

## **Product Data Bulletin: Firefly™ HPPL Signage**

**Dated: 1/9/2020**

### **Description:**

International Nameplate Firefly™ HPPL Signage product is durable “glow in the dark” safety signage design for use in passenger rail cars or similar applications. Firefly™ HPPL Signage produced with transparent polycarbonate film that offers fire retardancy as well as UV and chemical resistant for use in the construction of signage for the transit industry. Firefly™ HPPL Signage is printed on the second surface providing the ultimate protection to the graphic image. The product is flexible and capable of being embossed as per ADA standards. The product is available from 0.005 up to 0.020” thick. Firefly™ HPPL Signage is compliant with American Public Transit Association Standard for Emergency Signage for Egress/Access of Passenger Rail Equipment APTA SS-PS-002-98 Rev3 and American Public Transit Association Standard for Low Location Exit Path Marking APTA SS-PS-004-99 Rev2.

- Meets or exceeds Bombardier Smoke and Toxicity SMP800C requirements
- Meets or exceeds FRA 49 CFR 238 flame and smoke requirements
- High impact resistance
- Chemical and stain resistant
- UV resistant and non-yellowing
- Textured Low glare surface suitable for ADA signage

### **Applications and Uses:**

The intended field of use for interior or exterior passenger rail car signage. Firefly™ HPPL signage has been successfully installed using high strength acrylic adhesive transfer tape. Adhesive chosen is at the sole discretion of the end user based on product best suited for their application.

### **Effective Performance Life:**

The effective performance life is based on field installations and laboratory results. The effective performance life of Firefly products is expected to be in excess of 5 years from the date of purchase.

Physical Properties		
Property	Test	Value
Light Transmission	ASTM 1003	90%
Tensile Strength	ASTM D 882	8,200 psi

### Chemical Resistance

Surface Contact for 1 hour at Room Temperature

Solution Used	Value
Isopropanol	No Effect
Acetone	No Effect
Painter Thinner	No Effect
Permanent Marker	Able to wipe off with Thinner
Enamel Paint	Able to wipe off with Thinner
Window Cleaner	No Effect
Vinegar	No Effect

### Flame Smoke and Toxicity

#### Flames Spread (ASTM E 162)

	F <sub>s</sub>	Q	I <sub>s</sub>
1:	2.3	4.5	10
2:	2.3	5.0	12
3:	2.4	4.7	11
4:	2.4	4.2	10
Round Average:			10
Specified Maximum:			35

