National Foam

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Storing Foam A & B Foam Concentrates

Contrary to popular belief, foam concentrate has no shelf life. The date on the foam pail, drum or tote is its birth date. If stored in sealed, original packaging, foam concentrates will easily last thirty years or more. Foam concentrate storage success is more about preventing concentrate evaporation and contamination than air contact. Class A and B foam concentrate containers should be kept sealed. In short, store it as if it were latex paint.

Metal container 1976 - Still sealed 9/15/09

Mobile Foam Storage Tanks

Foam tanks that are not gasket sealed, and fitted with pressure-vacuum vents will eventually be the cause for concentrate evaporation. Two-inches of foam concentrate sealer (mineral oil) floated on class B firefighting foam will prevent evaporation, and is often recommended for level, stationary (class B) tanks fitted with regular atmospheric vents. It wouldn't hurt if you added it to a fire boat, foam trailer or engine's concentrate tank.
CAUTION: Do not put mineral oil on Class A foam concentrate - they might mix.

Fire apparatus, marine units and foam trailer tanks are subject to sloshing when the tank is not full. Alcohol resistant foam concentrates (AR-AFFF), which is gel-like to start with, regardless of brand will not tolerate sloshing. A foot of open air space in a foam tank will cause a whipped cream-like concentrate/air froth in the free space, which can stay this way for months. This is the main reason for keeping mobile AR-AFFF tanks topped off. Not much of a problem with Class A or regular AFFF concentrates.

Keep Class A foam concentrate away from AR-AFFF concentrate. Class A concentrate is mostly a solvent (alcohol) and water mixture with a touch of Mr. Bubble. A cup of AR-AFFF in a class A tank is usually system fatal. The AR-AFFF will do what its supposed to do in your tank, rather than on the fire, leaving pizza-like dough at the bottom of your foam tank - and system supply lines connected there to.

Freeze/Thaw Cycles

Freezing alcohol resistant foam concentrate may cause compound component separation, and will hinder firefighting performance, particularly foamability. Consult your foam manufacturer for advice when using thawed AR-AFFF. Freeze-thaw cycles should not be a problem with regular AFFF or class A concentrates; although Class A concentrates often have other problems in cold climates.

Test Freeze Your AR Foam

Freeze a 1/4 cup sample in a clear container. A clean peanut butter jar with an inch or two of head space will do nicely. Normal AR-AFFF foam concentrate will present as a gel. As a rule, the more AR chemical (polymer) it contains the more gelatinous it will be. If it lifts with a turkey baster or eye-dropper it's good to go. Compound separation looks like thin liquid under the thick stuff. If it separates, you may need to reconstitute it by shaking or stirring. Shaking a foam tank or drum may not be an option, especially if you don't know if it's been frozen.

Cold Class A Foam Concentrate

Class A foam concentrates are formulated using various wetting and foaming components. Most alcohol based Class A foams are sensitive to low temperature storage. Once concentrate gets in the 40 degree range (4 to 5c), it's a good bet that foamability and wetting will suffer. Moreover, viscosity becomes quite variable when class A foam concentrate approaches 40 degrees (5 c). Normal free-flowing class A foam may thicken and become syrup-like when it gets too cold. Since

Class A foam concentrates are often proportioned using onboard systems with supply-side plumbing strainers, one can expect the cold, syrup-like material to proportion lean, if at all.

To determine how fit your class A foam concentrate is for cold weather, put a quarter cup sample in a clear container; set it in an salt/ice bath or freezer with a thermometer in it. As the concentrate temperature drops it may start to cloud - colder yet, and you may see dust-like bits suspended in the liquid. Finally, it may turn to slush. At its cloud point, foam concentrate will be pretty much useless in terms of its wetting and foaming mission, as its wetting solvent and its Mr. Bubble components begin to separate. Use a turkey baster or medication syringe to see if the liquid lifts. If it struggles, chances are it will proportion lean. If it is cloudy, it may not foam very well either.

All Is Not Lost

Depending on the type of wetting chemistry used in your particular brand of Class A concentrate, you will find variable cold temperature results. As the concentrate warms, it will coalesce and again be fit for use. Some are good to go at low temps, some not so good.

Putting frozen or cold class A concentrate in a seventy degree space (20c) for twelve hours or so should put you back in business.

Combustible Liquid Warning:

Do not store alcohol-based, class A foam near the firehouse furnace. There are class A foam products that qualify under NFPA 30 as combustible liquids. I know of one brand that has a flash point of 104F (40C) - See MSDS. Alcohol based wetting agents are not a safety problem when used for firefighting at normal use concentrations, i.e., half percent or less.

Degreaser Warning:

Class A foams, and particularly wetting agents are good at cleaning the factory lubricants out of your nozzles. As the lube. disappears you will notice bale (shut-off) and bumper (stream shaper) get harder and harder to cycle. This condition is usually fixable by applying something like CLP-Break-Free® to moving parts - Shake well before each squirt.

Plumbing, Valves & Tank Materials

Stay away from galvanized pipe, steel pipe and aluminum components. Recommended construction materials are stainless steel (Type 304L or 316), high density cross-linked polyethylene, or reinforced fiberglass polyester (isophthalic polyester resin) with a vinyl ester resin internal layer coating (50-100 mils). Flex hose can be EPDM, or poly. Suction rated hoses should be used on intake side of proportioning equipment. Gaskets and seals: Buna-n (nytrile). Stay clear of 0.5" compression fitting, air-brake hose, as "O" ring material may not be compatible with dispersing solvents contained in foam concentrates.

Since 1988 Jim Cottrell has been National Foam and TFT's eastern regional factory agent and product development consultant. He chairs the IFSTA Foam Technical Committee and is a member of the Underwriters Laboratories, Foam Standards Panel. Jim is an accomplished investigator, speaker and a nationally recognized instructor /lecturer. Jim's Combat Support Products Division manufactures specialty firefighting appliances.

See training video postings from arafff136 on YouTube, or www.combatsupportproducts.com/Video_Library/Archive.html