

ANSULITE ARC 3% or 6% AR-AFFF Concentrate

Description

ANSULITE ARC (Alcohol-Resistant Concentrate) 3% or 6% AR-AFFF (Aqueous Film-Forming Foam) Concentrate is formulated from special fluorochemical and hydrocarbon surfactants, a high molecular weight polymer, and solvents. It is transported and stored as a concentrate to provide ease of use and considerable savings in weight and volume.

It is intended for use as a 3% or 6% proportioned solution (depending on the type of fuel) in fresh, salt or hard water. It may also be used and stored as a premixed solution in fresh or potable water for use with the ANSUL® Model AR-33-D wheeled fire extinguisher.

Three fire suppressing mechanisms are in effect when using ANSULITE ARC 3% or 6% AR-AFFF foam solution on either a conventional Class B hydrocarbon fuel such as gasoline, diesel fuel, etc.; or a Class B polar solvent (water miscible fuel) such as methyl alcohol, acetone, etc.

1. An aqueous film is formed in the case of a conventional hydrocarbon fuel, or a polymeric membrane in the case of a polar solvent fuel. This film or membrane forms a barrier to help prevent the release of fuel vapor.
2. Regardless of the fuel type, a foam blanket is formed which excludes oxygen. The liquids that form the film or the polymeric membrane are drained from the foam blanket.
3. The water content of the foam produces a cooling effect.

PHYSIOCHEMICAL PROPERTIES AT 77 °F (25 °C)

Appearance	Pale Yellow Gelled Liquid
Density	1.000 g/ml ± 0.02
pH	7.0 – .8.5
Refractive Index	1.3480 ± 0.0020
Surface Tension (3% Solution)	18 ± 1 dynes/cm
Viscosity	2525 ± 700 centipoise*

*Brookfield Viscometer Spindle #4, Speed 30 rpm

ANSULITE ARC 3% or 6% AFFF Concentrate is a non-Newtonian fluid that is both pseudoplastic and thixotropic. Because of these properties, dynamic viscosity will decrease as shear increases.

Application

ANSULITE ARC 3% or 6% AR-AFFF Concentrate is unique among AFFF agents in that it can be used on either conventional Class B fuels or polar solvent type Class B fuels. Its excellent wetting characteristics make it useful in combating Class A Fires as well.

Because of the low energy to make foam, it can be used with both aspirating and non-aspirating discharge devices.



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To provide even greater fire protection capability, it can be used with dry chemical suppressing agents without regard to the order of application. Due to the velocity of the dry chemical discharge, care must be taken not to submerge the polymeric membrane below the fuel surface.

Fire Performance

The fire performance of ANSULITE ARC 3% or 6% AR-AFFF Concentrate is measured primarily against Underwriters Laboratories Standard 162.

Foaming Properties

When used with fresh, salt or hard water, at the correct dilution with most conventional foam making equipment, the expansion ratio will vary depending on the performance characteristics of the equipment. Aspirating discharge devices produce expansion ratios from 5:1 to 10:1 depending primarily on type of aspirating device and flow rate. Non-aspirating devices such as handline water fog/stream nozzles or standard sprinkler heads give expansion ratios of 2:1 to 4:1.

Proportioning

ANSULITE ARC 3% or 6% AR-AFFF Concentrate can be easily proportioned (at the correct dilution) using most conventional proportioning equipment such as:

1. Balanced pressure and in-line balanced pressure pumped proportioning equipment
2. Balanced pressure bladder tank proportioners
3. Around-the-pump proportioners
4. Fixed or portable (in-line) venturi type proportioners
5. Handline nozzles with fixed induction/pickup tubes

The usable temperature range for ANSULITE ARC 3% or 6% AR-AFFF Concentrate with this equipment is 35 °F to 120 °F (2 °C to 49 °C) respectively.

Application Rates

Application Rates using UL 162 Standard 50 ft² Fire Test on representative hydrocarbon and polar solvent fuels are listed below.

UL Type II Application⁽¹⁾ – Polar Solvents

Fuel Group	Concentration	UL ⁽²⁾ Recommended Application Rate	
		gpm/ft ²	(Lpm/m ²)
Alcohol			
Methanol (MeOH)	6%	0.10	(4.1)
Ethanol (EtOH)	6%	0.10	(4.1)
Isopropanol (IPA)	6%	0.15	(6.1)
Ketone			
Acetone	6%	0.15	(6.1)
Methyl Ethyl Ketone (MEK)	6%	0.15	(6.1)
Carboxylic Acid			
Acetic Acid	6%	0.17	(6.9)
Aldehyde			
Propionaldehyde	6%	0.17	(6.9)
Ester			
Ethyl Acetate	6%	0.10	(4.1)
Butyl Acetate	6%	0.10	(4.1)
U.L. Type III Application⁽³⁾ – Hydrocarbons			
Heptane	3%	0.10	(4.1)
Toluene	3%	0.10	(4.1)
Gasoline	3%	0.10	(4.1)
10% Gasohol (EtOH)	3%	0.10	(4.1)

(1) TYPE II DISCHARGE OUTLET – A device that delivers foam onto the burning liquid and partially submerges the foam or produces restricted agitation of the surface as described in UL 162.

