SLOVENSKI STANDARD
SIST EN 1111:2026

01-maj-2026

Sanitarne armature - Termostatska mešalna armatura (PN 10) - Splošne tehnične zahteve

Sanitary tapware - Thermostatic mixing valves (PN 10) - General technical specification

Sanitärarmaturen - Thermostatischer Mischer (PN 10) - Allgemeine technische Spezifikation

Robinetterie sanitaire - Mitigeurs thermostatiques (PN 10) - Spécifications techniques générales

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Ta slovenski standard je istoveten z: **EN 1111:2026**

ICS:

91.140.70	Sanitarne naprave	Sanitary installations

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 1111

March 2026

ICS 91.140.70

Supersedes EN 1111:2017

English Version

Sanitary tapware - Thermostatic mixing valves (PN 10) - General technical specification

Robinetterie sanitaire - Mitigeurs thermostatiques (PN 10) - Spécifications techniques générales

Sanitärarmaturen - Thermostatischer Mischer (PN 10) - Allgemeine technische Spezifikation

This European Standard was approved by CEN on 26 January 2026.

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European foreword

This document (EN 1111:2026) has been prepared by Technical Committee CEN/TC 164 “Water Supply”, 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of an identical text or by endorsement, at the latest by September 2026, and conflicting national standards shall be withdrawn at the latest by September 2026.

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 1111:2017.

EN 1111:2026 includes the following significant technical changes with respect to EN 1111:2017:

— to Clause 13 clarifications of the requirements with new figures being introduced;

— the standard was revised editorially.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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, Türkiye and the United Kingdom.

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Introduction

In respect of potential adverse effects on the quality of water intended for human consumption, caused by the product covered by this document, it provides no information as to whether the product can be used without restriction in any of the Member state of the EU or EFTA.

NOTE While awaiting the adoption of verifiable European criteria, attention is also drawn to national regulations that can apply.

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1 Scope

This document specifies general construction, performance and material requirements for PN 10 thermostatic mixing valves (TMV) and includes test methods for the verification of mixed water temperature performance at the point of use below 45 °C. This does not exclude the selection of higher temperatures where available. When these devices are used to provide anti-scald protection for children, elderly and disabled persons, the mixed water temperature needs to be set at a suitable temperature (body temperature approximately 38 °C). In particular children are at risk to scalding at lower temperatures than adults. This does not obviate the need for supervision of young children.

It applies to valves intended for use on sanitary appliances in kitchens, washrooms (incl. all rooms with sanitary tapware, e.g. toilets and cloakrooms) and bath rooms operating under the conditions specified in Table 1.

This document allows TMVs to supply a single outlet or a small number of outlets in a “domestic” application (e.g. one valve controlling a shower, bath, basin and/or bidet), excluding valves specifically designed for supplying a large number of outlets (i.e. for institutional use).

The tests described are type tests (laboratory tests) and not quality control tests carried out during manufacture.

Table 1 — Conditions of use

Supply	**Operating range**	
	limits	recommended
Pressure		
-Static	≤ 1 MPa [≤ 10 bar]	
-Dynamic	≥ 0,05 MPa [≥0,5 bar]	(0,1 to 0,5) MPa [(1 to 5) bar]
Temperature		
-Hot	≤ 70 °C	≤ 65 °C
-Cold	≤ 25 °C	—

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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 200, *Sanitary tapware — Single taps and combination taps for water supply systems of type 1 and type 2 — General technical specification*

EN 246, *Sanitary tapware — General specifications for aerators*

EN 248, *Sanitary tapware — General specification for electrodeposited coatings of Ni-Cr*

EN 1057, *Copper and copper alloys — Seamless, round copper tubes for water and gas in sanitary and heating applications*

EN 1112, *Sanitary tapware — Shower outlets for sanitary tapware for water supply systems of type 1 and type 2 — General technical specification*

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EN 1113, *Sanitary tapware — Shower hoses for sanitary tapware for water supply systems of type 1 and type 2 — General technical specification*

