

## HYDRAL 1S 1% AFFF Concentrate

### Description

HYDRAL 1S 1% AFFF (Aqueous Film-Forming Foam) Concentrate combines fluoro- and hydrocarbon-surfactant technologies to provide superior fire and vapor suppression for Class B hydrocarbon fuel fires. This synthetic foam concentrate is intended for firefighting applications at 1% solution in fresh, salt, or hard water.

HYDRAL 1S 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 an aqueous film that suppresses fuel 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	Clear amber liquid
Density	1.02 ± 0.02 g/ml
pH	7.0 – 8.5
Refractive Index	1.3700 minimum
Viscosity*	5 ± 2 cSt
Sediment**	≤ 0.25%
Spreading Coefficient	3 dynes/cm minimum at 1% dilution
Pour Point	-4 °C
Freeze Point	-6 °C

\*Cannon-Fenske Viscometer at 20 °C

\*\*EN 1568:2008 protocol

HYDRAL 1S 1% Concentrate formulation contains short-chain, C6 fluorochemicals manufactured using a telomer-based process that does not produce PFOS.



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### Approvals, Listings, and Standards

HYDRAL 1S 1% AFFF Concentrate is approved, listed, qualified under, or meets the requirements of the following specifications and standards:

- UL Standard 162, Foam Liquid Concentrates



### Application

HYDRAL 1S 1% AFFF Concentrate is intended for use on Class B hydrocarbon fuel fires with low water solubility such as crude oils, gasolines, diesel fuels, and aviation fuels. It is not suitable for use on polar 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 1S AFFF Concentrate can be ideal for fixed, semi-fixed, and emergency response firefighting applications such as:

- Fuel or chemical storage tanks
- Industrial chemical and petroleum processing facilities
- Truck/rail loading and unloading facilities
- Flammable liquid containment areas
- Mobile equipment
- Aircraft hangars

## Foaming Properties

HYDRAL 1S 1% AFFF Concentrate may be effectively applied using most conventional foam discharge equipment at a 1% dilution with fresh, salt, or hard water. For optimum performance, water hardness should not exceed 500 ppm expressed as calcium and magnesium.

HYDRAL 1S 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	1%
Expansion Ratio	≥ 7
25% Drain Time (min:sec)	≥ 2:30
50% Drain Time (min:sec)	≥ 4:30

\*per EN 1568-3: 2008 protocol

## Proportioning

The recommended operational temperature range for HYDRAL 1S 1% AFFF Concentrate is 2 °C to 49 °C per UL-162. This foam concentrate 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 also be diluted with fresh or sea water to 1% pre-mix solution.

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

## Storage and Handling

HYDRAL 1S 1% 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*. The product should be maintained within the recommended temperature range. If the concentrate freezes during transport or storage, full product serviceability can be restored upon thaw with gentle re-mixing.

Factors affecting the 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 1S Concentrate can be maximized through optimal storage conditions and proper handling. SABO FOAM foam concentrates have demonstrated effective firefighting performance with contents stored in the original package under proper conditions for more than 10 years.

Mixing HYDRAL 1S Concentrate with other foam concentrates for long-term storage is not recommended. Use in conjunction with comparable 1% AFFF products for immediate incident response is appropriate.

## Materials of Construction Compatibility

To help avoid corrosion, galvanized pipe and fittings should never be used in contact with undiluted HYDRAL 1S 1% 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.

## Inspection

HYDRAL 1S 1% 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 1S 1% 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 1S 1% AFFF Concentrate is available in pails, drums, totes, or bulk shipment. For bulk orders, consult an account representative.

Part No.	Description	Shipping Weight	Container Volume
F101373C2	20 L Pail	22.1 kg	0.0285 m <sup>3</sup>
F101373C1	25 L Pail	27.45 kg	0.0329 m <sup>3</sup>
F101373D1	200 L Drum	218.5 kg	0.2477 m <sup>3</sup>
F101373T1*	1,000 L Tote	1,110 kg	1.398 m <sup>3</sup>

\*Totes are not UL approved packaging.

Safety Data Sheet (SDS) available at [www.sabofoam.com](http://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](http://www.sabofoam.com)

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

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