



A UTC Fire & Security Company

Badger Fire Protection
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TECHNICAL BULLETIN

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Subject: Fundamental Foam Fire Extinguisher Questions & Answers

1. What makes foam extinguishing agents so unique in a hand portable fire extinguisher?

Foam agents represent the only hand portable extinguishing agent that is a class "B" securing agent. Foam agents suppress liquid fuel vapors and can effectively secure a fire hazard, thus preventing re-flash or re-ignition when properly applied. Foam agents are additionally unique in that they can also be utilized immediately in liquid fuel spill situations to prevent a potential fire situation from occurring. This makes foam agents ideal for many emergency response/rescue applications.

2. Are foam agents acceptable for use on energized class "C" fire situations?

NO -Because foam fire extinguishing agent solutions are primarily comprised of water, which is electrically conductive, they are not recommended or approved for these applications.

3. Are foam agents suitable for all class "B" hazards?

NO -Foam agents are best suited to address flammable liquid class "B" hazards where the fuel is in a horizontal state. Because foam agents work by floating on the fuel surface to effectively create a barrier between the fuel and oxygen, foams work best when the liquid fuel is horizontally situated such as in a spill, fuel-in-depth or obstacle hazard configuration.

4. Will foam agents work on all class "B" liquid fuels?

NO -Some foam agents will only work on hydrocarbon types of liquid fuels which do not mix with water, while others have special additives that allow them to also work on water miscible polar solvent types of fuels like alcohols, which mix with water based agents. The universal or dual-purpose foam agent solutions like Badger's "Universal Ultra" are often identified with an "Alcohol Resistant" or "AR" designation.

5. How can I determine if a class "B" liquid fuel is a hydrocarbon or polar solvent?

In lieu of running laboratory tests, obtain a copy of the MSDS for the fuel. The MSDS will specifically identify the type of fuel it is and provide recommendations for the proper type of foam extinguishing agent that should be utilized.

6. How does the new Badger "Universal Ultra" foam work on water miscible polar solvent types of fuels?

Badgers new "Universal Ultra" foam contains a special biosynthesized polymer, which forms a protective surface membrane that enables the discharged foam solution to bond and float, even upon water miscible types of liquid fuels.

7. What is the shelf life of the "Universal Ultra" foam concentrate charges?

If stored in the original sealed concentrate container between the recommended temperature limitations of 35F to 120F, the shelf life will be a minimum of 15 years. Outdated or questionable concentrate charges can sometimes be utilized in training evolutions.

8. What is the shelf life of the "Universal Ultra" foam solution within an extinguisher?

While initial testing has indicated that our foam agent pre-mix solution should retain its original fire fighting performance for six years, the NFPA regulations specify much shorter intervals. The NFPA regulations currently require pre-mixed foam agent solutions in portable extinguishers to be replaced every three years. (Reference 2010 NFPA-10 paragraph 7.4.2.3.1)

9. Is the "Universal Ultra" foam environmentally safe?

Yes -Universal Ultra is non-toxic and biodegradable. It also contains no ingredients reportable under the Superfund Amendments & Reauthorization Act (SARA) or Comprehensive Environmental Response Compensation & Liability Act (CERCLA).

10. What is the proper way to clean up a foam discharge?

The limited quantity of foam solution discharged from a hand portable foam fire extinguisher does not normally represent much concern or create any problems with ground water run off or sewage treatment systems if they are flushed away with water. The primary concern is typically associated with addressing the handling of the remaining fuel involved within a spill or fire situation. The recommendations contained on the fuel's MSDS and the local authority having jurisdiction should be followed.

11. What is the basic difference between a FFFP and AFFF type of foam?

The FFFP (Film Forming Fluoro-Protein) foams have an organic protein base typically comprised of hydrolyzed waste materials such as chicken feathers, explaining the solution stability, smell and clean up issues often associated with their use. The AFFF's (Aqueous Film Forming Foams) utilize biodegradable synthetic base materials that are more stable and desirable to work with.