EN 1717, *Protection against pollution of potable water in water installations and general requirements of devices to prevent pollution by backflow*

EN 13618, *Flexible hose assemblies in drinking water installations — Functional requirements and test methods*

EN 13959, *Anti-pollution check valves — DN 6 to DN 250 inclusive family E, type A, B, C and D*

EN 14506, *Devices to prevent pollution by backflow of potable water — Automatic diverter — Family H, type C*

EN 16145, *Sanitary tapware — Extractable outlets for sink and basin mixers — General technical specification*

EN 60584 (all parts), *Thermocouples (IEC 60584)*

EN ISO 228-1, *Pipe threads where pressure-tight joints are not made on the threads — Part 1: Dimensions, tolerances and designation (ISO 228-1)*

EN ISO 3822-1, *Acoustics — Laboratory tests on noise emission from appliances and equipment used in water supply installations — Part 1: Method of measurement (ISO 3822-1)*

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EN ISO 3822-2, *Acoustics — Laboratory tests on noise emission from appliances and equipment used in water supply installations — Part 2: Mounting and operating conditions for draw-off taps and mixing valves (ISO 3822-2)*

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EN ISO 3822-3, *Acoustics — Laboratory tests on noise emission from appliances and equipment used in water supply installations — Part 3: Mounting and operating conditions for in-line valves and appliances (ISO 3822-3)*

EN ISO 3822-4:1997, *Acoustics — Laboratory tests on noise emission from appliances and equipment used in water supply installations — Part 4: Mounting and operating conditions for special appliances (ISO 3822-4)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions 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
thermostatic mixing valve
TMV
valve, with one or more outlets, which mixes hot and cold water and automatically controls the mixed water to a selected temperature

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3.2
fidelity
reproducibility and accuracy of temperature selection

3.3
obturator
movable component of the valve whose position in the fluid flow path permits, restricts or obstructs the fluid flow

Note 1 to entry: The flow rate between no flow and maximum flow conditions can be affected either by the same control device or a separate flow control device, where fitted.

3.4
outlet 1
default position of the diverter

3.5
outlet 2
outlet(s) other than outlet 1

4 Symbols and units

For the purposes of this document, the symbols and units given in Table 2 apply.

Table 2 — Symbols and units

Symbol	Characteristic	Unit
D	internal diameter of tube or casing	mm
f	thickness of the annular slit of Type C pressure take-off tees	mm
i	width of the annular slit of Type C pressure take-off tees	mm
ϑ_{PP}	temperature peak to peak	°C
p_c	pressure of cold water supply	MPa (bar)
p_h	pressure of hot water supply	MPa (bar)
Q_c	flow rate of cold water	l/s (l/min)
Q_h	flow rate of hot water	l/s (l/min)
$Q_c + Q_h$	flow rate of mixed water	l/s (l/min)
$t_{0, 1, 2, 3...}$	time when equilibrium is disturbed	s
T_c	temperature of cold water supply	°C
T_h	temperature of hot water supply	°C
T_m	temperature of mixed water	°C
$T_{0, 1, 2, 3, ...}$	Temperature in °C	°C

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Symbol	Characteristic	Unit
x_1	distance	mm
x_2	distance	mm
ϑ_0	Set temperature	°C
ϑ_{mix}	Mixed water temperature	°C

5 Classification

This classification covers the following types of TMVs:

a) Type 1 – Single control: valves with a single control device regulating flow and temperature (actuator movement in two planes);

b) Type 2 –Dual control: valves with separate control devices regulating flow and temperature;

c) Type 3 – Single sequential control: valves with a single control operating through a predetermined sequence of flow and temperature. These shall have a shut-off device (actuator movement in one plane);

d) Type 4 – TMVs without flow control device;

e) Type 5 – Preset: valves not adjustable by the user of a sanitary appliance;

f) Type 6 – Other: valves with special control devices.

