

### Material Specification Guide

# **LUMIFORM**<sup>™</sup>

With a vast offering of encapsulated decors, low environmental impact, and Class A fire rating, Lumiform offers limitless design possibilities. Layer color, décors and textured finishes to create a stunning focal point or architectural accent. This proprietary PETG resin is ideal for interior applications, and its outstanding performance makes Lumiform a favorite for healthcare design.

## PANEL THICKNESS

Lumiform panels are available from 0.050" (1.27 mm) through 0.472" (12 mm) with a standard tolerance of  $\pm 10\%$  of nominal. Tolerance varies by décor.

### GAUGE EQUIVALENTS

NOMINAL DECIMAL (IN)	FRACTION EQUIVALENT	MILLIMETERS
.050"	1/20"	1.27 mm
.060"	1/16"	1.5 mm
.118"	1/8"	3.0 mm
.236"	1/4"	6 mm
.354"	3/8"	9 mm
.472"	1/2"	12 mm

Actual panel dimensions may vary by décor. Some décors are not compatible with all gauges or panel sizes.

# PANEL DIMENSIONS

Lumiform is offered in standard 4' × 8' and 4' x 10' 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
Oversize	4' x 10'	48" x 120"	1219 x 3048 mm

# FINISHES

Lumiform 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. frost, sandstone and stucco) provide better protection against minor surface scratches.

#### STANDARD FINISHES

• Gloss • Matte

Brushed

FrostDiffusion

SatinSandstone

- Sandstone
  Stucco
- Galvanized
- Crisscross
  - Weave

Moiré

Not all finishes are available with all products.

### **RESIN FEATURES**

#### HIGH PERFORMANCE RESIN

- Specially formulated co-polyester resin (PETG)
- Many times the impact strength of acrylic
- Easy to fabricate and install
- Excellent chemical resistance
- Approximately half the weight of glass
- Up to 40 times stronger than annealed glass of comparable thickness

### IOW ENVIRONMENTAL IMPACT

- Contains up to 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 89% of visible light transmittance
- Up to 4 times more energy efficient than glass

### **BUILDING CODES**

- Meets criteria for approved interior finishes & light transmitting materials
- Class A fire rating
- UL GREENGUARD indoor air quality certified

### CUSTOM DESIGN SOLUTIONS

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



### 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.

#### ILLUME

A translucent light diffusing layer 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.

#### MARKER BOARD

A high quality dry erase finish that can be added to any Lumicor panel.

#### OPAQUE

Opaque is a light-blocking layer available in a variety of neutral tones. Add Opaque to panels when 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.

#### **REFLECTIVE FINISHES**

Reflective Finishes are proprietary silvery surfaces that can be applied to Lumiform panels to create more dimension within the panel and add a sophisticated sparkle. For additional metallic colors such as gold or copper, pair Reflective Finishes with Luminous décors.

## 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 formulas below can be used to calculate the appropriate allowance for Lumiform panels.

Length, Width, or Thickness	х	Temperature Change	×	Coefficient of Thermal Expansion	=	Expansion Allowance
in	Х	°F	х	.00005	=	in
mm	х	°C	х	.00009	=	mm

Example:

A 48"  $\times$  96" Lumiform 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 0.192" from the coldest to the warmest temperature exposure, and the width would change 0.096".

# CREDITS & CERTIFICATIONS

Lumiform panels can help your project earn recycled content LEED credits, as well as qualify for certifications related to health and wellness, aesthetics, and biophila when specified with some décors.

### **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

### WEIGHT

Lumiform is a lightweight material at approximately half the weight of glass, with poundage varying depending on gauge and size. The following numbers are estimates, and actual weights may differ based on your décor selection.

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Panel Thickness	fraction	3/64"	1/16"	1/8"	1/4"	3/8"	1/2"
	in	0.050"	0.060"	0.118"	0.236"	0.354"	0.472"
	mm	1.27 mm	1.5 mm	3.0 mm	6.0 mm	9.0 mm	12.0 mm
Standard Weight	lbs	9.5 lbs	12.7 lbs	24.9 lbs	49.9 lbs	74.8 lbs	99.8 lbs
48" × 96"   1219 × 2438mm	kg	4.3 kg	5.8 kg	11.3 kg	22.6 kg	33.9 kg	45.2 kg
Oversize Weight	lbs	11.9 lbs	15.8 lbs	31.2 lbs	62.4 lbs	93.6 lbs	124.7 lbs
48" × 120"   1219 × 3048mm	kg	5.4 kg	7.2 kg	14.1 kg	28.3 kg	42.4 kg	56.6 kg



### FLAMMABILITY & SMOKE TEST

Lumiform gauges .354" and below have up to a Class A fire rating, while the .472" gauge has a Class B rating.

