SLOVENSKI STANDARD
oSIST prEN 17526:2026

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Plinomeri - Plinomer na osnovi termičnega merjenja masnega toka

Gas meter - Thermal-mass flow-meter based gas meter

Gaszähler - Thermische Massendurchflussgaszähler

Compteurs de gaz - Compteur de gaz basé sur un débitmètre massique par effet thermique

Ta slovenski standard je istoveten z: **prEN 17526**

ICS:

91.140.40 Sistemi za oskrbo s plinom Gas supply systems

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English Version

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Compteurs de gaz - Compteur de gaz basé sur un débitmètre massique par effet thermique

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This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 237.

If this draft becomes a European Standard, 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.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (prEN 17526:2026) has been prepared by Technical Committee CEN/TC 237 “Gas meters”, the secretariat of which is held by BSI.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 17526:2021+A1:2025.

prEN 17526:2026 includes the following significant technical changes with respect to EN 17526:2021+A1:2025:

— Scope modified to consider the introduction of Annex E;

— Errors limit in 5.3.2.3 Method b) corrected to 1,3 % as per 5.3.1 Method b);

— Table 9 and Table 13 modified to comply with 1/3 of MPE requirement;

— New test procedure step introduced in 5.7.3 in case the meter is fitted with an internal valve;

— Different test rig design in 5.7.3 for meters with Q_{max} = 2,5 m^3/h or Q_{max} = 4 m^3/h;

— Typo correction in Table 16: average value is now 0,8 Q_{min};

— Introduced new subclause 6.13 with *Hydrogen compatibility of materials*;

— Typo correction in 9.3.2 with “deionized water” replacing “ionized water”;

— Table 23 modified removing two flags: “Nothing” and “O”;

— New test gases for blended gas and hydrogen added in Annex B;

— Introduced new Annex E (informative), *Meters designed to measure blended gas and/or hydrogen*;

— Removal of Annex ZA.

1 Scope

This document specifies requirements and tests for the construction, performance, safety and production of battery powered class 1,5 Capillary Thermal-Mass Flow sensor gas meters (hereinafter referred to as meter(s)). This applies to meters having co-axial single pipe, or two pipe connections, which are used to measure volumes of fuel gases of the 2nd and/or 3rd family, as given in EN 437:2021.

In general, the term “thermal mass flow meters” applies to a flow-measuring device using heat transfer to measure and indicate gas flowrate, as defined in ISO 14511.

NOTE Although the word “mass” is present in the definition of the measurement principle, gas meters covered by this document provide measurement of gas at base conditions of temperature and pressure.

These meters have a maximum working pressure not exceeding 0,5 bar and a maximum flowrate not exceeding 160 m^3/h over a minimum ambient temperature range of −10 °C to +40 °C and a gas temperature range as specified in the marking, with a minimum range of 40 °C.

For meters designed for hydrogen measurement, the maximum flowrate is not exceeding 480 m^3/h, whilst the other characteristics are as stated above.

This document applies to meters indicating volume at base conditions, which are installed in locations with vibration and shocks of low significance. It applies to meters in:

— closed locations (indoor or outdoor with protection, as specified in the instruction manual) with condensing humidity or with non-condensing humidity;

or, if specified in the marking:

— open locations (outdoor without any covering) both with condensing humidity or with non-condensing humidity;

and in locations with electromagnetic disturbances likely to be found in residential, commercial and light industrial use. For meters which indicate unconverted volume, reference can be made to Annex C.

Unless otherwise stated, all pressures given in this document are gauge pressures.

Requirements for electronic indexes, valves and additional requirements for batteries incorporated in the meter and any other additional functionalities are given in EN 16314:2013.

Unless otherwise stated in a particular test, the tests are carried out on meters that include additional functionality devices, as indicated in the instruction manual.

Clauses 1 to 13 are for design and type testing only.

For meters designed for blended gas and/or hydrogen measurement, refer to Annex E.

This document refers only to hydrogen as specified in ISO 14687:2025 with a purity of type I grade A or better.

Unless otherwise stated, all tests applicable to 2nd and 3rd family gases are applicable also to blended gas and hydrogen.

Mixtures with a hydrogen concentration above 20 % and below 98 % by volume are not covered by this document.

