

U.S. Fire Administration / National Fire Academy

Coffee Break Training

Topic: Insulating Non-Metallic Pipe

Learning objective: The student shall be able to state one method for protecting a residential wet pipe sprinkler system from freezing, and identify luminaire types listed for direct contact with thermal insulation.

In climates where low temperatures threaten the integrity of plastic sprinkler pipe in residential attics, it is important that adequate protection be provided to prevent freezing.

A common protective method is to cover the sprinkler pipe with insulation while allowing convective heat from conditioned spaces below to keep the fire protection water in a liquid state. It is important that the insulation be installed tightly against the joists so cold air doesn't migrate from the unheated attic to the pipe.

In areas where attic temperatures drop below 0 °F (-18 °C), an additional layer of insulation should be provided. In all cases, the insulation should be installed in accordance with the insulation manufacturer's recommendations.



In this illustration, it also is interesting to note that the light fixture appears to be in direct contact with the Kraft paper backing. One might consider this as a potential fire hazard due to the heat emitted from the lamp. This particular fixture, though, is a Type IC rated fixture, and is Underwriters Laboratories (UL) listed for use in direct contact with thermal insulation.

According to the National Electrical Code Handbook, "A recessed luminaire (fixture) that is identified for contact with insulation, Type IC, shall be permitted to be in contact with combustible materials at recessed parts, points of support, and portions passing through or finishing off the opening in the building structure."

Non-Type IC recessed luminaires (fixtures) that are not identified for contact with insulation must have all recessed parts spaced at least 1/2-inch (13 mm) from combustible materials. The support points and the trim finishing off the opening are permitted to be in contact with combustible materials.

For additional information, refer to NFPA 13D, *Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes*, Chapter 8; the NFPA 70, *National Electrical Code*[™], Chapter 4; and the *National Electrical Code Handbook*.