



**SLOVENSKI STANDARD**  
**SIST EN 817:2009**

**01-januar-2009**

**BUXca Yý U**  
**SIST EN 817:1997**

---

GUbjHufbYUfa Uhi fY!`A Y Ubg\_c`bUgHj`´j Ua YýU`bU`Ufa Uhi fUfDB`%\$L!`Gd`cýbY  
H M b] bY`nU Hýj Y

Sanitary tapware - Mechanical mixers (PN 10) - General technical specifications

Sanitärarmaturen - Mechanisch einstellbare Mischer (PN 10) - Allgemeine technische Spezifikation

**ITeH STANDARD PREVIEW**  
**(standards.iteh.ai)**

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

[SIST EN 817:2009](#)

<https://standards.iteh.ai/catalog/standards/sist/86cbc3b5-4889-4014-8789-252aabb35837/sist-en-817-2009>

**Ta slovenski standard je istoveten z: EN 817:2008**

---

**ICS:**

91.140.70      Sanitarne naprave      Sanitary installations

**SIST EN 817:2009**

**en,fr,de**

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN 817:2009

<https://standards.iteh.ai/catalog/standards/sist/86cbc3b5-4889-4014-8789-252aabb35837/sist-en-817-2009>

EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 817**

June 2008

ICS 91.140.70

Supersedes EN 817:1997

English Version

## Sanitary tapware - Mechanical mixing valves (PN 10) - General technical specifications

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

Sanitärarmaturen - Mechanisch einstellbare Mischer (PN  
10) - Allgemeine technische Spezifikation

This European Standard was approved by CEN on 29 May 2008.

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 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

[SIST EN 817:2009](https://standards.iteh.ai/catalog/standards/sist/86cbc3b5-4889-4014-8789-252aabb35837/sist-en-817-2009)

<https://standards.iteh.ai/catalog/standards/sist/86cbc3b5-4889-4014-8789-252aabb35837/sist-en-817-2009>



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

Management Centre: rue de Stassart, 36 B-1050 Brussels

## Contents

	page
Foreword.....	6
Introduction.....	7
<b>1 Scope .....</b>	<b>8</b>
<b>2 Normative references .....</b>	<b>10</b>
<b>3 Terms, definitions and designation .....</b>	<b>10</b>
3.1 Terms and definitions .....	10
3.2 Designation .....	11
<b>4 Marking and identification .....</b>	<b>11</b>
4.1 Marking .....	11
4.2 Identification.....	12
<b>5 Materials .....</b>	<b>12</b>
5.1 Chemical and hygiene requirements .....	12
5.2 Exposed surface conditions .....	12
<b>6 Dimensional characteristics .....</b>	<b>12</b>
6.1 General remarks.....	12
6.2 Inlet dimensions.....	12
6.3 Outlet dimensions.....	17
6.4 Mounting dimensions.....	19
6.5 Special cases .....	20
6.6 Flexible hoses for shower outlets .....	20
6.7 Shower outlets .....	20
<b>7 Sequence of testing.....</b>	<b>21</b>
<b>8 Leaktightness characteristics .....</b>	<b>21</b>
8.1 General.....	21
8.2 Test methods.....	21
8.3 Leaktightness of the obturator and of the mixing valve upstream of the obturators with the obturator in the closed position.....	22
8.4 Leaktightness of the mixing valve downstream of the obturator with the obturator open .....	22
8.5 Leaktightness of manually operated diverter .....	22
8.6 Leaktightness and operation of diverter with automatic return .....	23
8.7 Leaktightness of the obturator: cross flow between hot water and cold water.....	24
<b>9 Pressure resistance characteristics – mechanical performance under pressure .....</b>	<b>26</b>
9.1 General.....	26
9.2 Principle.....	26
9.3 Apparatus .....	26
9.4 Mechanical behaviour upstream of the obturator – obturator in the closed position.....	26
9.5 Mechanical behaviour downstream of the obturator – obturator in the open position .....	26
<b>10 Hydraulic characteristics .....</b>	<b>27</b>
10.1 General.....	27
10.2 Initial settings.....	27
10.3 Principle.....	28
10.4 Apparatus .....	28
10.5 Procedure .....	28
10.6 Determination of flow rate .....	29
10.7 Determination of sensitivity.....	30
<b>11 Mechanical strength characteristics - torsion test for operating mechanism .....</b>	<b>33</b>

