



# CompressedAirFoam.com

## **Welcome to CompressedAirFoam.com**

CompressedAirFoam.com is an instructional organization. We are organized to promote a focused effort to deliver accurate information about the benefits and usage of Compressed Air Foam Systems. Our intent is to convey industry knowledge in an objective way to allow for pressure free education on this modern-day method of firefighting.



# Foam Equipment Selection

The spec'ing and purchasing of a Foam / CAFS equipped apparatus can be a daunting endeavor that keeps apparatus committee members awake at night. Just when they think they've got everything lined up and all the decisions made, along comes additional information that brings up more questions and more contentious discussions accompanied by possibly unanticipated expenditures.

These CompressedAirFoam.com presentations should help clarify some of the additional hardware and foam concentrate products that will be required to make your Class A foam capable apparatus operate safely and to its maximum capability. It is highly recommended that you include ***certified Foam / CAFS on-site instruction*** in your apparatus specifications.

Without a doubt these decision processes will generate additional questions. That being the case, we encourage you to reach out to CompressedAirFoam.com personnel who are globally considered "Subject Matter Experts" in the Class A foam and CAFS world.

**We're here for you!**

# Foam Concentrate Selection

- Currently there is **NOT** a single “Do all, Be all” foam concentrate on the market. There are numerous tactical uses for foams and many of these require complete understanding to maximize the benefits. Unfortunately, there is a great deal of misinformation and misuse of foam concentrates. The information provided here in will give you the basis to make an initial informed decision to properly select a Class A concentrate.

A few common uses for Class A are:

- Fire attack operations with Class A solution.
- Gross PPE Decontamination on the scene.
- Fire ground operations with “Nozzle Aspirated Foam Systems” ( NAFS ).
- Pretreatment / protection of Class A fuels. ( Structural, Wildland & WUI )
- Fire ground operations with “Compressed Air Foam Systems” ( CAFS ).

**The following primer will introduce *Class A Foam Concentrates*:**



# CompressedAirFoam.com

Presents

**Class A Foam Concentrates**  
**Principles and Applications**

# Why new technology for an “Old School” fire?

- Basically... many types of extinguishing agents will achieve fire control, yet have drastically different results i.e. -



**These Work Better!**

**These Worked But...**

**Proper concentrate selection will make or break your fire attack!**

# Selection of Correct Concentrate - Classification

## Class A Foam Concentrate:

These contain hydrocarbon surfactants that reduce the surface tension of water in the foam solution, allowing for better water penetration. Coats and insulates fuels, preventing pyrolysis and ignition. May be applied with fog nozzles, aspirating nozzles, medium & high expansion devices and CAFS. Mildly corrosive. Equipment must be flushed thoroughly after use.  
( IFSTA Chp. 14, pg. 736 )

Most brands are detergent based, carbon loving & surface tension reducing foaming agents that operate in the 0.1 % to 1.0 % range.



# Selection of Correct Concentrate - Classification

**Class B Foam Concentrates:** These are used to prevent or to extinguish fires involving combustible liquids. Manufactured with either synthetic or protein base ( or a combination ).

( IFSTA Chp. 14, pg. 736 )

Also, these can be specifically made for straight hydrocarbon fires and/or polar solvent fires. Proportioning ranges are 1.0%, 3.0%, 6.0% or combinations there of. Most are more corrosive, toxic and environmentally hazardous than Class A.

For additional info visit: [www.ffc.org](http://www.ffc.org)



# Selection of Correct Concentrate - Classification

## “Specialty” Foam Concentrates:

Are all concentrates that are **NOT** a pure “Class A” or pure “Class B” i.e., emulsifiers, gels, retardants, non-foaming wetting agents, Haz-Mat concentrates etc. Many “Universal” (A / B compatible) concentrates work best on a specific hazard but may be used on other fuel classes as well. Also, some Class B concentrates may be rated as a “Wetting Agent” at 0.25% although they are not designed for Class A fires and may not be considered the best choice.





# Selection of Concentrate - Classifications

## Foam Concentrate Class Differences:

### “Class A” concentrates:

They have a **high affinity for carbon**. Most are environmentally friendly. Considered mildly corrosive with low toxicity and no known carcinogens. The “Reportable Quantities”, if any, are higher than Class B. Good finished foam production in the lower ½ of the 0.1% to 1.0% operating range.

