AFSA45
ANTIFREEZE TESTING – LISTED AND LEGACY SOLUTIONS
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An NFPA Global Solutions Company
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Antifreeze Testing Requirements
NFPA 25 2026 Edition
How often?
Annually
When?
Beginning of heating season prior to freezing conditions
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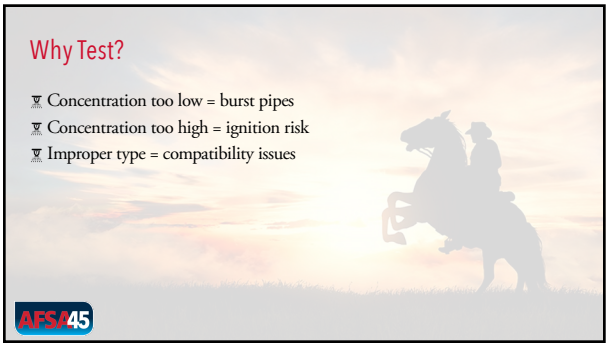
Why Test?
Concentration too low = burst pipes
Concentration too high = ignition risk
Improper type = compatibility issues
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Before Sampling
Determine the type of antifreeze in the system
Information sign
Installation records
Maintenance records
Information from the building owner
Chemical/laboratory tests
Other reliable information
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Before Sampling Continued…

If…

A. The type of antifreeze is no longer permitted

OR

B. The type of antifreeze cannot be determined

…the system needs to be drained and refilled with an acceptable solution*

*listed solution in most cases

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What types of antifreeze are permitted?

- **Legacy Solutions – Existing Systems Only**
  - Glycerine – up to 38% by volume
  - Propylene Glycol – up to 30% by volume*
- **Listed Solutions – New Systems OR Refilling Existing Systems**
  - Tyco LFP
  - Tyco LFP+
  - Noble FireFighter Eliminator 1330
  - Lubrizol Freezemaster

*>30% by volume permitted for ESFR sprinklers if listed for such an application

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Permitted Antifreeze – How have these changed?

- **NFPA 25 2008 Edition**
  - Solutions can be mixed in the field
    - Glycerine – up to 70% by volume
    - Diethylene glycol – up to 60% by volume
    - Ethylene glycol – up 53% by volume
    - Propylene glycol – up to 60% by volume

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Permitted Antifreeze – How have these changed?

- **NFPA 25 2011, 2014, 2017 and 2020 Editions**
  - Newly introduced solutions must be factory premixed
  - No diethylene glycol or ethylene glycol
  - All systems shall utilize listed antifreeze solutions* with some exceptions
  - Legacy solutions – permitted for systems installed prior to 9/30/2012 until 9/30/2022
    - Propylene glycol ≤30% by volume (up to 40% with a risk assessment)
    - Glycerine ≤38% by volume (up to 50% with a risk assessment)

*First listed antifreeze product was introduced in 2018

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Permitted Antifreeze – How have these changed?

- **NFPA 25 2023 Edition – same as 2026 Edition**
  - Legacy Solutions – **Existing Systems Only**
    - Glycerine – up to 38% by volume
    - Propylene Glycol – up to 30% by volume*
  - Listed Solutions – **New Systems OR Refilling Existing Systems**
    - Tyco LFP
    - Tyco LFP+
    - Noble Firefighter Eliminator 1330
    - Lubrizol Freezemaster

*>30% by volume permitted for ESFR sprinklers if listed for such an application

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Sampling

- If antifreeze type is permitted, the following samples should be taken from the system*:
  - Top
  - Bottom
  - Most Remote (if not accounted for in the top or bottom)
  - Water Supply (if not accounted for in the top or bottom)
  - If system is >150 gallons, an additional sample for every 100 gallons

*The listed product manufacturer may specify the number of test points (and refill procedure)

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The Testing

- Specific gravity
  - Hydrometer with a suitable scale
- Refractive index
  - Refractometer calibrated for the antifreeze solution
- This testing can be done in the field or by a laboratory

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The Testing Requirements

- If any samples fall outside the **allowable range**, the system should be drained and refilled with a listed solution*

*Some exceptions apply

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What is the allowable range?

- **Legacy Solutions – Existing Systems Only**
  - ≤38% by volume glycerine solution
  - ≤30% by volume propylene glycol solution
  - Compare specific gravity/refractive index to chart of expected values vs concentration (Table A.5.3.4.4.2 of NFPA 25 2026 Edition)
  - Concentration also determines freeze point

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What is the allowable range?

