

Special Edition

The NFSA Media Center is being upgraded. Therefore, there will not be a Video EOD released today. Instead, this special edition of TechNotes has been prepared.

Winter officially began a couple of weeks ago. For some parts, this means the cold weather is settling in the area. As all bundle up to endure the cold temperatures, it is a good time to remind everyone of the rules for fire sprinkler systems related to antifreeze. The following information details the limited areas where antifreeze can be used until a listed antifreeze solution is available as well as regulations related to handling existing antifreeze systems.

After reviewing the following information, if antifreeze is not a viable option for the scenario, then SQ 164 (January/February 2011) may offer assistance with information on alternatives to using antifreeze in a fire sprinkler system. As everyone tries to stay warm this winter, remember to keep the water of the fire protection systems warm too, or at least 40°F (4°C).

Antifreeze Guidance

When is the use of antifreeze permissible in sprinkler systems under NFPA 13, NFPA 13R, and/or NFPA 13D systems?

Antifreeze systems installed prior to September 30, 2012 may be maintained provided the antifreeze concentrations do not exceed those stated in the standards. Systems installed after September 30, 2012 may not use antifreeze unless it is listed for use in

Lubrizol

**LISTED
AND APPROVED
FOR MORE
APPLICATIONS
THAN ANY OTHER
NON-METALLIC
FIRE SPRINKLER
SYSTEM**



BlazeMaster
FIRE SPRINKLER SYSTEMS

[LEARN MORE >](#)

sprinkler systems subject to some exceptions for certain ESFR sprinklers in NFPA 13 and also in NFPA 13D with the approval of the AHJ. The listing process has been setup by the laboratories, but at this time no antifreeze solution has completed the process yet.

The changes in the antifreeze requirements are reflected in the 2013 edition of NFPA 13 and have been made retroactive to the 2010 edition by means of a Temporary Interim Amendment. Although no official amendment has been made by NFPA to the 2007 or prior editions, it would be prudent not to ignore the information that is available. The hazard with antifreeze does not change depending on which edition of the standard is used for installation purposes. Failure to acknowledge these limitations could create a potential liability as the information is readily available in the newer editions. It is rare for NFPA to process a TIA on documents other than the most current published edition. Although this issue is a large concern, the NFPA chose to only process the TIA on the 2010 Edition, recognizing that the newest published edition represents the current positions based on information presented to the Committee.

Summary of Antifreeze Rules for New Systems

- A new system being designed in accordance with NFPA 13 - New antifreeze systems are required to use listed solutions under NFPA 13 (2013) 7.6.2.1. The one exception under 7.6.2.2 is that premixed antifreeze solutions of propylene glycol are permissible with ESFR sprinklers where they are listed for such use in a specific application.
- A new system being designed in accordance with NFPA 13R - New antifreeze systems are required to use listed solutions under NFPA 13R (2013) 5.4.2.
- A new system being designed in accordance with NFPA 13D - New antifreeze systems are permitted to be glycerine or propylene glycol if the antifreeze is limited to the portion of the building subjected to freezing conditions and if the AHJ has been convinced that no other option is available as per NFPA 13D (2013) 9.2.2.2. In

**Upcoming Technical
Tuesdays**

Jan 20
Cloud Ceilings - The
Latest Research

Feb 17
Ceiling Elevation
Changes in Storage
Occupancies

Register Here

these cases, the solutions are limited to 48% glycerine and 38% propylene glycol.

Summary of Antifreeze Rules for Existing Systems

- An existing system that was installed in accordance with NFPA 13 - The rules of new editions of NFPA 13 do not apply to existing systems installed under older editions. Maintenance of existing systems is generally performed in accordance with NFPA 25, which allows existing antifreeze systems that were installed under older editions of NFPA 13 to have the solution replaced with propylene glycol or glycerine with the following limitations from NFPA 25 (2014) 5.3.4.2.1:
 - a) The system would have to have been installed prior to September 30, 2012.
 - b) The solution is limited in concentration to 50% glycerine or 40% propylene glycol.
 - c) Antifreeze systems with solutions in excess of 38% glycerine or 30% propylene glycol have to be justified by an approved risk assessment conducted by a "qualified person" and approved by the AHJ.
 - d) Systems with glycerine and propylene glycol can only continue in place until September 30, 2022. At that time, they will either need to be replaced with a listed antifreeze solution (of which there are none yet) or a system that complies with NFPA 13 such as a wet pipe system with pipes in a heated space, a dry-pipe system or a preaction system.
- An existing system that was installed in accordance with NFPA 13R - The situation is the same as with existing systems installed in accordance with NFPA 13. See above.
- An existing system that was installed in accordance with NFPA 13D - Systems installed in accordance with NFPA 13D do not need to meet NFPA 25. Therefore, these systems are not required to follow the rules discussed above



View older issues in the "Member's Only" section

Upcoming In-Class Seminars

Jan 21-22 San Marco, TX
Sprinkler Protection for Storage

Jan 29 Augusta, ME
Understanding, Applying & Enforcing NFPA 25

Feb 5-6 Cromwell, CT
ITM: Navigating Through the Liability Minefield

[Register Here](#)

for existing systems installed in accordance with NFPA 13 or NFPA 13R. Instead, NFPA 13D has its own section to deal with antifreeze in existing systems in NFPA 13D (2013) 9.2.2.1.1 and 9.2.2.2* .

- a) Listed antifreeze solutions are allowed for replacement in glycerine systems up to 50% solutions and propylene glycol systems up to 40% solutions.
- b) Unlisted antifreeze solutions are allowed for replacement of glycerine at a maximum concentration of 48 percent by volume or propylene glycol at a maximum concentration of 38 percent by volume for pipe supplying sprinklers in a specific area of the dwelling unit where acceptable to the AHJ.

Did You Know??

The NFSA keeps a member of the Engineering Department staff on duty every business day to answer your technical questions live. We call this the expert of the Day (EOD) program and it is available to our members by phone, fax or e-mail. Call us at (845) 878-43200 and press 5, or you can send a fax to [\(845\) 878-4215](tel:8458784215), or you can e-mail us at eod@nfsa.org. Last year we answered more than 2600 requests for assistance.

