



AF3 - American Fire Fighting Foam

Product Data Sheet: A-zero-F® Av-Spec™ 3%

Overview

AF3 has brought sustainable fluorine-free firefighting foam technology to market that has zero adverse effect on the environment, people and animal life. A-zero-F® Av-Spec™ 3% is a fluorine-free, PFAS-free and siloxane-free drop-in replacement for AFFF. It is readily biodegradable with no harmful fluorochemicals, no high viscosity thickeners and no biopersistent siloxanes.

Application

A-zero-F Av-Spec 3% is used at 3% concentration for land-based freshwater hydrocarbon pool fires and Aircraft Rescue Firefighting (ARFF) applications. Av-Spec was developed to achieve fast knockdown and extinguishment and long burnback resistance. It is effective on Class B hydrocarbon fires using all standard firefighting equipment for low and medium expansion foam.

Technology

AF3's breakthrough fluorine-free technology, A-zero-F, creates a foam that repels fuel. The exposed outer molecules form a film on the fuel surface and the shielded interior segments repel the fuel from the foam. This speeds knockdown and extinguishment and because it resists fuel emulsification, produces long burnback times, even with forceful plunging applications. This results in no flashovers and no foam burning at hot surfaces, a problem that current F3 foams have not resolved. This advanced technology is the key to replicating the performance of AFFF.

Real-World Performance

Third-party approvals are an established means to validate that a foam has been tested to small-scale standards. However, this may not equate to high level performance in real-life fires. AF3 has validated both. Large pool fires stress the foam's limits with more heat, fuel emulsification and hot metal surfaces. The Delaware State Fire School (DSFS) tests F3 foams on a full-scale 1800 sq. ft. 175-gal gasoline fire at 0.05 gpm/sf. Until Av-Spec was tested, no F3 foam had passed, including two on the Mil-Spec QPL. Av-Spec passed all parameters. The Delaware State Fire Chief said Av-Spec "performed like an AFFF. All the other (F3) foams broke down and lit off. This had no breakdown. None of the others have come up with this yet." At 1% dilution, it performed as strongly as at 3% ([see video](#)).

Storage/Shelf life

For maximum shelf life, this product should be stored in its original container. By following yearly testing as recommended by the National Fire Protection Association (NFPA), the shelf life of this product should be minimum 10 years. With proper protection from evaporation, contamination and extreme temperatures, it can be stored in stainless steel and epoxy-lined tanks with yearly testing. Do not store in contact with carbon steel, iron or aluminum alloys.

Foam Properties	Results
Foam Expansion Ratio, Mil-Spec, 2 gpm	8 - 10
Quarter Drain Time (QDT), MilSpec, 2 gpm	90 minutes
Specific Gravity (20°C)	1.09
pH	7
Freezing Point	-7 °C, 19 °F
Minimum Use Temperature	-4 °C, 25 °F
Recommended Storage Temperature	2 to 49 °C 35 to 120 °F
Viscosity 5°C (cSt)	90
Viscosity 25°C (cSt)	32
Fluorine, ppm	0

MIL-PRF-32725 Fire Test	Extinguishment	25% Burnback
28 sq ft Fresh Water, 2 gpm	Maximum 60 sec gas Maximum 30 sec Jet A	Minimum 4:00 Gas 5:00 Jet A 4:00 Jet A with PKP
Full Strength - Gasoline	Pass	Pass
Full Strength - Jet A	Pass	Pass
Full Strength - Jet A + PKP	Pass	Pass
Half Strength - Jet A	Pass	Pass
MIL-PRF-32725 Fire Test	Extinguishment	25% Burnback
50 sq ft Fresh Water, 3 gpm	Maximum 60 sec Jet A	Minimum 4:30 Jet A
50 sq ft, 3 gpm - Jet A	Pass	Pass

Mil-Spec and ARAFF Performance

A-zero-F Av-Spec passed all 18 Mil-Spec fire tests, proving fast control, extinguishment and long burnback. Av-Spec has the longest burnback and foam stability in the industry, evidenced by its 90-minute Quarter Drain Time (Residence Time) compared to the typical 5 - 10 minutes for AFFF and F3 foams. Its fast knockdown and vertical cling are essential for critical ARFF applications.

Equipment

A-zero-F Av-Spec 3% is designed to be proportioned at 3% dilution in fresh water and can be used with conventional firefighting equipment with no modifications required. It is a true drop-in replacement for AFFF with no thickeners that affect proportioning.

Compatibility

Although A-zero-F Av-Spec 3% has similar properties to other foam concentrates, MIL-PRF-32725 stipulates that different F3 foams should not be mixed.

Precautions

Avoid inhalation, ingestion and contact with skin and eyes. See SDS for details.

Packaging

Part No. S4070-5: 5-gallon pails (19 L)
Part No. S4070-55: 55-gallon drums (208 L)
Part No. S4070-265: 265-Gallon gallon Tote (1000 L)

AF3 - Protecting People and the Environment

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