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 437:2021, *Test gases — Test pressures — Appliance categories*

EN 549:2019+A2:2024, *Rubber materials for seals and diaphragms for gas appliances and gas equipment*

EN 1092-1:2018, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated — Part 1: Steel flanges*

EN 16314:2013, *Gas meters — Additional functionalities*

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 1518-1:2023, *Paints and varnishes — Determination of scratch resistance — Part 1: Constant-loading method (ISO 1518-1:2023)*

EN ISO 2409:2020, *Paints and varnishes — Cross-cut test (ISO 2409:2020)*

EN ISO 2812-1:2017, *Paints and varnishes — Determination of resistance to liquids — Part 1: Immersion in liquids other than water (ISO 2812-1:2017)*

EN ISO 4628-2:2016, *Paints and varnishes — Evaluation of degradation of coatings — Designation of quantity and size of defects, and of intensity of uniform changes in appearance — Part 2: Assessment of degree of blistering (ISO 4628-2:2016)*

EN ISO 4628-3:2024, *Paints and varnishes — Evaluation of quantity and size of defects, and of intensity of uniform changes in appearance — Part 3: Assessment of degree of rusting (ISO 4628-3:2024)*

EN ISO 4892-3:2024, *Plastics — Methods of exposure to laboratory light sources — Part 3: Fluorescent UV lamps (ISO 4892-3:2024)*

EN ISO 6270-1:2018, *Paints and varnishes — Determination of resistance to humidity — Part 1: Condensation (single-sided exposure) (ISO 6270-1:2017)*

EN ISO 6272-1:2011, *Paints and varnishes — Rapid-deformation (impact resistance) tests — Part 1: Falling-weight test, large-area indenter (ISO 6272-1:2011)*

EN ISO 9227:2022,[1] *Corrosion tests in artificial atmospheres — Salt spray tests (ISO 9227:2022)*

EN ISO/CIE 11664-4:2019, *Colorimetry — Part 4: CIE 1976 L*a*b* colour space (ISO/CIE 11664-4:2019)*

EN 50561-1:2013,[2] *Power line communication apparatus used in low-voltage installations — Radio disturbance characteristics - Limits and methods of measurement — Part 1: Apparatus for in-home use*

[1] As impacted by EN ISO 9227:2022/A1:2024.
[2] As impacted by EN 50561-1:2013/AC:2015.

EN 55032:2015,[3] *Electromagnetic compatibility of multimedia equipment — Emission Requirements*

EN IEC 60079-0:2018/A11:2024,[4] *Explosive atmospheres — Part 0: Equipment — General requirements (IEC 60079-0:2017)*

EN IEC 60079-10-1:2021, *Explosive atmospheres — Part 10-1: Classification of areas — Explosive gas atmospheres (IEC 60079-10-1:2020)*

EN IEC 60079-11:2024, *Explosive atmospheres — Part 11: Equipment protection by intrinsic safety "i" (IEC 60079-11:2023)*

EN IEC 60079-15:2019, *Explosive atmospheres — Part 15: Equipment protection by type of protection "n" (IEC 60079-15:2017)*

EN 60529:1991,[5] *Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989)*

EN 60695-11-5:2017, *Fire hazard testing — Part 11-5: Test flames — Needle-flame test method — Apparatus, confirmatory test arrangement and guidance (IEC 60695-11-5:2016)*

EN 60695-11-10:2013,[6] *Fire hazard testing — Part 11-10: Test flames — 50 W horizontal and vertical flame test methods (IEC 60695-11-10:2013)*

EN IEC 60730-1:2024,[7] *Automatic electrical controls — Part 1: General requirements (IEC 60730-1:2013, modified + COR1:2014)*

EN IEC 61000-4-2:2025, *Electromagnetic compatibility (EMC) — Part 4-2: Testing and measurement techniques — Electrostatic discharge immunity test (IEC 61000-4-2:2025)*

EN IEC 61000-4-3:2020, *Electromagnetic compatibility (EMC) — Part 4-3: Testing and measurement techniques — Radiated, radio-frequency, electromagnetic field immunity test (IEC 61000-4-3:2020)*

EN 61000-4-8:2010, *Electromagnetic compatibility (EMC) — Part 4-8: Testing and measurement techniques — Power frequency magnetic field immunity test (IEC 61000-4-8:2009)*

EN 61000-4-9:2016, *Electromagnetic compatibility (EMC) — Part 4-9: Testing and measurement techniques — Impulse magnetic field immunity test (IEC 61000-4-9:2016)*

EN IEC 61000-6-1:2019, *Electromagnetic compatibility (EMC) — Part 6-1: Generic standards — Immunity for residential, commercial and light-industrial environments (IEC 61000-6-1:2016)*

EN IEC 61000-6-2:2019, *Electromagnetic compatibility (EMC) — Part 6-2: Generic standards — Immunity standard for industrial environments*

EN 62056-21:2002, *Electricity metering — Data exchange for meter reading, tariff and load control — Part 21: Direct local data exchange (IEC 62056-21:2002)*

ISO 834-1:2025, *Fire resistance tests — Elements of building construction — Part 1: General requirements*

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[3] As impacted by EN 55032:2015/AC:2016-07, EN 55032:2015/A1:2020 and EN 55032:2015/A11:2020.
[4] As impacted by EN IEC 60079-0:2018/AC:2020-02 and EN IEC 60079-0:2018/A11:2024.
5 As impacted by EN 60529:1991/AC:2006-12, EN 60529:1991/A1:2000, EN 60529:1991/A2:2013 and EN 60529:1991/A2:2013/AC:2019-02.
6 As impacted by EN 60695-11-10:2013/AC:2014.
7 As impacted by EN 60730-1:2024/A11:2024.

