

Position Paper

Installation of PE-RT Fittings Within and Under Concrete Slabs

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Position

Inherent in the typical applications of plumbing and mechanical systems, fittings for polyethylene of raised temperature resistance (PE-RT) tubing are sometimes required to be installed in access-restricted locations such as within walls, above ceilings, and within or under poured concrete slabs.

Thanks to the flexible nature of PE-RT tubing, most PE-RT piping systems need not be designed using an abundance of fittings or joints. However, when fittings are required within such locations, including those embedded within concrete slabs, either for repair purposes or as per design (e.g., hydronic heating/cooling distribution headers), the Plastics Pipe Institute (PPI) supports the position of PE-RT tubing and fitting manufacturers that permit such installations. Installation of fittings within or under concrete slabs must be strictly in accordance with the manufacturer's instructions. PPI recommends pressure testing of piping systems per local code requirements and per manufacturer's instructions prior to embedding them within or under concrete slabs.

PPI recommends the removal of code restrictions against such installations, allowing individual manufacturers the authority to permit this practice where deemed appropriate.

Background

As verified by the stringent requirements of international product standards ASTM F2623¹, ASTM F2769², and CSA B137.18³, fittings intended for use with PE-RT tubing and the joints/connections which are created are stronger than the tubing itself and are designed to withstand extreme temperatures, pressures, and thermocycles. For instance, fittings for PE-RT plumbing tubing are pressure-rated for sustained pressure of 100 psi at 180°F (690 kPa at 82°C) and are performance-tested to verify no leakage within 1,000 thermocycles between 60°F and 180°F (see ASTM F2769).

Examples of specific PE-RT fitting standards are ASTM F1807, F1960, F2080, F2159, F3347, and F3348. Each of these fitting designs are tested to the identical performance requirements of ASTM F2623 (hydronics), ASTM F2769 (plumbing), and CSA B137.18. Fittings tested and certified to these standards demonstrate a high level of reliability, performance, and longevity.

¹ ASTM F2623 "Standard Specification for Polyethylene of Raised Temperature (PE-RT) Systems for Non-Potable Applications" published by ASTM International, West Conshohocken, PA; ² ASTM F2769 "Standard Specification for Polyethylene of Raised Temperature (PE-RT) Plastic Hot- and Cold-Water Tubing and Distribution Systems" published by ASTM International, West Conshohocken, PA; ³ CSA B137.18 "Polyethylene of Raised Temperature Resistance (PE-RT) Tubing Systems for Pressure Applications" published by CSA Group, Toronto, ON