

STANDARD INFORMATION

Standard Number: CSA B137.5

Standard Name: Crosslinked Polyethylene (PEX) Tubing Systems for Pressure Applications

Standard Edition and Issue Date: 6th Edition Dated January 1, 2017

Date of Revision: January 1, 2017

Date of Previous Revision of Standard: 5th Edition Revised January 1, 2016

EFFECTIVE DATE OF NEW/REVISED REQUIREMENTS

Effective Date: **February 16, 2019**

IMPACT, OVERVIEW, AND ACTION REQUIRED

Impact Statement: A review of all Listing Reports is necessary to determine which products comply with new/revise requirements and which products will require re-evaluation. **NOTE:** Effective immediately, this revised standard will be exclusively used for evaluation of new products unless the Applicant requests in writing that current requirements be used along with their understanding that their listings will be withdrawn on Effective Date noted above, unless the product is found to comply with new/revise requirements.

Overview of Changes:

- New section added for performing UV Exposure test and chlorine resistance test
- Added requirements for Push-Fit Fittings
- Added requirements for crimping rings
- Revised requirements for cross linking

Specific details of new/revise requirements are found in table below.

If the applicable requirements noted in the table are not described in your report(s), these requirements will need to be confirmed as met and added to your report(s) such as markings, instructions, test results, etc. (as required).

Client Action Required:

Information – To assist our Engineer with review of your Listing Reports, please submit technical information in response to the new/revise paragraphs noted in the attached or explain why these new/revise requirements do not apply to your product (s).

Current Listings Not Active? – Please immediately identify any current Listing Reports or products that are no longer active and should be removed from our records. We will do this at no charge as long as Intertek is notified in writing prior to the review of your reports.



STANDARD INFORMATION

CLAUSE	VERDICT	COMMENT
		<i>Additions to existing requirements are <u>underlined</u> and deletions are shown lined out below.</i>
4	Info	General requirements
4.2	Info	Materials
		<i>New section added;</i>
		PEX Material designation code
4.2.2		In accordance with ASTM F876, the PEX tubing material designation code shall consist of the abbreviation for the type of plastic (PEX) followed by four Arabic digits that describe short-term properties in accordance with applicable ASTM standards and as shown in Table 4.
		The first digit following the abbreviation for the type of plastic is for chlorine resistance tested in accordance with ASTM Test Method F2023.
		a) A “0” indicates that the PEX tubing either has not been tested for chlorine resistance or that the PEX tubing does not meet the minimum requirement for chlorine resistance.
4.2.2.1		b) A “1” indicates the PEX tubing has been tested and meets the ASTM F876 requirement for minimum chlorine resistance at the end use condition of 25% at 60°C and 75% at 23 °C.
		c) A “2” is reserved for future application.
		d) A “3” indicates that the PEX tubing has been tested and meets the ASTM F876 requirement for minimum chlorine resistance at end use condition of 50% at 60°C and 50% at 23 °C.
		e) A “4” is reserved for future application.
		f) A “5” indicates that the PEX tubing has been tested and meets the ASTM F876 requirement for minimum chlorine resistance at end use conditions of 100% of the time at 60 °C.
		The second digit following the abbreviation for the type of plastic is for demonstrated UV resistance of PEX material when tested in accordance with ASTM Test Method F2657 and evaluated in accordance with ASTM F876.
4.2.2.2		a) A “0” indicates that the PEX tubing either has not been tested for UV resistance or that the PEX tubing does not meet the minimum requirement for UV resistance.
		b) A “1” indicates the PEX tubing has been tested and meets the ASTM F876 requirement for minimum UV resistance of 1 month.
		c) A “2” indicates the PEX tubing has been tested and meets the ASTM F876 requirement for minimum UV resistance of 3 months.



d) A “3” indicates the PEX tubing has been tested and meets the ASTM F876 requirement for minimum UV resistance of 6 months.

Note: PEX tubing is not intended for use or storage in direct sunlight. UV resistance is intended to protect PEX tubing during installation time. See ASTM F876 Appendix X2 for more information.

4.2.2.3 The last two digits following the abbreviation for the type of plastic are the hydrostatic design stress for water at 23 °C in units of 100 psi with any decimal figures dropped. Where the hydrostatic design stress code contains less than two digits, a zero is used before the number.

4.2.5 ***New section added;***

Push-fit fittings

4.2.5.1 Connections achieved by push-fit fittings shall comply with ASSE 1061.

4.2.5.2 A tube support liner shall be used with PEX tubing systems, when required by the fitting manufacturer.

4.2.5.3 Push-fit fittings shall not be used with tubing that includes an ethylene vinyl alcohol (EVOH) layer or barrier unless specified by the manufacturer.

