

# 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 <sup>3</sup>
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 <sup>2</sup>
Strengthened	649 kgf/mm <sup>2</sup>
Fracture Toughness	0.66 MPa m <sup>0.5</sup>
Coefficient of Expansion (0 °C - 300 °C)	75.8 x 10 <sup>-7</sup> /°C

### Chemical Strengthening

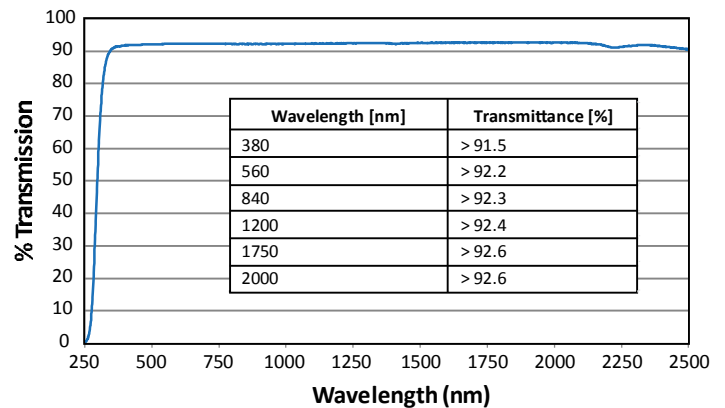
Compressive stress	≥ 950 MPa @ 40 μm DOL
Depth of Layer	≥ 50 μm

### 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™.

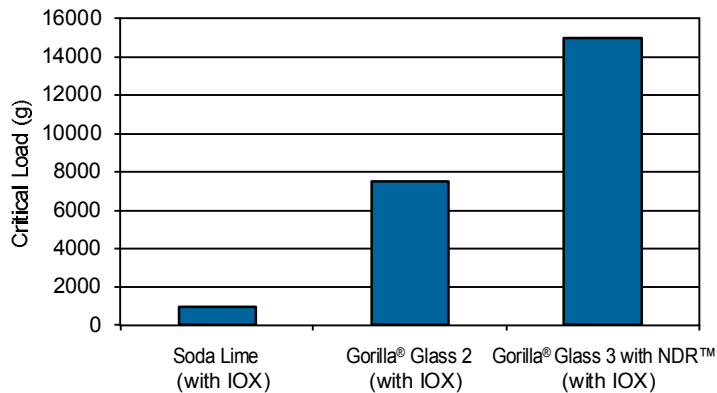
Reagent	Time	Temperature (°C)	Weight Loss (mg/cm <sup>2</sup> )
HCl - 5%	24 hrs	95	0.6
NH <sub>4</sub> F:HF - 10%	20 min	20	2.1
HF - 10%	20 min	20	12.3
NaOH - 5%	6 hrs	95	1.9

### 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

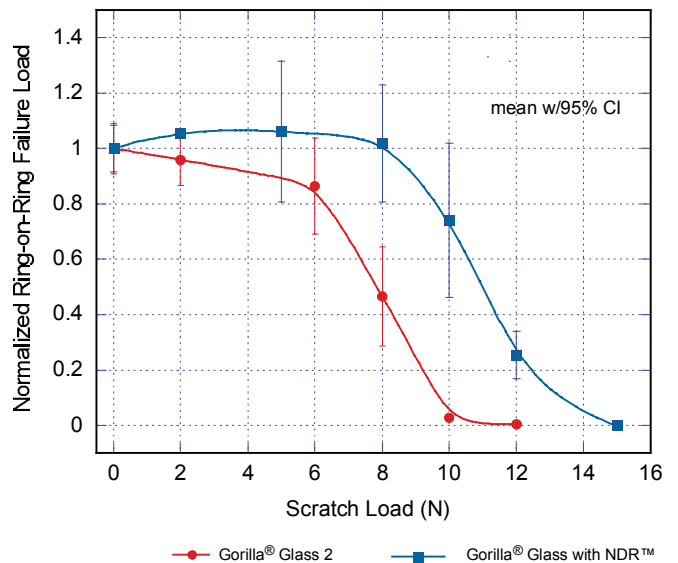
# Putting Gorilla® Glass 3 with NDR™ to the Test.

