SAMPLING PROCEDURE
FOR FOAM CONCENTRATES AND PROPORTIONING TESTING

NFC960

- Request for Analysis Form
- NFPA-11 Recommends That All Foam Systems Shall Be Thoroughly Inspected And Checked For Proper Operation Annually
- Regular Sampling And Evaluation Can Detect Deterioration Of The Foam Concentrate And Accumulation Of Sediment In Low Areas
- Regular Sampling and Testing of the Foam Proportioning System Ensures the Accuracy of the System



Why Take Foam Samples

Under normal circumstances and under satisfactory storage conditions, foam concentrates manufactured by reputable companies should maintain their quality for years. However, no matter how good the foam concentrate, deterioration can take place in a number of ways and it is therefore recommended to monitor the quality. Summarized below are some of the causes of foam concentrate degradation:

- Dilution or evaporation
- Topping off with inferior or incompatible products
- Excessively high or low storage temperatures
- Unsuitable storage conditions

NFPA-11 recommends that all foam systems shall be thoroughly inspected and checked for proper operation annually. The inspection shall include performance evaluation of the foam concentrate or premix solution quality.

Regular Sampling and Evaluation Can Detect:

- Deterioration of the foam concentrate
- Accumulation of sediment in low areas, which could possibly cause proportioning problems when the system is activated

Why Test Proportioning

Annual testing of foam proportioning equipment is recommended by NFPA 25 Standard for the Inspection, Testing and Maintenance of Water-Based Fire Protection Systems.

Testing of foam concentration in proportioned solution determines the accuracy of the system's proportioning equipment. Variances in foam concentrate proportioning can affect the expansion and drainage of the foam generated from the system which can influence the performance.

Accuracy of proportioning should be tested when a system is first installed or commissioned and annually thereafter.

Regular Testing Can Detect:

- If the system is in good operating condition
- Proportioning concentration is accurate

Note: *It is also recommended to test the condition of the foam concentrate annually (see also NFC960)*

Laboratory Analysis

National Foam Technical Service Laboratory has offered a premier foam analysis service for many decades.

An unbiased analysis of the foam samples is provided for the user's consideration. The recommended method for evaluating the condition of foam concentrate is to complete the tests which follow. These are part of the lab analysis:

- Specific Gravity
- pH Value
- Sediment
- Expansion Ratio
- Quarter Drainage Time

Along with testing of the foam concentrate, annual testing of the foam proportioning system tests the accuracy of the system and can determine if corrective actions are needed to make sure that the system is operating properly.

In addition to laboratory analysis of foam concentrates, National Foam can test the proportioning accuracy of the foam system.

Ordering Information

Free Foam test sample kits and proportioning kits can be obtained by emailing: techsvc@nationalfoam.com

Fill in the attached form denoting whether laboratory foam analysis, foam proportioning analysis, or both are indicated.

See page 2 of this form for detailed procedures for taking foam concentrate and foam proportioning samples.

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Procedures for Taking Laboratory Analysis Samples

Samples taken from the installation should be representative of the foam concentrates stored so that an accurate evaluation can be made.

1. To ensure a uniform sample, if the system design permits, circulate the system back to the storage tank for the appropriate time prior to sampling.

   If circulation is not possible for any reason, take samples from the top, middle, and bottom of the tank.

   If it is not possible to take three samples, due to the construction of the vessel or other reasons, then take one sample from the top of the tank and a second sample from the bottom.

   When sampling foam concentrate from atmospheric tanks employing foam seal/mineral oil, please ensure that the foam sample is not contaminated with oil and is representative of the foam liquid in the tank.

   NOTE: SUBMIT ONE COMPOSITE SAMPLE ONLY, made by mixing the samples taken from the tank.

   If it is only possible to take one sample from a storage vessel that has not been circulated, it should be understood that this may not be truly representative of the complete contents of the storage tank.

   NOTE: When using drain-off points, ensure that sufficient fluid is allowed to flush through the pipework to clear any accumulation of sludge, and provide a representative sample.
2. The sample must be at least 500 ml (approximately 1 pint) in volume and shipped in a clean, tightly sealed container made of polyethylene. Contact techsvc@nationalfoam.com for sample kits, if needed.
3. The container label (do not use gummed labels) or container must be marked with a waterproof pen showing the following information:
   - Name of company
   - Type of concentrate; e.g., AFFF 3%, etc. (samples that are not identified with the type of foam and % will not be tested)
   - Source of sample; e.g., B5 Foam Room - Tank #1
4. Complete the Request for Analysis Form on pages 3 and 4.

   NOTE: Indicate the type of foam and lot number, if known. Be specific in storage container identification; e.g., 1500-gallon tank located in B5 Foam Room - Tank #1. Note any special conditions or problems.
5. Sample containers must be packaged to avoid damage during shipment. Ship the samples to National Foam's Technical Service Lab at the address listed on the Request for Analysis Form.