5 Info **Detailed requirements**

5.1 Info **Dimensions**

5.1.2 Info **Fittings**

New clause added;

5.1.2.2 Fittings shall comply with the requirements of the applicable reference fitting standard, this Standard and the applicable requirements of CSA B137.0. Reference fitting standards include ASTM F1807, F1865, F1960, F2080, F2098, F2159, and F2735.

New clause added;

5.1.2.3 Fittings without an applicable reference fitting standard and intended for use with PEX tubing shall be tested in accordance with Clause 5.1.7 for qualification with PEX tubing.

5.1.4 Info **Transition fittings**

New clause added;

5.1.4.4 Solder-joint ends shall be in compliance with ASME B16.18 for machined and cast alloy fittings and with ASME B16.22 for wrought copper fittings.

5.1.5 Info **Crimping rings and clamps**

5.1.5.2 The dimensions and tolerances of copper crimping rings shall be in compliance with the values specified in ~~Tables 6 and 7~~ ASTM F1807 when measured in accordance with Clause 6.9 of CSA B137.0.



5.1.5.3		The dimensions and tolerances of stepless one-ear clamps shall be in compliance with the values specified in Table 8 <u>ASTM F2098</u> when measured in accordance with Clause 6.9 of CSA B137.0.
5.1.6		<i>New section added;</i> Cold-expansion fittings
5.1.6.1		Cold expansion fittings require the expansion of the pipe or tube prior to insertion of the fitting. Examples of cold expansion fitting standards are ASTM F1865, F1960, and F2080.
5.1.6.2		The dimensions and tolerances of cold-expansion fittings shall be in compliance with the values of the reference Standard when measured in accordance with Clause 6.9 of CSA B137.0.
5.1.6.3		Each insert end of a fitting shall have a tubing stop that limits the depth of insertion of the fitting into the tubing.
5.1.7		<i>New clause added;</i> Fitting qualification Fittings shall meet the system performance requirements of this Standard (Clauses 5.2.2, 5.3, and 5.9) and the applicable fitting standard, if any, when tested with each specific PEX tubing with which it is intended to be used.
6	Info	Test methods
6.5	Info	Degree of crosslinking
6.5.1		Note: This Clause provides a test method for measuring the average degree of crosslinking over the tubing wall thickness. The degree of crosslinking shall be determined as follows: a) A piece of PEX tubing shall be placed in a lathe with automatic feeding. A strip consisting of the full wall thickness shall be shaved and shall constitute a test specimen. The strip thickness shall be approximately 0.1 mm <u>0.10 +/- 0.05 mm</u> and shall be obtained by setting the lathe feeding accordingly. b) The specimens shall be tested in accordance with ASTM D2765, Method B; however, those requirements relating to test specimen preparation shall not be mandatory. c) For the purposes of this Standard, the degree of crosslinking, V, shall be calculated as follows: $V = (100 \text{ percent} - \text{extract percent})$ Where extract percent = the solvent extraction, %, as calculated in accordance with Section 13 of ASTM D2765



Tubing

PEX tubing shall be marked in accordance with Clause 7.1 of CSA B137.0, with the following additional requirements:

- 7.1
- a) Pipe and tubing for reclaimed water distribution shall be marked as specified in CSA B128.1.
 - b) Pipe and tubing for ground source geothermal systems shall be marked as specified in the CAN/CSA-C448 Series.
 - c) PEX tubing material designation code as per Clause 4.2.2.
 - d) Where applicable, the standard designation(s) of the fitting system(s) for which the tubing is recommended by the tubing manufacturer and that is specifically qualified for use with PEX in accordance with Clause 5.1.7.

New table added;

Material designation code cells

Table 4

Property	Standard	0	1	2	3
Chlorine resistance	F2023	Not tested or rated	75% at 23 °C (73 °F) and 25% at 60 °C (140 ° F)	Reserved	50% at 23 °C (73 °F) and 50% at 60 °C (140 °F)
Minimum UV resistance	F2657	Not tested or rated	1 month	3 months	6 months
HDS for water at 23 °C (73°F)	—	—	—	—	—

4	5	6	7	8	9
Reserved	100% at 60 °C (140 ° F)	—	—	—	—
—	—	—	—	—	—
—	—	630	—	800	—

CUSTOMERS PLEASE NOTE: This Table and column “Verdict” can be used in determining how your current or future production is or will be in compliance with new/revised requirements.