

SLOVENSKI STANDARD

SIST EN 15092:2009

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Building valves - Inline hot water supply tempering valves - Tests and requirements

Gebäudearmaturen - Thermostatische Mischer für Warmwasserbereiter - Anforderungen und Prüfungen

Robinetterie des bâtiments - Vannes mélangeuses en ligne d'alimentation en eau chaude - Essais et exigences

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 15092

June 2008

ICS 91.140.60

English Version

**Building valves - Inline hot water supply tempering valves - Tests
and requirements**

Robinetterie des bâtiments - Vannes mélangeuses en ligne
d'alimentation en eau chaude - Essais et exigences

Gebäudearmaturen - Thermostatische Mischer für
Warmwasserbereiter - Prüfungen und Anforderungen

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

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

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Contents

Page

Foreword.....	3
Introduction	4
1 Scope	5
2 Normative references	5
3 Terms and definitions	6
4 Materials and surface finishes	7
4.1 General.....	7
4.2 Nature of materials	7
5 Design and dimensional requirements	8
5.1 Backflow prevention.....	8
5.2 Dimensional characteristics	8
5.3 Set temperature adjustment	10
5.4 Temperature override function.....	10
6 Mechanical tests and requirements	10
6.1 Body strength test	10
6.2 Bending moment test for tempering valves.....	10
6.3 Torque tests for temperature stops	11
7 Performance tests and requirements	12
7.1 General.....	12
7.2 Standard test conditions.....	12
7.3 Verification of valve temperature settings	13
7.4 Determination of minimum flow rate	14
7.5 Test for temperature stability starting from ambient	16
7.6 Test for temperature stability with changing flow rates	17
7.7 Test for thermal shutoff with cold water supply failure	18
7.8 Test for temperature stability with changing inlet pressure	18
7.9 Test for temperature stability with changing inlet temperature	19
7.10 Endurance test on the thermostat	20
8 Acoustic tests and requirements	21
8.1 General.....	21
8.2 Test method.....	21
8.3 Expression of results	21
8.4 Requirements	21
9 Classification.....	21
10 Designation	21
11 Marking	22
11.1 Temperature marking	22
11.2 Flow marking.....	22
11.3 Identification marking	22
12 Instructions	22
Annex A (informative) Apparatus for endurance test on thermostat.....	24
Annex B (informative) Apparatus for performance test	26
Annex C (normative) Measurement of parameters.....	28
Annex D (informative) Temperature transient requirements	29
Bibliography	30

Foreword

This document (EN 15092:2008) 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.

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.

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EN 15092:2008 (E)**Introduction**

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

- a) this European Standard provides no information as to whether the product may be used without restriction in any of the Member States of the EU or EFTA;
- b) 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.

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1 Scope

This European Standard specifies dimensions, materials and performance requirements (including methods of test) for in line hot water supply tempering valves for sanitary hot water systems, of nominal sizes from DN 15 to DN 50. Tempering valves reduce the temperature of sanitary hot water for distribution throughout the hot water system. The conditions of use are specified in Table 1.

The valves are intended to be used with storage water heaters to provide tempered hot water to the terminal fitting. They are not intended to control the temperature at the point of use.

Tempering valves control the distribution temperature from a water heater to a preset value or an adjustable range, both between 45 °C and 65 °C.

Table 1 — Conditions of use

	Limits of use	Recommended limits for operation
Dynamic pressure	0,02 MPa (0,2 bar) min.	$0,1 \text{ MPa} \leq P \leq 0,5 \text{ MPa}$ (1 bar $\leq P \leq 5,0$ bar)
Static pressure	1 MPa (10 bar) max.	—
Hot water inlet temperature	$T \leq 90 \text{ }^{\circ}\text{C}$	$60 \text{ }^{\circ}\text{C} \leq T \leq 80 \text{ }^{\circ}\text{C}$
Cold water inlet temperatures	$T \leq 25 \text{ }^{\circ}\text{C}$	$T \leq 25 \text{ }^{\circ}\text{C}$
Distribution (outlet) temperature	$45 \text{ }^{\circ}\text{C} \leq T \leq 65 \text{ }^{\circ}\text{C}$	

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2 Normative references (standards.iteh.ai)

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 1092-3, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated — Part 3: Copper alloy flanges*

