

How does foam help to extinguish fire? The following is from a publication from the National Wildfire Coordinating Group called *Foam Vs Fire Primer*, NFES 2270:

Plain water is not as efficient as foam at removing heat. By adding foam concentrate to water to make foam solution, efficiency can be increased by as much as two times that of water. When foam solution is turned into a foam, all three legs of the fire triangle can be attacked. Foam holds water in place so that heat is absorbed and reflected, oxygen is separated from the fuel, fuel is insulated, and vapors are suppressed.

There are several types of foam typically used in fighting fires, from a simple foam solution that consists of detergent within a water stream, acting primarily to break the surface tension of the water molecule, to very dry foam, the consistency of shaving cream. What works the best? The answer to that depends on what you are trying to accomplish. The concentration of bubbles within the water creates four common degrees/types of foam:

FOAM SOLUTION

A clear to milky solution, lacks bubbles, consists of primarily water. Well suited for flame knockdown, wetting, and mop-up operations, as well as fire fuel cooling. Very fast drain time.

WET FOAM

Watery, but with small to large bubbles. Still lacks "body", but tends to extend the water volume due to low to moderate expansion of the foam. Allows greater discharge distances than heavier bodied foams.

FLUID FOAM

Similar in body to wet shaving cream. While it flows easily, it's drain time is slower than first two types. Possesses medium expansion qualities, making it more suited for establishing barriers for fire protection.

DRY FOAM

Heavy bodied, very similar to shaving cream. Consists of mostly air. Capable of clinging to vertical surfaces for extended periods. Ideal for creating barriers in heavy fuels and thick undergrowth. Expansion rates, thus greatest amounts of foam generated with available water, increase as the foam gets heavier bodied. The highest rates require nearly all air and foam concentrate, with minimal water. These foams require compressed air foam generation systems (CAFS).

The EconoFoam XM-II, when used with a low-expansion naturally aspirating nozzle, is capable of creating discharge from a *Foam Solution* to a *Light Fluid Foam*, depending upon the injection rate chosen. It not only helps your onboard water to go farther, it makes the water more effective by changing the surface tension. While it can be effective in creating barriers, it is typically used to knock down active fires, extending the water supply by better allowing the water to be absorbed by the fuel, and creating a buffer between the flame and the fire.