Material Specification Guide

LUMISHIELD EX™

Lumishield EX was engineered specifically to meet the demands of outdoor projects while delivering exceptional aesthetics. Formulated with exterior-grade polycarbonate resin using 40% recycled content, this product offers high impact strength, UV resistance, and flammability performace for the toughest projects, from sound barries and bus shelters to wind screens and carports.

PANEL THICKNESS

Lumishield EX panels are available in 0.236" (6 mm) and 0.472" (12 mm) with a standard tolerance of ±10% of nominal. Tolerance varies by décor.

GAUGE EQUIVALENTS

NOMINAL DECIMAL (IN)	FRACTION EQUIVALENT	MILLIMETERS
.236”	1/4"	6 mm
.472”	1/2"	12 mm

PANEL DIMENSIONS

Lumishield EX is offered in standard 4' × 8' sizes. Custom lengths and widths are also available. Panels may be cut to order upon request for an additional fee.

PANEL SIZE	FEET	INCHES	MILLIMETERS
Standard	4' x 8'	48” x 96”	1219 x 2438 mm

FINISHES

Lumishield EX is available in a wide variety of surface finishes to provide different aesthetics. You can even specify different finishes for each side of the sheet. Heavier finishes (e.g. sandstone and stucco) provide better protection against minor surface scratches.

STANDARD FINISHES

- Gloss
- Matte
- Brushed
- Frost
- Diffusion
- Galvanized
- Satin
- Sandstone
- Stucco
- Moiré
- Crisscross
- Weave

Not all finishes are available with all products.

WEIGHT

Lumishield EX is a lightweight material at roughly half the weight of glass, with poundage varying by gauge. The following numbers are estimates, and actual weights may differ slightly.

Panel Thickness	fraction	1/4"	1/2"
	in	0.236”	0.472”
	mm	6.0 mm	12.0 mm
Standard Weight 48" × 96" | 1219 × 2438mm	lbs	47.1 lbs	94.3 lbs
	kg	21.4 kg	42.8 kg

RESIN FEATURES

HIGH PERFORMANCE RESIN

- Specially formulated polycarbonate resin with UV cap on both sides
- 130 times the impact strength of glass
- Over 30 times the impact strength of acrylic
- Approximately half the weight of glass
- Easy to fabricate and install

LOW ENVIRONMENTAL IMPACT

- Contains 40% recycled content
- Qualifies for LEED MR Credit 4 and IEQ Credit 8.1 & 8.2 (daylight and views)
- 100% recyclable

LIGHT TRANSMITTANCE & ENERGY

- Allows up to 85% of visible light transmittance
- Up to 8 times more energy efficient than glass

BUILDING CODES

- Meets criteria for approved interior finishes & light transmitting materials
- Class B fire rating
- Approved for CPSC 16 CFR 1201 Category I & II
- Meets ANSI Z97.1-2004 (safety glazing materials)

CUSTOM DESIGN SOLUTIONS

- Available in a variety of finishes
- Optional add-ons including additional protective finish and opaque backer
- Layer multiple décors for a unique design
- Digital prints with your own artwork

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ADD-ONS

Enhance a panel's appearance or performance with optional add-ons that can be applied to the front or back side of the panel.

CHEMSHIELD

A high performance clear film that can be applied to one or both sides of Lumishield EX products. With Chemshield applied, Lumicor products can be used in environments requiring superior stain and chemical resistance. This protective layer will not fade or streak even after heavy cleaning, but cannot be renewed if damaged.

ILLUME

A translucent light diffusing resin applied to the back of Lumicor panels. Illume helps to spread light evenly across the panel and conceal bulbs and fixtures to create a clean aesthetic.

OPAQUE

Cloud White Opaque is a light-blocking layer available for applications where there is a need for privacy or substrate concealment.

LUMINOUS

Our proprietary color technology can be added to any standard Lumicor product, its versatility making it easy to add a splash of color to any décor. Specify up to three layers to build a custom color.

CREDITS & CERTIFICATIONS

Lumishield EX panels can help your project earn recycled content LEED credits, as well as qualify for certifications related to health, wellness, and aesthetics.

RECYCLED CONTENT

- LEED MR 4.1: Recycled content: 10% (1 point)
- LEED MR 4.2: Recycled content: 20% (2 points)
- LEED MR Building Product Disclosure and Optimization – Sourcing of Raw Materials

HEALTH & AESTHETICS

- WELL Feature 62: Daylight Modeling
- WELL Feature 04: VOC Reduction
- LEED Low-Emitting Materials
- LEED MR 4: Daylight & Views

FLATNESS TOLERANCE

Extending across the panel, bowing is permitted to a maximum of 1/4" (6 mm) for each 48" (1.2 m) or fraction thereof. Panel is to be measured when laying horizontally under its own weight on a flat continuous surface.

