TECH TIP

SPRAYING POLYURETHANE FOAM TO CPVC PIPES

As a result of two separate and extensive studies, the proper application of sprayed polyurethane foam, both open and closed cell, is not an issue from either a chemical compatibility or exposure to exothermic heat during or after the foaming process.

SPFA systems house members, and Lubrizol (a leading supplier to CPVC resins) conducted a joint study that conclusively shows that sprayed polyurethane foam does not have a chemical compatibility issue and does not cause environmental stress cracking (ESC). This SPFA study included high-pressure, two-component open- and closed-cell SPF, as well as low-pressure, two-component closed-cell formulations using a wide range of halogenated flame retardants, which had been identified as a potential source of ESC. It should be noted CPVC pipes can be damaged from mechanical stress and the foam applicator should take all necessary steps to prevent any movement or stress to the pipe itself while working in proximity to pipes.

A separate study by an SPFA-member systems house and Lubrizol concluded that both closed-cell and open-cell SPF may be applied to CPVC piping without damage caused by the SPF's exotherm (heat of reaction). Open- and closed-cell spray foams were applied to over 50 different pipe samples of Blazemaster® sprinkler pipes ranging from ¾" to 1½" diameter and Flow Guard Gold® plumbing pipes from ½" to 1"diameter (both manufactured by Lubrizol). Pipes were tested:

- Water-filled and dry (empty);
- At internal pipe pressures in excess of typically seen in the field;
- Using SPF thicknesses above recommended application rates.

The study concluded that SPF may be applied to any CPVC pipe size, both standard plumbing and sprinkler types.

When applying SPF to CPVC piping, SPFA recommends the following precautions:

- CPVC piping should be depressurized during SPF application
- Closed-cell SPF should be applied using the manufacturer's recommended maximum pass thickness and minimum time between passes.
- Open-cell SPF should be applied using the manufacturer's recommended maximum pass thickness.

- When applying SPF around sprinkler heads, the sprinkler head should be masked to prevent SPF or overspray from entering and/or interfering with the operable parts of the sprinkler head.

Full details of the ESC study can be found at the SPFA website www.sprayfoam.org and a Compatibility and Exotherm Position statement can be found on the Lubrizol website at:

http://www.lubrizol.com/cpvc/documents/blazemaster-blaster/spring-2010-blazemaster-blaster-newsletter.pdf

The California State Fire Marshal also issued a bulletin in May 2014 addressing concerns regarding the use of SPF in contact with CPVC piping:
http://osfm.fire.ca.gov/informationbulletin/pdf/2014/IB_SprayPolyurethaneFoamApplication_5-27-2014.pdf