Coffee Break Training - Fire Protection Series

Automatic Sprinklers: Batt Insulation for Sprinkler Protection

No. FP-2011-42 October 18, 2011

Learning Objective: *The student shall be able to identify means to insulate sprinkler pipe using batt insulation.*

As colder weather arrives, concerns increase over the likelihood of frozen sprinkler pipes. Several options exist to reduce the chance of freezing, and one of the more popular methods is illustrated in today's Coffee Break Training: installation of fiberglass batt insulation over the sprinkler pipe.

The annexes to NFPA 13D, *Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes* and NFPA 13R, *Standard for the Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height* include illustrations to explain how to install batts to protect sprinkler pipe from cold air.

According to a recently published study by the Fire Protection Research Council, "tenting" batt insulation over the pipe is a common method used as an alternative to antifreeze when insulating sprinkler piping sections that are run within any unconditioned space, such as an attic or an exterior wall.

Fiberglass batt insulation is one method for protecting sprinkler pipe from freezing and it must be installed in accordance with the insulation manufacturer's instructions. *Photo courtesy Keith Heckler, Rockville Fire Department, MD.*

There must be sufficient insulation between the unconditioned space and the sprinkler piping to keep the water temperature within the piping at or above 40 °F (4.4 °C). In order for it to be effective, the insulation must be continuous over the pipe, with the assumption that any heat lost through the insulation will be replaced by the conditioned space. In working with one insulation manufacturer, the researchers stated that as long as the following conditions were met, there would be no issue with insulation protecting the sprinkler piping from freezing:

- Keep the insulation over the pipe and not under it.
- Do not allow gaps in the insulation or compress it in any way.
- Keep the insulation in place.
- Create an air gap above the pipe so that the pipe is surrounded by warm air and not in direct contact with the insulation.
- Keep a substantial amount of pipe in contact with the ceiling so it is heated from below.

Insulation manufacturers provide technical guidance for insulating sprinkler pipe and should always be consulted so the insulation installer is using the correct technique for the product.

For additional information with excellent illustrations, refer to *Sprinkler Insulation: A Literature Review* at www.nfpa.org/assets/files//PDF/Research/RFSprinklerInsulation.pdf See also NFPA 13D or 13R.