HYDRAL AR 3-3 C 3%x3% AR-AFFF Concentrate

Description

HYDRAL AR 3-3 C AR-AFFF (Alcohol Resistant Aqueous Film-Forming Foam) Concentrate combines fluoro-and hydrocarbon-surfactant technologies to provide superior fire and vapor suppression for Class B, polar solvent and hydrocarbon fuel fires. This synthetic foam concentrate is intended for forceful or gentle firefighting applications at 3% solution on hydrocarbon fuels and for gentle firefighting applications at 3% solution on polar solvent fuels in fresh, salt, or hard water. The dual 3% solution level for HYDRAL AR 3-3 C minimizes the product required to protect against hydrocarbon and polar solvent fuel fire hazards.

HYDRAL AR 3-3 C foam solution utilizes three suppression mechanisms intended for rapid fire knockdown and superior burnback resistance:

- The foam blanket blocks oxygen supply to the fuel.
- Liquid drains from the foam blanket and forms either:
  - An aqueous film on a hydrocarbon fire, or
  - A polymeric membrane on a polar solvent fire which suppresses the vapor and seals the fuel surface
- The water content of the foam solution produces a cooling effect for additional fire suppression.

TYPICAL PHYSIOCHEMICAL PROPERTIES AT 20 °C

Appearance	Viscous amber liquid
Density	1.05 ± 0.02 g/ml
pH	7.0 – 8.5
Refractive Index	1.3680 minimum
Viscosity*	2,300 ± 300 cPs
Sediment**	≤ 0.25%
Spreading Coefficient	3 dynes/cm minimum at 3% dilution
Pour Point	≤ -15 °C
Freeze Point	≤ -18 °C
Storage and Operating Range**	-13 °C – 60 °C

*Brookfield viscometer, Spindle #4, Speed 60 rpm

**EN 1568:2008 protocol

HYDRAL AR 3-3 C Concentrate is a non-Newtonian fluid that is both pseudoplastic and thixotropic; therefore, dynamic viscosity will decrease as shear increases.

The HYDRAL AR 3-3 C AR-AFFF Concentrate formulation contains short-chain, C6 fluorochemicals manufactured using a telomer-based process that does not produce PFOS.

Approvals, Listings, and Standards

HYDRAL AR 3-3 C AR-AFFF Concentrate is approved, listed, qualified under, or meets the requirements of the following specifications and standards:

- EN 1568:2008
  - Parts 1, 2, 3, 4
- ICAO
  - Level B
- IMO MSC. 1/Circ. 1312
- MED Modules B and D

EN 1568 ICAO Level B

Application

HYDRAL AR 3-3 C AR-AFFF Concentrate is intended for use on both types of Class B fires; hydrocarbon fuels with low water solubility, such as crude oils, gasolines, diesel fuels, and aviation fuels; and polar solvent fuels with appreciable water solubility, such as methyl and ethyl alcohol, acetone, and methyl ethyl ketone. It may also be used in conjunction with dry chemical agents to provide even greater fire suppression performance.

HYDRAL AR 3-3 C Concentrate can be ideal for fixed, semi-fixed, and emergency response firefighting applications such as:

- Docks, on-board marine, and helipad systems
- Fuel or chemical storage tanks
- Industrial chemical and petroleum processing facilities
- Truck/rail loading and unloading facilities
- Flammable liquid containment areas

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Foaming Properties

HYDRAL AR 3-3 C AR-AFFF Concentrate may be effectively applied using most conventional foam discharge equipment at the correct dilution with fresh, salt, or hard water. For optimum performance, water hardness should not exceed 500 ppm expressed as calcium and magnesium.

HYDRAL AR 3-3 C Concentrate requires low energy to foam and the foam solution may be applied with aspirating and non-aspirating discharge devices. Non-aspirating devices, such as handline water fog/stream nozzles or standard sprinkler heads, typically produce expansion ratios from 2:1 to 4:1. Aspirating low-expansion discharge devices typically produce expansion ratios from 3.5:1 to 10:1, depending on the type of device and the flow rate. Medium-expansion discharge devices typically produce expansion ratios from 20:1 to 60:1.

