

## CHEMGUARD C306-MS-C 3% AFFF Concentrate

### Description

CHEMGUARD C306-MS-C 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 C306-MS-C foam solution utilizes three suppression mechanisms for rapid fire knockdown and enhanced burn-back 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	1.3655 ± 0.0020
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

### Application

CHEMGUARD C306-MS-C 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 has excellent wetting properties that can effectively combat Class A fires as well. It may also be used in conjunction with dry chemical agents to provide even greater fire suppression performance.

CHEMGUARD C306-MS-C Concentrate can be ideal for fixed and emergency response firefighting systems designed to protect naval and aviation assets. Typical applications include:

- Military and civilian aircraft facilities
- Crash fire rescue (per US DOT FAA AC No. 150/5210-6D)
- On-board marine/naval fire suppression systems
- Storage tanks
- Docks/marine tankers



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### Approvals, Listings, and Standards

CHEMGUARD C306-MS-C 3% AFFF Concentrate is approved, listed, qualified under, or meets the requirements of the following specifications and standards:

- US Department of Defense Military Specification
  - MIL-F-24385F: Fire Extinguishing Agent, Aqueous Film-Forming Foam (AFFF) Liquid Concentrate for Fresh and Sea Water.
- Underwriters Laboratories Inc. (UL)
  - UL Standard 162, Foam Liquid Concentrates
  - Fresh and Sea Water
- National Fire Protection Association (NFPA)
  - NFPA 403, Standard for Aircraft Rescue and Fire-Fighting Services at Airports
  - NFPA 409, Standard on Aircraft Hangars
  - NFPA 412, Standard for Evaluating Aircraft Rescue and Fire-Fighting Foam Fire Equipment
  - NFPA 414, Standard for Aircraft Rescue and Fire-Fighting Vehicles
  - NFPA 418, Standard for Helicopters

Contact Johnson Controls Technical Services and/or refer to listing agency for current product and compatible hardware listings.

The environmentally-minded CHEMGUARD C306-MS-C 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.



## Foaming Properties

CHEMGUARD C306-MS-C 3% AFFF Concentrate may be effectively applied using most conventional foam discharge equipment at 3% dilution with fresh, salt, or hard water. For optimum performance, water hardness should not exceed 500 ppm expressed as calcium and magnesium.

CHEMGUARD C306-MS-C Concentrate requires low energy to foam and the foam solution may be applied with aspirating and non-aspirating discharge devices. Non-aspirating discharge 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 Sea 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 C306-MS-C 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 C306-MS 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 long-term effectiveness include temperature exposure and cycling, storage container, air exposure, evaporation, dilution, and contamination. The effective life of CHEMGUARD C306-MS-C 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.

CHEMGUARD C306-MS-C Concentrate has been successfully evaluated by the US Naval Sea Systems Command for prolonged compatibility with other 3% AFFF concentrates qualified under MIL-F-24385F specification.

- Mixing with foam concentrates not vetted by MIL-F-24385F is not recommended.
- For immediate incident response, it is appropriate to use the concentrate in conjunction with comparable 3% AFFF products.

## Materials of Construction Compatibility

CHEMGUARD C306-MS-C 3% AFFF Concentrate compatibility with HDPE has been successfully evaluated using ASTM D1693-70 protocol under UL-162 standard. Concentrate corrosion studies with cold-rolled carbon steel (UNS G10100), 90-10 copper-nickel (UNS C70600), 70-30 nickel-copper (UNC N04400), bronze (UNS C90500), and CRES steel (UNS S30400) have been successfully completed per ASTM E527 protocol under MIL-F-24385F specification.

To help avoid corrosion, galvanized pipe and fittings should never be used in contact with undiluted CHEMGUARD C306-MS-C concentrate. Refer to Johnson Controls Technical Bulletin "Acceptable Materials of Construction" for recommendations and guidance regarding compatibility of CHEMGUARD concentrates with common materials of construction in the firefighting foam industry.

## Inspection

CHEMGUARD C306-MS 3% AFFF Concentrate should be inspected periodically per 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

Concentrate is available in commercial packaging only under CHEMGUARD C306-MS-C product designation and is not available for direct, contract government acquisition (per MIL-F-24385F packaging provision). Concentrate is available in pails, drums, totes or bulk shipment.

Part No.	Description	Shipping Weight	Cube
770809	Pail 5 gal (19 L)	45 lb (20.4 kg)	1.25 ft <sup>3</sup> (0.0353 m <sup>3</sup> )
770810	Drum 55 gal (208 L)	495 lb (224.5 kg)	11.83 ft <sup>3</sup> (0.3350 m <sup>3</sup> )
770811*	Tote 265 gal (1,000 L)	2,463 lb (1,117 kg)	50.05 ft <sup>3</sup> (1.42 m <sup>3</sup> )

For bulk orders, consult an account representative

\*Totes are not UL approved packaging.

Safety Data Sheets (SDS) are available at [www.chemguard.com](http://www.chemguard.com)

**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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