

CORNING Gorilla® Glass

Corning's New Gorilla® Glass 3 with Native Damage Resistance™ is an alkali-aluminosilicate thin sheet glass that is better able to survive the real-world events that most commonly cause glass failure. With its new core composition, this glass enables improved damage resistance and toughness by helping to prevent the deep chips and scratches that cause glass to break.

Product Information

Benefits

- Glass designed with improved native damage resistance,
 - Enhances retained strength after use
 - High resistance to scratch and sharp contact damage
 - Superior 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 0.4 mm - 2.0 mm

Viscosity

| | |
|---------------------------------------|--------|
| Softening Point ($10^{7.6}$ poises) | 900 °C |
| Annealing Point ($10^{13.2}$ poises) | 628 °C |
| Strain Point ($10^{14.7}$ poises) | 574 °C |

Properties

| | |
|---|-----------------------------|
| Density | 2.39 g/cm ³ |
| Young's Modulus | 69.3 GPa |
| Poisson's Ratio | 0.22 |
| Shear Modulus | 28.5 GPa |
| Vickers Hardness (200 g load) | |
| Un-strengthened | 534 kgf/mm ² |
| Strengthened | 649 kgf/mm ² |
| Fracture Toughness | 0.66 MPa m ^{0.5} |
| Coefficient of Expansion (0 °C - 300 °C) | 75.8 x 10 ⁻⁷ /°C |

Chemical Strengthening

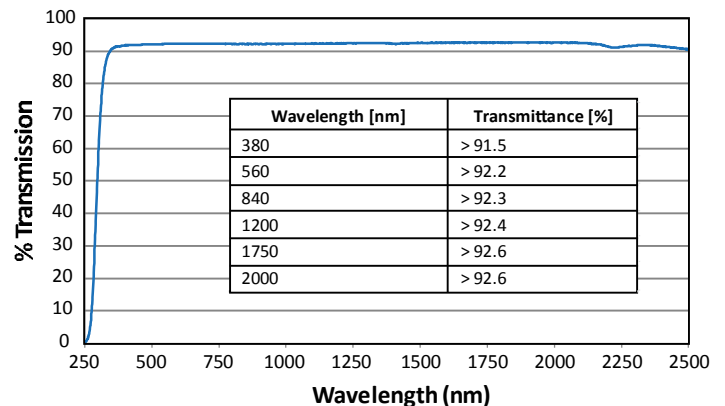
| | |
|--------------------|-----------------------|
| Compressive stress | ≥ 950 MPa @ 40 μm DOL |
| Depth of Layer | ≥ 50 μm |

Optical

Refractive Index (590 nm)

| | |
|------------------------|----------------|
| Core glass* | 1.50 |
| Compression layer | 1.51 |
| Photo-elastic constant | 31.9 nm/cm/MPa |

* Core index is used for FSM-based measurements since it is unaffected by ion-exchange conditions.



Chemical Durability

Durability is measured via weight loss per surface area after immersion in the solvents shown below. Values are highly dependent upon actual testing conditions. Data reported is for Corning's Gorilla Glass 3 with NDR™.

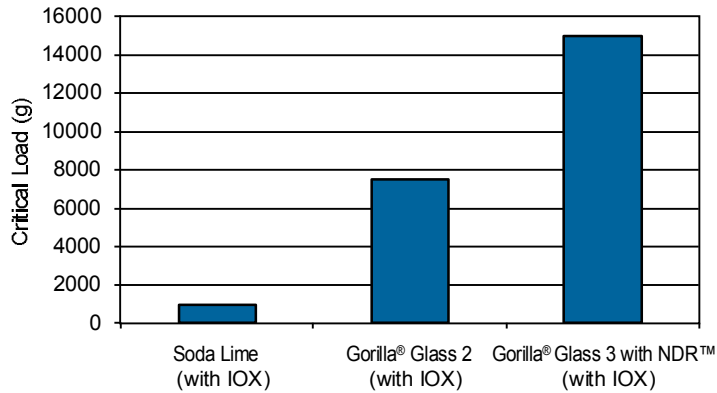
| Reagent | Time | Temperature (°C) | Weight Loss (mg/cm ²) |
|----------------------------|--------|------------------|-----------------------------------|
| HCl - 5% | 24 hrs | 95 | 0.6 |
| NH ₄ F:HF - 10% | 20 min | 20 | 2.1 |
| HF - 10% | 20 min | 20 | 12.3 |
| NaOH - 5% | 6 hrs | 95 | 1.9 |

Electrical

| Frequency (MHz) | Dielectric Constant | Loss Tangent |
|-----------------|---------------------|--------------|
| 54 | 7.59 | 0.022 |
| 163 | 7.48 | 0.022 |
| 272 | 7.44 | 0.021 |
| 381 | 7.42 | 0.022 |
| 490 | 7.38 | 0.021 |
| 599 | 7.37 | 0.022 |
| 912 | 7.30 | 0.023 |
| 1499 | 7.26 | 0.023 |
| 1977 | 7.23 | 0.023 |
| 2466 | 7.20 | 0.024 |
| 2986 | 7.19 | 0.025 |

