ICC-ES PMG Listing

PMG-1012

Effective date: August 1, 2011
This listing is subject to re-examination in one year.

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CSI: Division: 23 00 00—HEATING, VENTILATING, AND AIR CONDITIONING (HVAC)
Section: 23 21 13—Hydronic Piping

Product certification system:

The ICC-ES product certification system includes testing samples taken from the market or supplier's stock, or a combination of both, to verify compliance with applicable codes and standards. The system also involves factory inspections, and assessment and surveillance of the supplier's quality system.

Product: Uponor/Wirsbo hePEX™ Tubing, Uponor AQUAPEX® Tubing, and Fittings for Use in Radiant Heating Systems

Listee: Uponor Incorporated
5925 148th Street West
Apple Valley, Minnesota 55124
www.uponor.com

Compliance with the following codes:

2012, 2009, and 2006 International Fuel Gas Code® (IFGC)
2012, 2009, and 2006 *International Mechanical Code*® (IMC)
2012, 2009, and 2006 *International Residential Code*® (IRC)
2009 IAPMO *Uniform Mechanical Code*® (UMC)*

*Uniform Mechanical Code® is a registered trademark of IAPMO.

Compliance with the following standards:

ASTM F 876 Standard Specification for Crosslinked Polyethylene (PEX) Tubing
ASTM F 877 Standard Specification for Crosslinked Polyethylene (PEX) Plastic Hot- and Cold-Water Distribution Systems
ASTM F 1960-04a
LC1004 PMG Listing Criteria for PP, PEX, PEX-AL-PEX, and PP-AL-PP Piping, Tube and Fittings Used in Radiant Heating and Water Supply Systems

Identification:

Tubing: The tubing is marked at intervals of 3 feet (914 mm) with the product designation (Uponor/Wirsbo hePEX™ or Uponor AQUAPEX®), nominal tube size, standard dimension ratio (SDR 9), temperature and pressure ratings [100 psi at 180/F (689 kPa at 82/C)], "ASTM F 876," ASTM F 877 designations, production code, name of the inspection agency (NSF International), and either the ICC-ES evaluation report number (ESR-1529) and/or the ICC-ES PMG listing mark.

Fittings: ProPEX fittings are marked with the nominal size, name of the inspection agency (NSF International), product code and "ASTM F 1960." The PEX compression ring for ProPEX fittings is marked with the nominal size and "ASTM F 1960." Brass compression fittings, QS20 fittings and compression rings are marked with the nominal size and "ASTM F 877." Fittings and compression rings are also marked with the Wirsbo trademark:

Packaging for the fittings includes the Uponor Inc. company name, product name, model number and either the ICC-ES evaluation report number (ESR-1529) or the ICC-ES PMG listing mark.

Installation:

Radiant piping must be installed in accordance with the manufacturer's published installation instructions and IMC Chapter 12, IRC Chapter 21 or IAPMO UMC Chapter 12, as applicable; and the installation is subject to approval by the code official having jurisdiction. The system must be installed by Uponor Inc.–trained installers. (See Figures 2, 3 and 4.)

Active radiant loops must be formed from continuous lengths of tubing, from manifold or in-slab header assembly supply to the return. Radiant loops, mat assemblies, and modules must be connected to the hot water source through manifolds, which allow the flow to the radiant loops, mats, or modules to be regulated. Tubing and fittings must not be installed or stored in locations exposed to direct sunlight. Tubing and fittings must be protected from physical damage with an oversized flexible sleeve at structural mass penetrations and when the tube is uncovered. Annular spaces between sleeves and tubing must be filled or caulked in an approved manner. The tubing must be installed using mounting brackets and installation hardware, which are provided with the product, in accordance with the manufacturer's published installation instructions. The manufacturer's published installation instructions must be furnished to the code official upon request. The tubing must be maintained at the proposed operating pressure during placement of concrete, or during backfilling when used in buried applications. Clearances from heat producing equipment must be in accordance with Chapter 5 of the *International Fuel Gas Code®,* or Chapter 82 of the IAPMO UMC, as applicable. The outside tube diameter is the nominal diameter plus 1/8 inch (3.2 mm). When the system is embedded in concrete, tubing must be covered by a minimum ¾ inch (19.1 mm) of concrete, and installation must comply with Chapter 19 of the *International Building Code®* (IBC). When tubing is installed over polystyrene boards, the boards must comply with the Chapter 26 of the *International Building Code®* (IBC) or Chapter 3 of the *International Residential Code®* (IRC), as applicable. Minimum bending radius is eight times the outside diameter of the PEX tubing. Horizontally laid pipe must be secured in such a manner that temperature induced expansion and contraction are accommodated.

