



## Product Update

### Advantages of Using the ASTM F-1807 Crimp Joining System with Superpex Pipe

#### Cost considerations:

Use of the ASTM F1807 crimp joining method is fast and efficient using simple brass and copper components and user friendly tools from various manufacturers. Other types of PEX joining systems may involve more expensive fittings that are only usable with the pipe manufacturer's pipe and involve tools unique to that system only. It is estimated that the time to make one connection using an ASTM F1807 system is less than 1/3 of the time needed to make an expansion type joint. These can be important factors in keeping you competitive in your marketplace.

#### Installation Temperatures:

The installation of an ASTM F1807 crimp joining system will be the same at any temperature. Other fitting systems that involve the expansion of PEX pipe may be more costly in cold weather due to the difficulty in expanding the pipe. This difficulty can also lead to joints being less than perfect and potentially requiring call backs.

#### Reliability of the ASTM F1807 crimp joining method with Superpex pipe:

Today, approximately 85-90% of all joints made with ASTM 876/877 pipe are made with ASTM F1807 crimp type joints. While some manufacturers have marketed expansion type fittings covered in ASTM F1960 and ASTM F 2080 as a more reliable option, it is appropriate to keep in mind that, of the many millions of crimp joints in use today, virtually no field failures have been attributed to the crimp joint design.

The insert crimp ring system with copper crimp rings was the first system to become a standard in ASTM and CSA. All other approved fitting types have adopted the severe requirements in the original crimp style standard.

Some of the very stringent tests in the standards for the ASTM F1807 crimp fitting system with PEX pipe include:

**Thermocycling test:**

As defined in ASTM F877, this test method describes a pass-fail test for thermally cycling PEX tubing and compression fittings assemblies over a critical temperature range for a selected number of cycles while subjected to a nominal internal pressure. This test method provides a measure of resistance to failure due to the combined effects of differential expansion and creep for PEX tubing and compression fittings intended for continuous use up to and including 180° F. The cycles are as such:

- Water immersion at 180° F for 2 minutes
- Air immersion at ambient for 2 minutes
- Water immersion at 60° F for 2 minutes
- Air immersion at ambient temperature for 2 minutes
- The system is pressurized at 100 psi and cycled 1000 times.

**Pressure and Temperature Capability:**

Assemblies are tested at 210° F and 150 psi for 720 hours.

**Hydrostatic Sustained Pressure:**

Test temperature is 180° F and the pressure varies with nominal size, e.g. for ½” it is 195 psi, for 5/8 and larger it is 190 psi. The time duration is 1000 hours.

The ASTM F1807 type of crimp system has been tested to determine the straight line force to separate PEX tubing from the metal insert fitting fastened with copper crimp rings. Sizes 3/8” through ¾” were tested All samples (6 each) terminated with a break at the tubing. None of the fittings pulled out of the tubing for any of the samples. Average pounds of force and extension in inches value are reported in the table below.

<b><u>Size</u></b>	<b><u>Force in Pounds</u></b>	<b><u>Extension in Inches</u></b>
3/8”	288.3	14.97
1/2”	339.0	18.20
3/4”	702.8	8.28
1”	1072.0	N/A

**Interchangeability:**

Approximately 17 different manufactures of brass and copper insert fittings and rings conform to the ASTM F1807 standard and are listed on the NSF website. The use of this type of system by a plumber allows interchangeability not available with other manufacturers’ types of joining methods for cost and convenience benefits.

**Water Flow:**

The slightly smaller ID of the ASTM F1807 fitting has such a small effect on pressure drop that unless many fittings are installed on a single run, it is negligible.