



# Evaluation of Wildland Fire Chemicals

## STANDARD TEST PROCEDURES

### Foaming Ability



**Summary:** This procedure is used to determine the ability of foam solutions to foam and how quickly the foam drains from the bubble structure.

The concentration of the foam solution, the temperature of the solution, and the quality of the water used to prepare the solution – distilled, tap, or sea – will affect the foaming ability of the solution.

**Equipment:**

100-mL graduated cylinder with a glass-stoppered top. The graduated cylinder should have volume markings below 5 mL for most accurate measurements.

Foam solution

10-mL pipet or syringe

Countdown timer

**Method:**

1. Prepare a solution of the test product, using the required concentration, water temperature, and water quality.
2. Record the details of the test solution.
3. Add 10 mL of the freshly prepared foam solution to the graduated cylinder, using the pipet or syringe.
4. Insert the glass stopper into the cylinder.
5. Agitate the solution by shaking the cylinder vertically, as vigorously as possible, for 10 seconds, while holding the stopper down with one finger.
6. As soon as shaking is finished, start the timer and immediately note the total volume of foam in the cylinder.
7. If the level is uneven, estimate the average volume.
8. Measure the volume of liquid in the bottom of the cylinder at the end of 1, 2, 3, 4, 5, 10 and 15 minutes.
9. Record the elapsed time and volume on the data sheet.
10. Calculate the foam expansion using the formula below:

$$\text{Foam Expansion} = \frac{\text{Volume of Foam}}{\text{Volume of Solution}}$$

11. Determine the foam drain rates by plotting the volume of solution drained from the foam against the time in minutes. A 25-percent drain time is the time required for 2.5 mL of solution to drain from the foam that was produced from 10 mL of solution.