

NF Foam Lines

National Foam®

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Wetting Agent Facts - Is Your Scene Secure?

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Do Not Confuse NFPA 11 With NFPA 18

1. Wetting Agents are not FAA approved for use in crash vehicles - this should be your first clue.
2. Wetting Agents are not code approved for use in foam fire suppression systems that protect gasoline, fuel oil tanks and loading docks.
3. Wetting Agents do not seem to work on low flash point fuels soaked into the earth, as they rely on agitation with fuel to mix with water.
4. Wetting Agents do not seem work when pooled gasoline fires have no water under them. See YouTube video <http://www.youtube.com/watch?v=Ml9C0zPfnT0&feature=context-gch>
5. Most wetting Agents are hi-performance detergents having no specific foaming chemistry. Do not expect AFFF like foam.
6. National's Knockdown, Class A has the same U.L. listing as popular wetting agents, often at a lower application rate. We do not recommend it for gasoline spill firefighting due it's not having an NFPA standing or U.L. approvals for E-10 gasoline.
7. There are no application rates for wetting agents and they show no evidence that an unignited spill is secure ... no foam.
8. Wetting Agents have no U.L., Factory Mutual or U.S. Coast Guard approvals for use on gasoline blended with ethanol or straight ethanol.
9. Wetting Agents do not work on ethanol or methanol fires. Ethanol extinguishes with plain water at a 5:1 dilute. 100 gal ethanol / 500 H2O
10. Wetting Agents are U.L. fire tested on heptane, not E-10, E-15 or E-85 gasoline.
11. Check gasoline MSDS for firefighting. They say to use FOAM, not wetting agents.
12. Wetting agents are great for class A firefighting. Although most do not foam like class A foam. They are great for oil spill clean up, degreasing and batch mixing in water tanks. However, treated tank water may be a de-foamer if used to make class B foam.



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Beware Of Salesman Speak On Agents “Approved” For A - B - D & K Fires

Wetting & Emulsifying Agents (WA’s) are agents covered in NFPA 18, and the Underwriters Laboratories, GOHR category. Also note that NFPA 11 is the standard that covers foam fire fighting for flammable liquids as does U.L. GFGV. WA’s contain no PFAS.

W.A.’s, which have been around since the 1940’s are advertised by some as approved for use on class A - B - D & K fires. The question is, approved by who? I recently saw a promotional flyer that invites area fire departments to see a demonstration of a W.A. that is supposed to be effective on Class A, B, D & K type fires, as well as a Haz-Mat and Vapor Mitigation agent, all in one! The answers to the questions below are instructive in terms of separating fact from sales hype.

- Are WA’s FAA, US Navy or Coast Guard approved for Crash Fire Rescue vehicles? NO
- Does the DOT Haz-Mat Guide recommend WA’s for use on anything in their book? NO
- Do oil companies use wetting agents in refinery fire control systems? NO
- Are WA’s UL Listed (GFGV) for use on MTBE or ethanol gasoline blends? NO
- Does ISO 9000 have anything to do with a fire fighting agent’s performance? NO
- Do fire codes allow WA’s for use in flammable liquid fire suppression systems? NO
- Is National Foam’s Class A (KnockDown) a UL Listed wetting agent (WA) ? YES
- Is National’s, Knockdown, class A foam, UL fire tested at a 5.7 times lower rate? YES
- Is National Foam’s, Knockdown, class A foam (WA) almost half the price? YES
- Does National Foam recommend Knockdown for use on gasoline or alcohols? NO
- Are WA’s found anywhere as a UL Listed, Class D (metal) extinguishing agent? NO
- Are any WA’s UL fire tested on alcohol-type (polar solvent) fuels?..... NO
- Will Cool-Aid (the soft drink) extinguish polar solvents (alcohols) as fast as a WA?..... YES
- Does Exxon/Mobil purchase Universal Gold, AR-AFFF for fire control systems?..... YES
- Does NFPA 11 (Firefighting Foam Standard) recognize wetting agents?..... NO
- Is Universal Gold, AR-AFFF UL fire tested and listed for ethanol//gasoline blends?.....YES
and Universal Green AR-F3 - no intentionally added PFAS Compounds
- Does Universal Gold, AR-AFFF contain any federally listed “nasty” chemicals? NO
and Universal Green AR-F3 - no intentionally added PFAS Compounds
- Is Universal Gold AR-AFFF, UL fire tested for type III devices (fire FD-type nozzles)?..... YES
- Can a WA or AFFF be used as a Class A foam? YES

If in doubt, call the folks who manufacture the fuel. Ask them what you should be using when the tiger gets out of their tank... See what Hess Oil says about firefighting agents in the attached MSDS. They refer to NFPA 11, not NFPA 18.



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Technical Bulletin

NFTB150

IS IT FOAM OR IS IT A WETTING AGENT?

Many fire service professionals are not aware there is a difference between foam, and wetting agents or emulsifiers. Understanding the basic performance parameters and limitations of each will help the user determine the applicability of each agent for the intended use. Foam is generally intended for use on Class B fires only. Wetting agents are applicable to Class A and non water-soluble Class B combustibles.

