

CORNING Gorilla® Glass



Corning® Gorilla® Glass is an environmentally friendly alkali-aluminosilicate thin sheet glass that is better able to survive the real-world events that most commonly cause glass failure. Its superior composition allows a deeper layer of chemical strengthening than is possible with most other chemically strengthened glasses — making it both durable and damage resistant.

Product Information

Benefits

- Glass designed for a high degree of chemical strengthening
 - High compressive stress
 - Deep compression layer
- High retained strength after use
- High resistance to scratch damage
- Pristine surface quality

Applications

- Ideal protective cover for electronic displays in:
 - Smartphones
 - Laptop and tablet computer screens
 - Mobile devices
- Touchscreen devices
- Optical components
- High strength glass articles

Dimensions

Available thicknesses 0.5 mm - 2.0 mm
Available in Gen 5 (1250 mm x 900 mm) sheets

Viscosity

Softening Point (10^{76} poises)	852 °C
Annealing Point ($10^{13.2}$ poises)	613 °C
Strain Point ($10^{14.7}$ poises)	563 °C

Properties

Density	2.44 g/cm ³
Young's Modulus	71.7 GPa
Poisson's Ratio	0.21
Shear Modulus	29.7 GPa
Vickers Hardness (200 g load)	
Un-strengthened	625 kgf/mm ²
Strengthened	674 kgf/mm ²
Fracture Toughness	0.7 MPa m ^{0.5}
Coefficient of Expansion (0 °C - 300 °C)	84.5 x 10 ⁻⁷ /°C

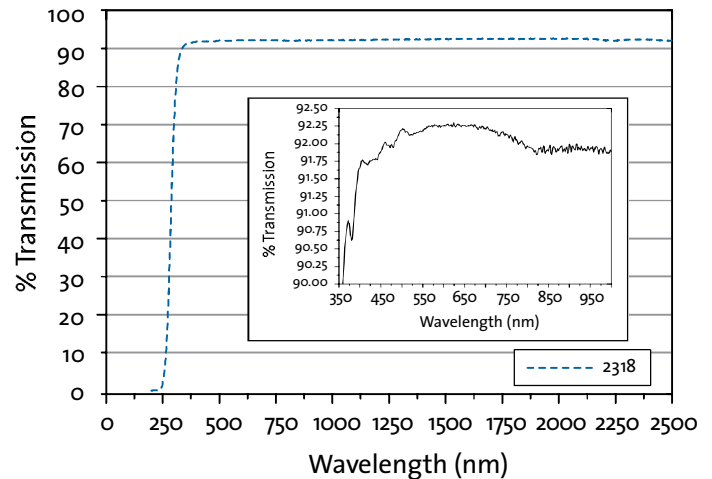
Chemical Strengthening*

Compressive stress	Capable ≥ 800 MPa
Depth of Layer	Capable ≥ 40 μm

Optical

Refractive Index (633 nm)

Core glass	1.5094
Compression layer	1.5116
Photo-elastic constant	29.4 nm/cm/MPa



Chemical Durability

Durability is measured via weight loss per surface area after immersion. Values are highly dependent upon actual testing conditions. Data is reported for Code 2318 glass. Unless otherwise noted, concentrations refer to weight percent.

Reagent	Time	Temperature (C)	Weight Loss (mg/cm ²)
HCl - 5%	24 hrs	95	0.04
NH ₄ F:HF - 10%	20 min	20	3.14
HF - 10%	20 min	20	11.96
NaOH - 5%	6 hrs	95	1.10

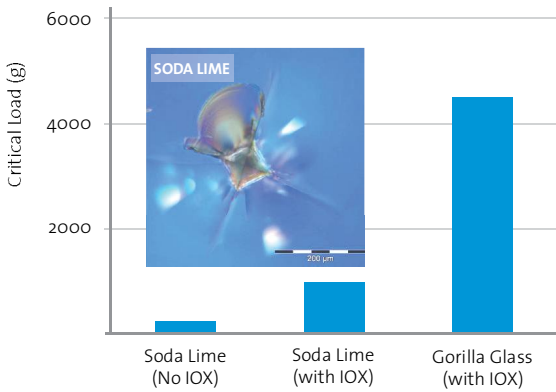
Electrical

Frequency (MHz)	Dielectric Constant	Loss Tangent
54	7.38	0.013
490	7.26	0.013
912	7.30	0.014
1977	7.22	0.015
2986	7.19	0.016

* A key aspect of the design of the strengthened glass article includes proper selection of the magnitude of compressive stress and the depth of compression layer appropriate for the application.