Only Uponor's proprietary fittings noted in this listing must be used in the Uponor System. Fittings must be attached to tubing in strict accordance with the Uponor Inc. installation instructions, which are provided with the product.

Clearances from heat-producing equipment must be in accordance with Chapter 5 of the *International Fuel Gas Code®* (IFGC), Chapter 13 of the *International Residential Code®* (IRC) or Chapter 8 of the IAPMO UMC, as applicable.

Models: **Tubing:**

Uponor AQUAPEX® Tubing is available in nominally $^{3}/_{8}$-, $^{1}/_{2}$-, $^{5}/_{8}$-, and $^{3}/_{4}$-inch-diameter (10, 13, 16 and 19 mm) sizes and in 300- to 1,000-foot-long (91.4 to 304.8 m) coils.

Uponor/Wirsbo hePEX™ Tubing is identical to the Uponor AQUAPEX tubing except for the inclusion of a barrier layer. The Uponor/Wirsbo hePEX tubing is available in nominally $^{5}/_{16}$-, $^{3}/_{8}$-, $^{1}/_{2}$-, $^{5}/_{8}$-, and $^{3}/_{4}$-inch-diameter (8, 10, 13, 16 and 19 mm) sizes and in 250- and 1,000-foot-long (76.2 and 304.8 m) coils.

Fittings (see Figure 1):

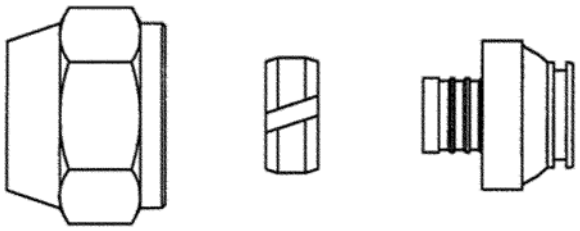
ProPEX Fittings are insert-type fittings manufactured of either brass or sulfone plastic, and are used with an external PEX compression ring. The fittings are available in nominally $^{3}/_{8}$-, $^{1}/_{2}$-, $^{5}/_{8}$-, and $^{3}/_{4}$-inch-diameter (10, 13, 16 and 19 mm) sizes. The ProPEX® fittings comply with ASTM F 1960.

Brass Compression-type Fittings are supplied in $^{3}/_{8}$-, $^{1}/_{2}$-, $^{5}/_{8}$-, and $^{3}/_{4}$-inch-diameter (10, 13, 16 and 19 mm) sizes, and consist of a nut, compression ring and insert. The compression fittings, when used with Uponor AQUAPEX or Uponor/Wirsbo hePEX tubing, comply with ASTM F 877.

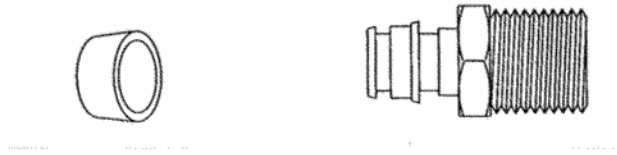
QS20 Brass Compression-type Fittings are $^{5}/_{16}$ inch (8 mm) in diameter, are for use with $^{5}/_{16}$-inch-diameter (8 mm) Uponor/Wirsbo hePEX tubing, and consist of a nut, compression ring and insert. The fittings, when used with $^{5}/_{16}$-inch-diameter (8 mm) Uponor/Wirsbo hePEX tubing, comply with ASTM F 877.

