



**Summary of Substantive Changes
between the 2018a and 2019b editions of
ASTM F1807 “Metal Insert Fittings Utilizing a Copper Crimp Ring for
SDR9 Cross-linked Polyethylene (PEX) Tubing and
SDR9 Polyethylene of Raised Temperature (PE-RT) Tubing”**

Presented to the IAPMO Standards Review Committee on May 17, 2021

General: The change to this standard should not have an impact on currently listed products. The substantive changes are:

- Revised the title to include alternate stainless steel clamps
- Expanded the scope to include alternate stainless steel clamps (see Sections 1.1, 5.3, 6.1, 6.2, 6.3, 6.4, 7.1, and 9)
- Added language to the scope for clarification of different types of connections for different materials (see Sections 1.1.1 through 1.1.5)

Title was revised to include Alternate Stainless Steel Clamps as follows:

Standard Specification for Metal Insert Fittings Utilizing a Copper Crimp Ring, [or Alternate Stainless Steel Clamps](#), for SDR9 Cross-linked Polyethylene (PEX) Tubing and SDR9 Polyethylene of Raised Temperature (PE-RT) Tubing

Section 1, Scope: Expanded the scope to include alternate stainless steel clamps as follows:

1. Scope

1.1 This specification covers metal insert fittings and copper crimp rings, [or alternate stainless steel clamps](#), for use with cross-linked polyethylene (PEX) tubing in [Nominal Tubing Size \(NTS\)](#) 3/8, 1/2, 5/8, 3/4, 1, 1-1/4, 1-1/2, and 2 ~~in nominal diameters~~ [sizes](#) that meet the requirements for Specification F876 or [Specification](#) F3253, ~~and or~~ for use with polyethylene of raised temperature (PE-RT) tubing in [NTS](#) 3/8, 1/2, 5/8, 3/4, ~~and 1-in., and~~ 1-1/4, ~~1-1/2, and 2~~ [in nominal diameters sizes](#) that meet the requirements of Specification F2623 ~~and or Specification~~ F2769. These fittings are intended for use in 100 psi (689.5 kPa) cold- and hot-water distribution systems operating at temperatures up to, and including, 180 °F (82 °C). ~~In addition, the fittings covered by this specification are intended for use in, but not limited to, residential and commercial systems, reclaimed water, fire protection, municipal water service lines, radiant heating and cooling systems, hydronic distribution systems, snow and ice melting systems, geothermal ground loops, district heating, turf conditioning, compressed air distribution and building services pipe. The requirements for materials, workmanship, dimensions, and markings to be used on the fittings and rings are also included.~~

[1.1.1 When used with PEX tubing in accordance with Specification F876, the fittings covered by this specification are intended for use in, but not limited to, residential and commercial, hot- and cold-potable water distribution systems, reclaimed water, fire protection, municipal water service lines, radiant heating and cooling systems, hydronic distribution systems, snow and ice melting systems, geothermal ground loops, district heating, turf conditioning, compressed air distribution and building services pipe.](#)



[1.1.2 When used with PEX tubing in accordance with Specification F3253, the fittings covered by this specification are intended for use in residential and commercial hydronic heating and cooling systems.](#)

[1.1.3 When used with PE-RT tubing in accordance with Specification F2769, the fittings covered by this specification are intended for use in residential and commercial, hot- and cold-potable water distribution systems.](#)

[1.1.4 When used with PE-RT tubing in accordance with Specification F2623, the fittings covered by this specification are intended for use in general fluid transport, including hydronics and irrigations systems.](#)

[1.1.5 The requirements for materials, workmanship, dimensions, and markings to be used on the fittings and rings are also included.](#)

Section 2, Referenced documents: ASTM F2098 was added as a referenced document as follows:

2.1 ASTM Standards

[F2098 Specification for Stainless Steel Clamps for Securing SDR9 Cross-linked Polyethylene \(PEX\) Tubing and SDR9 Polyethylene of Raised Temperature \(PE-RT\) to Metal Insert and Plastic Insert Fittings](#)

Section 5, Materials and Manufacture:

[5.3 Alternate Stainless Steel Clamps—Clamps shall be made from stainless steel in conformance with all requirements of Specification F2098.](#)

Section 6, General Requirements:

6.1 When fittings [utilizing copper crimp rings or utilizing alternate stainless steel clamps](#) manufactured according to this specification are intended for use with ~~the~~ PEX tubing, the following sections of Specification F877 [or Specification F3253](#) constitute a part of this specification.