(2) UL builds in a 5/3 safety factor from its test rate to its recommended rate of application.

(3) TYPE III DISCHARGE OUTLET – A device that delivers the foam directly onto the burning liquid as described in UL 162.

Storage/Shelf Life

When stored in the packaging supplied (polyethylene drums or pails) or in equipment recommended by the manufacturer as part of the foam system and within the temperature limits specified, the shelf life of ANSULITE ARC 3% or 6% AR-AFFF Concentrate is about 20-25 years.

The factors affecting shelf life and stability for ANSULITE AFFF concentrates are discussed in detail in ANSUL Technical Bulletin No. 54. Freezing of the product should be avoided. If, however, the product is frozen during storage or transportation, it must be thawed and inspected for signs of separation. If separation has occurred, the product must be mechanically mixed until homogeneous.

When the concentrate is to be stored in an atmospheric storage tank, a 1/4 in. (6 mm) layer of mineral oil should be added to seal the concentrate and minimize the effects of evaporation.

Compatibility

Since the concentrate is a unique blend of surfactants, high molecular weight polymers, and solvents; it is recommended that ANSULITE ARC 3% or 6% AR-AFFF should not be mixed with any other foam concentrates. Consult Technical Services with any questions of compatibility.

Materials of Construction Compatibility

Tests have been performed with ANSULITE ARC Concentrate verifying its compatibility with standard carbon steel “black” pipe and pipe manufactured from various stainless steel or brass compounds. Alternative pipe, fittings, and valves may be used in some cases if acceptable to the customer and/or the authority having jurisdiction. Refer to ANSUL Technical Bulletin No. 59, addressing acceptable materials of construction for use with ANSUL foam concentrates.

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

Please **first** consult Tyco Fire Protection Products for specific guidelines concerning materials of construction.

Inspection

As with any fire suppressing agent, ANSULITE ARC 3% or 6% AR-AFFF Concentrate, whether in the concentrate or pre-mixed form, should be inspected periodically per requirements of NFPA 11 “Standard for Low-, Medium-, and High-Expansion Foam.” Annually submit samples to the manufacturer or a qualified laboratory for quality condition testing. Refer to the Field Inspection Manual (Part No. 31274) for detailed inspection procedures. An annual inspection is recommended unless unusual conditions of exposure occur such as described in ANSUL Technical Bulletin No. 54. In such cases, contact Tyco Fire Protection Products for more information.

Approvals and Listings

There are no military or federal specifications covering products such as ANSULITE ARC 3% or 6% AR-AFFF Concentrate.

ANSULITE ARC 3% or 6% AR-AFFF Concentrate is approved, qualified under, listed or meets the requirements of the following specifications and standards:

Underwriters Laboratories Inc. – UL Standard 162

1. Foam Quality Tests
2. Class B Hydrocarbon Fuel Fire Tests
3. Class B Polar Solvent Fuel Fire Tests
4. Foam Identification Tests
5. Tests of Shipping Containers
6. Class B Hydrocarbon and Polar Solvent Fuel Sprinkler Tests (Standard type both upright and pendent)
7. Subsurface Injection

Besides determining agent characteristics, Underwriters Laboratories lists ANSULITE ARC foam concentrate for use with specific hardware components that also carry the UL listing. To obtain these listings, Tyco Fire Protection Products selected various hardware components from the major U.S. manufacturers of foam hardware.

Ordering Information

ANSULITE ARC 3% or 6% AR-AFFF Concentrate is available in pails, drums, totes, or bulk shipment.

Part No.	Description	Shipping	
		Weight	Cube
55797	Pail	45 lb	1.25 ft ³
	5 gal (19 L)	(20.4 kg)	(0.0353 m ³)
55808	Drum	495 lb	11.83 ft ³
	55 gal (208 L)	(224.5 kg)	(0.335 m ³)
432157	Tote	2465 lb	50.05 ft ³
	265 gal (1000 L)	(1118 kg)	(1.42 m ³)
56084	Bulk Order	Contact Technical Services	

Note: The converted metric values in this document are provided for dimensional reference only and do not reflect an actual measurement.

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