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**Plastics piping systems for hot and  
cold water installations — Crosslinked  
polyethylene (PE-X) —**

**Part 5:  
Fitness for purpose of the system**

**AMENDMENT 1**

*Systèmes de canalisations en plastique pour les installations d'eau  
chaude et froide — Polyéthylène réticulé (PE-X) —*

*Partie 5: Aptitude à l'emploi du système*

*AMENDEMENT 1*

**PROOF / ÉPREUVE**

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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 2, *Plastics pipes and fittings for water supplies*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 155, *Plastics piping systems and ducting systems*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

A list of all parts in the ISO 15875 series can be found on the ISO website.

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# Plastics piping systems for hot and cold water installations — Crosslinked polyethylene (PE-X) —

## Part 5: Fitness for purpose of the system

### AMENDMENT 1

#### *Normative references*

Replace the reference to "EN 712" with the following:

ISO 3501, *Plastics piping systems — Mechanical joints between fittings and pressure pipes — Test method for resistance to pull-out under constant longitudinal force*

Replace the reference to "EN 713" with the following:

ISO 3503, *Plastics piping systems — Mechanical joints between fittings and pressure pipes — Test method for leaktightness under internal pressure of assemblies subjected to bending*

Replace the reference to "EN 921" with the following:

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

ISO 1167-2, *Thermoplastics pipes, fittings and assemblies for the conveyance of fluids — Determination of the resistance to internal pressure — Part 2: Preparation of pipe test pieces*

Replace the reference to "EN 12293" with the following:

ISO 19893, *Plastics piping systems — Thermoplastics pipes and fittings for hot and cold water — Test method for the resistance of mounted assemblies to temperature cycling*

Replace the reference to "EN 12294" with the following:

ISO 13056, *Plastics piping systems — Pressure systems for hot and cold water — Test method for leaktightness under vacuum*

Replace the reference to "EN 12295" with the following:

ISO 19892, *Plastics piping systems — Thermoplastics pipes and fittings for hot and cold water — Test method for the resistance of joints to pressure cycling*

#### *4.1, Table 1*

Replace the reference to "EN 921" with "ISO 1167-1 and ISO 1167-2".

Replace the reference to "EN 713" with "ISO 3503".

Replace the reference to "EN 712" with "ISO 3501".

## ISO 15875-5:2003/Amd.1:2020(E)

Replace the reference to "EN 12293" with "ISO 19893".

Replace the reference to "EN 12295" with "ISO 19892".

Replace the reference to "EN 12294" with "ISO 13056".

### 4.2, first sentence

Replace the reference to "EN 921" with "ISO 1167-1 and ISO 1167-2".

### 4.3, first sentence

Replace the reference to "EN 713" with "ISO 3503".

### 4.3, second paragraph

Replace "of nominal diameter greater than or equal to 32 mm" with "that are declared as being bendable by the system supplier."

### 4.4, first sentence

Replace the reference to "EN 712" with "ISO 3501".

### 4.5, first sentence

Replace the reference to "EN 12293" with "ISO 19893".

### 4.5, Table 5

Replace Table 5 with the following table:

**Table 5 — Test parameters for thermal cycling test**

	Application class			
	Class 1	Class 2	Class 4	Class 5
Maximum design temperature, $T_{max}$ , in °C	80	80	70	90
Highest test temperature, in °C	90	90	80	95
Lowest test temperature, in °C	20	20	20	20
Test pressure, in bars	$p_D$	$p_D$	$p_D$	$p_D$
a Each cycle shall comprise $15^{+1}_0$ min at the highest test temperature and $15^{+1}_0$ min at the lowest (i.e. the duration of one cycle is $30^{+2}_0$ min).				
b Each cycle shall comprise $150^{+5}_0$ min at the highest test temperature and $150^{+5}_0$ min at the lowest (i.e. the duration of one cycle is $300^{+10}_0$ min).				
c The test arrangement consists of min. 4 pipe connectors or min. 6 pipe connections for $d_n > 160$ mm. The free pipe length between the joints shall not be less than 150 mm. A representative set of fittings shall be used in the assembly.				

Table 5 (continued)

	Application class			
	Class 1	Class 2	Class 4	Class 5
Number of cycles for $d_n \leq 160$ mm <sup>a</sup>	5 000	5 000	5 000	5 000
Number of cycles for $d_n > 160$ mm <sup>b</sup>	500	500	500	500
Number of test pieces	One set of fittings in accordance with the configuration shown in ISO 19893 <sup>c</sup>			
<p><sup>a</sup> Each cycle shall comprise <math>15 \begin{smallmatrix} +1 \\ 0 \end{smallmatrix}</math> min at the highest test temperature and <math>15 \begin{smallmatrix} +1 \\ 0 \end{smallmatrix}</math> min at the lowest (i.e. the duration of one cycle is <math>30 \begin{smallmatrix} +2 \\ 0 \end{smallmatrix}</math> min).</p> <p><sup>b</sup> Each cycle shall comprise <math>150 \begin{smallmatrix} +5 \\ 0 \end{smallmatrix}</math> min at the highest test temperature and <math>150 \begin{smallmatrix} +5 \\ 0 \end{smallmatrix}</math> min at the lowest (i.e. the duration of one cycle is <math>300 \begin{smallmatrix} +10 \\ 0 \end{smallmatrix}</math> min).</p> <p><sup>c</sup> The test arrangement consists of min. 4 pipe connectors or min. 6 pipe connections for <math>d_n &gt; 160</math> mm. The free pipe length between the joints shall not be less than 150 mm. A representative set of fittings shall be used in the assembly.</p>				

4.5

Replace all references to "EN 12293" with "ISO 19893".

4.6, first sentence

Replace the reference to "EN 12295" with "ISO 19892".

4.6, Table 6

Replace [Table 6](#) with the following table:

Table 6 – Test parameters for pressure cycling

Characteristics	Requirement	Test parameters		Test method	
Pressure cycling	No leakage	Test temperature	23 °C		ISO 19892
		Number of test pieces	3		
			$d_n \leq 160$ mm	$d_n > 160$ mm	
		Frequency (cycles/min)	(30 ± 5)	(15 ± 3)	
		Number of cycles	10 000	5 000	
		Test pressure limits for a design pressure of:	Upper limit	Lower limit	
			4 bar	6,0 bar	
6 bar	9,0 bar		0,5 bar		
8 bar	12,0 bar		0,5 bar		
	10 bar	15,0 bar	0,5 bar		

4.7

Replace the reference to "EN 12294" with "ISO 13056".

4.7, Table 7

Replace the reference to "EN 12294" with "ISO 13056".

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