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**Industrial valves — Ball valves of  
thermoplastics materials**

**AMENDMENT 1**

*Robinetterie industrielle — Robinets à tournant sphérique en  
matériaux thermoplastiques*

*AMENDEMENT 1*

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

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This document was prepared by Technical Committee ISO/TC 138, *Plastics pipes, fittings and valves for the transport of fluids*, Subcommittee SC 7, *Valves and auxiliary equipment of plastics materials*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

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# Industrial valves — Ball valves of thermoplastics materials

## AMENDMENT 1

Page 1, Clause 2

Delete the reference to EN 736-1:1995 and EN 736-2:1997, to be moved to the Bibliography.

Delete the following references:

ISO 12092:2000, *Fittings, valves and other piping system components made of unplasticized poly(vinyl chloride) (PVC-U), chlorinated poly(vinyl chloride) (PVC-C), acrylonitrile-butadiene-styrene (ABS) and acrylonitrile-styrene-acrylester (ASA) for pipes under pressure — Resistance to internal pressure — Test method*

EN 558-1:1995, *Industrial valves — Face-to-face and centre-to-face dimensions of metal valves for use in flanged pipe systems — Part 1: PN-designated valves*

EN 558-2:1995, *Industrial valves — Face-to-face and centre-to-face dimensions of metal valves for use in flanged pipe systems — Part 2: Class-designated valves*

EN 736-3:1999, *Valves — Terminology — Part 3: Definition of terms*

EN 12107:1997, *Plastics piping systems — Injection-moulded thermoplastics fittings, valves and ancillary equipment — Determination of the long-term hydrostatic strength of thermoplastics materials for injection moulding of piping components*

Add the following references:

ISO 7-1:1994/Cor1:2007, *Pipe threads where pressure-tight joints are made on the threads — Part 1: Dimensions, tolerances and designation — Technical Corrigendum 1*

ISO 1167-1:2006, *Thermoplastics pipes, fittings and assemblies for the conveyance of fluids — Determination of the resistance to internal pressure — Part 1: General method*

EN 558:2017, *Industrial valves — Face-to-face and centre-to-face dimensions of metal valves for use in flanged pipe systems — PN and Class designated valves*

EN 736-3:2008, *Valves — Terminology — Part 3: Definition of terms*

ISO 10931:2005/Amd 1:2015, *Plastics piping systems for industrial applications — Poly(vinylidene fluoride) (PVDF) — Specifications for components and the system — Amendment 1*

ISO 15493:2003/Amd 1:2016, *Plastics piping systems for industrial applications — Acrylonitrile-butadiene-styrene (ABS), unplasticized poly(vinyl chloride) (PVC-U) and chlorinated poly(vinyl chloride) (PVC-C) — Specifications for components and the system — Metric series — Amendment 1*

ISO 15493:2003/Cor 1:2004, *Plastics piping systems for industrial applications — Acrylonitrile-butadiene-styrene (ABS), unplasticized poly(vinyl chloride) (PVC-U) and chlorinated poly(vinyl chloride) (PVC-C) — Specifications for components and the system — Metric series — Technical Corrigendum 1*

Replace the reference to ISO 898-1:1999 by the following:

ISO 898-1:2013, *Mechanical properties of fasteners made of carbon steel and alloy steel — Part 1: Bolts, screws and studs with specified property classes — Coarse thread and fine pitch thread*

Replace the reference to ISO 12162:1995 by the following:

## ISO 16135:2006/Amd.1:2019(E)

ISO 12162:2009, *Thermoplastics materials for pipes and fittings for pressure applications — Classification, designation and design coefficient*

Replace the reference to ISO 15494:2004 by the following:

ISO 15494:2015, *Plastics piping systems for industrial applications — Polybutene (PB), polyethylene (PE), polyethylene of raised temperature resistance (PE-RT), crosslinked polyethylene (PE-X), polypropylene (PP) — Metric series for specifications for components and the system*

Replace the reference to ISO 5211:2001 by the following:

ISO 5211:2017, *Industrial valves — Part-turn actuator attachments*

Replace the reference to EN 1092-1:2001 by the following:

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

Replace the reference to EN 1267:1997 by the following:

EN 1267:2012, *Industrial valves. Test of flow resistance using water as test fluid*

Replace the reference to EN 12266-1:2003 by the following:

EN 12266-1:2012, *Industrial valves. Testing of metallic valves. Pressure tests, test procedures and acceptance criteria. Mandatory requirements*

Page 2, Clause 3

Add the following text after the first paragraph:

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

Convert all NOTES to "Note X to entry".

