



**Summary of Substantive Changes
between the 2018a and 2021 editions of
ASTM F1960 “Cold Expansion Fittings with PEX Reinforcing Rings for Use with
Cross-linked Polyethylene (PEX) and
Polyethylene of Raised Temperature (PE-RT) Tubing”**

Presented to the IAPMO Standards Review Committee on August 9, 2021

General: The change to this standard may have an impact on currently listed products. The substantive changes are:

- Adding a note for fittings made from Unreinforced Sulfone Plastic (SP) to clarify requirements for hot and cold water distribution (see Note 1 Section 5.1.2.2)
- Changed the Stabilizer requirements to be in accordance with ASTM F876 (see Section 7.1.3)

Section 2, Referenced documents: The following standards were added or deleted as follows:

2.1 ASTM Standards

[D2837 Test Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials or Pressure Design Basis for Thermoplastic Pipe Products](#)

[F2159 Specification for Plastic Insert Fittings Utilizing a Copper Crimp Ring, or Alternate Stainless Steel Clamps for SDR9 Crosslinked Polyethylene \(PEX\) Tubing and SDR9 Polyethylene of Raised Temperature \(PE-RT\) Tubing](#)

[F2735 Specification for Plastic Insert Fittings For SDR9 Cross-linked Polyethylene \(PEX\) and Polyethylene of Raised Temperature \(PE-RT\) Tubing](#)

~~[D3035 Specification for Polyethylene \(PE\) Plastic Pipe \(DRPP\) Based on Controlled Outside Diameter](#)~~

[F3348 Specification for Plastic Press Insert Fittings with Factory Assembled Stainless Steel Press Sleeve for SDR9 Cross-linked Polyethylene \(PEX\) Tubing and SDR9 Polyethylene of Raised Temperature \(PE-RT\) Tubing](#)

2.5 ISO Standards:

[ISO 9080 Plastics piping and ducting systems – Determination of the long-term hydrostatic strength of thermoplastics materials in pipe form by extrapolation](#)

[ISO 12162 Thermoplastics materials for pipes and fittings for pressure applications –Classification, designation and design coefficient](#)

Section 5, Materials and Manufacture:

5.1 Cold expansion fittings shall be made from one of the following materials:

5.1.1 Brass:

5.1.1.1 Machined Brass—Machined brass fittings shall be made from material meeting the requirements of one of the following listed below:

Specification Alloy

ASTM B16/B16M UNS C36000

ASTM B140/B140M UNS C31400



ASTM B371/B371M UNS C69300, [C69850](#)

.....

5.1.1.2 Forged Brass—Forged brass fittings shall be made from material meeting the requirements of Specification B283/ B283M, Copper Alloy UNS Nos. C27450, C27451, C27453, C35330, C36500, C37700, C46400, [C46500](#), C48600, C49260, C49340, C69300, [or C69850](#).

.....

5.1.2.2 Unreinforced Sulfone Plastic (SP)—Fittings shall be molded from sulfone plastic (SP) as specified in Specification D6394. The material shall be unreinforced polysulfone (group 01, class 1, grade 2), or polyphenylsulfone (group 3, class 1, grade 2.) or unreinforced polyphenylsulfone/polysulfone blends (group 04, class 1, grade 2) [or reworked plastic in accordance with 5.1.2.3.](#)

[NOTE 1—Since fittings specified by this specification will be used in hot-and-cold water plumbing systems \(also noted for Specifications F2159, F2735, and F3348\), a material used to manufacture fittings in accordance with this specification must demonstrate qualities consistent with that application in addition to the performance requirements of this specification. Those qualifying characteristics include, but are not limited to, an established hydrostatic design basis \(HDB\) in accordance with Test Method D2837 or ISO 9080/ ISO 12162 compliant minimum required stress \(MRS\) and a demonstration of resistance to the long-term effects of those chemicals normally found in potable water at the maximum temperature stated in this specification.](#)

Section 7, Performance Requirements

7.1.3 Stabilizer ~~Migration-Resistance~~ [Functionality](#)—~~When tested in accordance with 11.3, the time t_2 , shall be at least 50% of the time, t_1 .~~ [The material used to make the PEX rings shall meet the stabilizer functionality requirements of Specification F876.](#)