#### Smoke Generation (ASTM E 662)

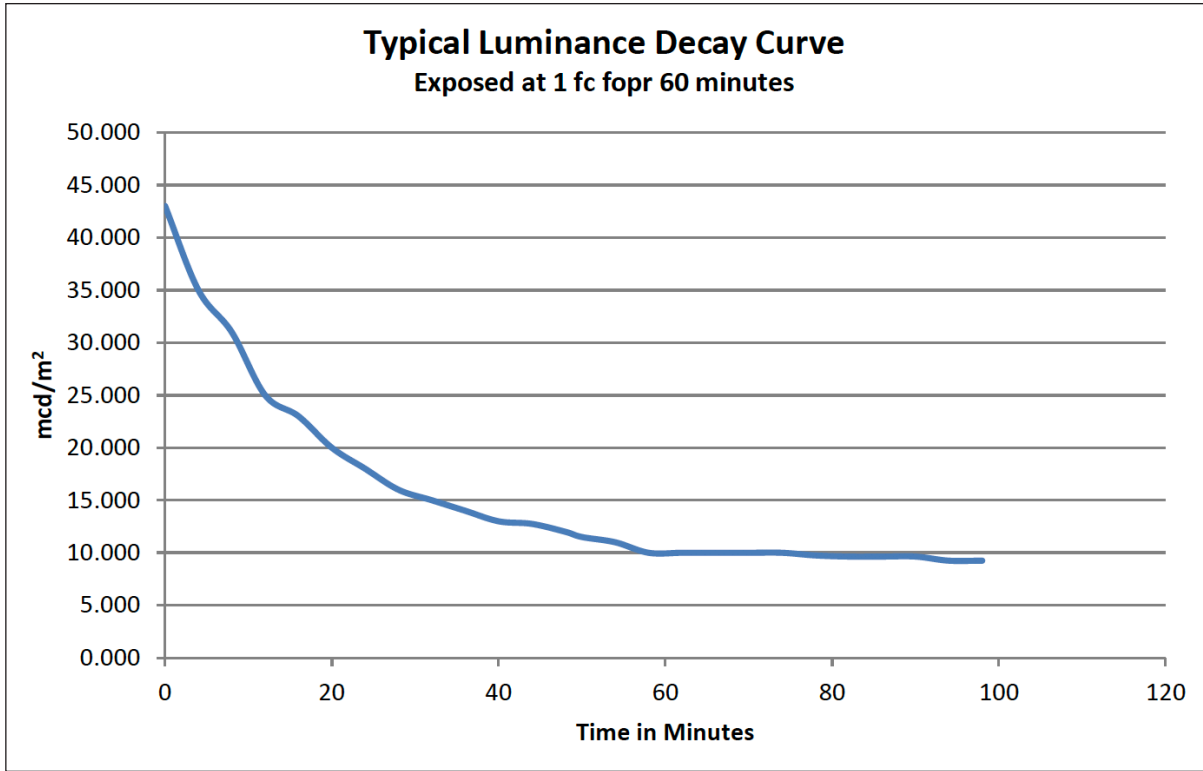
Test	Flaming Mode				Non-Flaming Mode				Maxima
	1	2	3	AVG	1	2	3	AVG	
Specific Optical Density at 1.5 min	29	14	34	26	0	1	1	1	100
Specific Optical Density at 4 min	91	51	83	75	19	27	27	24	200
Maximum Specific Optical Density	168	237	255	220	121	138	129	129	
Maximum Corrected Optical Density	161	233	249	214	119	137	127	128	

### Bombardier SMP 800C

		Flaming	Non-Flaming	Maxima
Carbon Monoxide	1.5 min	59 ppm	<10 ppm	
	4.0 min	249 ppm	<10 ppm	
	Max	1018 ppm	33 ppm	3500 ppm
Carbon Dioxide	1.5 min	1443 ppm	<50 ppm	
	4.0 min	3752 ppm	<50 ppm	
	Max	15825 ppm	241 ppm	90000 ppm
Nitrogen Oxide		3 ppm	1 ppm	100 ppm
Sulphur Oxide		<1 ppm	<1 ppm	100 ppm
Hydrogen Chloride		<2 ppm	<1 ppm	100 ppm
Hydrogen Fluoride		<2 ppm	<1 ppm	100 ppm
Hydrogen Bromide		1 ppm	1 ppm	100 ppm
Hydrogen Cyanide		9 ppm	<1 ppm	100 ppm
Time to Ignition		3 s	Did not ignite	
Burning Duration		150 s		

### Luminance Test Results (APTA SS-PS-002-98 Rev3.)

Source	Illuminance	Duration	Luminance after 90 min
Luminescent Lamp	10.76 lux	60.0 min	9.64 mcd/m <sup>2</sup>



## Resistance to Fumes, Splash, and Spillage, not Immersion (ASTM D 3912)

Solutions Used	Value
Acetone	Pass
Ammonium Hydroxide	Pass
Butyl Cellosolve	Pass
Cellosolve Acetate	Pass
Ethyl Alcohol	Pass
Hyjet #3	Pass
Isopropyl Alcohol	Pass
MEK	Pass
Methyl Alcohol	Pass
Perchloroethylene	Pass
Phosphoric Acid 35%	Pass
Potassium Hydroxide	Pass
Skydrol 500 A&B	Pass
Sodium Chloride	Pass
Toluene	Pass
Urine	Pass
Xylene	Pass

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