

U.S. Fire Administration / National Fire Academy

# Coffee Break Training

## Topic: Thermal Barriers for Nonmetallic Sprinkler Pipe

**Learning objective:** The student shall be able to identify minimum thermal barrier requirements for nonmetallic pipe installed in aboveground portions of fire sprinkler systems.

Chlorinated polyvinyl chloride (CPVC) and cross-linked polyethylene (PEX) are specially listed non-metallic plastics for some automatic sprinkler system installations.

Unless CPVC is protected by ordinary temperature-rated quick-response or residential sprinklers under very specific conditions, the nonmetallic sprinkler pipe must be installed with a thermal barrier between the room and the pipe. PEX always must be protected. The barrier is intended to protect the pipe and fittings from thermal failure.

Thermal protection for **PEX** consists of one layer of 3/8-inch (9.5 mm) gypsum wallboard, a suspended membrane ceiling with lay-in panels or tiles weighing at least 0.35 pounds per square foot (1708 kg/m<sup>2</sup>) when installed with metallic support grids, 1/2-inch (12.7 mm) plywood soffits, or one layer of 1/2-inch (12.7 mm) plywood.



Lay-in ceiling tiles will provide an approved thermal barrier for CPVC.

**CPVC** thermal protection includes one layer of 3/8-inch (9.5 mm) gypsum wallboard, a suspended membrane ceiling with lay-in panels or tiles weighing at least 0.35 pounds per square foot (1708 kg/m<sup>2</sup>) when installed with metallic support grids, or 1/2-inch (12.7 mm) plywood soffits. In residential occupancies, one layer of 1/2-inch (12.7 mm) plywood may be used.

Regardless of thermal protection, neither PEX nor CPVC is intended to be installed in combustible concealed spaces where sprinklers are required by the NFPA standards.

For additional information, refer to NFPA 13, *Standard for the Installation of Sprinkler Systems*; NFPA 13-D, *Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes*; and for the latest thermal barrier and listing information, visit [www.ul.com](http://www.ul.com) for the “Fire Protection Equipment Directory” categories VIWT and VIXR.