- **Listed Solutions**
  - Manufacturer's datasheet provides allowable specific gravity and/or refractive index ranges
    - If measuring outside these ranges – the solution should be replaced
  - Freeze point is indicated on the product datasheet
    - It cannot be calculated or determined by a calibrated refractometer

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Common Reasons for Failure

- Antifreeze type that is no longer allowed
- % Concentration is too low and type cannot be determined (too diluted)
- % Concentration is too high
  - Possibly due to improper mixing
  - Possibly due to previously allowed higher concentration premixed solutions
  - Possibly due to settling of the solution
- Listed solution is outside of manufacturer specified ranges

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REQUIRED

FOR CEU CREDIT:

- ✓ Badge scanned at start of seminar
- ✓ Attend full seminar
- ✓ Complete survey 1 of 2 ways:
  - ✓ Survey link is emailed to attendees with scanned badges
  - ✓ Event app by EventsAir
    - Login to app
    - Navigate to seminar survey
  - ✓ Surveys close 10/31/26

Thank you!

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Scan QR code to submit questions for **Ask the Experts!**

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2027 Training Schedule

WEBINARS

1/6	Updates to NFPA 20
1/20	Calculating Pressure Reducing Hose Valves
2/3	Consumer Alert: Nitrogen in Sprinkler Systems
2/17	Reviewing Hydraulic Calculations
3/3	Updates to NFPA 13, 2028 Ed.
3/17	Updates to NFPA 13R & 13D, 2028 Eds.
4/7	Topic Coming Soon
4/21	NFPA 25: Roles & Responsibilities
5/5	Standpipe Flow Test Procedures
5/19	Storage 101
6/2	NFPA Technical Meeting - Voting Guide
6/16	Topic Coming Soon
6/30	Topic Coming Soon
7/7	Updates to NFPA 14, 2027 Edition
7/21	Adjacent Hazards & Design Methods
8/4	Acceptance Testing
8/18	Modifications to Existing Systems
9/22	Topic Coming Soon
10/6	Seismic 101
10/20	Proposed Updates to NFPA 25, 2029 Ed.
11/3	Evaluating Fire Pump Flow Tests
11/17	Top 10 Tech Reviews
12/1	Designing Water Storage Tanks
12/15	Pump Room Layout

PROGRAMS

Feb 9 - Mar 5 Apr 20 - May 14 Aug 3 - Aug 27** Oct 26 - Nov 19	Beginning Design School*
Apr 26 - May 7 Nov 1 - 12	Intermediate Design School*
Feb 8 - 10** Apr 12 - 14 Jul 12 - 14 Oct 11 - 13	Sprinkler Hydraulics Calculations Workshop
Apr 19 - 21 Oct 18 - 20	Advanced Hydraulics Calculations Workshop
Feb 11** Apr 30 Jul 23 Sep 24	Introduction to the Fire Sprinkler Industry
Mar 1 - 3 May 17 - 19 Aug 16 - 18 Oct 18 - 20**	NFPA 25 Essentials Workshop
Jun 7 - 10 Sep 20 - 23	Experienced Inspector Skills Lab
Mar 4 - 5 May 20 - 21 Aug 19 - 20 Oct 21 - 22**	NFPA 25 Fire Pump Workshop
Spring Summer Fall	ITM Inspector Development Program* *This program is 20 months.*

** Hybrid course **At General Air Products Lab, Exton, PA*

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September 8-11	Manchester Grand Hyatt San Diego, CA

For More Details Visit:
firesprinkler.org

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Dates subject to change. Programs subject to minimum registrations.

rev 9/14/2026

Virtual Instruction Path (VIP)

for Sprinkler Fitting Apprentices

Level 1 - Begins January 2027

Level 2 - Begins February 2027

Level 3 - Begins January 2027

Level 4 - Begins March 2027

www.firesprinkler.org/VIP

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HANDS-ON WORKSHOPS FOR 2027

FEATURING AFSA'S TRAINING LAB

NFPA 25 Essentials Workshop

Mar | May | Aug | Oct

Description: Understand roles, responsibilities, and NFPA 25 ITM procedures through hands-on testing of wet systems, dry systems, and fire pumps.

NFPA 25 Fire Pump Workshop

Mar | May | Aug | Oct

Description: Develop practical NFPA 25 fire pump ITM skills, including no-flow and full-flow testing, water supply graphing, and performance evaluation.

Introduction to the Fire Sprinkler Industry

Feb | Apr | Jul | Sep

Description: This course is designed for those new to the industry. An introductory, wide-ranging 8-hour course that provides a broad overview of core fire sprinkler industry concepts for those new to the field.

Experienced Inspector Skills Lab NEW

Mar | Sep

Description: Take your ITM expertise beyond the basics. Designed for experienced technicians, this course combines focused classroom instruction with hands-on system lab training to strengthen your application of current NFPA 25 inspection, testing, and maintenance requirements. Refine fire sprinkler testing practices, improve documentation, deliver more consistent service, and help reduce liability while reinforcing knowledge commonly covered on certification exams.

Learn more about AFSA's fire sprinkler lab featuring functional risers, a spray room, fire pumps, and an interactive classroom.

firesprinkler.org/lab