12. Can anti freeze additives be utilized within a foam extinguisher to lower its operating temperature limitation?

NO-This would violate NFPA-10 requirements and void the approval agency manifest along with the manufacturer's warranty. The problem with such additives is that they may cause hardware material compatibility problems within a pressurized container, which is often not visually apparent. Freezing point depressant additives are also often detrimental to the fire fighting performance of a foam agent solution.

13. What type of water should be utilized when recharging a hand portable foam fire extinguisher?

Because the quality and stability of a foam solution is often directly related to the water used when recharged, Badger recommends that only fresh potable (drinking) water be used for recharge.

14. Can I substitute or mix "Universal Ultra" concentrate with other AR-AFFF types of foam concentrates?

NO-You should never substitute or mix any foam agents within the same extinguisher. To ensure hardware material compatibility and optimum fire fighting performance, only fill a foam fire extinguisher with the specific type and volume of foam concentrate charge specifically identified on the extinguisher's nameplate.

15. Can "Universal Ultra" foam be simultaneously used and applied with dry chemical agents?

Yes-"Universal Ultra" foam can work very effectively with dry chemical agents during fire situations, especially when the foam solution is applied to a flame free class "A" or class "B" flammable liquid fuel surface that has been extinguished with dry chemical.

17. How much foam should be applied to a liquid fuel surface to suppress combustible vapors?

There are many variables that affect the coverage and seal-ability of a foam blanket such as the type of fuel involved, the temperature and wind conditions. The general rule of thumb for a film forming type of foam is that there should always be a visual foam blanket covering the fuel to be safe. When conditions dictate, additional foam should be applied to any fuel areas where the foam is not visually apparent.

18. How should a foam extinguisher agent be applied to a burning class "B" liquid?

As a general rule, the most effective way for a foam agent to be applied is in a gentle manner that does not aggravate or plunge the foam solution down into the fuel surface where it can become contaminated with the fuel. This is often best accomplished with a gentle sweeping action of the discharge or better yet, by applying the foam agent against an obstacle within the hazard or against the backside of a container where the foam solution can flow gently down onto and over the surface of the fuel.

19. If only a portion of a foam extinguisher charge is used, can the extinguisher be topped off?

No-To maintain the proper foam solution proportions and ensure optimum fire fighting performance, foam hand portable charges should never be topped off. Whenever a foam extinguisher is partially discharged and all of the foam is not used, the extinguisher should be completely emptied and a new foam charge added.

21. Why are the class "A" fire ratings of foam extinguishers sometimes less than those of water units?

Because the primary market and application for a foam fire extinguisher is typically related to the extinguishment and suppression of class "B" liquid fire hazards, the design focus is primarily upon the class "B" fire ratings. While the water content of a foam solution generally provides sufficient cooling to obtain a class "A" rating, the surface tension reducing properties generally associated with better cooling and penetration is detrimental to a class "B" foam. The longer drain times and stability factors necessary for suppressing the vapors of a class "B" liquid fuel, tend to limit the cooling and penetrating properties of a liquid extinguishing medium. For applications needing higher class "A" fire ratings, it is typically much more economical to simply utilize water or smaller multipurpose dry chemical fire extinguishers. The present ANSI/UL-711 "Fire Ratings and Test Criteria Standard" contains provisions allowing water extinguishers to obtain fire ratings without conducting any actual fire tests.

20. How does the drain time of a foam solution relate to performance?

The drain time of a foam solution basically relates to how stable or long a foam blanket will remain. While there are many variables that affect how long a foam blanket can provide protection over a flammable liquid fuel, the longer drain times are generally considered best. It is very important when comparing the drain times of foam solutions to ensure that they were obtained from the same specific hardware configuration referenced. Foam drain times vary with different hardware, pressures, nozzles, concentrations and flow rates.