EN 1254-1, *Copper and copper alloys — Plumbing fittings — Part 1: Fittings with ends for capillary soldering or capillary brazing to copper tubes*

EN 1254-2, *Copper and copper alloys — Plumbing fittings — Part 2: Fittings with compression ends for use with copper tubes*

EN 1254-3, *Copper and copper alloys — Plumbing fittings — Part 3: Fittings with compression ends for use with plastics pipes*

EN 1254-4, *Copper and copper alloys — Plumbing fittings — Part 4: Fittings combining other end connections with capillary or compression ends*

EN 1254-5, *Copper and copper alloys — Plumbing fittings — Part 5: Fittings with short ends for capillary brazing to copper tubes*

EN 1982, *Copper and copper alloys — Ingots and castings*

EN 12164, *Copper and copper alloys — Rod for free machining purposes*

EN 12165, *Copper and copper alloys — Wrought and unwrought forging stock*

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

EN 15092:2008 (E)

EN ISO 228-1, *Pipe threads where pressure-tight joints are not made on the thread — 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 3822-3, *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 3822-3:1997)*

EN ISO 6509, *Corrosion of metals and alloys — Determination of dezincification resistance of brass (ISO 6509:1981)*

ISO 7-1:1994, *Pipe threads where pressure-tight joints are made on the threads — Part 1: Dimensions, tolerances and designation*

3 Terms and definitions

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

3.1**tempering valve**

temperature activated valve which mixes hot and cold water to achieve a pre-determined outlet temperature and which is fitted between the water heater and the point of use to control the distribution temperature to between 45 °C and 65 °C

3.2**maximum distribution temperature**

maximum hot water outlet temperature at which the tempering valve is designed to be used and which is 65 °C; national regulations may set a lower value distribution temperature

3.3**minimum distribution temperature**

45 °C which is the minimum hot water outlet temperature at which the tempering valve is designed to be used

3.4**pre-set temperature**

temperature as set by the manufacturer of the valve

3.5**set temperature**

distribution temperature between 45 °C to 65 °C

3.6**adjustable valve**

valve with a control mechanism which enables the distribution temperature to be adjusted from one set point to another set point within a pre-determined minimum and maximum value

3.7**temperature override function**

facility for temporary use, that allows a temperature in excess of the normal distribution temperature of 65 °C to enter the hot water distribution system for thermal disinfection to control the growth of bacteria

3.8**Type 1 tempering valve**

non-adjustable tempering valve with pre-set temperature

3.9**Type 2 tempering valve**

tempering valve adjustable with or without tool and with pre-set temperature

3.10**nominal diameter (DN)**

nominal diameter referring to the final outlet connection diameter to pipe, of the valve assembly

4 Materials and surface finishes**4.1 General**

The selection of materials is the responsibility of the manufacturer, provided they satisfy the following requirements:

- a) materials and coatings shall not contaminate the potable water, when in normal or accidental contact;
- b) in a technical document, the manufacturer shall state the nature of the materials and coatings used;
- c) material with inadequate corrosion resistance shall have additional protection;
- d) the materials used shall not deteriorate at a temperature of 95 °C for 1 h and be suitable under the temperatures specified in the tests in this European Standard.

4.2 Nature of materials

Examples of bronze and brass which may be used, without coating, for manufacturing purposes are given in Table 2.

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Table 2 — Examples of copper alloys

Material designation		European Standard
Symbol	Reference number	
CuSn10-C	CC480K	EN 1982
CuSn5Pb5Zn5-C	CC491K	EN 1982
CuSn3Zn8Pb5-C	CC490K	EN 1982
CuZn39Pb3	CW614N	EN 12164/EN 12165
CuZn40Pb2	CW617N	EN 12164/EN 12165
CuZn36Pb2As	CW602N	EN 12164/EN 12165

Copper-zinc alloys containing more than 10 % zinc are subject to dezincification when submitted to water capable of dezincification. In the countries where the use of products made of dezincification resistant materials is required, the products have to guarantee a dezincification depth of less than 200 µm in any direction; they have to be tested in accordance with EN ISO 6509 and have to be marked in compliance with the indications specified in Clause 11, Marking.

5 Design and dimensional requirements

5.1 Backflow prevention

Integral backflow prevention devices shall comply with the appropriate standard in their own right.