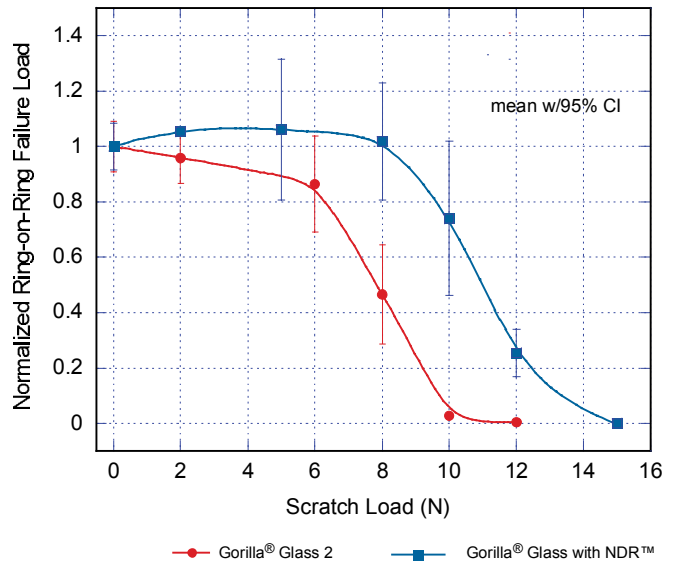
Putting Gorilla® Glass 3 with NDR™ to the Test.

Greater damage resistance

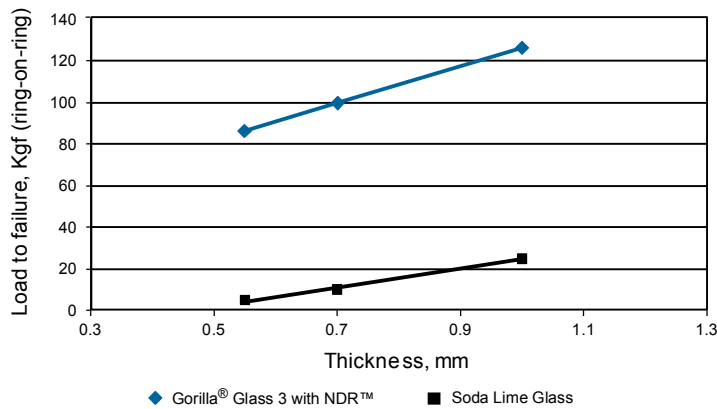


It takes more load to initiate radial cracks in the glass.

Greater retained strength

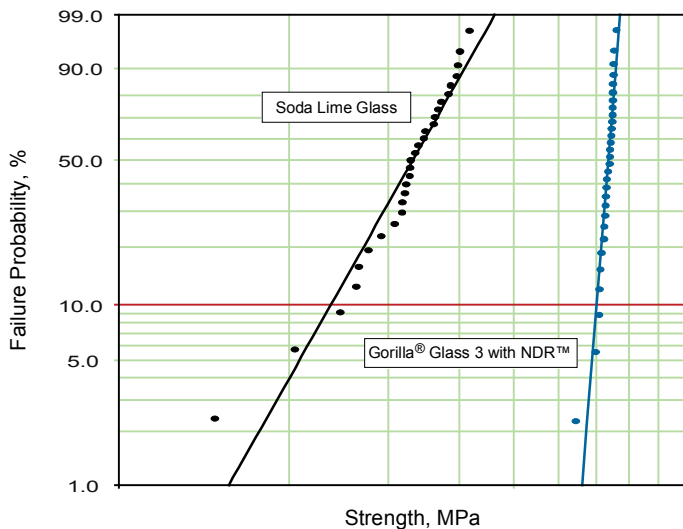


Enables the use of thinner cover glass



Devices benefit from greater retained strength.

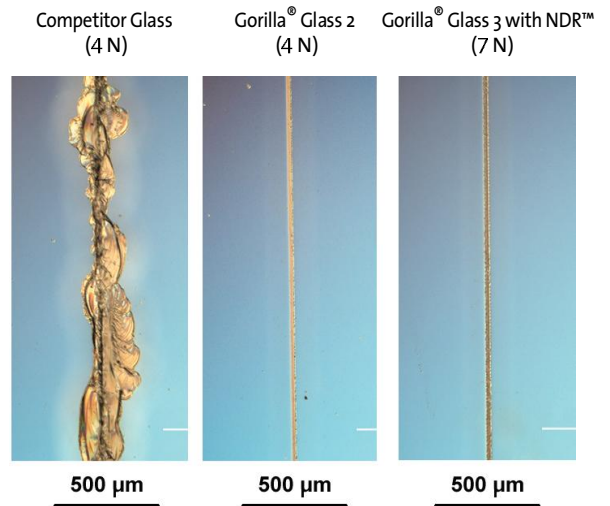
Enables greater strength



Corning Gorilla Glass 3 with NDR™ exhibits tighter strength distribution.

Scratches are less visible

Knoop Visual Scratch Test After Ion Exchange



CORNING

For more information:
Email: specialty materials.com
Web: www.corninggorillaglass.com