

## THUNDERSTORM® WNF33A 3% $\times$ 3% Non-Fluorinated Foam Concentrate

### Features

- Designed, tested and demonstrated to provide excellent control and suppression of large hydrocarbon tank fires
- Designed in accordance with NFPA Standard 11 for low- and medium-expansion foams
- UL 162 listed as an alcohol-resistant synthetic fluorine free foam (AR-SFFF) concentrate for use on hydrocarbon and polar solvent fuel fires
- Passes UL 162 type III test protocol on hydrocarbons at the same 0.10 gpm/ft<sup>2</sup> (4.1 Lpm/m<sup>2</sup>) design application rate as traditional AR-AFFF products with similar control times
  - Recommended minimum application rate of 0.16 gpm/ft<sup>2</sup> (6.5 Lpm/m<sup>2</sup>) for fuel in-depth tank fires up to 150 ft (45.7 m) in diameter; for larger tank sizes please contact the WILLIAMS FIRE & HAZARD CONTROL® team directly for further guidance
  - Recommended minimum application rate of 0.10 gpm/ft<sup>2</sup> (4.1 Lpm/m<sup>2</sup>) for spill fire applications
- Superior drain time compared to a high-quality AR-AFFF, with a longer lasting foam blanket for better burnback resistance and post-fire suppression
- Dry chemical agent compatible
- Successfully evaluated in accordance with the WILLIAMS FIRE & HAZARD CONTROL Plunging Test Protocol

### Description

THUNDERSTORM® WNF33A Foam Concentrate delivers exceptional firefighting performance, continuing the renowned heritage of THUNDERSTORM foams.

WNF33A Foam Concentrate is a 3% $\times$ 3% Alcohol Resistant Non-Fluorinated Foam Concentrate that provides excellent 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 gentle firefighting applications at 3% solution on polar solvent fuels.

THUNDERSTORM WNF33A foam solution utilizes three suppression mechanisms intended for rapid fire knockdown and superior burnback resistance:

- The foam blanket has extended drain times to help block oxygen to the fuel and suppress fuel vapor
- On polar solvent fires, liquid drains from the foam blanket and forms a polymeric membrane which protects the foam from destruction by the polar fuel, suppresses vapors, and seals the fuel surface
- The water content of the foam solution produces a cooling effect for additional fire suppression



011706

### Typical physiochemical properties

Appearance	Viscous yellow liquid
Density	1.12 $\pm$ 0.2 g/ml
pH	6.2 to 7.2
Refractive Index	1.3876 minimum
Viscosity*	2450 $\pm$ 250 cPs at 60 rpm
Viscosity*	3900 $\pm$ 500 cPs at 30 rpm
Freeze Point**	15.8 °F (-9 °C)
Storage and Operating Range	35 °F to 120 °F (2 °C to 49 °C)
*Brookfield LV Viscometer Spindle #4	Properties measured at 25 °C (77 °F)
**per EN1568:2018 protocol	

THUNDERSTORM WNF33A Foam Concentrate is a non-Newtonian fluid that is both pseudoplastic and thixotropic; therefore, dynamic viscosity will decrease as shear increases.

THUNDERSTORM WNF33A concentrate is a non-fluorinated firefighting foam concentrate, meaning that it does not have any intentionally added PFAS chemistry and is produced in equipment that has not handled PFAS chemistry. THUNDERSTORM WNF33A concentrate thus complies with Directives (EU) 2017/1000 on PFOA and 2019/1021 (EU POPs directive).

### Application

THUNDERSTORM WNF33A Foam 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. The concentrate 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.

## Application (Continued)

THUNDERSTORM WNF33A Foam Concentrate is well-suited for use in municipal and industrial response for spills and fuel in-depth fires. It may be applied with either an aspirating or non-aspirating nozzle on both Type III applications as well as foam systems with Type II discharge devices. Examples of these applications include:

- Flammable liquid in-depth and spill fires
- Fuel and chemical storage tanks
- Industrial chemical and petroleum processing facilities
- Truck/rail loading and unloading facilities
- Flammable liquid containment areas

### Application Rates

Fuel Group	Concentration	Minimum Recommended Application Rate	
		gpm/ft <sup>2</sup>	(Lpm/m <sup>2</sup> )
<b>Type III Application<sup>1</sup> - UL Listed</b>			
Hydrocarbons	3%	0.16	(6.5)
<b>Type III Application<sup>2</sup> - Third Party Witnessed</b>			
Hydrocarbons	3%	0.10	(4.1)
<b>Type II Application<sup>3</sup> - UL Listed</b>			
Hydrocarbons	3%	0.10	(4.1)
Ethanol (EtOH)	3%	0.10	(4.1)
Ketones	3%	0.17	(6.9)
E85	3%	0.10	(4.1)

- Notes:**
1. TYPE III DISCHARGE OUTLET – A device that delivers the foam directly onto the burning liquid as described in UL 162.
  2. NFPA 11 allows a design rate of 0.10 gpm/ft<sup>2</sup> (4.1 Lpm/m<sup>2</sup>) for spill fire applications. This product has been tested in accordance with UL 162 for use at this application rate.
  3. 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.

## Foaming Properties

THUNDERSTORM WNF33A Foam Concentrate may be effectively applied using aspirating and non-aspirating discharge equipment at the correct dilution with fresh, salt, or hard water.

### TYPICAL FOAM CHARACTERISTICS\*

Water	Fresh	Salt
Proportioning rate	3%	3%
Expansion ratio	≥7.5:1	≥7:1
25% drain time (min:sec)	> 60:00	> 50:00
50% drain time (min:sec)	> 85:00	> 75:00

\* per EN 1568-3: 2018 protocol

## Proportioning

The recommended operational temperature range for THUNDERSTORM WNF33A Foam 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 ratio flow controllers
- Around-the-pump type proportioners
- Fixed or portable in-line venturi type proportioners
- Handline nozzles with fixed eductor/pick-up tubes
- Self-educting nozzles

## Storage and Handling

THUNDERSTORM WNF33A Foam 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 concentrate should be maintained within the recommended operational temperature range. Freezing of the product should be avoided.

Factors that could negatively impact the foam concentrate's long-term effectiveness include but are not limited to temperature exposure and cycling, storage container characteristics, air exposure, evaporation, dilution, and contamination. The effective life of THUNDERSTORM WNF33A Foam Concentrate can be maximized through optimal storage conditions and proper handling. THUNDERSTORM foam concentrates have demonstrated effective firefighting performance with contents stored in the original package under proper conditions for more than 10 years.

This product should not be mixed with other types of foam concentrates or other manufacturers' foam concentrates under any circumstances. The use of multiple, separately applied finished foam products for incident response is appropriate.

## Inspection

THUNDERSTORM WNF33A Foam Concentrate should be inspected 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

Part No.	Description	Shipping Weight
<b>Pails</b>		
A163813N72	5 gal (19 L)	47 lb (21.3 kg)
<b>Drums</b>		
A163813N73	55 gal (208 L)	518 lb (234.9 kg)
<b>Totes*</b>		
A163813N75	265 gal (1003 L)	2578 lb (1169.3 kg)
A16381G0JJ	320 gal (1454 L)	3124 lb (1417 kg)

\* Totes are not UL approved packaging.

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

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

WILLIAMS FIRE & HAZARD CONTROL, THUNDERSTORM and the product names listed in this material are marks and/or registered marks. Unauthorized use is strictly prohibited.