Fire Suppression Services Incorporated
3802 South 2300 East, Salt Lake City. UT 84109. Ph (801) 277-6464

Use of AntiFreeze solutions **ED**

2012-2022
RFC-009

REQUEST FOR COMMENT

In regard to the year 2022 and buildings with anti-freeze systems installed.

It is a Federal offence to make your own antifreeze chemical.

The initial Safety incident occurred 2009
The Initial Antifreeze Safety Alert was issued 2010-July
All antifreeze systems expire on September-30, 2022

All Antifreeze solutions must be purchased as a pre-mixed UL-listed solution.
This includes both the Glycerin and Glycol types.
Incorrect solutions allow for combustion to occur, and fuel the fire.

All AF type solutions must be premixed by a UL listed manufacturer.
As of the 2015-NFPA-25 and the 2015-NFPA-13;

And...

- No Fire Suppression company is permitted to mix its own solution.
- NFPA 13 and 13R systems must be provided with a certificate indicating the type of antifreeze, the concentration and the freezing point.
- Factory premixed antifreeze solutions of propylene glycol in excess of 40% by volume are permitted in ESFR (Early Suppression Fast Response) systems where the sprinklers are listed for such use in a application
- Documentation must be affixed to the system describing the brand of premix used, along with other data.

So:
The two solutions that can be purchased for these systems have the following properties:

	Propylene Glycol 38%	**Glycerin** 48%
Freeze Point	0°	-15°
Flow Point	-15°	-25°
Burst Point	-50°	-50°

(All temperature are in the legacy Fahrenheit scale)

These fluids must be manufactured by a UL listed plant.

Begin Loop

IF Year not-equals 2022 THEN
IF the current 'system solution' is
Propylene Glycol and tests at or higher than +3°
OR:
IF the current 'system solution' is

Glycerin and it tests at or higher than -5°,
THEN
Drain & Replace the fluid
ELSE
IF the system has a higher concentration
AND is testing better than these freeze point (example -20°)
THEN that solution can stay in the system until 2022.
ELSE
Drain out AND Change all older solutions to an approved manufacturer-supplied UL mixture; per NFPA-25 & 13 mandates.
ELSE
IF year equals 2022 AND date equal sept-30
THEN
REPLACE all antifreeze systems with an alternate means of freeze protection
endIF
endIF etcetera
End Loop

Start Loop
IF UTAH
Replace all antifreeze systems with alternate method, by year 2022, Sept-30.
End Loop
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Options:

1. Use an approved Glycerin solution.
    a. Cost $700-$9,000
2. Convert system to a Dry System. ($10k-25k)
3. Insulate & maintain the temperature in the space above 42 degrees F
4. Install 'dry' heads off a wet-pipe system.
    a. Max. sprig length of 4ft may be a limiting factor
5. A combination of any of the above.
    a. NB: heat-trace is still not accepted.

Note:

As at 2018, All NEW fire systems are required to use LISTED antifreeze solutions.
As of writing, 2018-09, THERE ARE NO ANTIFREEZE SOLUTIONS LISTED FOR USE.
Hence the NFPA has effectively banned the use of antifreeze solutions in new fire systems.
NFPA25 has been updated to give an expiration date on all antifreeze solutions in EXISTING fire sprinkler systems of 2022, September-30. AND: on or BEFORE (i.e. 'by') that date all antifreeze systems must be replaced with an alternate means of freeze protection. (see 'Options' above).

Chemical Antifreeze in fire sprinkler systems **ENDS 2022-Sept-30**

Converting is cumbersome and costly; It may be easier to install a new dry pipe system. (hydro-re-calcs)

Glycerin

1. Is a sugar.
2. When heated, it absorbs much more thermal energy than water, at the same temperature.
    a. So, when it comes in contact with skin, (or any combustible,) it delivers up a more severe burn to the skin it contacts, than does water/steam at the same temperature.
3. Is combustible
4. Used in antifreeze
5. Used in Nyquil, Robitussin.

Propylene Glycol

1. From the Oxidation of Propylene
    a. Byproduct of the fractionation of Oil (Petro-Chemical)
2. Used as chemical feedstock
3. Used in antifreeze
4. Produces the ‘smoke’ in electronic cigarettes
5. De-ices aircraft
6. Used in Nyquil, Robotussin.
7. Unsafe for cats

Polypropylene Glycol

1. From the Oxidation of Propylene
    a. Byproduct of the fractionation of Oil (Petro-Chemical)
2. Inkjet, Paintballs, laxatives

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Ethylene glycol:

1. It is a poison
2. Is combustible
3. It is used in vehicles as an AF.
4. It kills cats.
5. It must never be used where there is any chance of it contaminating potable water or food processing equipment.

2012 UT State, FireCode Ammendments, in regard to Antifreeze.

(12) IFC, Chapter 9, Section 903.3.1.1 is amended by adding the following subsection:
"903.3.1.1.2 Antifreeze Limitations. Antifreeze used in a new automatic system installed in accordance with NFPA 13 may not exceed a maximum concentration of 38% premixed propylene glycol or 48% premixed glycerin, and the capacity of the system may not exceed 150 gallons.

(13) IFC, Chapter 9, Section 903.3.1.2 is amended by adding the following subsection:
"903.3.1.2.2 Antifreeze Limitations. Antifreeze used in a new automatic sprinkler system installed in accordance with NFPA 13R may not exceed a maximum concentration of 38% premixed propylene glycol or 48% premixed glycerin, and the capacity of the system may not exceed 150 gallons.

(14) IFC, Chapter 9, Section 903.3.1.3 is amended by adding the following subsection:

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"903.3.1.3.1 Antifreeze Limitations. Antifreeze used in a new automatic sprinkler system installed in accordance with NFPA 13D may not exceed a maximum concentration of 38% premixed propylene glycol or 48% premixed glycerin, and the capacity of the system may not exceed 150 gallons.

(15) IFC, Chapter 9, Section 903.3.5, Water supplies, is amended as follows:
On line six, after the word "Code", add "and as amended in Utah's State Construction Code".