

EAST GRAND FIRE PROTECTION DISTRICT NO. 4

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To: Fire Sprinkler Service Contractors, Installers & Owners.
From: East Grand Fire Prevention Bureau.
Re: Changes to NFPA 13, 13D & 13R concerning antifreeze solutions.
Date: November 17, 2021

On August 5th, 2010, the NFPA Standards Council enacted 3 TIA's (Tentative Interim Amendments) to the NFPA 13 series of standards concerning concentrations of antifreeze solutions in sprinkler systems installed in dwelling areas. This decision came after a series of tests conducted by Underwriters Laboratories and the NFPA's Fire Protection Research Foundation. These tests found that with some concentrations of glycerin or propylene glycol antifreeze solutions and depending on several delivery pressure & sprinkler head variables, a condition can exist in which the antifreeze solution may increase the intensity of fire conditions before being suppressed by the water in the rest of the system. These TIA's call for the exclusion of antifreeze solutions in new sprinkler installations, however, do not specifically address existing systems.

The NFPA Standards Council defers back to a recommendation in their July 6th, 2010, Safety Alert regarding the treatment of existing systems. Like the TIA's the safety alert recommends a very prudent course of action and asks that all existing systems be drained of antifreeze and refilled with water only. It was the NFPA's stated intent to continue to develop a more permanent solution to this problem and to define more clear guidance for existing systems as well as those in freezing climates like we experience in East Grand Fire Dist.

Prior to the approval of the 3 TIA's the NFPA standards recommend the use of the antifreeze solutions, depending on the chemical being used and level of freeze protection being sought, to exceed 50% concentration by volume and up to as much as a 70% concentration. The research conducted found that these concentrations can be ignited under certain conditions when discharged from the sprinkler system.

After reviewing this department found that the tests conducted showed that when below certain concentrations the antifreeze solutions behaved as desired and did not ignite or increase the severity of the fire. Therefore, after reviewing the results and as the Authority Having Jurisdiction this department requires the following:

1. During the next required service, for all systems a detailed measurement is taken to determine the concentration of solution after draining back the antifreeze sections to help ensure proper mixing.
2. Newly introduced solutions shall be listed factory premixed antifreeze.
3. For all systems installed prior to 9/30/2012, listed antifreeze solutions shall not be required until 9/30/22 where one of the following conditions is met:
 - a. The concentration of the antifreeze solution shall be limited to 30% propylene glycol by volume or 38% glycerin by volume
 - b. Antifreeze systems with concentrations in excess of 30% but not more than 40% for propylene glycol by volume and 38% but not more than 50% glycerin by volume shall be permitted based on extreme sub-zero winter temperatures experienced annually in East Grand Fire District.
4. That all contractors furnish this department with written documentation as to the date and concentrations found in systems they are servicing and or installing in East Grand Fire District.
5. That all contractors tag the sprinkler riser with this same information as required by NFPA.
6. That all new systems are required to use listed factory premixed solutions only!
7. *When any questions or discrepancies arise with new or existing systems the Codes and Standards adopted by the State of Colorado's Division of Fire Protection and Control take precedence.



Dennis K. Soles
Fire Prevention Bureau
East Grand Fire Protection District