



## Lateral Ignition and Flamespread Tests (LIFT) <sup>1</sup>



When water enhancers were first introduced for firefighting in the wildland urban interface environment, the primary objective was to prevent or slow ignition of vertical surfaces and to protect resources such as structures and seed or nesting trees.

The time that it takes to ignite a piece of T1-11 siding using the LIFT apparatus and Forest Service protocols is one indication of the ability of a mixed product to slow or prevent ignition, especially on a vertical surface. The LIFT test is used as a part of the evaluation for water enhancer products.

Water enhancers are typically used to provide surface protection and are evaluated using high and low mix ratios to span the approved range found on the Qualified Products List. All tests are performed by applying the product to the T1-11 sample and immediately exposed to the heat source.

The time to ignition is measured and used to calculate the ignition reduction of the product at the specified mix ratio.

The ignition reduction is a numeric value that compares the ignition time for water and the enhanced water mixture during the same test period. It is calculated as shown below:

$$\text{Ignition Reduction} = \frac{\text{Time to Ignition, mixed product}}{\text{Time to Ignition, water}}$$

The water enhancer products currently in use are sensitive to the quality of the water used to prepare the mixed product. Water hardness especially affects the consistency and ability of the product to remain on a vertical or uneven surface.

In the field, the mix ratio and water quality, the condition of the wood surface, the weather, and fire intensity, and the characteristics of the product will impact the level of protection afforded by the product in an actual fire situation.

Product Performance Data on next page

1 Standard Test Procedure 2.2 gives detailed instructions for the LIFT test.



# Lateral Ignition Tests (LIFT) Water Enhancers<sup>1</sup>



Product Name	Concentration	Ignition Reduction <sup>2</sup>	Time to Ignition (TTI), seconds		
			Product <sup>3</sup>	Water	Untreated
Barricade II	1.0%	1.1	80 ± 7	74 ± 4	42 ± 7
	3.0%	3.0	223 ± 17		
Thermo-Gel 200L	0.5%	0.9	66 ± 6		
	3.0%	9.9	735 ± 128		
Thermo-Gel 500P	0.4%	2.7	197 ± 39		
	1.2%	14.0	1035*		
Firewall II	0.25%	1.0	77 ± 7		
	3.0%	2.5	184 ± 15		
Blazetamer 380	0.65%	1.3	98 ± 2		
Firelce 561	1.4%	12.4	920 ± 90		
	2.1%	11.3	835 ± 192		
Insul-8	0.37%	0.9	66 ± 16		
	3.0%	12.7	944*		
EarthClean Tetra KO XL-P	0.5%	1.1	84 ± 9		
	1.5%	16.9	1255*		
Firelce HVB-Fx	1.7%	2.3	168 ± 33		
	2.7%	6.7	453 ± 51		
StrongWater	1.25%	1.04	80.77 ± 5.3		
	2.0%	1.71	133.01 ± 10.9		

Notes:

1 - Standard Test Procedure 2.2 gives instructions for the LIFT test.

2 - Ignition Reduction = (Product, Ignition Time) / (Water, Ignition Time)

3 - Forest Service Protocol using T1-11 siding. All test mixtures were prepared with deionized water.

\* - No error in measurement reported; for products that exceed a TTI of 900 seconds (15 minutes), replicate burns are terminated after 15 minutes.