Procedures for Taking Foam Proportioning Samples

In order to accurately determine foam concentrate proportioning, three samples need to be collected from each foam system tested:

- Foam concentrate
- Dilution water
- foam solution from the proportioning system

The foam concentrate sample should be taken from the foam concentrate supply tank of the system to be tested. It is also advised that the foam concentrate should be tested as recommended by NFPA 11 as this will evaluate any dilution or evaporation or deterioration of the foam concentrate (see NFC960).

The dilution water used for the system test should also be sampled.

Foam solution samples should be taken once it is determined that the system is operating properly and that the foam solution sample is collected at an adequate distance downstream from the proportioner being tested. Ensure that the system has been allowed to run at design flow and has reached a steady state prior to collecting foam solution sample. Refer to manufacturer's Operating and Maintenance manual for the proportioning system to determine the operating procedures. Do not sample foam solution drained from expanded foam as this can produce misleading results.

1. Place foam concentrate, dilution water and proportioned foam solution in labeled containers. 500 ml (or approximately 1 pint) samples are required for the foam concentrate and proportioned foam solution. 1000 ml of the dilution water is requested.
2. Containers should be clean and tightly sealed. Polyethylene containers are preferred, or contact techsvc@nationalfoam.com for a test kit.
3. Mark containers with a waterproof pen, indicating the following information:
   - Name of company
   - Type of concentrate; e.g. AFFF 3%, etc. (Samples that are not identified with the type of foam concentrate and system proportioning percentage will not be tested)
   - Source of sample or system; e.g. B5 Foam Room – Tank 1
4. Complete the Request for Proportioning Analysis Form on pages 3 and 4w.

NOTE: Indicate the type of foam and lot number, if known. Be specific in storage container/system identification. Note any special conditions or problems.

5. Sample containers must be packaged to avoid damage during shipment. Ship the samples to National Foam Technical Service Laboratory at the address listed on the Request for Analysis form.

National Foam
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24hr **RED ALERT®** : 610-363-1400 • Fax: 610-431-7084
www.nationalfoam.com

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REQUEST FOR ANALYSIS FORM

NATIONAL FOAM

06/26 NFC960 (Rev L)

Forward Samples To:

Attention: Technical Service Lab
141 Junny Road • Angier, NC 27501
Phone: (919) 331-6100 • Fax: (919) 639-2257
Red Alert Emergency Response Number: (610) 363-1400
E-Mail: techsvc@nationalfoam.com
Email for free sample kit

From:

Name: _____ Title: _____ Date: __ / __ / ___

Company Name: _____

Billing Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____ E-Mail: _____

Payment Information Required for Testing:

Purchase Order No.: _____ Check No.: _____ Check Date: __ / __ / ___

Credit Card: ☐ American Express ☐ Discover ☐ Mastercard ☐ Visa

Credit Card No.: _____ Security Code.: ____ Expiration Date: __ / __ / ___

Name on Card: _____ Signature: _____

Forward Report To:

Name: _____ Company _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____ E-Mail: _____

Testing Requested	Price	# of Samples	$xxx
Laboratory Analysis	$150/Sample		
* Proportioning Testing	$150/Sample		
Surcharges			
** Dual Water Testing	$50/Sample		
*** Expedited Testing	$75/Sample		
		Total	

* *Please see instructions on earlier pages specifying additional required samples for proportioning testing.*

** *Samples will be tested in fresh water solutions only unless otherwise specified on sample information page*

*** *Expedited testing:*

1 - 5 samples: 2-3 working days
6 - 10 samples: 4-5 working days
10+ samples: Please contact National Foam for expedited delivery timeframe

Note: Prices subject to change without prior notice

Note Any Special Conditions/Problems:

_____

_____

_____

_____

_____

_____

REQUEST FOR ANALYSIS FORM

NATIONAL FOAM

Note: Only foam concentrates manufactured by National Foam may be submitted for analysis. Please provide the information below for all samples. At a minimum, foam concentrate manufacturer, product name and type, and if applicable, proportioning percentage must be completed or the sample will not be tested.

Foam Concentrate Sample					Sample Source		System Information		Water Type to be Tested		
Manufacturer	Product Name	Type	Proportioning Percentage(s) (3%, 1% x 3%, etc.)	Lot Number (if known)	Tank or Package Size (gal)	Tank Location (Top, Middle, Bottom, Mix)	Type (Sprinkler, Fire Truck, etc.)	Proportioning (1%, 3% or 6%)	Fresh	Salt	Both*

NOTE: *Use additional forms if needed.*

* ***NOTE:*** *Both system water types will incur the Dual Water Testing Surcharge per sample.*

Foam Concentrate Type Abbreviations

Fluorinated Foam Concentrates (Only National Foam Product Samples Accepted for Testing):

AFFF - Aqueous Film Forming Foam; AR-AFFF - Alcohol Resistant AFFF; FP - Fluoroprotein Foam; FFFP - Film Forming Fluoroprotein; AR-FFFP - Alcohol Resistant FFFP.

Fluorine Free Foam Concentrates (Non-National Foam Product Samples Accepted for Testing with SDS):

SFFF - Synthetic Fluorine Free Foam; AR-SFFF - Alcohol Resistant SFFF; Hi-Ex - High Expansion Foam; CA - Class A Foam and/or Wetting Agent; P - Protein