

FOAM TEST KITS

REFRACTOMETER & CONDUCTIVITY

NPR420

- Portable Kit
- Contains All Necessary Supplies
- Choice of Refractometer or Conductivity Method



Description

Foam Test Kits supply all the components necessary to determine foam concentrate proportioning accuracy in water solutions used to generate foam. Improper concentration can negatively affect the performance of the foam system in providing firefighting efficacy.

NFPA 11 Standard for Low-, Medium-, and High-Expansion Foam (2016) recommends confirmation of proper function of the foam proportioning system by conducting a foam injection rate test. Annual inspection is also recommended by NFPA 25 Standard for the Inspection, Testing and Maintenance of Water-Based Fire Protection Systems (2017). NFPA 11 Annex B details acceptable methods for determination of foam solution concentration. These methods include the Refractive Index Method and the Conductivity Method. National Foam provides Foam Test Kits for each of these methods.

Features

Refractometer Test Kit

- 3 Plastic Flasks with caps (250 ml)
- 1 Syringe (20 ml Luer-lock)
- 2 Syringes (10 ml Luer-lock)
- 1 Graduated Cylinder (100 ml)
- 3 pipets (7 ml)

- 1 Digital Refractometer (Misco V-100 Palm Abbe PA-202 or equivalent)
- 1 Instruction Manual
- 1 Carrying case

Conductivity Test Kit

- 3 Plastic Flasks with caps (250 ml)
- 1 Syringe (20 ml Luer-lock)
- 2 Syringes (10 ml Luer-lock)
- 1 Graduated Cylinder (100 ml)
- 3 pipets (7 ml)
- 1 Conductivity Meter (Traceable 4169 or equivalent)
- 1 Conductivity Probe
- 1 Instruction Manual
- 1 carrying case

Applications

Determination of foam concentration in solution is used as a means of determining the accuracy of the foam system's proportioning equipment. Accuracy of foam concentrate proportioning affects the foam quality, or expansion and 25% drainage time of the foam which may, in turn, affect the efficacy of the fire performance. Two acceptable methods for determination of foam concentrate proportioning in water include the refractive index method and the conductivity method (NFPA 11 Annex D). Both methods

employ preparation of standard solutions of known concentrations. Measurement of either the refractive Index or conductivity of the known solutions is plotted versus the percent concentration on a graph or spreadsheet. The proportioned sample is then compared to the standard curve values to determine acceptable concentration.

The acceptable proportioning ranges for foam systems are as follows:

- 1% Systems1.0 – 1.3%
- 2% Systems2.0 – 2.6%
- 3% Systems3.0 – 3.9%
- 6% Systems6.0 – 7.0%

Using water and foam concentrate, the standard solutions to be prepared include concentrations at the nominal intended percentage of injection as well as concentrations of one percentage point above and below the nominal percentage. After the foam solutions are properly mixed, readings are taken of each solution. Using standard graph paper or a spreadsheet program, the readings are plotted on one axis and the percent concentration of the foam solutions are placed on the other axis. The plotted curve is used as a standard for the subsequent tests to determine the proportioning accuracy of the system.

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General recommendations for both methods include:

- The water used to prepare the standard concentration solutions must be representative of the water that will be discharged through the system to test the foam concentrate proportioning.
- The foam concentrate used to prepare the standard concentration solutions must also be representative of the product to be used in the foam system. Foam concentrates can vary in refractive index or conductivity from lot to lot.
- The standard solutions of known concentrations should be accurately prepared.
- The method chosen must provide accurate values and there should be sufficient differences in the readings to be able to discern differences in concentration.
- Controlling variable conditions such as temperature fluctuations will aid in maintaining accuracy of the readings.
- When evaluating system proportioning, the flow rate should approximate the design rate of the system.
- Proportioned foam solution shall be run to the devices protecting the greatest single hazard and to the device with the lowest flow rate.
- The foam test shall last a minimum of 1 minute (actual injection time) to insure the proportioning system has stabilized before taking samples.

TECHNICAL SPECIFICATIONS		
	Refractometer Kit	Conductivity Kit
	Digital Refractometer	Conductivity Meter
Unit of Measure	Brix/Refractive Index (nD)	Conductivity
Measurement Range	0.0 - 85.0 Brix 1.3330 - 1.5000 nD	0.0µS/cm - 19.99mS
Measurement Precision	+/- 0.1 Brix +/- 0.0001 nD	+/- 2.0%
Temperature Compensation	Automatic	Automatic
Power Supply	2 AAA Batteries	(1) 9 Volt Battery
Calibration Points	2	1
Display	LCD	LCD

ORDERING INFORMATION

Part Number	Description	Shipping Weight	Shipping Dimensions
4999-1000-8	Foam Test Kit, Refractometer	10.0 lb - 4.5 kg	1.24 ft ³ (0.035 m ³)
4999-1000-5	Foam Test Kit, Conductivity	10.0 lb - 4.5 kg	1.24 ft ³ (0.035 m ³)