



Protecting CPVC Piping Against Freezing

System Design is the first step and the key to properly protecting a system from cold temperatures. CPVC piping is only approved for use in wet pipe fire sprinkler systems and antifreeze should be used as a measure of last resort. So how should CPVC piping be protected against freezing?

Design

Using the construction features of the building to protect piping from freezing is best accomplished in the design phase. Locating piping on interior walls offers natural insulation. The need for building heat must be clearly detailed on sprinkler plans and in bid specifications, especially when this work is outside your scope of work.

Insulation

Poor or missing insulation is a leading cause of freeze related losses. Missing batt insulation, blown-in insulation that has settled, field changes from specified insulation have all led to large dollar water damage claims.

Because requirements for insulation differ around the country and effectiveness varies greatly with the type of insulation and quality of the installation, it is critical to address insulation needs on plans and in bid specifications. Clearly define who is responsible for insulation specifications and installation. Do not forget to provide the General Contractor written notification of requirements to insulate the areas in which sprinkler piping is installed. Also, communicate any concerns noted during the project, in writing, to the General Contractor.

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Antifreeze Solutions

Antifreeze *must never be used* as a substitution for good design and proper insulation. In addition to being more expensive to install, antifreeze systems require ongoing tests of the solution quality (NFPA 25, 5.3.4, NFPA 13D, 4.2.4).

If it is necessary to use an antifreeze solution, consider:

- A loop rather than filling the entire system with antifreeze
- Follow NFPA 13 guidelines on backflow devices and expansion chambers
- Use only glycerin-water solutions
- Purchase pre-mixed solutions, or always mix solutions in new, clean containers to avoid contamination and compatibility issues.

Conclusion

There are often times where system design is challenged by pipe and fittings that are located in areas where cold temperatures are likely. A properly designed sprinkler system, without the need for antifreeze solution, is the best protection against freezing of CPVC piping. *The extra time spent designing around the potential for freezing, will save frustration and expense of water discharge problems down the road.*

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