

HEATABLE GLASS FOR LIGHTING



CLARITY IN ANY CONDITION

Guardian heatable glass keeps lighting lenses clear of fog, frost and snow so that your light always shines through.

Warm away precipitation to keep essential lights bright in demanding environments with Guardian heatable glass.

Safely Efficient

Until now, LED and other energy efficient lights had one major drawback in cold climates: Because they emit little infrared heat, fog, frost and snow build up, obstructing light and threatening safety. Guardian heatable glass for lighting eliminates this concern. Remarkably transparent and conductive, lenses can be warmed as needed with little electricity. The results are highly efficient, highly durable fixtures that can go anywhere—in winter or other inclement weather conditions.

Exceptionally Clear

Guardian heatable glass transmits an extraordinary amount of light, exceeding the illumination possible with alternatives that darken the glass with additives or obscure it with embedded wires. Add Guardian's anti-reflective coating and/or a high index interlayer to increase light transmission even more. Better light transmission means more lumens with less energy consumption.

Unparalleled Service

As one of the world's leading glass manufacturers with locations in more than 25 countries, Guardian is ready to deliver high volume, high quality lighting solutions. Our engineers tailor your Guardian heatable glass solution to optimize your fixture design and lighting plan. Our skilled Guardian Select Fabricator Network can temper, cut, coat, print and polish each lens to your exact specifications, and advise on electrical design and assembly techniques.

Expect High Performance

- Highly conductive
- Outstanding visible light transmission
- Extremely durable
- Increases efficiency and efficacy
- Neutral light transmission
- High Color Rendering Index (CRI)

Add Value in a Breadth of Applications

- Traffic lights
- Airport and aircraft lighting
- Emergency and security lighting
- Billboard lighting
- Residential in-ground lighting

Making the switch to Guardian lenses is easy—no need to change your manufacturing process. We'd love to learn about your project and collaborate on energy-efficient, cost-saving solutions. Our engineers, testing specialists and sample program are ready to support you from concept to completion.

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SPECIFICATIONS

Substrate Options and Performance

Glass	UltraWhite™ Low-Iron Glass Standard Clear Glass Acid-Etched Glass Textured Glass Single-Sided Anti-Reflective Glass
Visible Light Transmission (500-600nm)	Heatable Monolithic: 87% Heatable with AR Monolithic: 91% Heatable Laminated Assembly with AR: 93%
Thickness	3.0 – 6.0 mm (Monolithic) 4.0 – 8.0 mm (Laminated Assembly)
Sourcing	Temperable and laminated parts with availability 10 days from date of order for fabricated parts from a Guardian Select Fabricator

Durability

Adhesion	No delaminating in snap tape pull test
Abrasion Resistance	No visible change (< 1%Δ transmission) after 50 passes with 1,000 g load
Humidity Exposure	No visible change (< 1%Δ transmission) after 5 days at 85°C and 85% rH
Chemical Exposure	No visible change (< 1%Δ transmission) after 24-hour soak in DI water, acetone, IPA and Ethyl Alcohol

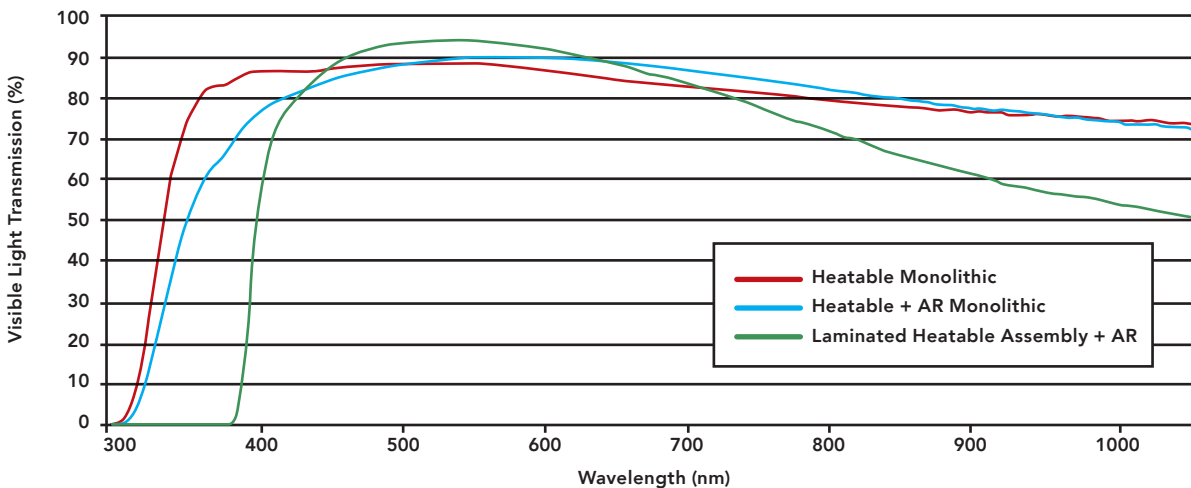
Power and Heating

Maximum Input Power	100 V AC/DC
Conductivity	15 to 20 Ω
Environmental Operating Range	-55° to +85°C
Maximum Glass Surface Operating Temperature	100°C
Operating Power Density	.1 to 9W/in. ²

Internal Strength

Thermal Tempering (Monolithic)	Meets ASTM C1048
Impact Resistance (Monolithic)	Meets ANSI Z97.1
Thermal Shock (Monolithic)	Meets MIL-C-7989
Maximum Internal Pressure Load (Monolithic)	10 psi (5 mm thickness)
Penetration Resistance (Laminated Assembly)	Meets ANSI Z26.1

CHOOSE THE BEST LEVEL OF TRANSMISSION FOR YOUR NEEDS



Predict Performance
Guardian engineers are on hand to help you calculate and improve the performance of your lighting fixtures with Guardian heatable glass.

Contact a regional Guardian location for additional product information.

Guardian Industries North America
TechGlass.NA@guardian.com
+1.855.270.4193

Guardian Industries Latin America
TechGlass.LatinAmerica@Guardian.com
+52.442.278.1700
+55.24.355.9000 (Brazil)

Guardian Industries Europe
TechGlass.Europe@Guardian.com
+36.68.887.200

Guardian Industries Middle East/Africa
TechGlass.MEA@Guardian.com
+971.50.432.8792

Guardian Industries Asia
TechGlass.Asia@Guardian.com
+66.38.892.111



A global glass manufacturer headquartered in Auburn Hills, Michigan, Guardian Industries is a leader in float glass, fabricated glass, fiberglass insulation and other building materials for commercial, residential and automotive applications. To learn more, visit Guardian.com.

Guardian makes lighting smarter with innovative solutions developed at our Science and Technology Center. You'll find Guardian technical glass in the world's most cutting-edge consumer and industrial products. Our global reach and local presence give you access to Guardian products and people, wherever you are.

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