### “Class B” concentrates:

These have a **low affinity for carbon** and don't biodegrade as readily as Class A. They are more corrosive than most Class A. Operating range is higher at 1.0%, 3.0% and 6.0%. The operating parameters must be closely adhered to for safe application. Some alcohol resistant Class B contain suspected carcinogens.

# Class A Concentrate Selection - Considerations

- Some of the most *basic principles* for Class A concentrate selection are:
- All Class A foams will extinguish fire better than plain water...Period! The question then becomes what are the important points to consider during selection beyond simple fire control. These can include but are not limited to:
  1. Personnel safety such as inhalation, toxicity, eye and skin irritation.
  2. Environmental impacts such as air pollution, water contamination and soil impacts.
  3. Equipment impacts like corrosion, impacts to painted surfaces and degradation of coatings.
  4. Decontamination of personnel, PPE, equipment and disposal of residue / concentrate containers.
  5. Additional training, equipment needs and maintenance of both.
  6. Creation and on-going revisions of comprehensive SOP's / SOG's.
  7. Budgetary impacts and how to mitigate / reduce them.



# Class A Concentrate Selection - Safety

- **Safety First!** Adherence to this will keep us in service for years to come. Our primary focus is the safety of our community but to achieve this we must protect our personnel. The proper and thoughtful use of Class A foam is going to help achieve both goals.
- Not all Class A are equal. There are very few national regulations on Class A. It is a buyer beware market. The most notable *recommendation* is to purchase a product listed on the USDA / USFS “Qualified Product List”. ( **URL changes annually. Web search USDA / USFS / Qualified Product List** ) Those products are tested for skin & eye irritation, toxicity, metals corrosiveness and biodegradability. To be listed they must biodegrade in 30 days or less.
- Use of this listing is a recommendation and *not a regulation* unless you're operating on USFS or some other federal properties, also there are some states that have adopted this listing as a state mandate as well. Check with your state regulatory agencies on local requirements prior to purchasing a Class A product. In most cases it's the “Authority Having Jurisdiction” that sets the foam usage and selection parameters.

# Class A Concentrate & the Environment

- The use of Class A foam has been shown to have *positive impacts* on air quality and reduced runoff of contaminated water from the fire scene. Due to the carbon loving nature of Class A, much of the air and water borne carbon based contaminants that contain carcinogens are collected in the foam blanket.
- Like most firefighting agents, but not all, Class A concentrates have a “Reportable Quantity” ( RQ ) listed and enforced by the Environmental Protection Agency ( EPA ). If the gallonage of application or spillage onto soil or into waterways exceeds the RQ then the responsible party must make timely notification to the appropriate environmental agency and may be responsible for the clean-up. ***Exceeding the RQ should always be avoided.*** If it happens then immediate and appropriate containment measures should be initiated. Refer to the product “Safety Data Sheet” for initial actions. Obviously, concentrate spillage into a waterway would require the most expedient of actions to mitigate any possible negative impacts to fisheries, wildlife or human consumption.
- Refer to the products Safety Data Sheets, local EPA rep’s, OEM contacts and have a preplan for this type of incident. Exceeding the RQ rarely occurs but may have detrimental impacts to the environment and your budget.



# Class A Concentrate Selection - Equipment

- ***A Super Cleanser!*** Most quality Class A concentrates have a low level of corrosiveness, certainly much lower than Class B concentrates. In fact, Class A's are a super cleaner that removes the coatings of lubricants on many metals and machinery. This then allows the metals to be exposed to water and air which exacerbates corrosion. This is another reason that foam "Batch Mixing" is ***not*** recommended.
- Since Class A concentrate loves carbon, spillage of ***concentrate*** on hydrocarbon-based apparatus paint may cause the paint to swell if left in contact for days and in extreme cases that affected paint can delaminate from the sheet metal. Simple house keeping will prevent all of this. If ***concentrate*** contacts the paint, wipe it off ASAP, wash the apparatus thoroughly that same day. ***Finished Foam*** is at such a low percentage that simple post incident apparatus washing will preclude any issues.



