U.S. Fire Administration / National Fire Academy

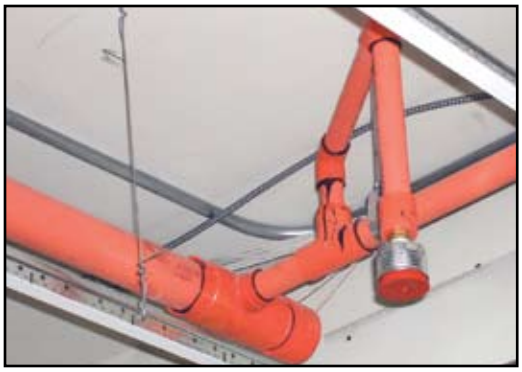
Coffee Break Training

Topic: Nonmetallic Sprinkler Pipe in Aboveground Applications

Learning objective: *The student shall be able to identify where nonmetallic pipe may be installed in aboveground portions of fire sprinkler systems.*

For many years, metal pipe or tube (iron or copper) were the only materials listed for fire sprinkler systems. Now, three nonmetallic plastics are recognized by NFPA sprinkler standards: chlorinated polyvinyl chloride (CPVC), cross-linked polyethylene (PEX), and polybutylene (PB), although PB is no longer in production.

There are limits, though, where these materials may be installed. Always refer to the manufacturer's product listing information for the most up-to-date information.



PEX is listed only for multipurpose piping systems (potable and fire protection) in one- and two-family dwelling and manufactured homes. The pipe must be installed with a thermal barrier between the room and the PEX.

CPVC may be used for wet pipe sprinkler systems in residential occupancies up to and including four stories, light hazard occupancies, and air plenums. CPVC may not be installed in combustible concealed spaces where sprinklers are required, and the expected ambient temperature of any space should not exceed 150 °F (65.6 °C).

CPVC should be protected by a thermal barrier, unless it is installed below a smooth, flat, horizontal ceiling or protected by sprinklers as follows:

Sprinkler	Orientation	Temperature Rating	Location
Quick Response	Pendent	135-170 °F (57.2 to 76.7 °C)	Within 8 inches of ceiling
Residential	Pendent	135-170 °F	Maximum spacing 15 feet
Quick Response	Sidewall	135-170 °F	Within 6 inches of ceiling and 4 inches of sidewall
Residential	Sidewall	135-170 °F	Maximum spacing 14 feet

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 latest thermal barrier and listing information, visit www.ul.com for the "Fire Protection Equipment Directory" categories VIWT and VIXR.