Foam and wetting agents are not the same, as evidenced by the development of separate NFPA standards.

NFPA-11, Standard for Low, Medium, and High Expansion Foam defines foam as a stable aggregation of bubbles of lower density than oil or water. Foam also exhibits a tenacity for covering horizontal surfaces. It flows freely over a burning liquid surface and forms a tough air-excluding, continuous blanket that seals volatile combustible vapors from access to air.

The basic mechanism foam utilizes for extinguishment is to separate the fuel from oxygen eliminating one leg of the fire tetrahedron, thus interrupting the combustion process. In situations where a fire has been extinguished or ignition has not occurred, foam also serves to provide a visual confirmation that the surface of the fuel has been covered.

NFPA-18, Standard on Wetting Agents defines a wetting agent as a concentrate that when added to water reduces its surface tension and increases its ability to penetrate and spread, extending the efficiency of water and the extinguishment of Class A and Class B fires in ordinary combustibles and flammable or combustible liquids that are not soluble in water.

Wetting agents generally contain a surfactant or emulsifying ingredient which enables them to mix with hydrocarbon fuels (emulsify) similar to oil and water in salad dressing. This is sometimes referred to as "encapsulating" or "locking up" the fuel.

The basic chemistry dilutes the fuel which increases the flash point and reduces the fuel's ability to vaporize at ambient temperatures or when heated. Over time, the fuel and wetting agent will eventually separate. This time frame is dependent on several variables, such as fuel type, fuel temperature, amount of wetting agent, etc. Generally, these agents require diluting the hydrocarbon fuel with about 6% of solution (emulsifying agent plus water) by volume.

This means a fire in a 10,000-gallon fuel oil storage tank would require about 600 gallons of wetting agent solution to effect extinguishment. The oil tank must have sufficient extra capacity to contain the fuel oil and emulsifying agent, since the two must mix.

As with many other pieces of firefighting equipment, Underwriters Laboratories (U.L.) Listings are accepted as a reputable and dependable third party testing agency for the public good. Quite often U.L. Listings are a requirement of bid specifications. Just as the listing criteria for fire hose and ground ladders are different, so too are the listing criteria for foam and wetting agents. In considering the use of wetting agents as a primary agent to extinguish Class B fires, the U.L. test standards should be consulted as a comparison of each agent's ability to perform.

There is a difference in the testing each type of concentrate undergoes to receive U.L. Listing for Class B applications. Foam is tested for five major areas of performance:

- **Rate of Application**
- **Extinguishing Time**
- **Sealability**
- **Burnback Resistance**
- **Foam Quality (Expansion and Drainage)**

Also, foam is typically investigated in combination with specific devices such as proportioning equipment and foam discharge equipment.

Wetting agents are tested for extinguishing only. There is no sealability test, burnback resistance test, or foam quality requirements. Also, wetting agents are not tested for use in combination with proportioning or discharge equipment. The chart on the following page compares the differences in UL testing for Class B applications for foams and wetting agents.

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NFTB150

U.L. CLASS "B" FIRE TEST COMPARISON Wetting Agent and Foam

U.L. Classification	Wetting Agent (GOHR)	Foam Liquid Concentrates (GFGV)	Notes
Test Standard	ANSI/NFPA 18 Standard for Wetting Agents	ANSI/UL 162 Foam Equipment & Liquid Concentrate	Not comparable agents as indicated by separate listings and test criteria
Fire Test Fuel	62.5 gal. Heptane	62.5 gal. Heptane	-
Fire Test Flow and Application Rate on 50 ft ² Fire	10 gpm (0.20 gpm/ft ²)	2 gpm (0.04 gpm/ft ²) (film-forming foam concentrates) 3 gpm (0.06 gpm/ft ²) (all other foam concentrates)	> 3 to 5 times higher application rate for the same test criteria
Fire Test Extinguishing Time Limit	</=5 minutes for full extinguishment @ 0.20 gpm/ft ²	</=3 minutes @ 0.04 gpm/ft ² </=5 minutes @ 0.06 gpm/ft ²	-
Sealability Test	None	2 tests during a 9 minute waiting period at 0.04 gpm/ft ² 2 tests during a 15 minute waiting period at 0.06 gpm/ft ²	Confirms the ability to seal against hot metal and prevent vapor migration
Burnback Resistance Test	None	Required after 9 minutes waiting period at 0.04 gpm/ft ² Required after 15 minutes waiting period at 0.06 gpm/ft ²	Critical for post fire security
Alcohol Resistance	None	Alcohol resistant foam concentrates are tested by ANSI/UL 162 for use on alcohols and other polar solvent fuels	Oxygenated gasoline additives are polar solvents and may require alcohol resistant foam*

*** Where oxygenated additives content exceeds 10% by volume, alcohol-resistant foam concentrates may be recommended. Consult manufacturer or UL listings for specific details. (See also NFPA 11-2016)**