



TECHNICAL INFORMATION

AR-AFFF CONCENTRATE 1X1

DESCRIPTION

NEPT1 is a new Synthetic Newtonian Aqueous Film Forming Foam (AFFF/AR) Concentrate, designed to be used at very low concentration: 1% for Class B hydrocarbon fires and polar fuels.

NEPT1 is different to other AFFF/AR because **it doesn't contain polymers** in its formulation. This concentrate is formulated from hydrocarbon and fluorochemical surfactants along with solvents.

The AFFF solution requires relatively low energy to expand into foam and the liquid which drains from the foam has the unique ability to form an aqueous film on most fuel surfaces. This film avoids contact with oxygen and helps preventing the release of fuel vapor. The water content of the foam produces a cooling effect.

Two of the most interesting advantages using NEPT1 are the small quantity of foam concentrate needed and that it doesn't have gelification problems because it doesn't contain polymers.

It is suitable in concentrations of 1%.

APPLICATION

NEPT1 should be used with an induction rate of 1% for Class B hydrocarbon fires and polar fuels.

Its excellent wetting characteristics make it useful for combatting Class A fires as well.

It can be used with low expansion foam equipment (foam chambers, nozzles...) and non-aspirating discharge devices (handline water fog/stream nozzles or standard sprinkler heads).

Aspirated AFFF results in higher expansion ratios, in a longer 25% drainage time and 25% burnback time than nonaspirated. The use of non-aspirated AFFF has several advantages over the use of aspirated AFFF in situations involving low vapor pressure fuels and rescue operations involving life danger.

PROPORTIONING

NEPT1 can be easily proportioned using most conventional proportioning equipment such as:

*Balanced pressure pump and bladder tank proportioners, around the pump type and venturis proportioners, and handline nozzles with fixed induction/pickup tubes.

TYPICAL PHYSICAL PROPERTIES OF CONCENTRATE

Appearance	Clear Yellow Liquid
Density, g/cm ³	1,07±0,01
pH	7,5±1,0
Viscosity (Brookfield), 375 s ⁻¹ , mPa.s:	
• 20°C	<40
• 0°C	<95
Freezing Point,°C	<-12

PROPERTIES OF FOAM SOLUTIONS

Induction Rate	1 %
Surface Tension, mN/m	16,5±1
Interfacial Tens.(ciclohex.), mN/m	>2,0
Low Expansion Rate (1%)	> 6,5
Drainage Time	> 3'00"

FIRE PERFORMANCE

NEPT1 is certified by MPA DRESDEN according to the following Standards:

- IMO MSC.1 Circ. 1312:2009 (Sea water)
- ICAO – Level B

NEPT1 fulfills the requirements of the EN-1568:3 and 4 Standards (Fresh water and sea water).

COMPATIBILITY WITH OTHER CONCENTRATES

The NFPA standard (NFPA 412, Paragraph 214 and NFPA 11B, 1-5.2) prohibits the mixing of AFFF concentrates unless it has previously been determined that they are compatible.

The MIL-F24385C standard provides a formalized method of compatibility determination but the Freeze Protected AFFF fall outside the military specification.

vs FOCUM recommends the following test: NEPT1 products are considered compatible in all proportions with the concentrates supplied by other manufacturers, when their mixture maintains its properties of foamability, film formation, sealability and fire performance to the same extent as the worst concentrate involved in the mixture, after an aging period of 10 days at 65°C at least.

Furthermore, the mixture should always be used with the higher induction and for the higher minimum temperature of use of the mixed concentrates.

NEPT1 may simultaneously be applied to fires with other foam solutions and dry chemical fire fighting agents.

MATERIALS OF CONSTRUCTION COMPATIBILITY

NEPT1 is compatible with pipe manufactured from various Stainless Steel or Brass Compounds. Other recommended materials are Polyethylene and Aluminium.

Galvanized pipe and fittings must not be used in areas where undiluted concentrate can get in contact with them since corrosion will result.

SHELF LIFE

The factors affecting shelf life and stability for this foam concentrate are the following: big temperature changes, handling procedures, extremely high or low temperatures and contamination by unknown materials.

Its shelf life is about 20-25 years if the storage is done according to the recommendations of vs FOCUM. In case of premixed solutions the shelf life depends on the type of water used to make up the premixed solution. Vs FOCUM recommends premixing only with potable water and only then a shelf life of 4 to 5 years is to be expected.

According NFPA 11 (12.6), samples of foam concentrates shall be sent to the manufacturer or qualified laboratory for quality condition testing at least annually.

STORAGE AND HANDLING

NEPT1 concentrate should be stored in the original shipping containers or in other special containers specially designed for this type of products (stainless steel or epoxy lined tanks).

Place the storage containers in an area at temperatures between -10°C to 50°C.

If the product is frozen during storage or transportation, thawing will render the product completely usable. Mixing after freeze thaw cycle is recommended.

ENVIRONMENTAL/TOXICOLOGICAL PROPERTIES

1.-Aquatic Toxicity.

The aquatic life, neither sensitive species nor tolerant ones, is not adversely affected by the use of NEPT1.

2.-Biodegradability.

The theoretical biodegradability is measured with two different tests: BOD over a five day period and COD; but for AFFF solutions BOD tests are conducted for a twenty day period because there is a lag phase in the bacterial population growth curve as the bacteria become acclimated to the chemicals in AFFF. The biodegradability is the ratio of BOD to COD: BOD_{20}/COD .

A concentrate is considered easily biodegradable when the ratio: DBO_{28}/DQO is above 0,65. NEPT1 products are well above this level and so they are easily biodegradable.

3.-Sewage Treatment Plant Treatability.

As NEPT1 products have a low biological oxygen demand (BOD), treatment plants don't need additional oxygen.

NEPT1 is not particularly toxic to the microbial populations normally found in treatment plants.

Compatible with the treatment plant's flora Anti-foam agents may be used to reduce foaming in waste streams.

4.-Nutrient Loading.

An algal bloom is not expected as NEPT1 contains no sources of nitrates or phosphates. Furthermore, it is extremely low in total organic carbon.

ORDERING INFORMATION

NEPT1 products are available in plastic Pail (20, 25 or 60 l), Drum (200 l.), Container (1000 l.) and Bulk.

