



Evaluation of Wildland Fire Chemicals

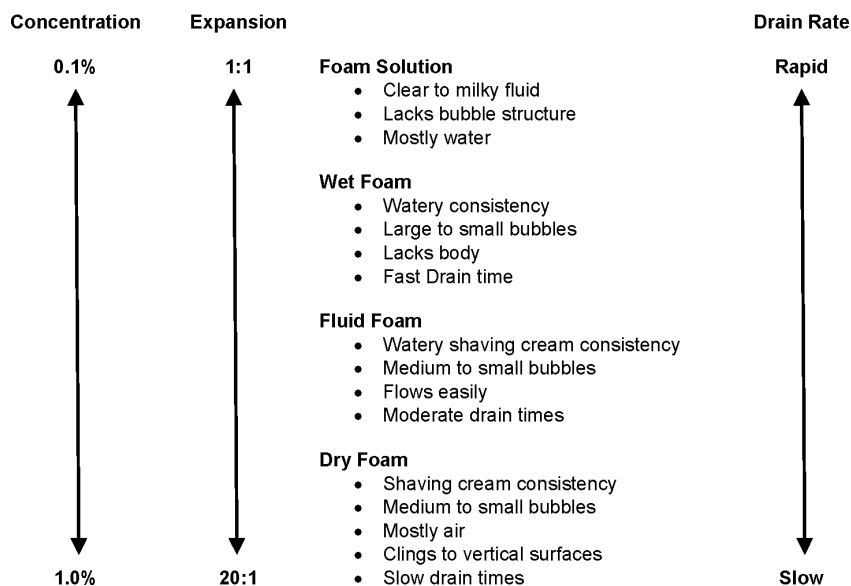
Standard Test Procedures

8.4 Expansion and Drainage

Summary: Both expansion and drain time are measures of foam performance. Expansion is a measure of the ability of the foam solution to hold air in the form of bubbles and the drain time is a measure of the ability of the bubbles to hold solution in their structure.

A single foam concentrate can be used to meet a wide range of performance requirements, by using different combinations of foam concentrate, adjusting the amount of incorporated air, and selecting different nozzles or setting.

Relationship Between Foam Concentration, Expansion, and Drain Rate



The test conditions required are used to help determine the range of performance for each concentrate.

Equipment:

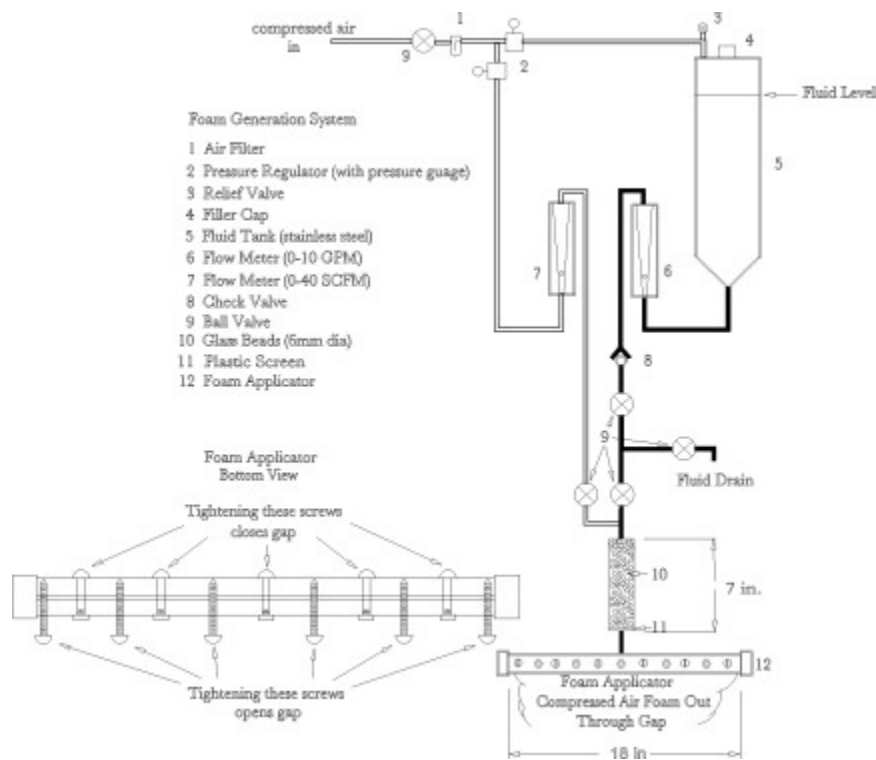
Foam generator – A schematic and pictures are attached Foam collection container with drain holes, with known volume

Balance with capacity suitable for the weight of the collection container and foam. Stop watch or similar timing device.

Straight edge or tool for removing excess foam from the container

Method:

1. Ensure balance is connected to data logger and zeroed.
2. Check the tare weight of the collection container.
3. Generate foam using a set of standard conditions: concentrate identity and age, concentration, water quality and temperature, generation conditions,
4. Collect in the standard container, remove excess foam with a straight edge, and note time.
5. Place container on the balance as shown in picture.
6. Note initial weight and collect weights for the container and remaining foam at intervals for 60 minutes.
7. Use the weight of the foam in the container and the volume of the container to calculate an expansion value.
8. Prepare a graph with time on the x-axis and weight on the y-axis.
9. Summarize findings.



Foam Generator Schematic

Foam Generator Settings and Descriptions

The foam generator that is used to determine the foam expansion and drain time performance of wildland fire foams is an in-house manufactured device that can be used with predetermined settings to compare the performance of different products.

A different generator may look different and is likely to give somewhat different results but should have the same capability of developing foam from fixed, preset conditions for comparison with other products or dilutions of the same product.

The settings used in the foam evaluation were developed in consultation with field personnel experienced in using foam, especially from aircraft, and were chosen to mirror the foam consistencies they saw in the field using the products available at that time.

<u>Foam Type</u>	<u>Generator Setting</u>
Very Wet Foam/Foam Solution	T15-S03-90
Wet Foam	T20-S09-90
Fluid Foam	T20-S06-90
Dry Foam	T15-S12-90

The generator setting defines the conditions used to make the foam. For example, for the setting T15-S12-90

- The pressure from the top (T), pressing the foam solution into the tubing to the scrubber is set at 15 psi.
- The pressure from the side (S), pushing air into the foam solution stream on the way to the scrubber is set at 12 psi.
- The controller for the flow to the scrubber is set at 90 degrees.

Other products may exhibit different characteristics and consistencies at the same generator setting. This may allow field personnel to relate the characteristics of different products when using the same field generation equipment. They may then be able to make informed decisions as to the foam types that will best meet their needs.