



**DATA SHEET  
#NFC210**

**AER-O-WATER 3EM  
AFFF Foam Concentrate**

**Description**

Aer-O-Water® 3EM is a superior quality aqueous film forming foam (AFFF) which is used at 3% concentration to extinguish fires in hydrocarbon fuels. It has been tested and qualified to meet the stringent requirements of U.S. Military Specification MIL-F-24385F. Aer-O-Water 3EM is suitable for use with most types of proportioning equipment and discharge devices.

AFFF foam concentrates are designed for rapid fire knock-down by producing a thin aqueous film which spreads across the surface of the fuel, separating the fuel from oxygen. This is accomplished by allowing the foam solution to quickly drain from the foam bubble which in turn, affects long term sealability and burnback resistance.

The aqueous film is produced by the fluorocarbon surfactant reducing the surface tension of the foam solution to a point where the solution can be supported by the surface tension of the fuel. The effectiveness of the aqueous film is directly influenced by the surface tension of the fuel. The aqueous film tends to be more effective on fuels with higher surface tension such as diesel and jet fuels, and less effective on fuels with lower surface tension such as hexane and gasoline.

In general, AFFF foam concentrates may be used with non aspirating nozzles and sprinklers, however, for best foam expansion and 25% drainage time, all foam concentrates should be used with aspirating nozzles and foam making discharge devices.

**Features**

- Low energy input AFFF - requires minimal agitation.
- Excellent fluidity provides rapid "knockdown".
- Suitable for use with fresh or sea water.
- Compatible with standard proportioning and foam making devices.
- Suitable for use with foam compatible dry powder extinguishing agents.

**Typical Physical Properties**

Appearance ..... Light Amber Color  
 Specific Gravity at 77°F(25°C) ..... 1.04  
 pH ..... 8.0  
 Viscosity at 77°F(25°C) ..... 3.0 csks

Freezing Point ..... 17°F(-8°C)  
 Minimum Usable Temperature ..... 35°F(2°C)  
 Maximum Usable Temperature ..... 120°F(49°C)

**Applications**

Aer-O-Water 3EM is used at 3% concentration in fire suppression systems and manually to fight fires involving hydrocarbon fuels such as crude oil, gasoline, and fuel oils. It is not suitable for use on polar solvents or water miscible fuels such as alcohols, ketones, esters, and ethers. Typical installations include foam water sprinkler systems, aircraft hangars, loading racks, process areas, etc. Aer-O-Water 3EM is also an excellent agent for use in Aircraft Rescue and Fire Fighting (ARFF) or other manual fire fighting applications where polar solvent fuels are not encountered.

**Approvals and Listings**

- Underwriters Laboratories, Inc.
- Factory Mutual System
- U.S. Military Specification MIL-F-24385F Qualified Products List (QPL)

Aer-O-Water 3EM has successfully passed UL-162 7th Edition test criteria for use at 3% concentration on hydrocarbons. The U.L. Listings include application through a variety of proportioning and foam making discharge devices using fresh or sea water. Consult National Foam for a complete list of these devices.

Aer-O-Water 3EM has passed stringent U.S. Military requirements for flammable liquid fire protection for use at 3% concentration on hydrocarbons.

**Storage and Handling**

Aer-O-Water 3EM is ideally stored in its original shipping container or in tanks or other containers which have been designed for such foam storage. Recommended construction materials are stainless steel (Type 304L or 316), high density cross linked polyethylene, or reinforced fiberglass polyester (isophthalic polyester resin) with a vinyl ester resin internal layer coating (50-100 mils).

Foam concentrates are subject to evaporation which accelerates when the product is exposed to air. Storage tanks should be sealed and fitted with a pressure vacuum vent

to prevent free exchange of air. The recommended storage environment is within the UL Listed temperature range of 35°F to 120°F (2°C to 49°C).

Aer-O-Water 3EM has been tested for compatibility with all 3% AFFF foam concentrates which are qualified to MIL-F-24385F, and are suitable for mixing in long term storage. It should not be mixed with other foam concentrates which are not qualified to MIL-F-24385F. Such mixing could lead to chemical changes in the product and a possible reduction in or loss of fire fighting capability. Most expanded foams are compatible for side-by-side application during an incident.

Aer-O-Water 3EM may be stored as a 3% premixed solution using fresh water. A biocide agent should be added to prolong storage life of the premix solution.

Aer-O-Water 3EM is suitable for use in combination with foam compatible dry chemical extinguishing agents.

### **Shelf Life, Inspection, and Testing**

The shelf life of any foam concentrate is maximized by proper storage conditions and maintenance. Factors affecting shelf life are wide temperature changes, extreme high or low temperatures, evaporation, dilution, and contamination by foreign materials. Properly stored National Foam AFFF foam concentrates have been tested and shown no significant loss of fire fighting performance, even after 15 years.

Annual testing of all fire fighting foam is recommended by the National Fire Protection Association (NFPA). National Foam provides a Technical Service Program to conduct such tests.

### **Environmental and Toxicological Information**

Aer-O-Water 3EM is biodegradable. However, as with any substance, care should be taken to prevent discharge from entering ground water surface water, or storm drains. With advance notice, Aer-O-Water 3EM can be treated by local

biological sewage treatment systems. Since facilities vary widely by location, disposal should be made in accordance with federal, state and local regulations.

The biological oxygen demand (BOD) and chemical oxygen demand (COD) of Aer-O-Water 3EM are as follows:

BOD<sub>20</sub> 480,000 mg/kg  
COD 516,000 mg/kg

Aer-O-Water 3EM has not been tested for acute oral toxicity, primary skin irritation, or primary eye irritation. Repeated skin contact will remove oils from the skin and cause dryness. Aer-O-Water 3EM is a primary eye irritant, and contact with the eyes should be avoided. Users are advised to wear protective equipment. If Aer-O-Water 3EM enters the eyes, flush them well with water and seek immediate medical attention. For further details, see the Aer-O-Water 3EM Material Safety Data Sheet.

### **Ordering Information**

| CONTAINER                                                 | SHIPPING WEIGHT          | PART NUMBER |
|-----------------------------------------------------------|--------------------------|-------------|
| <b>5-Gallon Pails</b><br>(19 litres)                      | 46 lb. (20.9 kg)         | 1133-8340-6 |
| <b>55-Gallon Drums</b><br>(208 litres)                    | 496 lb. (225 kg)         | 1133-8481-6 |
| <b>275-Gallon IBC Reusable Tote Tank</b><br>(1041 litres) | 2520 lb. (1145.5 kg)     | 1133-8725-6 |
| <b>Bulk</b>                                               | 8.59 lb./gal.(1.03 kg/l) | 1133-8001-6 |

Palletizing of pails and drums is available upon request.

### **SHIPPING CUBE**

|                               |                              |
|-------------------------------|------------------------------|
| 5-Gallon Pail .....           | 1.13 cu. ft. (0.032 cu. m)   |
| 55-Gallon Drum .....          | 11.51 cu. ft. (0.326 cu. m)  |
| 275-Gallon IBC Tote Tank .... | 51.11 cu. ft. (1.1061 cu. m) |

This information is only a general guideline. The company reserves the right to change any portion of this information without notice. Terms and conditions of sale apply and are available on request.

07/01 (Rev C) Printed in USA (NFC210-AOW3EM.P65)