TUFFAK SL Polycarbonate

UV Resistant Sign Grade

TUFFAK SL Sign Grade sheet is a polycarbonate product with an advanced UV resistance technology that promotes long lasting outdoor weathering performance. It features outstanding impact strength, excellent dimensional stability, high temperature resistance, and high clarity. This lightweight thermoformable sheet is also easy to fabricate and decorate. TUFFAK SL is offered in clear, a wide range of standard sign colors, or can be custom matched to any color. The product, available in either sheet or reels, has a proven track record of outstanding performance in extreme environments and meets the UL 879 standard for electric sign components.

Applications

Flat and formed sign faces and channel letters

Regulatory code compliance and certifications

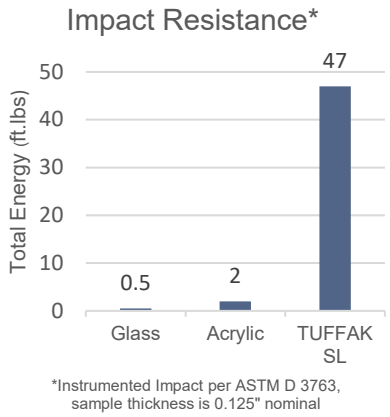
- Florida Building Code 2017, 6th Ed. High Velocity Hurricane Zone Classified Miami-Dade NOA: NOA
- UL 879: Electric Sign Components, UL File #E146154
- UL 94: Flammability file #E87887
- UL 746C: Suitability for Outdoor Use, UL File #E87887
- UL 972: Burglary Resistant Glazing Materials, UL File #BP2126

Typical Properties

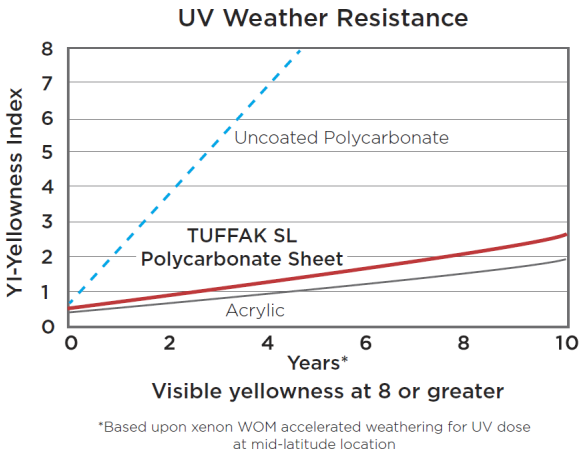
Property	Test Method	Units	Values
PHYSICAL			
Specific gravity	ASTM D 792	-	1.2
Refractive index	ASTM D 542	-	1.586
Light transmission, Clear @ 0.118”	ASTM D 1003	%	86
Light transmission, B59 White @ 0.118”	ASTM D 1003	%	27
Light transmission, B54 White @ 0.150”	ASTM D 1003	%	27
B54 White @ 0.177”	ASTM D 1003	%	27
Water absorption, 24 hours	ASTM D 570	%	0.15
Poisson’s ratio	ASTM E 132	-	0.38
MECHANICAL			
Tensile strength, ultimate	ASTM D 638	psi	9,500
Tensile strength, yield	ASTM D 638	psi	9,000
Tensile modulus	ASTM D 638	psi	340,000
Elongation	ASTM D 638	%	110
Flexural strength	ASTM D 790	psi	13,500
Flexural modulus	ASTM D 790	psi	345,000
Compressive strength	ASTM D 695	psi	12,500
Compressive modulus	ASTM D 695	psi	345,000
Izod impact strength, notched @ 0.125”	ASTM D 256	ft·lbs/in	18
Izod impact strength, unnotched @ 0.125”	ASTM D 256	ft·lbs/in	60 (No break)
Instrumented impact @ 0.125”	ASTM D 3763	ft·lbs	47
Shear strength, ultimate	ASTM D 732	psi	10,000
Shear strength, yield	ASTM D 732	psi	6,000
Shear modulus	ASTM D 732	psi	114,000
Rockwell hardness	ASTM D 785	-	M70 / R118
THERMAL			
Coefficient of thermal expansion	ASTM D 696	in/in/°F	3.75×10^{-5}
Coefficient of thermal conductivity	ASTM C 177	BTU·in/hr·ft2·°F	1.35
Heat deflection temperature @ 264 psi	ASTM D 648	°F	270
Heat deflection temperature @ 66 psi	ASTM D 648	°F	280
Brittleness temperature	ASTM D 746	°F	-200
ELECTRICAL			
Dielectric constant @ 10 Hz	ASTM D 150	-	2.96
Dielectric constant @ 60 Hz	ASTM D 150	-	3.17
Volume resistivity	ASTM D 257	Ohm·cm	8.2×10^{16}
Dissipation factor @ 60 Hz	ASTM D 150	-	0.0009

TUFFAK SL Polycarbonate

Arc resistance	-	-	-
Stainless steel strip electrodes	ASTM D 495	Seconds	10
Tungsten electrodes	ASTM D 495	Seconds	120
Dielectric strength, in air @ 0.125”	ASTM D 149	V/mil	380
FLAMMABILITY			
Horizontal burn, AEB	ASTM D 635	in	<1
Flame class @ 0.060”	UL 94	-	HB
Ignition temperature, self	ASTM D 1929	°F	1022
Ignition temperature, flash	ASTM D 1929	°F	824



*Instrumented Impact per ASTM D 3763, sample thickness is 0.125" nominal



*Based upon xenon WOM accelerated weathering for UV dose at mid-latitude location

TUFFAK SL Standard Colors

Standard TUFFAK Color	Standard Industry Color	Standard Gauge
White / B59 – B54	7328	0.093” – 0.236”
Red / D96	2283	0.118” – 0.177”
Red / D99	2793	0.118” – 0.177”
Blue / F84	2114	0.118” – 0.177”
Blue / F85	2051	0.118” – 0.177”
Green / H87	2108	0.118” – 0.177”
Yellow / M72	2037	0.118” – 0.177”
Orange / C59	2119	0.118” – 0.177”