

APPENDIX A

(WETTING AGENTS)

GOHR

INVESTIGATION TO DETERMINE COMPLIANCE WITH NFPA 18, 2006 EDITION

PRODUCT SUBMITTED:

"Novacool UEF" wetting agent, a liquid concentrate for addition to water to produce a solution having a greater fire extinguishing efficiency than plain water.

For use on fires in Class A and B materials when mixed with water in a proportion of not less than 0.4 percent by volume.

ASSUMPTIONS:

- The wetting agent is intended for use at the concentrations specified by the Manufacturer for Class A & B applications
- A Test Report will be provided to UL with results indicating compliance with the Toxicity requirements outlined in Paragraph 5.2.7 of NFPA 18. A Laboratory as indicated in Paragraph 5.1.2 of NFPA 18 shall provide the Report.
- The current wetting agent formulation will not be altered or modified in order to comply with the new NFPA requirements.
- The agent concentration used for Class A and Class B Fire Tests will be identical.
- With exception of the toxicity testing all testing will be conducted at UL.
- Our cost limit assumes that only two (2) 20B fires and two (2) 3A cribs will be necessary. If additional 20B fires and 3A cribs are necessary, a cost limit increase will be needed.
- A test nozzle will be supplied for conducting the Class B fire tests. The 2006 Edition of NFPA 18 does not specify whether an aspirating nozzle or non-aspirating nozzle should be used for conducting the Class B fire tests. Therefore, either an aspirating or non-aspirating nozzle may be utilized at this time. However, please note, it is UL's understanding that this matter will be placed on the docket for processing and resolution by the NFPA 18 Technical Committee at its next meeting and should the requirements of NFPA 18 be revised in the future to require a specific nozzle configuration, then the agent would need to comply with the requirements by the effective date of the new or revised requirements.

The following Checklist is to be completed before a project can be opened.

<input type="checkbox"/>	All assumptions outlined in the appendix have been reviewed and confirmed to be correct.
<input type="checkbox"/>	Testing is to be conducted at UL's Northbrook, IL, USA facility: <input type="checkbox"/> All samples outlined in the test program were shipped by _____ (shipping company) with tracking number _____ on / / (MM/DD/YYYY) <input type="checkbox"/> Class A fire test concentration: _____

	<input type="checkbox"/> Class B fire test concentration: _____ <input type="checkbox"/> Class B fire test nozzle inlet pressure: _____ psi.
<input type="checkbox"/>	Material Safety Data Sheets (MSDS) for each liquid product has been provided with the test samples.

TEST PROGRAM:

Test	Standard Reference	Description
Review of Manufacturer's Technical Data sheet	NFPA 18, 5.1.3	Copy of Manufacturer's Technical Datasheet
Pour Point	NFPA 18, 5.2.1, ASTM D97	The pour point shall be determined in accordance with ASTM D97
Miscibility	NFPA 18, 5.2.2	Observations to be recorded at 10-revolution intervals
Separation on Standing	NFPA 18, 5.2.3, 5.3.2	30 days at the minimum and maximum storage temperatures and at 18°C ± 2.7°C (65°F ± 5°F).
Impact of Low Temperature on Surface Tension	NFPA 18, 5.2.4, ASTM D 1331	Surface tension of wetting agent solution prepared from wetting agents stored at -18°C (0°F) shall not vary more than 5 dynes/cm from the initial measurement determined in accordance with 5.3.1. For 16 hours, 100 cc of the wetting agent conditioned at -18°C (0°F). The cooled wetting agent shall be conditioned at 18°C ± 2.7°C (65°F ± 5°F) for not less than 16 hours. Samples to be prepared from the conditioned wetting agent at the manufacturer's minimum and maximum use concentrations.
Surface Tension	NFPA 18, 5.3.1 ASTM D 1331	Wetting agents when added to water in concentrations specified for use shall reduce the surface tension to less than 33 dynes/cm when tested at 18°C (65°F)
pH	NFPA 18, 5.2.5	pH must be between 6 and 9 at 18°C ± 2.7°C (65°F ± 5°F).
Viscosity	NFPA 18, 5.2.6	Measurements will be taken at the temperatures of 2°C (35°F), 21°C (70°F), and 49°C (120°F)
Review of Toxicity Report	NFPA 18, 5.2.7	Must comply with EPA OPPTS tests or their equivalent. Report of compliance is required.
Corrosion	NFPA 18, 5.2.8, 5.3.3	Test against samples of 4130 mild steel, 2024-T3 aluminum, and UNS C27000 yellow brass (65 percent copper, 35 percent zinc). 0.8 L (24 oz) of liquid for total immersion tests or 0.4 L (12 oz) of liquid for partial immersion tests. Samples must stand undisturbed for 90 days. The results of the testing shall be

		included in the manufacturer's technical data
Class A Fire Extinguishment - Wood Crib Test	NFPA 18, 5.3.4.1 UL 711, Sec. 7.2	The tests shall be conducted utilizing a 9.5 L (2.5 gal) Listed 2A rated water extinguisher.2 consecutive extinguishments (3A cribs)
Class A Fire Extinguishment – Deep –Seated Fire Test	NFPA 18, 5.3.4.2	Ginned cotton – 6 tests, 3 with plain water and 3 with premixed wetting agent
Class A Fire Extinguishment – Wood Fiber Board Penetration	NFPA 18, 5.3.4.3	Fiber board – 6 tests, 3 with plain water and 3 with premixed wetting agent
Class B Fire Extinguishment	NFPA 18, 5.3.5 UL 711, Sec. 8.2	2 consecutive 20B Pan tests 5 minute extinguishment required.
Marking Requirements	NFPA 18, 7.3	One set of drawings for review
Qualitative Infrared Analysis	NFPA 18, 8.2	Performed on wetting agent

REQUIRED SAMPLES FOR NORTHBROOK:

1. Sufficient quantity of wetting agent for above testing.
2. Class B fire test nozzle.