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**AMENDMENT 1**  
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**Industrial valves — Diaphragm valves  
of thermoplastics materials**

**AMENDMENT 1**

*Robinetterie industrielle — Robinets à membrane en matériaux  
thermoplastiques*

*AMENDEMENT 1*

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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*.

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# Industrial valves — Diaphragm valves of thermoplastics materials

## AMENDMENT 1

### Page 1, Clause 1

Add the following NOTE at the end of Clause 1:

NOTE 3 Different DN and/or PN can be declared by the manufacturer.

### Page 1, Clause 2

Date all the normative references.

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 fluid — 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 16138:2006/Amd.1:2019(E)

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

Replace the reference to ISO 5210:1991 by the following:

ISO 5210:2017, *Industrial valves — Multi-turn valve 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*

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*

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 5, 4.2.1

Replace the first sentence and the list by the following:

The valve body 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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Page 5, 4.3, Table 1

Replace Table 1 with the table below. [ISO 16138:2006/Amd 1:2019](https://standards.iteh.ai/catalog/standards/sist/95fd65b-af4d-486c-b1a5-)

<https://standards.iteh.ai/catalog/standards/sist/95fd65b-af4d-486c-b1a5->  
**Table 1 — Minimum values for rating factor  $f_r$  for a lifetime up to 25 years**

| Temperature<br>°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 |

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.

**Table 1** (continued)

| Temperature<br>°C | Minimum rating factor $f_t$ for body material |    |    |       |       |      |
|-------------------|---|----|----|-------|-------|------|
|                   | ABS   | PE | PP | PVC-C | PVC-U | PVDF |
| 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.

Page 6, 4.4.1

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.

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Page 7, 4.6.1

Replace the text with the following:

**4.6.1 Design strength** <https://standards.iteh.ai/catalog/standards/sist/95fd65b-af4d-486c-b1a5-8edddea763b7/iso-16138-2006-amd-1-2019>

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 7, 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.

Page 8, 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  $F$ .

**WARNING** — Forces  $F_s$  exceeding those given in EN 12570 could adversely influence the diaphragm.

*Page 9, 5.2.2*

Replace the text with the following:

### **5.2.2 Testing materials**

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

*Page 10, 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.

*Bibliography*

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Replace [4] by EU Directive 2014/68/EU, *Pressure Equipment Directive (PED)*.

Add the reference to EN 736-1 and EN 736-2.

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