EXPANSION & CONTRACTION

Resin will expand and contract nominally with changes in temperature. Please allow for expansion and contraction when installing fasteners, hardware, frame systems, or when edge butting sheets. The formula below can be used to calculate the appropriate allowance for Lumishield EX panels.

Length, Width, or Thickness	x	Temperature Change	x	Coefficient of Thermal Expansion	=	Expansion Allowance
in	x	°F	x	.000037	=	in
mm	x	°C	x	.000044	=	mm

Example:

A 48" × 96" Lumishield EX panel will be installed in an office building near the entrance. The coldest temperature of the panel in that location over the entire year is expected to be 50°F, and the warmest is expected to be 90°F. The temperature change will then be 40°F. The height would then change 0.142" from the coldest to the warmest temperature exposure, and the width would change 0.071".

FLAMMABILITY & SMOKE TEST

Lumishield EX has a Class B fire rating in both .236" and .472" gauges.

DATA

PROPERTY	RESULT	ASTM
Flammability Burning Rate	CC1, PASS	D-635
Smoke Density Rating 75% maximum	68%, PASS	D-2843
Self Ignition Temperature 650°F (343°C) minimum	1,070°F (577°C), PASS	D-1929

RATING

GAUGE	RESULT		TEST
.236"	FSI: 65 SDI: 450	Class B	UL 723/ASTM E-84
.472"	FSI: 40 SDI: 350	Class B	UL 723/ASTM E-84

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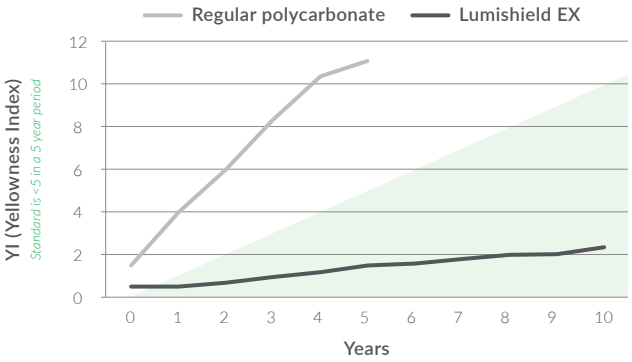
UV TEST



MATERIAL PROPERTIES

	PROPERTY	RESULT	ASTM
Physical	Type	Polycarbonate (PC)	
	Specific Gravity Density compared to water	1.20	D-792
	Water Absorption	0.15%	D-570
	Sound Transmission At 1/8" (3 mm)	31 db	E-90
Optical	Optical Refractive Index	1.59	D-542
	Regular Light Transmittance	86%	D-1003
	Haze Light Transmittance	1.1%	D-1003
	UV - Resin Degradation	No	
Mechanical	Tensile Strength Max	9,500 psi (65.5 MPa)	D-638
	Tensile Elongation Max	110%	D-638
	Tensile Modulus	340,000 psi (2,344 MPa)	D-638
	Flexural Strength Max	13,500 psi (93 MPa)	D-790
	Flexural Modulus	345,000 psi (2,379 MPa)	D-790
	Izod Impact Strength	18 ft-lb/in (961 J/m)	D-256
	Rockwell Hardness	M-70/R-118	D-785
	Abrasion Resistance Haze percentage	30% at 100 cycles	D-1044
Thermal	Max Continuous Service Temperature	257°F (125°C)	
	Softening Temperature	297°F (147°C)	
	Deflection Temperature At 264 psi (1.8 MPa)	270°F (132°C) at 1.8 MPa 280°F (134°C) at 0.455 MPa	D-648
	Coefficient of Thermal Expansion	3.75 x $10e^{-5}$in/(in–°F) 6.8 x $10e^{-5}$m/(m–°C)	D-696
	Thermal Conductivity	1.35 BTU in/(hr ft^2 °F) .0019 W/(cm °C)	C-177

Material properties apply to the resin itself. Results may vary for finished panels with encapsulated materials.

CLEANING PROCEDURES

The proprietary UV surface treatment on Lumishield EX significantly improves long-term performance. Periodic cleaning using proper procedures and compatible clears is recommended to prolong service life.

