INTERNATIONAL STANDARD

ISO 15875-5

First edition
2003-12-01

AMENDMENT 1
2020-12

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

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

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Published in Switzerland

Foreword

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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).

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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".

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
Number of cycles for $d_n \leq 160$ mm[a]	5 000	5 000	5 000	5 000
Number of cycles for $d_n > 160$ mm[b]	500	500	500	500
Number of test pieces	One set of fittings in accordance with the configuration shown in ISO 19893[c]			

[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.

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	0,5 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".