ISO 14687:2025, *Hydrogen fuel quality — Product specification*

ASTM D 1003-13, *Standard Test Method for Haze and Luminous Transmittance of transparent plastics*

3 Terms, definitions and symbols

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

ISO and IEC maintain terminology 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 Terms and definitions

3.1.1
actual flow rate
flow rate at the gas pressure and gas temperature conditions prevailing in the gas distribution line in which the meter is fitted, at the meter inlet

3.1.2
additional functionality
functions over and above that within the meter, which can be integral to the meter, or included within a connected device

3.1.3
additional functionality device
device that carries out additional functionalities

3.1.4
air
air of density approximately 1,2 kg · m^{-3}

3.1.5
base conditions
fixed conditions to which a volume of gas is converted (e.g. base gas temperature 273,15 K plus 15 K at base gas pressure of 1 013,25 mbar)

3.1.6
blended gas
mixture of 2nd family gases as specified in EN 437:2021 and hydrogen as specified in ISO 14687:2025 type I, with a hydrogen concentration up to and including 20 % by volume in the mixture

3.1.7
class 1,5 meter
accuracy achieved by a meter, which has an error of indication between −3 % and +3 % for flow rates Q, where $Q_{min} \leq Q < Q_t$, and an error of indication between −1,5 % and +1,5 % for flow rates Q, where $Q_t \leq Q \leq Q_{max}$, where Q_{max} to $Q_{min} > 150$ and Q_{max} to $Q_t \geq 10$ and Q_r to Q_{max} is 1,2

3.1.8
contaminants
gas borne dust, vapour and other substances that could affect the operation of the meter

3.1.9
display
device which shows information from the meter (e.g. liquid crystal that displays registers, volume or flags)

3.1.10
distributed gas
locally available gas

3.1.11
disturbance
influence quantity having a value within the limits specified but outside the specified rated operating conditions of the measuring instrument

Note 1 to entry: An influence quantity is a disturbance if the rated operating conditions for that influence quantity are not specified.

3.1.12
durability
ability of an instrument to maintain its performance characteristics over a specified period of use

3.1.13
error of indication
value which shows the relationship in percentage terms of the difference between the volume indicated by the meter and the volume which has actually flowed through the meter, to the latter value:

Note 1 to entry:

$$\varepsilon\left[\%\right] = 100\frac{V_i - V_c}{V_c}$$

where

V_i is the indicated volume;

V_c is the volume which has actually flowed through the meter.

3.1.14
event
condition requiring action or to log an action

3.1.15
external leak tightness
leak tightness of the gas carrying components of the gas meter with respect to the atmosphere

3.1.16
galvanic connection/interface
hard wired serial connection or pulse output from the meter

3.1.17
gas meter
instrument designed to measure, memorize and display the volume of fuel gas that has passed through it

3.1.18
gauge pressure
absolute pressure minus atmospheric pressure

3.1.19
gross calorific value
amount of heat which would be released by the complete combustion in air of a specified quantity of gas, in such a way that the pressure at which the reaction takes place remains constant, and all the products of combustion are returned to the same specified temperature as that of the reactants, all of these products being in the gaseous state except for water formed by combustion, which is condensed to the liquid state at this specified temperature

3.1.20
hydrogen
hydrogen with a purity as defined in ISO 14687:2025 type I, grade A or better

3.1.21
index
current reading of the total volume passed through the meter

3.1.22
maximum operating pressure
maximum pressure at which a system can be operated continuously under normal conditions

Note 1 to entry: Normal conditions are no fault in any device or stream.

3.1.23
maximum error shift
maximum mean error shift at any of the tested flow rates

3.1.24
maximum flow rate
highest flow rate at which the gas meter provides indications that satisfy the requirements regarding maximum permissible error (MPE)

3.1.25
maximum permissible error
MPE
extreme value of measurement error, with respect to a known reference quantity value, permitted by specifications for a given measurement, measuring instrument, or measuring system

3.1.26
maximum working pressure
upper limit of the working pressure for which the meter has been designed, as declared and marked on the index or the data plate

3.1.27
mean error
arithmetic mean of consecutive errors of indication at a flow rate

3.1.28
memory
element which stores digital information