

CHEMGUARD C3IC1 3% AFFF Concentrate

Description

CHEMGUARD C3IC1 3% 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 3% solution in fresh, salt, or hard water.

CHEMGUARD C3IC1 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 77 °F (25 °C)

Appearance	Pale yellow liquid
Density	1.02 ± 0.02 g/ml
pH	7.0 – 8.5
Refractive Index	1.3630 minimum
Viscosity*	3.25 ± 1.0 cSt
Spreading Coefficient	3 dynes/cm minimum at 3% dilution
Pour Point	27 °F (-3 °C)
Freeze Point	27 °F (-3 °C)

*Cannon-Fenske viscometer at 77 °F (25 °C)

The environmentally-minded CHEMGUARD C3IC1 3% AFFF Concentrate formulation contains short-chain, C-6 fluorochemicals manufactured using a telomer-based process. The telomer process produces no PFOS, and these C-6 materials do not breakdown to yield PFOA. The fluorochemicals used in the concentrate meet the goals of the U.S. Environmental Protection Agency 2010/15 PFOA Stewardship Program and the current ECHA Directive (EU) 2017/1000.



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Approvals, Listings, and Standards

CHEMGUARD C3IC1 3% AFFF Concentrate is designed in accordance with National Fire Protection Association (NFPA) Standard 11 for Low-, Medium-, and High-Expansion Foam. The concentrate is approved, listed, qualified under, or meets the requirements of the following specifications and standards:

- UL Standard 162, Foam Liquid Concentrates
- ULC S564, Category 1 Foam Liquid Concentrates
- ICAO, Level C



Application

CHEMGUARD C3IC1 3% 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.

The concentrate also has excellent wetting properties that can effectively combat Class A fires. It may also be used in conjunction with dry chemical agents to provide even greater fire suppression performance.

CHEMGUARD C3IC1 Concentrate is specifically designed for aviation applications requiring exceptional firefighting performance, per the International Civil Aviation Organization (ICAO) standard. Ideal applications include:

- Aircraft Rescue & Fire Fighting (ARFF) vehicles
- Aircraft hangars, helidecks, and terminals
- Mobile emergency response equipment
- Flammable liquid containment areas

Foaming Properties

CHEMGUARD C3IC1 3% AFFF Concentrate may be effectively applied using most conventional foam discharge equipment at a 3% dilution with fresh, salt, or hard water. For optimum performance, water hardness should not exceed 500 ppm expressed as calcium and magnesium.

CHEMGUARD C3IC1 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 FOAM CHARACTERISTICS** (Fresh and Salt Water)

Proportioning Rate	3%
Expansion Ratio	≥ 9.5
25% Drain Time (min:sec)	≥ 3:30
50% Drain Time (min:sec)	≥ 5:45

**per EN 1568-3, 2008 protocol

Proportioning

The recommended operational temperature range for CHEMGUARD C3IC1 3% AFFF Concentrate is 35 °F to 120 °F (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 a 3% 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

CHEMGUARD C3IC1 3% 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 CHEMGUARD C3IC1 Concentrate can be maximized through optimal storage conditions and proper handling. CHEMGUARD concentrates have demonstrated effective firefighting performance with contents stored in the original package under proper conditions for more than 10 years.

Mixing CHEMGUARD C3IC1 Concentrate with other foam concentrates for long-term storage is not recommended. Use in conjunction with comparable 3% 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 CHEMGUARD C3IC1 3% 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

CHEMGUARD C3IC1 3% 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.

Ordering Information

CHEMGUARD C3IC1 3% AFFF Concentrate is available in pails, drums, totes, or bulk shipment.

<u>Part Number</u>	<u>Description</u>	<u>Approximate Shipping Weight</u>
Pails		
704237	5 gal (19 L)	45 lb (20.4 kg)
704237E	5 gal (19 L)	45 lb (20.4 kg)
Drums		
704239	55 gal (208 L)	495 lb (224.5 kg)
704239E	55 gal (208 L)	495 lb (224.5 kg)
Totes*		
704241	265 gal (1,003 L)	2,463 lb (1,117 kg)
704241E	265 gal (1,003 L)	2,463 lb (1,117 kg)

For bulk orders, consult an account representative.

*Totes are not UL/ULC approved packaging.

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

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

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