GLOBAL OPTICS

Corning
Gorilla Glass®

🔷 **Key Properties of Gorilla Glass®**

💪 Exceptional Strength: Chemically strengthened through ion exchange, providing up to ~900 MPa surface compressive stress for superior impact and scratch resistance.

🧪 High Chemical Durability: Resistant to moisture, acids, and environmental degradation — ideal for demanding environments.

🔍 Excellent Optical Clarity: High transmission from ~350 nm to 2.5 µm with minimal haze and distortion.

🪶 Lightweight & Thin: Enables thin, strong optical windows and protective covers without compromising rigidity or performance.

🔥 Thermal Stability: Performs reliably under temperature cycling with low thermal expansion (~8.1 × 10⁻⁶ /°C).

⚙️ Machinable & Coatable: Compatible with laser cutting, polishing, and AR or DLC coatings for custom optical use.

🌍 Environmentally Stable: Maintains optical and mechanical integrity under humidity, UV, and mechanical stress.

🛠️ Applications of Gorilla Glass®

📱 Display and Touch Panels: Widely used for smartphones, tablets, and instrument displays requiring high transparency and scratch resistance.

🛰️ Aerospace and Defense Optics: Protective covers and ruggedized windows for optical sensors, cameras, and display systems in harsh environments.

🔬 Optical and Laboratory Instruments: Used as a protective window or cover plate in precision imaging systems and analytical instruments.

🧠 Wearable and Medical Devices: Ideal for biosensors, diagnostic instruments, and wearable optics needing lightweight, durable protection.

🌡️ Industrial and Automotive Displays: Provides high strength and clarity for rugged control panels and automotive HUD optics.
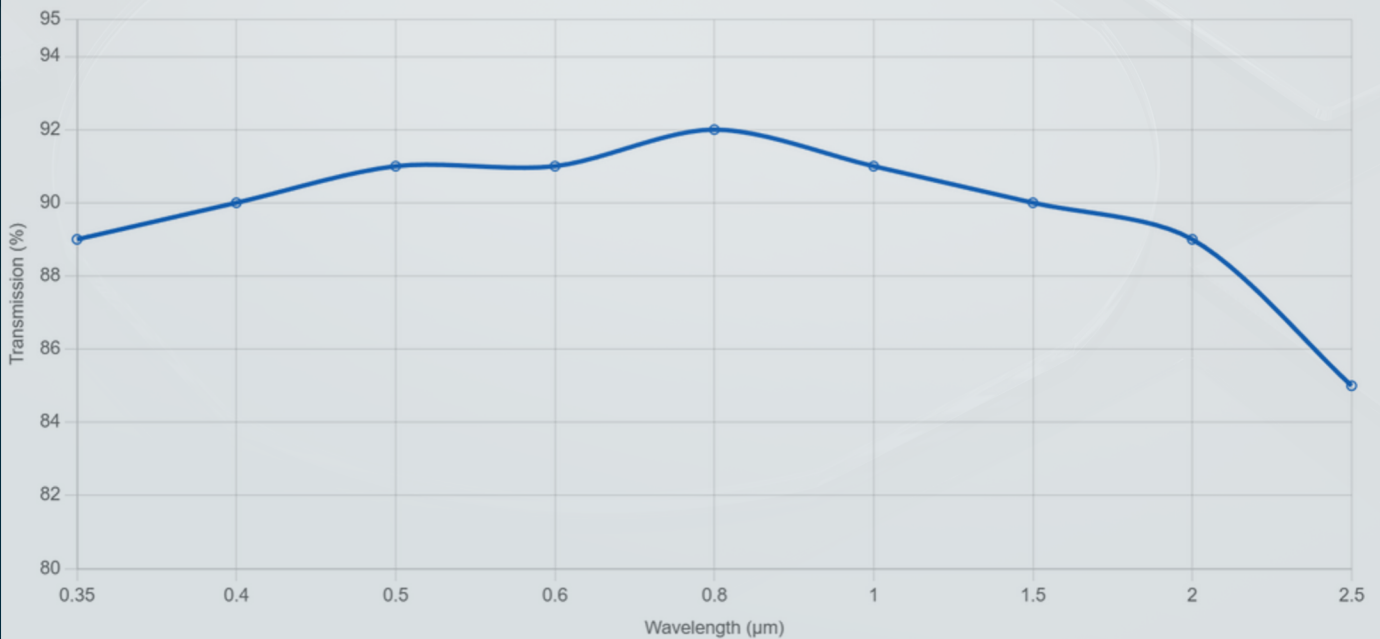
⚙️ Custom Optical Windows: Available machined, polished, and coated for use in lasers, photonics, and sensor protection assemblies.