#### DATA

PROPERTY	RESULT	ASTM
Flammability Burning Rate	CC1, PASS	D-635
Smoke Density Rating 75% maximum	71.6%, PASS	D-2843
Self Ignition Temperature 650°F (343°C) minimum	932°F (500°C), PASS	D-1929
UPITT Toxicity	PASS	UPITT Mortality Test
UL Flammability Classification	V-2	UL-94

#### RATING

GAUGE	RESULT		TEST
.118"	FSI: 15 SDI: 165	Class A	ASTM E-84
.118"	FSI: 55 SDI: 450		CAN / ULC-S102.2
.236" and below Walls only or ceilings only	PASS	Class A	NFPA 286
.236"	FSI: 60 SDI: 450	Class B	ASTM E-84
.236"	FSI: 55 SDI: 410		CAN / ULC-S102.2
.354" Walls in stand-off configuration	PASS	Class A	NFPA 286
.354"	FSI: 35 SDI: 350	Class B	ASTM E-84
.354"	FSI: 45 SDI: 360		CAN / ULC-S102.2
.472"	FSI: 50 SDI: 400	Class B	ASTM E-84

# CLEANING PROCEDURES

- Wash with a mild solution of soap or detergent and lukewarm water. Any acrylic cleaner may also be used. Novus cleaner and polish is an approved product for a clean shine that also protects from static build up.
- 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.

Do not use alcohol, glass cleaners, acetone, lacquer thinner, solvents, or abrasive compounds when cleaning Lumiform. Avoid the use of abrasive cleaners, squeegees, scrapers, synthetic rags, and other cleaning implements that may scratch or gouge the panels.

## MATERIAL PROPERTIES

	PROPERTY	RESULT	ASTM			
	Туре	Polyethylene (PETG)				
sical	Specific Gravity Density compared to water	1.27	D-792			
Phys	Water Absorption	0.20%	D-570			
	Sound Transmission At 1/8" (3 mm)	25 db	E-90			
	Optical Refractive Index	1.57	D-542			
cal	Regular Light Transmittance	89%	D-1003			
Opti	Haze Light Transmittance	<1%	D-1003			
	UV - Resin Degradation	Yes				
	UV - Blocking	Optional				
Mechanical	Tensile Strength Max	7,700 psi (53 MPa)	D-638			
	Tensile Elongation Max	4.80%	D-638			
	Tensile Modulus	320,000 psi (2,200 MPa)	D-638			
	Flexural Strength Max	11,200 psi (77 MPa)	D-790			
	Flexural Modulus	310,000 psi (2,100 MPa)	D-790			
	Izod Impact Strength	1.7 ft-lb/in (88 J/m)	D-256			
	Rockwell Hardness	R-115	D-785			
	Abrasion Resistance Haze percentage	41% at 200 cycles	D-1044			
	Max Continuous Service Temperature	150°F (66°C)				
	Softening Temperature	181°F (83°C)				
ermal	Deflection Temperature At 264 psi (1.8 MPa)	164°F (74°C)	D-648			
The	Coefficient of Thermal Expansion	5.0 x 10e <sup>-5</sup> in/(in–°F) 9 x 10e <sup>-5</sup> m/(m–°C)	D-696			
	Thermal Conductivity	1.67 BTU in/(hr ft²°F) .0019 W/(cm °C)	C-177			
3acterial	Fungal	No growth	G-21			
Fungal/E	Bacterial	No growth	G-22			

