

TechTip I4 – SPF and CPVC Piping

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.

In 2009, 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_SprayPolyurethaneFoamApplication5-27-2014.pdf

ABOUT THE SPRAY POLYURETHANE FOAM ALLIANCE (SPFA)

Founded in 1987, the Spray Polyurethane Foam Alliance (SPFA) is the voice, educational and technical resource, for the spray polyurethane foam industry. A 501(c)6 trade association, the alliance is composed of contractors; manufacturers and distributors of polyurethane foam, related equipment and protective coatings; and consultants who provide inspections and other services. The organization supports the best practices and the growth of the industry through several core initiatives, which include educational programs and events, the SPFA Professional Installer Certification Program, technical literature and guidelines, legislative advocacy, research, and networking opportunities. For more information, please use the contact information and links provided in this document. www.sprayfoam.org

DISCLAIMER

THIS DOCUMENT WAS DEVELOPED TO AID CONTRACTORS AND INSTALLERS IN THE PROPER APPLICATION OF SPRAY-APPLIED POLYURETHANE FOAM SYSTEMS. THE INFORMATION PROVIDED HEREIN, BASED ON CURRENT CUSTOMS AND PRACTICES OF THE TRADE, IS OFFERED IN GOOD FAITH AND BELIEVED TO BE TRUE TO THE BEST OF SPFA'S KNOWLEDGE AND BELIEF.

THIS DOCUMENT IS MADE AVAILABLE "AS IS" AND WITHOUT WARRANTIES OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, SATISFACTORY QUALITY, AND NON-INFRINGEMENT. TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, SPFA, ITS OFFICERS, DIRECTORS, EMPLOYEES, AUTHORIZED AGENTS AND VOLUNTEERS DISCLAIM ANY AND ALL LIABILITY OR RESPONSIBILITY FOR ANY LOSSES, DAMAGES, COSTS AND/OR INJURIES OF ANY KIND OR NATURE ARISING OUT OF OR RESULTING FROM THE USE AND/OR RELIANCE UPON THE CONTENTS OF THIS DOCUMENT.

DOCUMENT HISTORY

Date	Sections Modified	Description of Changes
July 2016	New Document	
January 2021	New Format	New TechTip Format