## Greater damage resistance

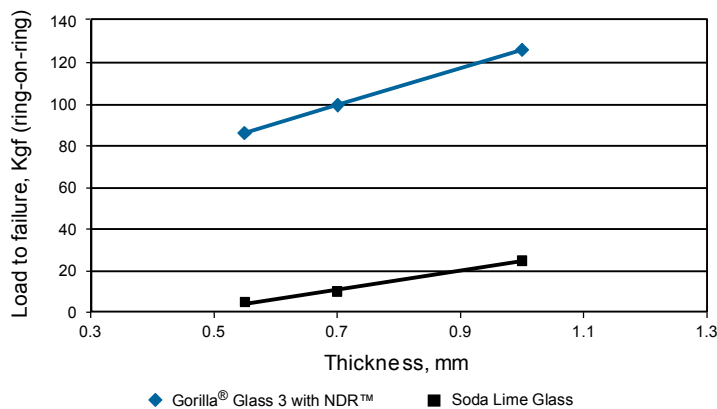


It takes more load to initiate radial cracks in the glass.

## Greater retained strength

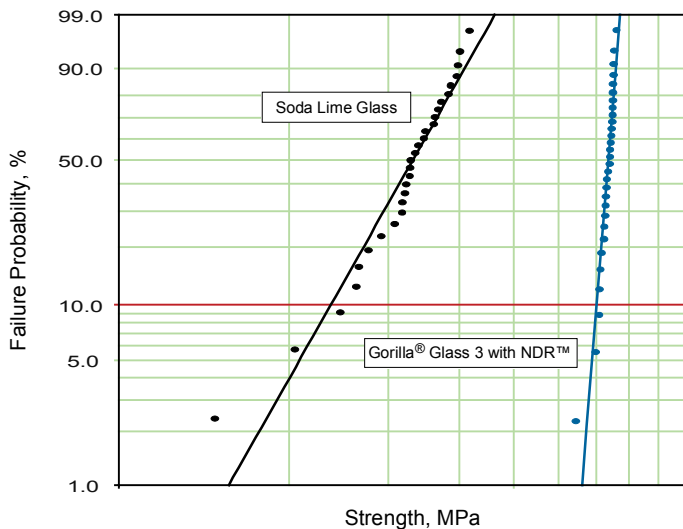


## Enables the use of thinner cover glass



Devices benefit from greater retained strength.

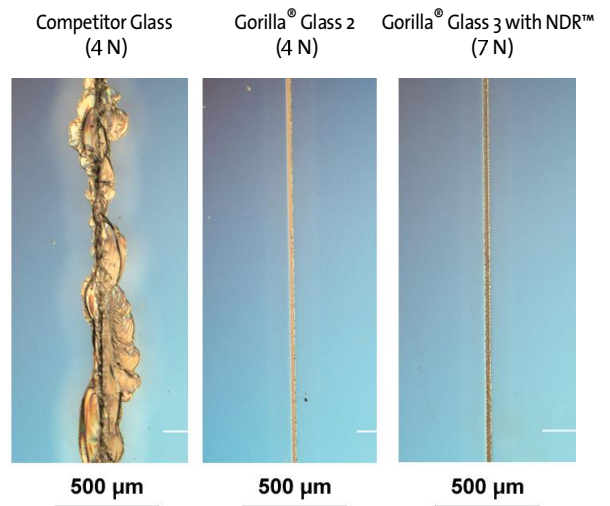
## Enables greater strength



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

## Scratches are less visible

Knoop Visual Scratch Test  
After Ion Exchange



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For more information:  
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Web: [www.corninggorillaglass.com](http://www.corninggorillaglass.com)

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