PROCEDURE

1. Wash with a mild solution of soap or detergent and lukewarm water.
2. Using a soft cloth or sponge, gently wash the sheet to loosen dirt and grime and rinse well with clean water.
3. To prevent water spotting, thoroughly dry with chamois or cellulose sponge.

Avoid the use of abrasive cleaners, squeegees, scrapers, synthetic rags, and other cleaning implements that may scratch or gouge the panels.

CLEANING AGENTS

The following agents have been found to be compatible with Lumishield EX panels under laboratory conditions.

Aqueous Solutions of Soaps & Detergents

- Joy®
- Palmolive Liquid®
- Windex D with Ammonia D®

Organic Solvents

All residual organic solvents should be removed with a secondary rinse.

- VM&P naphtha
- Hexcel F.O. 554 (butyl cellosolve)
- Kerosene (Neleco-Placer)

Alcohols

- Methanol
- Isopropyl alcohol

GRAFFITI REMOVAL

- **Butyl cellosolve** is recommended for removal of paints, marking pen inks, lipstick, etc. The use of masking tape, adhesive tape, or lint removal tools works well for lifting off old weathered paints.
- **Kerosene** and **VM&P naphtha** are generally effective to remove labels and stickers. If the solvent will not penetrate the sticker material, apply heat with a hair dryer to soften the adhesive and promote removal.

If a material is found to be incompatible in a short-term test, it will usually be found to be incompatible in the field. The converse, however, is not always true. Favorable performance is no guarantee that actual end-use conditions have been duplicated, therefore these results should be used as a guide only and it is recommended that the products be tested under actual end-use conditions by the user.

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CHEMICAL RESISTANCE

CHEMICAL	6 DAYS / 23°C	6 DAYS / 50°C
Acetic acid, 10% in water	Resistant	Resistant
Acetone	Limited Resistance (Swells)	
Ammonia, 0.1% in water	Not Resistant	
Ammonium nitrate, 10% in water/neutral	Resistant	Not Resistant
Benzene	Limited Resistance (Swells)	
Benzine, free from aromatic hydrocarbons	Resistant	Resistant
Butyl acetate	Not Resistant	
Carbon tetrachloride	Limited Resistance (Swells)	
Chloroform	Limited Resistance (Dissolves)	
Citric acid, 10% in water	Resistant	
Dibutyl phthalate	Not Resistant	
Diethyl ether	Not Resistant	
Dimethyl formamide	Limited Resistance (Dissolves)	
Dioctyl phthalate	Not Resistant	
Dioxane	Limited Resistance (Dissolves)	
Ethanol, pure	Resistant	Resistant
Ethyl acetate	Limited Resistance (Swells)	
Ethylamine	Not Resistant	
Ethylene chloride	Limited Resistance (Swells)	
Ethylene glycol, 1:1 with water	Resistant	Resistant
Glycerin	Limited Resistance (Reacts)	
Hexane	Resistant	Resistant
Hydrochloric acid, 10% in water	Resistant	Resistant
Hydrogen peroxide, 30% in water	Resistant	
Iron (III) chloride, saturated/ aqueous solution	Resistant	Resistant
Isooctane (2,2,4-trimethyl pentane), pure	Resistant	Resistant (40°C)
Isopropanol, pure	Resistant	
Methanol	Not Resistant	
Methyl ethyl ketone	Limited Resistance (Swells)	
Methylamine	Limited Resistance (Reacts)	
Methylene chloride	Limited Resistance (Dissolves)	
Nitric acid, 10% in water	Resistant	
N-propanol	Not Resistant (30°C)	
Ozone, 1% in air	Not Resistant	
Paraffin/paraffin oil, pure, free from aromatic hydrocarbons	Resistant	Resistant
Phosphoric acid, 1% in water	Resistant	Not Resistant
Potassium hydroxide, 1% in water	Not Resistant	
Propane	Resistant	Resistant
Silicone oil	Resistant	Resistant
Sodium carbonate, 10% in water	Resistant	Not Resistant (70°C)
Sodium chloride, saturated/ aqueous solution	Resistant	Resistant
Sodium hydroxide, 1% in water	Not Resistant	
Styrene	Not Resistant	
Sulfuric acid, 10% in water	Resistant	Resistant
Tetrachloroethane	Limited Resistance (Swells)	
Tetrachloroethylene	Not Resistant	
Trichloroethylene	Limited Resistance (Swells)	
Tricresyl phosphate	Not Resistant	
Triethylene glycol	Resistant	Resistant
Xylene	Limited Resistance (Swells)	

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