11.1	General.....	33
11.2	Test method .....	33
12	Mechanical endurance characteristics.....	34
12.1	Mechanical endurance of the control device.....	34
12.2	Mechanical endurance of diverters .....	38
12.3	Mechanical endurance of swivel spouts.....	40
13	Backflow protection .....	41
14	Acoustic characteristics .....	41
14.1	General.....	41
14.2	Procedure .....	41
14.3	Requirements.....	41
	Annex A (informative) Apparatus .....	43
	Annex B (informative) Pressure take-off tee.....	47
	Bibliography .....	50

## iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN 817:2009](#)

<https://standards.iteh.ai/catalog/standards/sist/86cbc3b5-4889-4014-8789-252aabb35837/sist-en-817-2009>

## Figures

Figure 1	Supply system with a pressure range of (0,05 to 1,0) MPa [(0,5 to 10) bar].....	9
Figure 2	Flexible hoses and plain tube .....	14
Figure 3	Multi-hole mechanical mixing valve .....	15
Figure 4	Supply connections for mechanical mixing valve and remote outlets .....	16
Figure 5	Remote outlet .....	18
Figure 6	Single hole mechanical mixing valve.....	18
Figure 7	Two hole mechanical mixing valve .....	18
Figure 8	Single hole mechanical mixing valve.....	19
Figure 9	Two hole mechanical mixing valve .....	20
Figure 10	Sensitivity curve.....	31
Figure 11	Radius for the determination of sensitivity .....	32
Figure 12	Rectangular movement .....	34
Figure 13	Triangular movement.....	35
Figure 14	Test bench adjustment torque for conventional mixing valve.....	37
Figure 15	Test bench adjustment torque for joystick mixing valve.....	37
Figure 16	Test bench adjustment torque for sequential mixing valve.....	37
Figure A 1	Supply circuits .....	43
Figure A 2	Test circuit.....	45
Figure A 3	Mounting of the mixing valve .....	46
Figure B 1	Pressure take-off tee .....	47
Figure B 2	Schematic examples of pressure take-off tees .....	48

## Tables

Table 1 Conditions of use/Classifications .....	8
Table 2 Designation .....	11
Table 3 Inlet dimensions (mechanical mixing valve).....	13
Table 4 Outlet dimensions (Remote outlets, mechanical mixing valve) .....	17
Table 5 Mounting dimensions (Outlets, single- and multi-hole mechanical mixing valve).....	19
Table 6 Test Sequence .....	21
Table 7 Summary of leaktightness tests .....	25
Table 8 Summary of pressure resistance characteristic tests.....	27
Table 9 Initial Settings .....	27
Table 10 Flow rates according to application.....	29
Table 11 Performance levels .....	30
Table 12 Summary of test conditions for cartridges .....	35
Table 13 Summary of test conditions for diverters.....	39
Table 14 Flow rate classes (EN ISO 3822-4 Annex A).....	41
Table 15 Acoustic group.....	42
Table A 1 Connecting dimension .....	45
Table B 1 Dimensions of the pressure take-off tee .....	47

**EN 817:2008 (E)****Foreword**

This document (EN 817:2008) 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 December 2008, and conflicting national standards shall be withdrawn at the latest by December 2008.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 817:1997.

This European Standard acknowledges the field of application for mechanical mixing valves used in water supply systems with a pressure range of (0,05 to 1,0) MPa (0,5 bar to 10 bar).

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

**(standards.iteh.ai)**

SIST EN 817:2009

<https://standards.iteh.ai/catalog/standards/sist/86cbc3b5-4889-4014-8789-252aabb35837/sist-en-817-2009>



## Introduction

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

This European Standard provides no information as to whether the product can be used without restriction in any of the Member States of the EU or EFTA.

It should be noted that, while awaiting the adoption of verifiable European criteria, existing national regulations concerning the use and/or the characteristics of these products remain in force.

This document identifies characteristics and technical requirements for mechanical mixing valves.

## iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN 817:2009

<https://standards.iteh.ai/catalog/standards/sist/86cbc3b5-4889-4014-8789-252aabb35837/sist-en-817-2009>

## EN 817:2008 (E)

## 1 Scope

This European Standard specifies:

- the dimensional, leaktightness, pressure resistance, hydraulic performance, mechanical strength, endurance and acoustic characteristics with which mechanical mixing valves need to comply;
- test methods to verify the characteristics.

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

This European Standard applies to PN 10 mechanical mixing valves for use with sanitary appliances installed in rooms used for bodily hygiene (cloakrooms, bathrooms, etc.) and in kitchens, i.e. for use with baths, wash basins, bidets, showers and sinks.