Conditions of Listing:

1. Details on the design and installation of the heating system must be submitted to the code official for approval.
2. The tubing must be maintained at the greater of $1^{1}/_{2}$ times the working pressure or 100 psi (689-4 kPa) during placement of concrete cover for hydronic piping system.
3. The tubing installation must be pressure-tested for leaks in the presence of the code official or the official's designated representative.
4. When installation is in fire-resistive assemblies, evidence of compliance with IBC Section 712 or UBC Sections 709 and 710, as applicable, must be provided to the code official.
5. Any potable water connections must be protected against backflow from the hydronic heating system.
6. The minimum cold bending radius is eight times the outside tube diameter.
7. The tubing is limited to hydronic applications using potable water as the transfer fluid.
8. The products are manufactured in Apple Valley, Minnesota, under a quality control program with inspections by NSF International (AA-633).



COMPRESSION FITTING



PROPEX FITTING AND PEX RING

FIGURE 1—FITTINGS

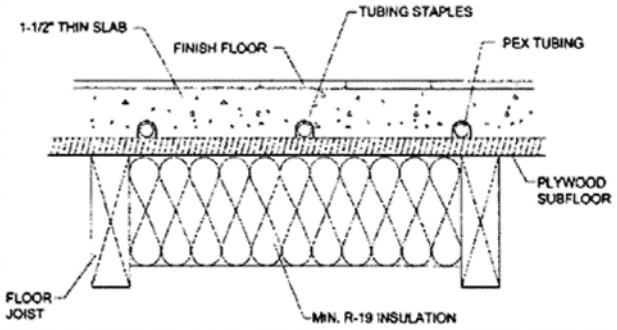


FIGURE 2—POURED UNDERLAYMENT DETAIL

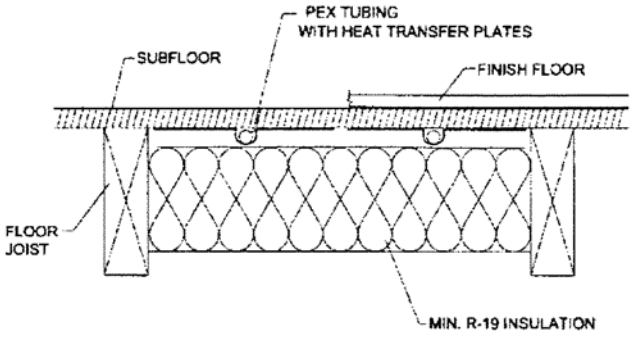


FIGURE 3—HEAT EMISSION PLATES DETAIL

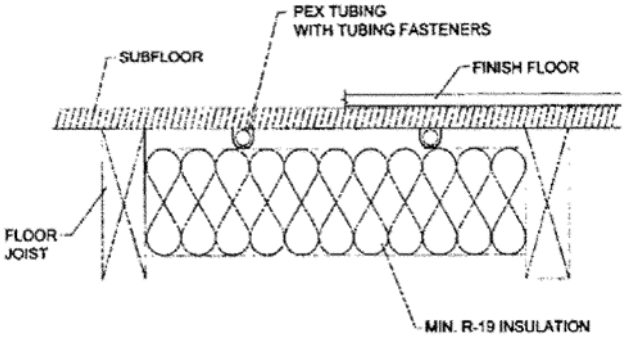


FIGURE 4—JOIST HEATING DETAIL

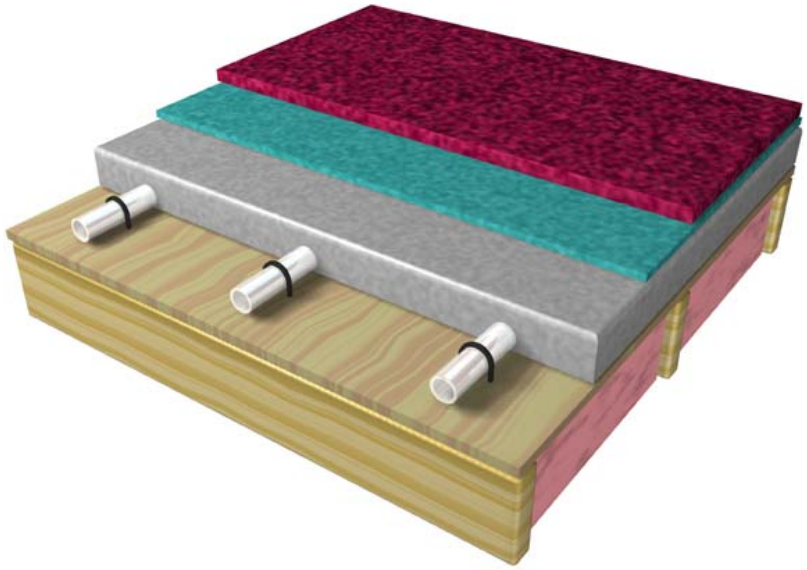


FIGURE 5

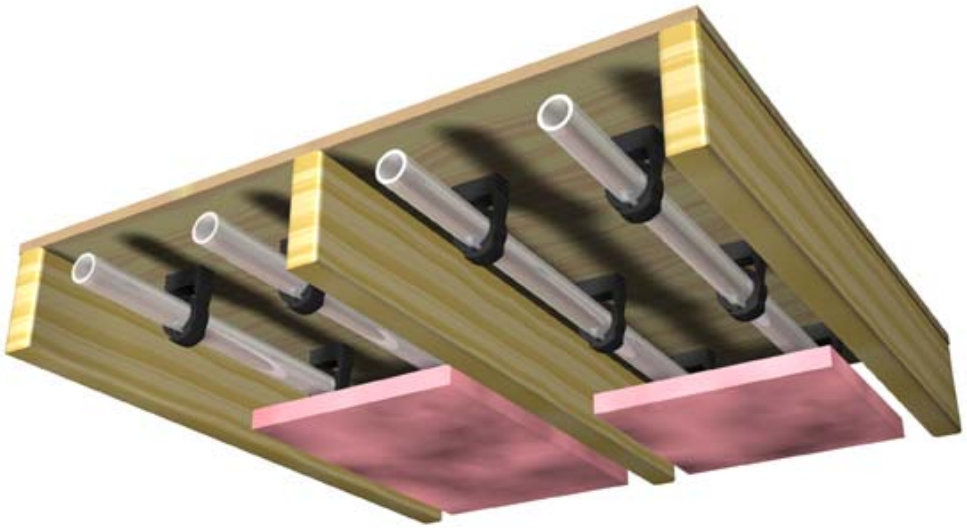


FIGURE 6

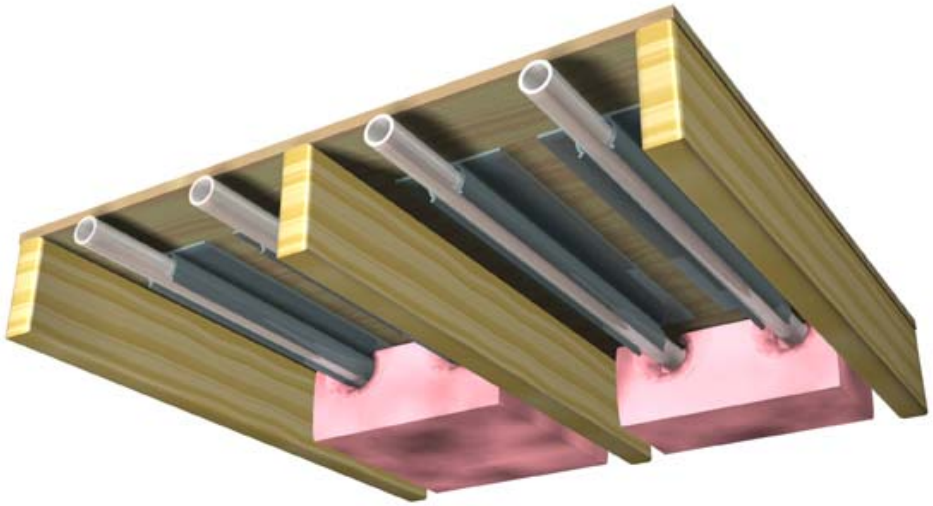


FIGURE 7