



Standard Specification for Mechanical Cold Expansion Insert Fitting With Compression Sleeve for Cross-linked Polyethylene (PEX) Tubing¹

This standard is issued under the fixed designation F1865; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope*

1.1 This specification covers mechanical cold expansion insert fittings with compression sleeve suitable for use with cross-linked polyethylene PEX plastic tubing in $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, and 1 in. and larger nominal diameters that meet the requirements of Specifications [F876](#) and [F877](#). These fittings are intended for use in 100 psi (689.5 kPa) cold and hot water distributions systems operating at temperatures up to and including 180° F (82°C). Included are the requirements for materials, workmanship, dimensions, and markings to be used on the fittings and compression sleeves

1.2 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

[B16/B16M](#) Specification for Free-Cutting Brass Rod, Bar and Shapes for Use in Screw Machines

[B140/B140M](#) Specification for Copper-Zinc-Lead (Red Brass or Hardware Bronze) Rod, Bar, and Shapes

[B283](#) Specification for Copper and Copper-Alloy Die Forgings (Hot-Pressed)

[D1600](#) Terminology for Abbreviated Terms Relating to Plastics

[D2122](#) Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings

[E18](#) Test Methods for Rockwell Hardness of Metallic Materials

[F412](#) Terminology Relating to Plastic Piping Systems

[F876](#) Specification for Crosslinked Polyethylene (PEX) Tubing

[F877](#) Specification for Crosslinked Polyethylene (PEX) Hot- and Cold-Water Distribution Systems

2.2 ASME Standards:³

[B 1.20.1](#) Pipe Threads General Purpose (inch)

[B 16.18](#) Cast Copper Alloy Solder Joint Pressure Fittings

[B 16.22](#) Wrought Copper and Copper Alloy Solder Joint Pressure Fittings

2.3 NSF International Standards:⁴

[NSF 14](#) Plastic Piping Components and Related Materials

[NSF 61](#) Drinking Water System Components-Health Effects

2.4 MSS Standard:⁵

[SP-104](#) Wrought Copper Solder Joint Pressure Fittings

3. Terminology

3.1 *Definitions*—Definitions are in accordance with Terminology [F412](#) and abbreviations are in accordance with Terminology [D1600](#) unless otherwise indicated.

4. Classification

4.1 This specification covers one class of mechanical cold expansion insert fittings with compression sleeve suitable for use with PEX tubing that meets the requirements of Specification [F876](#) and [F877](#).

5. Materials and Manufacture

5.1 *Fittings*—The fittings shall be made from one of the following metals:

¹ This specification is under the jurisdiction of Committee [F17](#) on Plastic Piping Systems and is the direct responsibility of Subcommittee [F17.10](#) on Fittings.

Current edition approved Dec. 1, 2009. Published January 2010. Originally approved in 1998. Last previous edition approved 2009 as F1865–02a(2009). DOI: 10.1520/F1865-09.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ Available from American Society of Mechanical Engineers (ASME), ASME International Headquarters, Three Park Ave., New York, NY 10016-5990, <http://www.asme.org>.

⁴ Available from NSF International, P.O. Box 130140, 789 N. Dixboro Rd., Ann Arbor, MI 48113-0140, <http://www.nsf.org>.

⁵ Available from Manufacturers Standardization Society of the Valve and Fittings Industry (MSS), 127 Park St., NE, Vienna, VA 22180-4602, <http://www.mss-hq.com>.