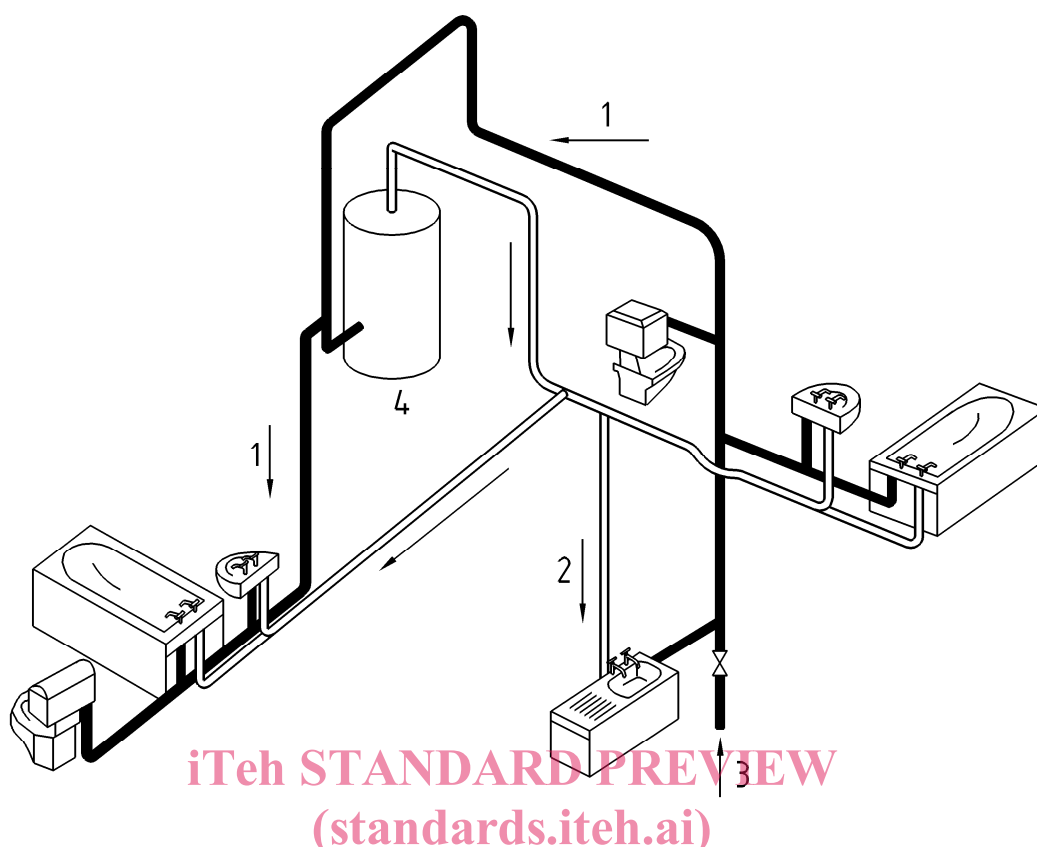
The conditions of use and classifications are given in 0.

**Table 1 — Conditions of use/classifications**

Water supply system	Operating range of mechanical mixing valves		Flow rate classes	Acoustics	Marking
	Limits	Recommended	See 0	See Clause 14	See Clause 4
Pressure	<u>Dynamic pressure</u> $\geq 0,05$ MPa (0,5 bar) <u>Static pressure</u> $\leq 1,0$ MPa (10,0 bar)	<u>Dynamic pressure</u> (0,1 to 0,5) MPa [(1,0 to 5,0) bar]	Z $\leq 0,15$ l/s A $\leq 0,25$ l/s S $\leq 0,33$ l/s B $\leq 0,42$ l/s C $\leq 0,50$ l/s D $\leq 0,63$ l/s	Group I -  Group II -  unclassified	for example IA IIC / B  I / - <sup>a</sup> II / - <sup>a</sup>
Temperature	$\leq 90$ °C	$\leq 65$ °C			

<sup>a</sup> Without flow rate class: mechanical mixing valves without interchangeable outlet accessories are tested with the original outlet accessories of the manufacturer and are not marked with a flow rate class.

NOTE Mechanical mixing valves for use at pressures lower than those in Table 1 are covered by EN 1286.



SIST EN 817:2009  
<https://standards.iteh.ai/catalog/standards/sist/86cbc3b5-4889-4014-8789-252aabb35837/sist-en-817-2009>

**Key**

- 1 cold water
- 2 hot water
- 3 mains supply pipe (supply pressures up to 10 bar)
- 4 water heater

**Figure 1 — Supply system with a pressure range of (0,05 to 1,0) MPa [(0,5 to 10) bar]**

## EN 817:2008 (E)

## 2 Normative references

The following referenced documents are indispensable for the application 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 246, *Sanitary tapware — General specifications for flow rate regulators*

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

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

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*

prEN 13618-1, *Hose assembly — Flexible hose assembly — Part 1: Product standard for flexible hose assembly (with or without braiding)*

prEN 13618-2, *Water supply — Hose assembly — Part 2: Semi-rigid hose assembly*

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

EN ISO 228-1, *Pipe threads where pressure tight joints are not made on the threads — Part 1: Dimensions, tolerances and designation (ISO 228-1:2000)*

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 3822-1:1999)*

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 3822-4:1997, *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 3822-4:1997)*

## 3 Terms, definitions and designation

### 3.1 Terms and definitions

For the purpose of this document, the following term and definition applies.