Replace 3.4 by the following:

### **3.4 maximum allowable pressure PMA**

maximum pressure occurring from time to time, including surge, that a component is capable of withstanding in service

[SOURCE: EN 805:2000, definition 3.1.1]

Replace the NOTE in 3.5 by the following:

Note 1 to entry: Adapted from EN 736-2.

Replace the NOTE in 3.7 by the following:

Note 1 to entry: Adapted from EN 12570.

Page 4, 4.1.2.2

Replace the subdivision c) of the list by the following:

- c) In accordance with EN 736-3, the valve shall be
  - either full bore, or
  - reduced bore, in which case the manufacturer shall specify the pressure loss factor or the minimum passage diameter in mm (see Table 2, item 9).

*Page 5, 4.2.1*

Replace the first sentence and the list by the following:

The valve body and bonnet/cover materials, selected from ISO 15493 or ISO 15494 or ISO 10931, shall be in accordance with the requirements of the relevant International Standard: ABS, PE, PP, PVC-C, PVC-U, PVDF.

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Replace Table 1 with the table below.

**Table 1 — Minimum values for rating factor  $f_r$  for a lifetime up to 25 years**

Temperature °C	Minimum rating factor $f_r$ for body material					
	ABS	PE	PP	PVC-C	PVC-U	PVDF
-40	1,0	1,0	—	—	—	a
-30	1,0	1,0	—	—	—	a
-20	1,0	1,0	—	—	—	1,0
-10	1,0	1,0	—	—	—	1,0
0	1,0	1,0	a	a	a	1,0
+5	1,0	1,0	a	a	a	1,0
10	1,0	1,0	1,0	1,0	1,0	1,0
20	1,0	1,0	1,0	1,0	1,0	1,0
25	1,0	1,0	1,0	1,0	1,0	1,0
30	0,8	0,76	0,85	0,85	0,80	0,9
40	0,6	0,53	0,70	0,65	0,60	0,8
50	0,4	0,35	0,55	0,50	0,35	0,71
60	0,2	0,24	0,40	0,35	0,15	0,63
70	—	—	0,27	0,25	—	0,54
80	—	—	0,15	0,15	—	0,47
90	—	—	0,08	a	—	0,36
100	—	—	a	a	—	0,25
110	—	—	—	—	—	0,17
120	—	—	—	—	—	0,12
130	—	—	—	—	—	a
140	—	—	—	—	—	a

NOTE These values do not coincide with the relevant factors for pipes and fittings.  
<sup>a</sup> A rating factor for this fluid temperature may be declared by the manufacturer.

Replace the text with the following:

**4.4.1 Face-to-face dimensions**

The face-to-face dimensions of valves for use in flanged pipe systems shall be selected from EN 558.

For all other types of end connection, the face-to-face dimensions shall be the responsibility of the manufacturer.

Replace the text with the following:

**4.6.1 Design strength**

For each valve body material, the design strength shall conform to ISO 9393-2:

- through the pressure test of the body;
- through the long-term behaviour test of the complete valve.

*Page 8, 4.6.3*

Replace the text with the following:

#### **4.6.3 Seat and packing/shell leaktightness**

The seat and packing/shell leaktightness shall be verified on all complete valves through seat and packing tests carried out in accordance with the requirements of ISO 9393-2.

The requirement for seat leaktightness is mandatory in all directions for multi-way valves.

*Page 9, 4.6.5*

Replace the text with the following:

#### **4.6.5 Permissible manual forces**

The lever and hand-wheel rim forces to open and fully close the valve shall not exceed the values given for the operating manual force  $F$  in EN 12570.

The maximum manual force  $F_s$  used to calculate the size of the operating element in EN 12570 may not be necessary.

All functional parts shall be serviceable after the application of the force  $F$ .

*Page 10, 5.2.2*

Replace the text with the following:

#### **5.2.2 Testing of materials**

The testing of the body and bonnet/cover raw materials shall be in accordance with ISO 1167-1.

*Page 11, 5.2.5*

Replace the text with the following:

#### **5.2.5 Long-term behaviour test of the complete valve**

The complete valve shall be tested in accordance with ISO 1167-1.