6.1.1 Requirements,

6.1.2 Test Methods, and

6.1.3 Retest and Rejection.

~~6.2~~ [6.1.4](#) In addition, when a section with a title identical to that referenced in 6.1 appears in this specification, it contains additional requirements that supplement those appearing in Specification F877 [or Specification F3253](#).

~~6.3~~ [6.2](#) When fittings [utilizing copper crimp rings or utilizing alternate stainless steel clamps](#) manufactured according to this specification are intended for use with PE-RT tubing, the following sections of Specification F2769 [or Specification F2623](#) constitute a part of this specification:

~~6.3.1~~ [6.2.1](#) Requirements,

~~6.3.2~~ [6.2.2](#) Test Methods, and

~~6.3.3~~ [6.2.3](#) Retest and Rejection.

~~6.4~~ [6.2.4](#) In addition, when a section with a title identical to that referenced in ~~6.3~~ [6.2](#) appears in this specification, it contains additional requirements that supplement those appearing in Specification F2769 [or Specification F2623](#).

~~6.5~~ [6.3](#) Dimensions—Any randomly selected fitting or fittings, and crimp ring or crimp rings, [and alternate stainless steel clamp or clamps](#) shall be used to determine dimensions. Measurements shall be made in accordance with Test Method [D2122](#), except when determining diameters, which is done by making measurements at four locations spaced approximately 45° apart around the circumference. Inspection and gauging of solder joint ends shall be in accordance with ASME B16.18, ASME B16.22, or MSS SP-104.



~~6.6.4~~ **6.6.4** General—All performance tests shall be performed on assemblies of fittings, crimp rings, and PEX tubing or PE-RT tubing. Fittings and crimp rings shall meet the material and dimensional requirements of this specification. Alternate stainless steel clamps shall meet the material and dimensional requirements of Specification F2098. PEX tubing shall meet the requirements of Specification F876 or Specification F3253. PE-RT tubing shall meet the requirements of Specification F2623 or Specification F2769. Assembly of test specimens shall be in accordance with 9.1.1. Use separate sets of assemblies for each performance test requirement.

Section 7, Dimensions:

7.1 Dimensions and Tolerances—The dimensions and tolerances of fittings and crimp rings shall be as shown in Fig. 1, Fig. 2, Fig. 3, and Fig. 4, when measured in accordance with 6.3. When used, alternate stainless steel clamps shall conform to the dimensional specifications of F2098.

Section 9, Assembly: Added requirements for clamp joints as follows:

9.2 Clamp Joints—Insert fittings shall be joined to PEX tubing by deforming and locking a stainless steel clamp around the outer circumference of the tubing, forcing the tubing material into annular spaces formed by the ribs on the fitting.

Metal insert fittings shall meet the material and dimensional requirements of this specification. PEX tubing shall meet the requirements of Specification F876. PE-RT tubing shall meet the requirements Specifications F2623 and F2769 or a combination thereof. Clamps shall meet the dimensional and material requirements of Specification F2098.

9.2.1 Clamping Procedure—The clamping procedure shall be as follows: slide the clamp onto the tubing, insert the ribbed end of the fitting into the end of the tubing until the tubing contacts the shoulder of the fitting or tube stop. The clamp shall then be positioned on the tubing so the edge of the clamp is 1/8 to 1/4 in. (3.2 to 6.4 mm) from the end of the tube. The ratcheting clamping tool shall be used to close the clamp. The tool shall not release until the clamp is properly closed.

9.2.2 Clamping Tools—Clamps and ratcheting hand tools from different manufacturers have similar appearances.

Clamps shall be installed using the tools and calibration methods recommended by the clamp manufacturer.