturregler für Gasgeräte

Thermostats mécaniques équipant les appareils d'utilisation des combustibles gazeux

Ta slovenski standard je istoveten z: EN 257:1992

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27.060.20	Plinski gorilniki	Gas fuel burners

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## English version

## Mechanical thermostats for gas-burning appliances

Thermostats mécaniques équipant les  
appareils d'utilisation des  
combustibles gazeux

Mechanische Temperaturregler für  
Gasgeräte

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## CEN

European Committee for Standardization  
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Europäisches Komitee für Normung

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### Foreword

This European Standard was prepared by the Technical Committee CEN/TC 58 "Safety and control devices for gas burners and gas-burning appliances", the Secretariat of which is held by BSI.

NOTE: (referring to 5.2.2 in this standard resulting from the discussions during the elaboration of the standard within CEN/TC 58): It should be noted that in some member countries there may be legislation limiting the application of zinc and zinc alloys.

In accordance with the Common CEN/CENELEC Rules, the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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## 1 Scope

This European Standard specifies the construction and performance requirements for mechanical thermostats for gas applications. It also establishes the definitions, test conditions and marking.

It applies to mechanical thermostats controlling the gas flow directly or indirectly through an integral gas valve, and which do not require external electrical energy for their operation.

The requirements of this standard apply to thermostats for all gas appliances, either heating or cooling, which are suitable for gases of one or more fuel gases of the 1st, 2nd or 3rd families and for gas pressures as defined for these gas families.

This standard only applies to thermostats used with gas appliances which are not installed in the open air.

Mechanical thermostats dealt with in this standard are intended for control functions.

## 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 these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publications referred to applies.

- |                 |   |
|-----------------|---|
| ISO 7-1: 1981   | Pipe threads where pressure tight joints are made on the threads - Part 1: Designation, dimensions and tolerances     |
| ISO 65: 1981    | Carbon steel tubes suitable for screwing in accordance with ISO 7-1   |
| ISO 228-1: 1982 | Pipe threads where pressure-tight joints are not made on the threads - Part 1: Designation, dimensions and tolerances |
| ISO 262: 1973   | ISO general purpose metric screw threads - Selected sizes for screws, bolts and nuts                                  |
| ISO 274: 1975   | Copper tubes of circular section - Dimensions   |
| ISO 301: 1981   | Zinc alloy ingots intended for casting  |
| ISO 1817: 1985  | Rubber, vulcanized - Determination of the effect of liquids   |
| ISO 7005: 1988  | Metallic flanges  |

- IEC 335-1: 1983 Safety of household and similar electrical appliances -  
Part 1: General requirements
- IEC 335-1: 1983 + A4: 1984 Amendment 4
- IEC 335-1: 1983 + A5: 1986 Amendment 5
- IEC 529 : 1989 Classification of degrees of protection provided by enclosures
- IEC 685-2-1 : 1980 Connection devices (junction and/or tapping) for household and similar fixed electrical installations - Part 2: Particular requirements - Screwless terminals for connecting copper conductors without special preparation
- IEC 998-2-1 : 1990 Connecting devices for low voltage circuits for household and similar purposes - Part 2-1: Particular requirements for connecting devices as separate entities with screw-type clamping units
- IEC 730-1 : 1986 Automatic electrical controls for household and similar use - Part 1: General requirements
- CEE Rec. 6 : 1974 Snap-on connectors

### 3 Definitions

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For the purposes of this standard, the following definitions apply.

**3.1 mechanical thermostat** (referred to as "thermostat" in this standard): Thermostat which controls the temperature by adjusting the flow rate accordingly to the temperature of the sensor without any external energy, such that the temperature remains within defined limits.

#### 3.2 Types of mechanical thermostat

**3.2.1 adjustable thermostat:** Thermostat in which the temperature set point can be adjusted by the user between minimum and maximum values.

**3.2.2 fixed setting thermostat:** Thermostat that has a pre-set fixed operating temperature which cannot be adjusted by the user.

**3.2.3 snap acting thermostat:** Thermostat with only two positions for the flow rate, i.e. "Full on - Off", "Full on - Reduced Rate" or "Reduced Rate - Off".

**3.2.4 modulating thermostat:** Thermostat which controls the flow rate in accordance with a predetermined and continuous function of the temperature of the temperature sensor.

**3.2.5 modulating thermostat with additional on-off action:** Thermostat which acts as a snap-acting thermostat between the closed and reduced positions and as a modulating thermostat between the reduced and full-on positions.

**3.3 closure member:** Moving part of the thermostat which opens and closes the gas circuit and/or varies the gas rate.

**3.4 breather hole:** Orifice that allows atmospheric pressure to be maintained in a compartment of variable volume.

**3.5 pre-setting device:** Device for adjusting an operating condition only by an authorized person. It may be fixed or variable, e.g. when it is the gas flow that is adjustable, either an orifice or an adjusting screw may be used.