#### **mechanical mixing valve**

valve which mixes hot and cold water and which, by means of a control device, allows the user to adjust between 'all cold water' and 'all hot water', which implies the flow rate of the mixture obtained may be adjusted between 'no flow' and 'maximum flow' using either the same control device or another separate control device

### 3.2 Designation

Mechanical mixing valves covered by this European Standard are designated by the characteristics identified in 0.

**Table 2 — Designation**

Tapware according to application (see 0)	
Type of valve	Mechanical mixing valve
Intended use	Basin, bidet, sink, bath or shower
Mounting method	Horizontal or vertical surfaces
Body	Single or multi-hole, visible, or concealed
Diverter	With or without diverter
Type of outlet	Fixed, moveable, divided outlet spout, with or without flow rate regulator
Acoustic group and classification	Group I, or group II, or unclassified
Water saving properties	Yes / no
Flow rate class	Z, A, S, B, C, D
Reference to this European Standard	EN 817

Example of designation:

Mechanical mixing valve for bath/shower, 2-hole with combined visible body, mounting on horizontal surface diverter, fixed outlet, flow rate classes C/B, with acoustic group I, EN 817.

## 4 Marking and identification

### 4.1 Marking

Mechanical mixing valves shall be marked permanently and legibly with:

- the manufacturer's or agent's name or identification - on the body or handle;
- the manufacturer's name or identification - on the cartridge (not applicable when the cartridge is of special design to suit the body);
- the acoustic group (see 0) and the flow rate class(es) (see 0), if applicable - on the body.

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

NOTE In the case of bath/shower mixing valves, the flow rate is indicated by the first letter for the bath outlet and by the second letter for the shower outlet.

Examples of marking:

Name or identification and IA, or IIA (acoustic group and flow rate class(es))

Name or identification and I/-, or II/- (acoustic group, without flow rate class(es))

**EN 817:2008 (E)**

Name or identification and IC/A, or IIC/A (bath/shower tap; the first letter for the bath outlet, the second letter for the shower outlet).

**4.2 Identification**

The control devices for mechanical mixing valves shall be identified:

- for cold water by the colour blue or word/letters for cold;
- for hot water by the colour red or word/letters for hot;
- any other suitable means.

**5 Materials****5.1 Chemical and hygiene requirements**

All materials coming into contact with water intended for human consumption shall present no risk to health.

They shall not cause any change of the drinking water in terms of quality, appearance, smell or taste.

**5.2 Exposed surface conditions**

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

iTeh STANDARD PREVIEW  
(standards.iteh.ai)

**6 Dimensional characteristics**

[SIST EN 817:2009](#)

<https://standards.iteh.ai/catalog/standards/sist/86cbc3b5-4889-4014-8789-252aabb35837/sist-en-817-2009>

**6.1 General remarks**

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

Special cases are covered in 6.5.

**6.2 Inlet dimensions**

Inlet dimensions shall be as specified in Table 3, 0, 0 and 0.

Table 3 — Inlet dimensions (mechanical mixing valve)

Dimensions (mm)			Comments	
Shank, union, captive nut				
A	G ½ B	Shank, union	In accordance with EN ISO 228-1	
A 2	9 min	Captive nut	Useful thread length	
A 3	15 min	Shank, Union (straight or eccentric)		
Connecting centres				
G <sup>a</sup>	150 ± 1	2 – hole wall mounted	Supply connection, Straight unions	
G 1	140 to 160		- with eccentric unions (extension of this range is permitted)	
Inlet connections				
N 1	12,3 + 0,2	Type A		
N 2	5 min			
N 1	15,2 ± 0,05	Type B		
N 2	13 min	30° chamfer/flat 0,3		
N 1	14,7 + 0,3	Type C		
N 2	6,4 min			
N 1	19,9 + 0,3	Type C		
N 2	6,4 min			
T		Plain end Ø 10 or 12 or 15 or G ½ or G 3/8 male or female		Copper tube(s) or flexible hose(s)
U	350 min			Tube(s) or flexible hose(s) Flexible hoses in accordance with prEN 13618-1 and/or prEN 13618-2

<sup>a</sup> 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 eccentric connection.