Typical Foaming Characteristics* (Fresh and Sea Water)

Proportioning Rate	3%
Expansion Ratio	≥ 8.0
25% Drain Time (min:sec)	≥ 8:00
50% Drain Time (min:sec)	≥ 12:00

*per EN 1568-3: 2008 protocol

Proportioning

The recommended operational temperature range for HYDRAL AR 3-3 C AR-AFFF Concentrate is -13 °C to 60 °C per EN 1568. However, the diluted solution will freeze at 0 °C. This foam concentrate can require special proportioning equipment. It can be correctly proportioned using most conventional, properly calibrated, in-line proportioning equipment such as:

- Balanced and in-line balanced pressure pump proportioners
- Balanced pressure bladder tanks and ratio flow controllers
- Around-the-pump type proportioners
- Fixed or portable in-line venturi type proportioners
- Handline nozzles with fixed eductor/pick-up tubes

For immediate use: The concentrate may be diluted with fresh or sea water to a 3% pre-mix solution.

For delayed use: Consult Technical Services for guidance regarding suitability of a stored pre-mix solution (fresh water only).

Materials of Construction Compatibility

To help avoid corrosion, galvanized pipe and fittings should never be used in contact with undiluted HYDRAL AR 3-3 C AR-AFFF Concentrate. Refer to Johnson Controls Technical Bulletin *Acceptable Materials of Construction* for recommendations and guidance regarding compatibility of foam concentrate with common materials of construction in the firefighting foam industry.

Storage and Handling

HYDRAL AR 3-3 C AR-AFFF Concentrate should be stored in the original supplied package (HDPE totes, drums, or pails) or in the recommended foam system equipment as outlined in Johnson Controls Technical Bulletin *Storage of Foam Concentrates*. A thin layer up to 6 mm thick of appropriate-grade mineral oil may be applied to the surface of the foam concentrate stored in a fixed, atmospheric storage container to help minimize evaporation. Consult Johnson Controls for further guidance regarding the use of mineral oil to help seal the surface of AR-AFFF concentrates.

The concentrate should be maintained within the recommended operational temperature range. Freezing of the product should be avoided. If, however, the product freezes during transport or storage, it must be thawed and inspected for signs of separation. If separation has occurred, or is suspected, the HYDRAL AR 3-3 C Concentrate should be mechanically mixed until homogeneous, and additional testing may be required after mixing to verify product quality.

Factors affecting foam concentrate's long-term effectiveness include temperature exposure and cycling, storage container characteristics, air exposure, evaporation, dilution, and contamination. The effective life of HYDRAL AR 3-3 C Concentrate can be maximized through optimal storage conditions and proper handling. SABO FOAM concentrates have demonstrated effective firefighting performance with contents stored in the original package under proper conditions for more than 10 years.

Mixing HYDRAL AR 3-3 C Concentrate with other foam concentrates for long-term storage is not recommended. Use in conjunction with comparable 3x3 AR-AFFF products for immediate incident response is appropriate

Inspection

HYDRAL AR 3-3 C AR-AFFF Concentrate should be inspected periodically in accordance with NFPA 11, EN 13565-2, or other relevant standard. A representative concentrate sample should be sent to Johnson Controls Foam Analytical Services or other qualified laboratory for quality analysis per the applicable standard. An annual inspection and sample analysis is typically sufficient unless the product has been exposed to unusual conditions.

Quality Assurance

HYDRAL AR 3-3 C AR-AFFF Concentrate is subject to stringent quality controls throughout production, from incoming raw materials inspection to finished product testing, and is manufactured in an ISO 9001:2008 certified facility.

Ordering Information

HYDRAL AR 3-3 C AR-AFFF Concentrate is available in pails, drums, totes, or bulk shipment.

Part No.	Description	Shipping Weight
F113389C2	20 L Pail	22.1 kg
F113389C1	25 L Pail	27.45 kg
F113389D1	200 L Drum	218.5 kg
F113389T1	1,000 L Tote	1,110 kg

For bulk orders, consult an account representative.

Safety Data Sheets (SDS) are available at www.sabofoam.com.

If any foam product is discharged into the environment, efforts should be made to control, contain and collect the discharge for proper disposal, while following all applicable laws, regulations, and codes. Further information regarding the use, discharge, and disposal of firefighting foams can be found at www.sabofoam.com.

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