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





## CHEMICAL RESISTANCE

	% CHANGE		APPEARANCE AFTER
REAGENT	Weight	Thickness	EXPOSURE
Acetic acid, 5%	<1	<1	Very slight yellowing
Acetic acid, conc.	19	18	Discolored, swelling
Acetone	16	23	Discolored (brown), swollen, rubber-like
Ammonium hydroxide, 10%	4	4	Discolored (pink), surface has blisters
Ammonium hydroxide, conc.	229	220	Turned white, outside crumbling off
Antifreeze, automotive ethylene glycol type	<1	<1	No change
Benzene	34	43	Discolored, rubber-like
Brake fluid, DOT3	2	2	No change
Brake fluid	6	6	Turned yellow, surface attacked, flaking off
Carbon tetrachloride	27	18	Discolored, swollen
Chromic acid, 40%	< 1	<1	Slightly discolored
Citric acid, 10%	< 1	<1	Slight yellowing
Cottonseed oil	< 1	<1	Very slight yellowing
Deionized water	< 1	<1	Slight yellowing
Detergent, Alconox	< 1	< 1	Slight yellowing
Di(2-ethylhexyl) phthalate	< 1	< 1	Very slight yellowing
Dibutyl sebacate	< 1	1	Slight yellowing
Diesel fuel	< 1	2	Discolored
Dimethyl formamide	22	39	Badly discolored and distorted
Ethanol, 50%	< 1	<1	Slight yellowing
Ethanol, 100%	< 1	<1	Very slight yellowing
Ethyl acetate	20	24	Badly discolored and swollen, softened
Ethylene dichloride	-	-	Completely deteriorated after 1 week
Gasohol, 10% ethanol	9	8	Cloudy, slight yellowing
Gasohol, 10% methanol	11	10	Cloudy, yellowed
Gasoline, base for gasohol	6	6	Slight yellowing
Gasoline, premium unleaded	2	3	Discolored
Gasoline, regular	< 1	<1	Slight yellowing
Gasoline, regular unleaded	2	2	Discolored
Grease, automotive	<1	< 1	No change
Hand cleaner, waterless Jergens SBS30	<1	2	No change
Hexane	< 1	< 1	Slight yellowing

DEACENT	% CHANGE		APPEARANCE AFTER
REAGENT	Weight	Thickness	EXPOSURE
Hydrochloric acid, 10%	< 1	< 1	Slight yellowing
Hydrochloric acid, conc.	1	<1	Badly discolored, blisters under surface
Hydrogen peroxide, 3%	< 1	< 1	Slight yellowing
Hydrogen peroxide, 28%	< 1	< 1	Slight yellowing
Isooctane	< 1	< 1	Very slight yellowing
Kerosene	< 1	< 1	Very slight yellowing
Lacquer thinner	7	6	Cloudy, white
Methyl alcohol	< 1	<1	Very slight yellowing, crazing
Mineral oil	< 1	< 1	Very slight yellowing
Motor oil	< 1	< 1	No change
Nitric acid, 10%	< 1	< 1	Slight yellowing
Nitric acid, 40%	1	< 1	Turned white
Nitric acid, conc.	-	-	Completely deteriorated after 1 week
Oleic acid, 83%	< 1	< 1	Very slight yellowing
Olive oil	< 1	< 1	Very slight yellowing
Penetrating oil, Liquid Wrench #1	10	11	Discolored
Phenol, 5%	13	14	Turned black
Silicone spray lubricant	67	34	White, swollen
Soap solution, 1%	< 1	< 1	Slight yellowing
Sodium carbonate, 2%	< 1	< 1	Slight yellowing
Sodium carbonate, 20%	< 1	< 1	Slight yellowing
Sodium hydroxide, 1%	< 1	< 1	Slight yellowing
Sodium hydroxide, 10%	8	6	Slight yellowing
Sodium hypochlorite, 3.5%	< 1	<1	Slight yellowing
Sulfuric acid, 3%	< 1	< 1	Slight yellowing
Sulfuric acid, 30%	< 1	< 1	Slight yellowing
Sulfuric acid, conc.	-	-	Completely deteriorated after 1 week
Tapping oil	< 1	1	No change
Toluene	26	31	Turned white, softened
Transformer oil	< 1	<1	Very slight yellowing
Transmission fluid, auto	< 1	< 1	No change

This data is based on information we believe to be reliable. The data is offered in good faith, but without guarantee, as conditions and method of use are beyond our control. We recommend prospective users determine the suitability of Lumicor materials and suggestions before adopting on a commercial scale. In no case is Lumicor, Inc. liable for direct, consequential, economic, or other damages. Lumicor disclaims all other warranties, expressed or implied, including the warranty of merchantability and fitness for a particular purpose.