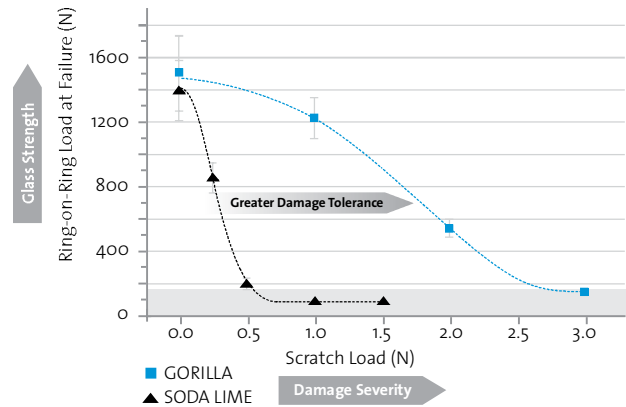
Putting Corning® Gorilla® Glass to the test.

Greater damage resistance.



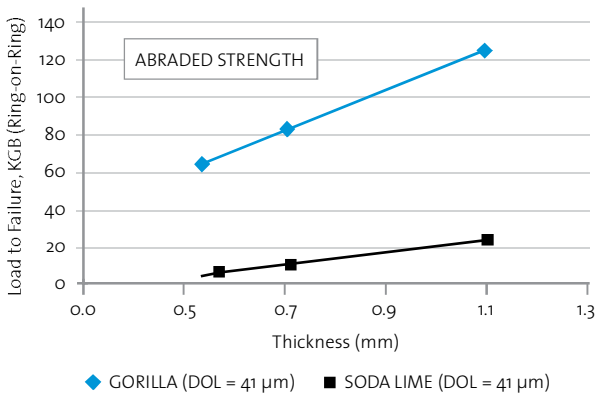
It takes more load to initiate (radial) cracks in the glass.

Greater retained strength.



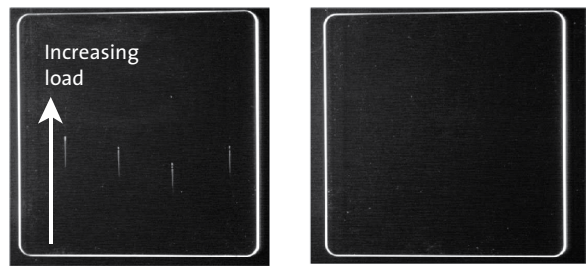
There is less strength degradation after scratching.

Enables use of thinner glass.



Devices benefit from a greater retained strength.

Scratches are less visible.

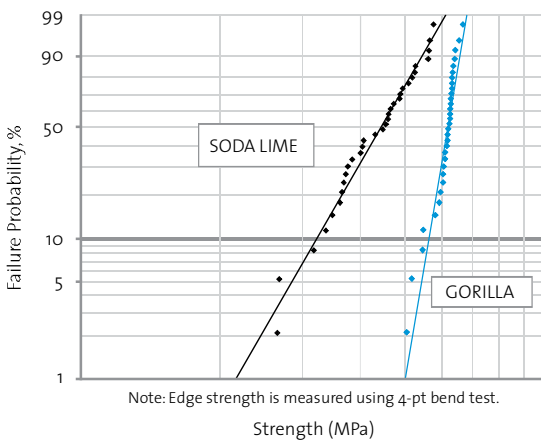


Ion-Exchanged Soda Lime Silicate
8 mm scratches made with load ramped from 20 g to 100 g

Ion-Exchanged Corning Gorilla Glass
Scratches on Corning Gorilla Glass are visible only under a microscope

Corning Gorilla Glass suppresses damage zone and lateral cracking that make scratches less visible.

Enables greater design strength.



Note: Edge strength is measured using 4-pt bend test.

Corning Gorilla Glass exhibits tighter strength distribution.

CORNING

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