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6 Designation

TMVs covered by this document are designated as follows:

a) its nominal inlet size, with or without diverter (see Table 3);

b) type of body (see Table 3);

c) type of outlet (see Table 3);

d) the sanitary appliance on which it shall be used (Table 3);

e) the method of mounting (see Table 3);

f) its acoustic group and flow rate classes (Clause 17 and Clause 13);

g) the reference to this document (EN 1111).

EXAMPLE TMV 1/2 with diverter, exposed body, fixed nozzle outlet bath/shower, horizontal mounting, group I class C/B EN 1111.

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Table 3 — Designation

Type of tap	TMV with or without diverter and type of diverter (if applicable)
Type of body	Single- or multi-hole, exposed, or concealed
Type of outlet	Fixed, moveable spout, with or without aerator
Intended use	Basin, bidet, sink, bath or shower
Mounting method	Horizontal or vertical surfaces
Acoustic group and classification	Group I, or group II, or unclassified/U
Flow rate class	Z, A, S, B, C, D
Reference to this document	EN 1111
Water saving properties	Yes / No

7 Marking/identification

7.1 Marking

TMVs shall be permanently and legibly marked with the manufacturer's or agent's name or identification on the body or handle.

For water saving mixing valves, appropriate information to installers and users shall be provided.

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7.2 Identification

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The temperature control device for the valve shall be identified by means of a scale or symbols or colours or any combination thereof.

TMVs shall be legibly marked to indicate cold / hot inlets.

NOTE Exposed valves need only one identification of cold or hot inlet.

8 Materials

8.1 Chemical and hygiene requirements

All materials coming into contact with water intended for human consumption shall present no health risk nor cause any change to the water in terms of quality, appearances, smell or taste.

8.2 Exposed surface condition and quality of coating

Exposed surfaces shall comply with the scope and requirements of EN 248.

9 Dimensional characteristics

9.1 General remarks

The design and construction of components without defined dimensions permits various design solutions to be adopted by the manufacturer.

Special cases are covered in 9.5.

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9.2 Inlet dimensions

Inlet dimensions shall be as specified in Table 4, Figure 1, Figure 2 and Figure 3.

Table 4 — Inlet dimensions (Single- and multi-hole combination TMVs)

Dimensions (mm)			Comments
Shank, Union, Captive nut			
A	G 1/2 B	Shank, Union	In accordance with EN ISO 228-1 (When the no-go gauge fits, the thread form should be considered acceptable as long as the function of the threaded joint can be verified.)
A 1	G 3/4 B		
A 2	≥ 9	Captive nut	Useful thread length
A 3	≥ 15	Shank, Union (straight or eccentric)	
Connecting centres			
G [a]	(150 ± 1)	2 – hole wall mounted	Supply connection, Straight unions
G 1	(140 to 160)		with eccentric unions (extension of this range is permitted)
G [a]	(150 ± 1)	Multi-hole combination TMV	
G 2	(200 ± 3,5)		
G 3	(180 ± 5)		
Inlet connections			
N 1	$(12{,}3\ ^{+0,2}_{0})$	Type A size 1/2	
N 2	≥ 5		
N 1	(15,2 ± 0,05) mm	Type B size 1/2 30° chamfer/flat 0,3	
N 2	≥ 13		
N 1	$(14{,}7\ ^{+0,3}_{0})$	Type C size 1/2	
N 2	6,4		
N 1	$(19{,}9\ ^{+0,3}_{0})$	Type C size 3/4	
N 2	≥ 6,4		
T	Ø 10 , 12 , 15 mm, G 1/2 or G 3/8	Plain end, male or female	Copper tube(s) or flexible hose(s)
U	≥ 350		Tube(s) or flexible hose(s) Flexible hoses in accordance with EN 13618

[a] Other dimensions are permissible (for replacement) when market tradition requires it, provided the manufacturer specifies the actual dimension in literature to avoid confusion with the standard dimension – which can be achieved using an excentric connection.

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