

Antifreeze Solutions for Use In Fire Sprinkler Systems, UL 2901

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Abstract:

Historically, antifreeze solutions have been used in fire sprinkler systems for decades when a system or a portion of the system is subject to freezing. The National Fire Protection Association (NFPA) fire sprinkler standards describe the limitations associated with using antifreeze solutions in sprinkler systems. In 2009, there was a report of an incident in which an antifreeze solution that discharged from a sprinkler system may have ignited when exposed to a fire in a residential facility.

Research was conducted to better understand whether certain concentrations of antifreeze in sprinkler systems could, in fact, contribute to a fire or create a hazardous condition when the solution was discharged. Based upon this extensive research, NFPA enacted emergency changes to its installation standards to prevent injury, loss of life and property damage. The current editions of NFPA 13, 13R and 13D generally require the use of listed antifreeze solutions for newly installed sprinkler systems. In addition, NFPA 25 requires that glycerine and propylene glycol antifreeze solutions currently used in installed sprinkler systems be replaced with a listed antifreeze solution by September 30, 2022.

In establishing certification requirements for antifreeze solutions, UL addressed several potential concerns regarding the use of antifreeze beyond potential ignition. UL has published UL 2901, the Outline of Investigation for Antifreeze Solutions for Use in Fire Sprinkler Systems. Solutions covered by these requirements are intended for use in accordance with NFPA 13, 13R, 13D, and 25.

UL 2901 includes requirements for the solution that address its stability, effects when exposed to certain materials associated with sprinkler systems, human health and environmental impact, fire performance, hydraulic characteristics, and marking and installation specifications. The purpose of the paper and presentation is to provide information on the requirements used in UL 2901 to evaluate antifreeze solutions for use in fire sprinkler system.