Lateral Ignition and Flamespread Tests (LIFT)[1]

When foams 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 both foam and water enhancer products.

Class A foams are typically used for wetting of fuels or to provide surface protection. The foams are tested using the LIFT test at 1.0-percent and 0.4-percent. To evaluate effectiveness for surface protection and penetration, the product is applied to the T1-11 sample and allowed to soak and penetrate for 5 minutes prior to exposure to the radiant heat panel.

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 class A foam products currently in use are sensitive to the quality of the water used to prepare the mixed product. Hardness especially can affect the stability of the foam and the 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 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.

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Class A Foam – Exposure Protection[1]

Product Name	Concentration	Ignition Reduction[2]	Time to Ignition, seconds		
			Product[3]	Water	Untreated
FireFoam 103B	0.4%	1.4	96 ± 7	68 ± 11	39 ± 8
Phos-Chek WD881	0.4%	1.6	108 ± 6	68 ± 11	39 ± 8
Pyrocap B-136	0.4%	1.3	88 ± 10	68 ± 11	39 ± 8
Phos-Chek WD881C	0.4%	1.6	112 ± 23	68 ± 11	39 ± 8
National Foam KnockDown	0.4%	1.2	85 ± 14	68 ± 11	39 ± 8
FlameOut	0.4%	1.2	82 ± 31	68 ± 11	39 ± 8
Angus Hi-Combat A	0.4%	1.4	98 ± 13	68 ± 11	39 ± 8
Buckeye Platinum Class A	0.4%	1.4	98 ± 19	68 ± 11	39 ± 8
Solberg Fire-Brake 3150A	0.4%	1.4	95 ± 20	68 ± 11	39 ± 8
First Response	0.4%	1.3	85 ± 11	68 ± 11	39 ± 8
Silv-Ex Plus	0.4%	1.2	85 ± 9	68 ± 11	39 ± 8
1% Bushmaster “A” Class Foam	0.4%	1.2	81 ± 4	68 ± 11	39 ± 8
Phos-Chek WD881A	0.4%	1.5	100 ± 14	68 ± 11	39 ± 8
Fomtec Enviro Class A	0.4%	1.2	84 ± 9	68 ± 11	39 ± 8
Bio-Ex Ecopol-F	0.4%	1.3	86 ± 12	68 ± 11	39 ± 8
SparkBarrier	0.4%	1.6	136 ± 30	68 ± 11	39 ± 8

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.

Lateral Ignition and Flamespread Tests (LIFT)

Class A Foam – Wetting and Penetration[1]

Product Name	Concentration	Ignition Reduction [2]	Time to Ignition, seconds		
			Product[3]	Water	Untreated
FireFoam 103B	1.0%	1.6	107 ± 14	68 ± 11	39 ± 8
Phos-Chek WD881	1.0%	1.5	103 ± 5	68 ± 11	39 ± 8
Pyrocap B-136	1.0%	1.5	99 ± 9	68 ± 11	39 ± 8
Phos-Chek WD881C	1.0%	1.5	102 ± 1	68 ± 11	39 ± 8
National Foam KnockDown	1.0%	1.6	109 ± 2	68 ± 11	39 ± 8
FlameOut	1.0%	1.1	77 ± 18	68 ± 11	39 ± 8
Angus Hi-Combat A	1.0%	1.7	115 ± 6	68 ± 11	39 ± 8
Buckeye Platinum Class A	1.0%	1.4	98 ± 14	68 ± 11	39 ± 8
Solberg Fire-Brake 3150A	1.0%	1.5	102 ± 1	68 ± 11	39 ± 8
First Response	1.0%	1.5	105 ± 16	68 ± 11	39 ± 8
Silv-Ex Plus	1.0%	1.5	99 ± 7	68 ± 11	39 ± 8
1% Bushmaster “A” Class Foam	1.0%	1.5	103 ± 11	68 ± 11	39 ± 8
Phos-Chek WD881A	1.0%	1.7	116 ± 12	68 ± 11	39 ± 8
Fomtec Enviro Class A	1.0%	1.5	105 ± 10	68 ± 11	39 ± 8
Bio-Ex Ecopol-F	1.0%	1.5	99 ± 7	68 ± 11	39 ± 8
SparkBarrier	1.0%	1.6	133 ± 39	68 ± 11	39 ± 8

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.