

**UL TESTING SPRINKLER TESTING CONDUCTED ON MAY 27, 2014  
LARGE SCALE BURN BUILDING IN NORTHBROOK, ILLINOIS  
NOTES**

**Who was present:** Representatives from NFPA, UL, insurance underwriters from AEGIS, AEG, France, Germany, Britain (Lloyds) & more.

**Sprinkler system used :** Hughes & Associates designed the test but the test was conducted by the UL per the request of all those present.

**Purpose of testing:** To compare effectiveness of using water, water + AFFF, and a non-flourinated firefighting foam product.

**Props used for testing:** 50-B Burn pan pool fire, cascade 3 dimensional fire and cascade + 50-B size pool fire.

**Fuels used for testing:** Heptane to get things going and diesel fuel was used to maintain the fire.

**Procedure used:** Heptane pre-burn for 1 minute to obtain maximum burn temperatures. Diesel fuel introduced next to support the fire. Diesel pre-burn 45 seconds before attempted extinguishment.

1st Test: Burn pan only to simulate pool fire.

2nd Test: Cascade fire.

3rd Test: Cascade + pool fire.

Note: Each of the 3 scenarios were tested at system using flow rates of 0.30 gal/sq ft/min, 0.22 gal/sq ft/min , and 0.16 gal/sq ft/min. Sprinkler spacing was also tested using 10 foot and 12 foot spacing.

**Summary:** Novacool UEF mixed at 0.5% per 1,000 gallons of water was able to extinguish all fires down to 0.16 gal/sq ft/min. However engineers present stated there was no need for the test to be conducted using a flow rate of 0.10 gal/sq ft/min because sprinkler systems are not designed to produce a flow rate of only 0.10 gal/sq ft/min. Affected by the research will be NFPA 18, NFPA, 18A,UL 162, NFPA 11, NFPA 13, and more. The whole purpose of this research is to establish data and guidelines for fluorine free agents, as well as other technologies available to the industry. When they tested spacing of sprinkler heads at a 12 ft spacing, Novacool was able to extinguish all but a an area of about 12 inches where the sprinkler coverage was unable to overlap. However, Novacool UEF was the only firefighting foam to successfully contain the fire outside the area that did not receive overlap coverage. The insurance under writer from AEGIS (a global insurance carrier) stated they will not insure sprinkler systems not equipped with Novacool if the flow of water alone is less than 0.45 gal/ sq ft/ min.KEEP THIS INFO TO YOURSELF AT THIS POINT

News is certain to be shared throughout the insurance industry and other insurance companies will soon adopt the same policy.

On May 29th we spend some extensive time at the UL Large Scale Burn Building 11 in Northbrook, IL. Attached pictures are from the event which was designed by Hughes & Associates per the request of NFPA, UL, AEGIS, AEG, France, Germany, Britain and more. Based on the research data that we were able to gather updates will be made to existing standards. We will obtain a copy of the testing report and have it for review within about month and a half. Affected by the research will be NFPA 18, NFPA 18A, UL 162, NFPA 11, NFPA 13, and more. The whole purpose of this research is to establish data and guidelines for fluorine free agents, etc.

The Novacool UEF 0.4% performed full extinguishment all the way down to 0.16 gal/sq.ft./min. We were confident that even at 0.1 gal/sq.ft./min. we can extinguish the difficult 3-D fire embedded in pool fire simultaneously, but the engineers on site stated that there was no need for that as the systems will never be designed below 0.16 gal/sq./min.