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

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Sanitetsarmaturer – Termostatblandare i högtryckssystem (PN 10) – Teknisk specifikation

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ICS 91.140.70

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Descriptors: sanitary valves, mixing valves, thermostatic valves, specifications, classifications, designation, dimensions, leaktightness, performance evaluation, hydraulic properties, mechanical properties, acoustic properties, tests, fatigue tests, marking

English version

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

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

Sanitärarmaturen – Thermostatische Mischer
(PN 10) – Allgemeine technische Spezifikation

This European Standard was approved by CEN on 7 May 1998.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

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Foreword

This European Standard 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of an identical text or by endorsement, at the latest by November 1998, and conflicting national standards shall be withdrawn at the latest by November 1998.

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

Introduction

In respect of potential adverse effects on the quality of water intended for human consumption, caused by the product covered by this standard :

- 1) this standard provides no information as to whether the product may be used without restriction in any of the Member state of the EU or EFTA ;
- 2) it should be noted that, while awaiting the adoption of verifiable European criteria, existing national regulations concerning the use and/or the characteristics of this product remain in force.

1 Scope

This European Standard specifies :

- the dimensional, leaktightness, mechanical and hydraulic performance, mechanical endurance and acoustic characteristics with which thermostatic mixing valves shall comply ;
- the procedures for testing these characteristics.

It is applicable :

- to thermostatic mixing valves intended for use on sanitary appliances in washrooms (toilets, bathrooms etc.) and in kitchens ;
- to PN 10 thermostatic mixing valves used under the pressure and temperature conditions given in table 1.

This standard allows for the use of thermostatic mixing valves to supply a single outlet or a small number of outlets in a "domestic" application (e.g. one valve, controlling a shower, bath, basin, bidet). But excludes valves specifically designed for supplying a large number of outlets (i.e. for institutional use).

Table 1 : Conditions for the use of thermostatic mixing valves

	Limits of use	Recommended limits for correct operation
Dynamic pressure	0,05 MPa (0,5 bar) min.	$0,1 \text{ MPa} \leq P \leq 0,5 \text{ MPa}$ (1 bar $\leq P \leq 5$ bar)
Static pressure	1 MPa (10 bar) max.	-
Hot water temperature	$T \leq 90 \text{ }^\circ\text{C}$	$55 \text{ }^\circ\text{C} \leq T \leq 65 \text{ }^\circ\text{C}$
Cold water temperature		$T \leq 25 \text{ }^\circ\text{C}$
NOTE : Thermostatic mixing valves intended for use at flow pressures below those in this table are covered by prEN 1287.		

2 Normatives references

This European Standard incorporates by dated or undated references 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 publication referred to applies.

EN 31	Pedestal wash basins - Connecting dimensions
EN 32	Wall hung wash basins - Connecting dimensions
EN 35	Pedestal bidets over rim supply only - Connecting dimensions
EN 36	Wall hung bidets over rim supply only - Connecting dimensions
EN 111	Wall hung hand rinse basins - Connecting dimensions
EN 200	Sanitary tapware - General technical specifications for single taps and mixer taps (Nominal size 1/2) PN 10 - Minimum flow pressure of 0,05 MPa (0,5 bar)
EN 232	Baths - Connecting dimensions
EN 246	Sanitary tapware - General specifications for flow rate regulators
EN 248	Sanitary tapware - General technical specifications for electrodeposited nickel chrome coatings
EN 695	Kitchen sinks - Connecting dimensions
prEN 1717	Protection against pollution of potable water in drinking water installations and general requirements of devices to prevent pollutions by backflow
prEN ISO 3822-1	Acoustics - Laboratory tests on noise emission from appliances and equipment used in water supply installations - Part 1 : Method of measurement (ISO/DIS 3822-1:1995)
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 3822-2:1995)
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

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 228-1		Pipe threads where pressure-tight joints are not made on the threads - Part 1 : Dimensions, tolerances and designation

3 Definition

For the purposes of this standard the following definition applies :

thermostatic mixing valve : A valve, with one or more outlets, which mixes hot and cold water and automatically controls the mixed water to a user selected temperature. The flow rate between no flow and maximum flow conditions can be effected either by the same control device or a separate flow control device, where fitted.

4 Classification

This classification covers the following types of thermostatic mixing valves :

Type 1 - Single control : Thermostatic mixing valves with a single control device for regulating flow rate and temperature ;

Type 2 - Dual control : Thermostatic mixing valves with two separate control devices for regulating flow rate and temperature ;

Type 3 - Single sequential control : Thermostatic mixing valves with a single control which operates through a predetermined sequence of flow and temperature. It shall have a shut-off device ;

Type 4 - Thermostatic mixing valves without flow control device ;

Type 5 - Other : Thermostatic mixing valves with special control devices.

5 Designation

The thermostatic mixing valves covered by this standard are designated as follows :

- its nominal size (1/2 or 3/4) (see table 4), with or without diverter (see table 2) ;
- type of body (see table 2) ;
- type of nozzle (see table 2) ;
- the sanitary appliance on which it is to be used (table 2) ;
- the method of mounting (see table 2) ;
- its acoustic group and flow rate classes (clause 14) ;

- the reference to this standard EN 1111 ;
- in the case of a thermostatic bath/shower mixing valve, the flow rate shall be designated by both flow rate classes. The first for the bath outlet, the second for the shower outlet.

EXAMPLE : Thermostatic mixing valve 1/2 ,with diverter, visible body, fixed nozzle outlet, bath/shower, horizontal mounting, group I class C/B EN 1111.

Table 2 : Designation

Diverter	with or without diverter
Type of body	two hole, single hole, visible or concealed
Type of nozzle	fixed/moveable outlet, no nozzle outlet
Intended use	basin, bidet, sink, bath or shower
Mounting method	horizontal or vertical surfaces

6 Marking/Identification

6.1 Marking

Thermostatic mixing valves complying with this standard shall be permanently and legibly marked with :

- the mark or name of the manufacturer ;
- the acoustic group and flow rate class or classes.

In the case of a thermostatic bath/shower mixing valve, both flow rate classes shall be marked, the first for the bath outlet, the second for the shower outlet.

6.2 Identification

The temperature control device for the valve shall be identified :

- by means of a scale and/or symbols ;
- and/or by colours (cold water blue, hot water red).

Thermostatic mixing valves shall be legibly marked with the colour red on the hot water inlet and the colour blue on the cold water inlet. Those with interchangeable supplies need not be marked.

7 Materials

7.1 Chemical and Hygienic characteristics

All materials in contact with water intended for human consumption shall present no health risk up to a temperature of 90 °C. They shall not cause any deterioration in water intended for human consumption with regard to food quality, appearance, odour or taste.

Within the recommended limit given in clause 1 for correct operation, the materials shall not be subject to any deterioration which might compromise the operation of the thermostatic mixing valve. Pressurised parts shall withstand the limits of use set in table 1. Material with inadequate corrosion resistance shall be given additional protection.

7.2 Exposed surface condition and quality of coating

Visible chromium plated surfaces and Ni-Cr coatings shall comply with the requirements of EN 248.

8 Dimensional characteristics

8.1 General comment on drawings

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

Special cases are covered in 8.5.

8.2 Thermostatic mixing valves mounted on horizontal surfaces

The standardised dimensions of thermostatic mixing valves :

- firstly, guarantee their mounting and interchangeability on sanitary appliances complying with EN 31, EN 32, EN 35, EN 36, EN 111, EN 232 and EN 695 ;
- secondly, give the various options for connection with the water supply.