Technical Parameters of Gorilla Glass®

| Property	Typical Value
Material Type	Aluminosilicate glass, chemically strengthened (Corning)
Transmission Range	~350 nm – 2.5 µm
Refractive Index (nd)	~1.51 @ 589 nm
Density	~2.44 g/cm³
Young's Modulus	~70 GPa
Compressive Stress (Surface)	Up to 900 MPa (after ion-exchange strengthening)
Hardness (Vickers)	~620 HV
Thermal Expansion Coefficient (α)	8.1×10^{-6} /°C (25–300 °C)
Thermal Conductivity	1.1 W/m·K @ 300 K
Softening Point	~700 °C
Chemical Resistance	Excellent – non-hygroscopic and corrosion-resistant
Surface Quality	Typical 40-20 scratch-dig (better on request)
Thickness Tolerance	±0.05 mm (precision cut)
Coating Compatibility	Compatible with AR, DLC and ITO coatings
Applications	Protective optical windows, displays, wearables, aerospace covers, and sensor optics
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📈 Gorilla Glass® Transmission vs Wavelength

Transmission (%) vs Wavelength (µm)

Typical transmission 350 nm – 2.5 µm, based on 1 mm sample.

◆ Refractive Index of Gorilla Glass® vs Wavelength

Refractive Index (n) vs Wavelength (µm)
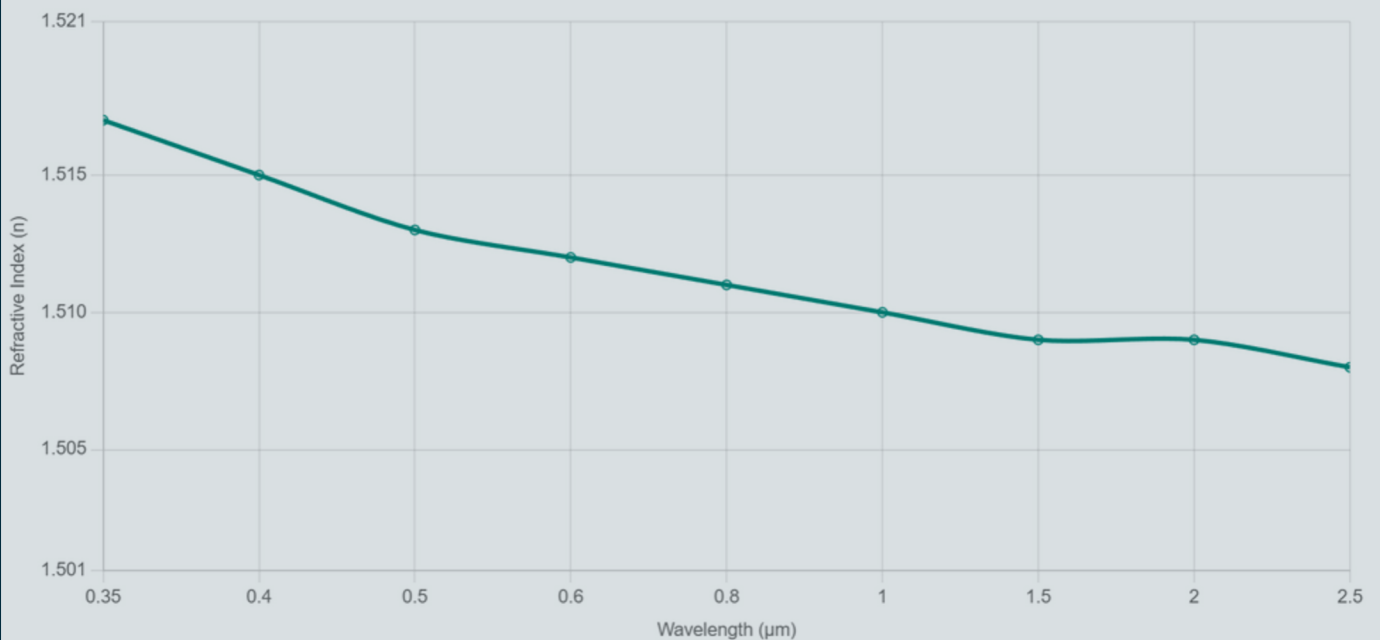
Refractive index ~1.51 @ 589 nm — minimal dispersion in visible range.

Gorilla Glass® is an advanced chemically strengthened aluminosilicate glass engineered by Corning to deliver exceptional strength, optical clarity, and surface durability. Through a proprietary ion-exchange process, the glass develops a high-compression surface layer that dramatically improves its resistance to impact, bending, and scratching.

Unlike standard display glass, Gorilla Glass® combines high transparency, low optical distortion, and excellent chemical resistance, making it ideal for optical windows, display covers, sensors, and protective optics in demanding environments.

Its stable transmission from 350 nm to 2.5 µm, low thermal expansion (~8.1×10^{-6} /°C), and compatibility with AR, DLC, and ITO coatings make it a preferred choice for aerospace, defense, medical, and consumer electronic applications where both performance and reliability are critical.