When fitted check valves, they shall comply with the requirements of EN 13959.

5.2 Dimensional characteristics

5.2.1 General

Tempering valves shall be classified by the nominal size (DN) of outlet end connection.

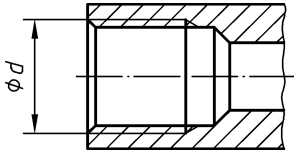
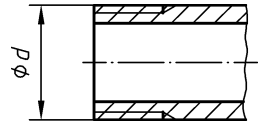
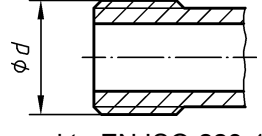
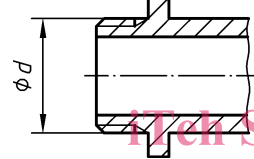
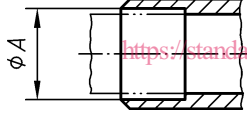
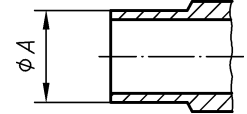
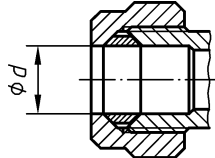
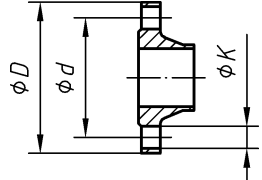
5.2.2 End connections

Examples of end connections are given in Table 3. All end connections shall comply with EN 1254. Connections requiring the use of heat to make or break the joint (e.g. capillary) are not permitted directly on the valve body.

5.2.3 Other connections (e.g. unions)

Connections, other than those specified in 5.2.1, shall comply with the functional aspects of the equivalent part of EN 1254.

Table 3 — Examples of end connections and nominal sizes (DN 15 to DN 50)

Type	a	DN 15	DN 20	DN 25	DN 32	DN 40	DN 50
 Internal thread to ISO 7-1:1994	d	Rp ½	Rp ¾	Rp 1	Rp 1 ¼	Rp 1 ½	Rp 2
 External thread to ISO 7-1:1994	d	R ½	R ¾	R 1	R 1 ¼	R 1 ½	R 2
 External thread to EN ISO 228-1	d	G ¾ B	G 1 B	G 1 ¼ B	G 1 ½ B	G 1 ½ B G 1 ¾ B	G 2 B
 External thread with shoulder to EN ISO 228-1	d	G ½ B	G ¾ B	G 1 B	G 1 ¼ B	G 1 ½ B G 1 ¾ B	G 2 B G 2 ⅜ B
 Capillary socket to EN 1254-1	A	15/18	22	28	35	42	54
 Male capillary end to EN 1254-1	A	15/18	22	28	35	42	54
 Compression end for copper pipe to EN 1254-2	d	15/18	22	28	35	42	54
 EN 1092-3	D d K	95 75 14	105 75 14	115 85 14	140 100 18	150 110 18	160 120 18

EN 15092:2008 (E)**5.3 Set temperature adjustment**

If provided for, the limitation of temperature adjustment shall comply with the following.

Pre-set adjustable temperature (Type 2: Valve)

The pre-set temperature mechanism shall:

- a) be capable of adjustment to the required distribution water temperature;
- b) be lockable at the required distribution water temperature; or
- c) require the use of a tool other than a standard screwdriver to access or make the adjustment;
- d) comply with the requirements of 6.3.

5.4 Temperature override function

If provided for, the override function shall:

- a) allow the valve to deliver mixed water above the maximum distribution temperature of 65 °C up to the hot water inlet supply temperature;
- b) require extra handling to actuate the override;
- c) be resettable after use;
- d) comply with the requirements of 6.3.

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6 Mechanical tests and requirements

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6.1 Body strength test**6.1.1 Procedure**

Seal all apertures and via the hot inlet connection apply a pressure of $(2,5 \pm 0,1)$ MPa $[(25 \pm 1)$ bar], for a period of (10^{+2}_0) min.

6.1.2 Requirement

The tempering valve body shall not show any visible sign of external leakage, permanent deformation or fracture.

6.2 Bending moment test for tempering valves**6.2.1 Principle**

The mechanical bending strength of the body is tested by a bending moment test, in which a force is applied for a pre-determined period.