# Class A Concentrate Selection - Decontamination

- ***Decontamination!*** Seems a strange thought when addressing a product such as Class A foam that many folks look upon as a detergent or simply as soap. They look and react much as those do, but they need to be treated with appropriate precautions. As always, clean PPE and uniforms after fire exposure and/or excessive direct exposure to foam ***concentrates***. Follow OEM cleaning recommendations.
- Scientific evidence is now being compiled that will prove Class A finished foam is an effective decontaminant and ***reduces carcinogen exposure*** on the fire ground and on our gear. In fact, a new phrase in the foam world is: ***CAFS = Carcinogen Absorbing Foam System***. **Watch the podcast presentations in the CompressedAirFoam.com library regarding this vital issue!**
- Follow OEM and EPA guidelines for PPE care and the disposal of cross contaminated concentrates, residue and concentrate containers.



# Class A Concentrate Selection - Training



- ***Your department has decided to use Class A foam... Now What?***
- This could prove to be one of the most important and impactful decisions in the department's history. Depending upon the usage type selected, Batch Mixing, In-Line Eductors, Electronic Direct Injection or Compressed Air Foam Systems there will be unforeseen training and equipment needs. Your visit to this CAF.com website is just the beginning of that process.
- Initial and on-going foam instruction is essential to personnel safety, equipment reliability and responsible budget management. To get the best information be prepared to bring in outside expertise to educate the membership. Seek out concentrate and equipment OEM representatives, they want their products to work as advertised and will educate you on factory recommendations. If possible, send members to seminars and shows to research what's available on the instruction, concentrate and equipment fronts.
- Just as you have begun with CompressedAirFoam.com, seek out additional reputable websites that are up to date and give you access to current foam users, OEM's and certified foam instructors such as [www.inFOAMationassociates.com](http://www.inFOAMationassociates.com).



# Class A Concentrate Selection – SOP's / SOG's

- ***Unlike the verbal pass down of department traditions and war stories you need to implement and maintain written “Foam SOP's or SOG's”.***
- With products that have potential impacts on safety, environment, equipment, budget and productivity there is no excuse for not having written procedures. Reach out to various sized departments for copies of department foam procedures. Integrate the applicable and best, discard the rest. Speak with industry experts on recommendations for your specific equipment maintenance and product limitations. Visit [CompressedAirFoam.com](http://CompressedAirFoam.com) *library* for a sample Foam SOP/ SOG.
- This needs to be a “Living Document” that’s reviewed and revised at least annually by staff and foam committee members. Don’t delay on integrating procedures on new products or equipment... *before* they are put in service.





# Class A Concentrate Selection – Budget \$tuff

- ***The Buck Stop\$ Here!***
- It's unfortunate that many Class A foam programs are started without good advice or intel on just what is needed beyond a bucket of that "STUFF". There's no denying that a variety of lessons learned, both good and bad, from other foam users goes along way toward getting the most out of the demonstrations and sales talk of dealers. Those lessons learned will arm you with intelligent and insightful questions for the salesperson.
- You need to ascertain not only the price of concentrate but it's capabilities, limitations, physical properties, safety and environmental properties, recommended operating parameters –vs- your operating needs. Determine if the concentrate is compatible with your chosen proportioner and your specific flow rates. Does the concentrate work and flow in the temperature range of your region? Is the product acceptable to the environmental folks in your jurisdiction? And of course,... Whom can I speak with in my region that currently uses this product via hardware like mine?
- Fiscal responsibility begins with thorough research and comparison. In some areas Class A foam, especially in CAFS form may be realized as ISO point reductions as well as the all-important fire loss reductions. Further savings can be realized by use of Electronic Direct Injection Proportioners, cooperative purchases with area departments or purchasing in bulk quantities. Limit training to shorter flows, as a parking lot full of bubbles doesn't always equal quality training. Also, a big saver is avoiding extended foam flows on "LOSER's". In the case of a massive loser, use your limited foam supplies to isolate the fire to the building or block of origin. Tens of thousands of gallons of Class A bubbles won't rebuild buildings!



# Class A Concentrate - Summary

- As you now realize, the selection of a high quality and safe Class A concentrate takes time and critical thinking. ***Investigate before you invest!*** Don't rush, reach out to the many sources of information we've touched on here and visit with knowledgeable folks about your specific Class A needs. If you have further questions...

**Remember... *We're here for you!***