

Position Paper

Installation of CPVC Fittings Within and Under Concrete Slabs

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Position

Inherent in the typical applications of plumbing, fire protection and mechanical systems, fittings for chlorinated polyvinyl chloride (CPVC) pipe and tubing are sometimes required to be installed in access-restricted locations such as within walls, above ceilings, and within or under poured concrete slabs.

Most CPVC systems need not be designed using an abundance of fittings or joints. However, when fittings are required within such locations, including those below or embedded within concrete slabs either for repair purposes or as per design (e.g., plumbing connections), the Plastics Pipe Institute (PPI) supports the position of CPVC pipe, 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 D2846¹ and CSA B137.6², among others, solvent cement fittings intended for use with CPVC pipe and tubing are designed to withstand extreme temperatures, pressures, thermocycles, and other exposures. For instance, fittings for CPVC 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. CPVC solvent cement fittings tested and certified to these standards demonstrate a high level of reliability, performance, and longevity.

CPVC fittings are not harmed by direct contact with concrete. Expansion and contraction are not a concern for the pipe and fittings embedded in concrete. Proper design considerations must be incorporated in the portion of the system that is not embedded in concrete. Care must be taken to avoid abrasion damage to pipe and fittings from contact with wire mesh or rebar.

¹ ASTM D2846 "Standard Specification for Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Hot- and Cold-Water Distribution Systems" published by ASTM International, West Conshohocken, PA

² CSA B137.6 "Chlorinated polyvinylchloride (CPVC) pipe, tubing, and fittings for hot- and cold-water distribution systems" published by CSA Group, Toronto, ON