Thermal Expansion of Gorilla Glass®

Coefficient of thermal expansion ≈ 8.1×10^{-6} /°C (25–300 °C).
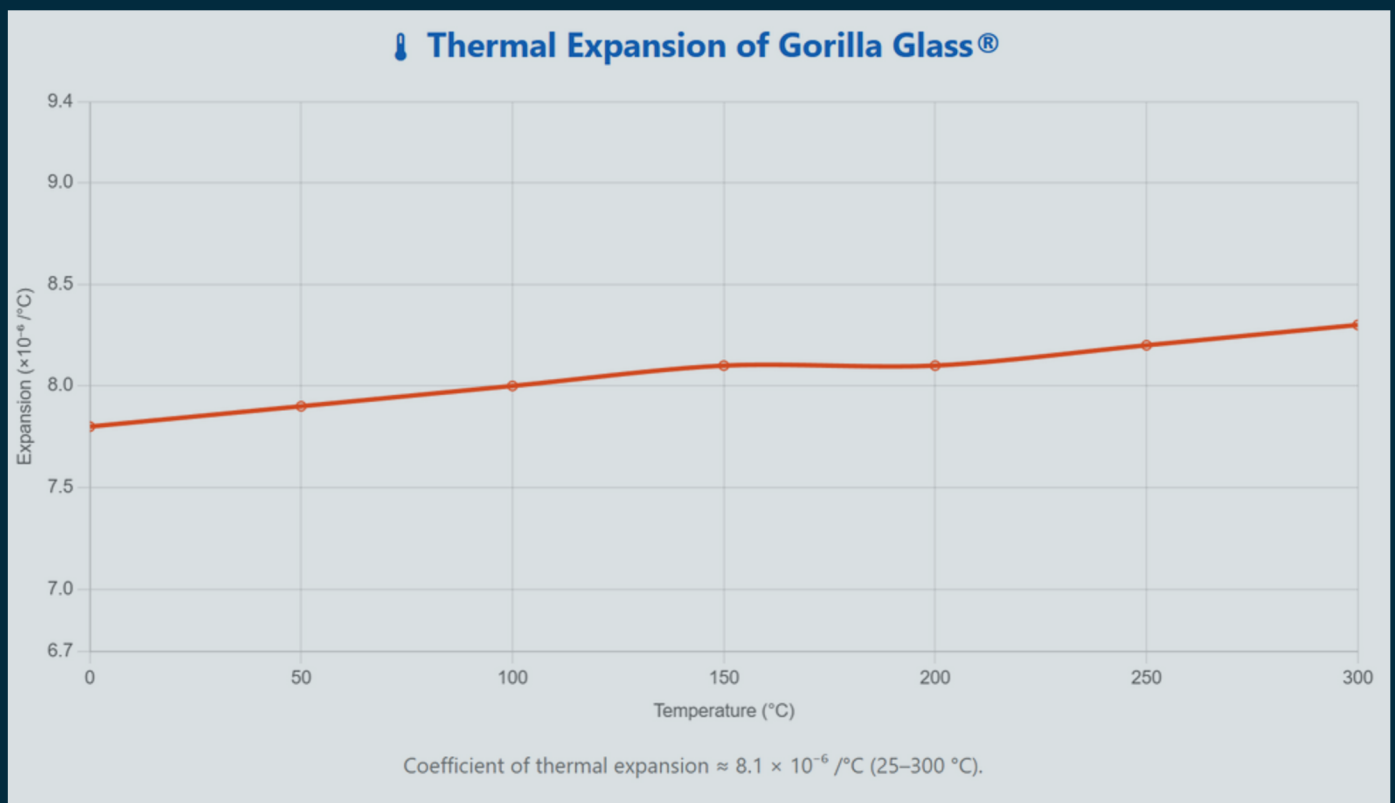
FAQ

Q: What is Gorilla Glass®?
A: Gorilla Glass® is a chemically strengthened aluminosilicate glass developed by Corning. It is known for its exceptional scratch resistance, impact durability, and optical clarity. The glass is produced through an ion-exchange process that creates a layer of compressive stress on the surface, significantly improving its strength compared to standard soda-lime glass.

Q: What makes Gorilla Glass® stronger than ordinary glass?
A: During chemical tempering, smaller sodium ions in the glass are replaced with larger potassium ions from a molten salt bath. This creates compressive stress on the surface that resists cracks, scratches, and impacts, providing up to 900 MPa surface strength — several times greater than typical glass.

Q: What is the transmission range of Gorilla Glass®?
A: Gorilla Glass® provides excellent optical transmission from approximately 350 nm to 2.5 µm, covering the visible and near-infrared regions. It maintains high clarity and minimal optical distortion, making it suitable for displays, sensors, and protective optical windows.

Q: Is Gorilla Glass® suitable for high-temperature or outdoor environments?
A: Yes. It performs reliably across a wide temperature range (–50 °C to +200 °C) and shows excellent resistance to moisture, chemicals, and UV exposure. Its low thermal expansion (~8.1×10^{-6} /°C) ensures dimensional stability under thermal cycling.

Q: Can Gorilla Glass® be coated or machined?
A: Absolutely. It can be cut, laser-processed, edge-polished, and coated with AR, DLC, or ITO layers. This makes it ideal for optical, electronic, and display applications requiring enhanced durability or specific optical performance.

Q: What are typical applications of Gorilla Glass®?
A: Gorilla Glass® is widely used for display panels, sensor windows, optical covers, aerospace instruments, medical devices, and ruggedized electronics. Its combination of high strength and transparency makes it a versatile protective material for optical assemblies.