**3.6 fixed by-pass:** Non-adjustable pre-setting device for fixing the minimum gas flow through a thermostat.

**3.7 by-pass adjusting device:** Screw adjustment or an exchangeable orifice, that fixes the minimum gas flow rate through the thermostat, and which is accessible only by the use of tools.

**3.8 temperature sensor:** Device which senses the temperature of the medium to be controlled or to be supervised.

**3.9 Leak-tightness**

**3.9.1 external leak-tightness (soundness):** Leak-tightness of a gas-carrying compartment with respect to atmosphere.

**3.9.2 internal leak-tightness (thermostat with complete shut-off):** Leak-tightness of the closure member when in a closed position sealing a gas carrying compartment with respect to another compartment or to the outlet of the thermostat.

The internal leak-tightness is the total leakage of those closure members in the closed position.

**3.10 Pressures**

**3.10.1 general:** All pressures are relative to the atmospheric pressure and are measured at right angles to the direction of gas flow.

**3.10.2 inlet pressure:** Pressure at the inlet of the thermostat.

**3.10.3 maximum working pressure:** Highest inlet pressure declared by the manufacturer at which the thermostat may be used.

**3.10.4 minimum working pressure:** Lowest inlet pressure declared by the manufacturer at which the thermostat may be used.

**3.10.5 outlet pressure:** Pressure at the outlet of the thermostat.

**3.10.6 test pressure:** Pressure to be applied during the test.

**3.10.7 pressure difference:** Difference between the inlet and outlet pressures with the closure member fully open.

**3.11 flow rate:** Volume of the air flowing through the thermostat in unit time.

**3.12 rated flow rate:** Air flow rate under standard reference conditions of temperature and pressure declared by the manufacturer at a pressure difference of 2,5 mbar with the closure member fully open.

**3.13 operating curve:** Graphical representation of the flow rate as a function of the sensor temperature at a given temperature set point and at a constant inlet pressure.

**3.14 backlash:** Difference of position of the adjusting knob when it is moved in both directions to obtain the same flow rate at a constant sensor temperature.

**3.15 maximum cycling frequency:** Number of working cycles in unit time as declared by the manufacturer which shall not be exceeded during operation.

**3.16 mounting position(s):** Position(s) declared by the manufacturer for mounting the thermostat.

**3.17 adjusting knob (or spindle):** That part of the thermostat which is used to select the temperature set-point.

### 3.18 Temperature

**3.18.1 maximum ambient temperature:** Highest temperature of the surrounding air declared by the manufacturer at which the thermostat may be operated.

**3.18.2 minimum ambient temperature:** Lowest temperature of the surrounding air declared by the manufacturer at which the thermostat may be operated.

**3.18.3 temperature set-point:** Any value selected within the temperature range at which the controlled temperature should be maintained.

**3.18.4 temperature set-point range:** Range between the minimum and maximum adjustable temperature set-points (by means of the adjusting knob).

**3.18.5 calibration flow rate:** Flow rate declared by the manufacturer for calibration.

**3.18.6 calibration temperature set-point:** Temperature at which the calibration flow rate should be obtained with the adjustment set to the position and in the direction declared by the manufacturer.

**3.18.7 temperature differential for snap-acting thermostats:** Difference in temperature necessary to obtain a change in the flow rate, at a given set-point.

**3.19 deviation:** Maximum deviation from the temperature set-point which is declared by the manufacturer.

**3.20 drift:** Permanent change in the operating curve of the thermostat.

#### **4 Group of thermostat**

A thermostat is grouped according to the bending moment that it is required to withstand.

##### **- Group 1 thermostats**

A Group 1 thermostat is a thermostat intended for use in a situation where it will not be subjected to bending stresses imposed by installation pipework, e.g. by the use of rigid adjacent supports.

##### **- Group 2 thermostats**

A Group 2 thermostat is a thermostat for use in any situation, either internal or external to the appliance and without support.

NOTE: A thermostat which complies with the requirements for Group 2 thermostats shall be deemed to comply also with the requirements for Group 1 thermostats.

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#### **5 Construction requirements**

##### **5.1 General construction requirements**

**5.1.1** Mechanical thermostats shall be designed, manufactured and assembled so that they function correctly when installed and used according to the manufacturer's instructions.

**5.1.2** Thermostats shall be free from sharp edges and corners which might cause damage, injury or incorrect operation.

All parts shall be clean internally and externally.

**5.1.3** Holes for screws, pins, etc., which are used for the assembly of parts of the thermostat or for mounting, shall not penetrate gasways.

The wall thickness between these parts and gasways shall be at least 1 mm.

**5.1.4** Holes necessary in manufacture which connect gasways to the atmosphere but which do not affect the function of the thermostat shall be permanently sealed by metallic means.

NOTE: Suitable jointing compounds may additionally be used.