

# CORNING Gorilla® Glass

Corning® Gorilla® Glass 5 – Corning’s latest glass design was formulated to address breakage – the greatest concern of consumers, according to Corning’s research. The new glass is just as thin and light as previous versions, but has been formulated to deliver dramatically improved damage resistance allowing improved in-field performance. Corning® Gorilla® Glass 5 has been tested for performance when subjected to sharp contact damage.

## Product Information

### Benefits

- Improved drop performance
- High 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
- Wearable devices

### Dimensions

Available Thickness 0.4mm – 1.3mm

### Viscosity

Softening Point ( $10^{7.6}$ poises)	884 °C
Annealing Point ( $10^{13.2}$ poises)	623 °C
Strain Point ( $10^{14.7}$ poises)	571 °C

### Properties

Density	2.43 g/cm <sup>3</sup>
Young’s Modulus	76.7 GPa
Poisson’s Ratio	0.21
Shear Modulus	31.7 GPa
Vickers Hardness (200g load)	
Unstrengthened	601 kgf/mm <sup>2</sup>
Strengthened	638 kgf/mm <sup>2</sup>
Fracture Toughness	0.69 MPa m <sup>0.5</sup>
Coefficient of Expansion (0-300°C)	$78.8 \times 10^{-7} / ^\circ\text{C}$

### Chemical Strengthening

Compressive Stress Capability	≥ 850 MPa
Depth of Compression Capability	≥ 75 μm

### Optical

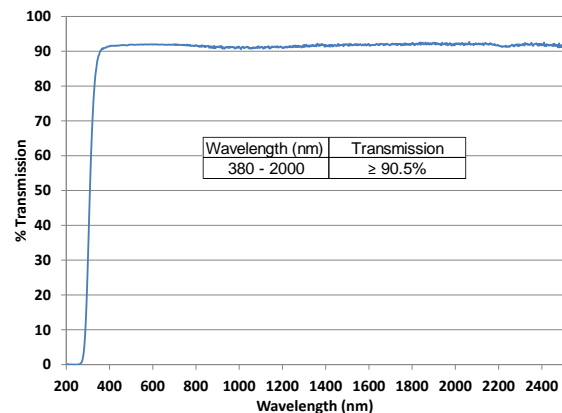
Refractive Index (590 nm)

Core Glass\* 1.50

Compression Layer 1.51

Photo-elastic constant 30.1 nm/cm/MPa

\*Core index is used for FSM-based measurements since it is unaffected by ion-exchanged 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 is reported for Corning® Gorilla® Glass 5.

Reagent	Time	Temperature (°C)	Weight Loss (mg/cm <sup>2</sup> )
HCl – 5%	24 hrs.	95	5.9
NH <sub>4</sub> F:HF – 10%	20 min.	20	1.0
HF – 10%	20 min.	20	25.2
NaOH – 5%	6 hrs.	95	2.7

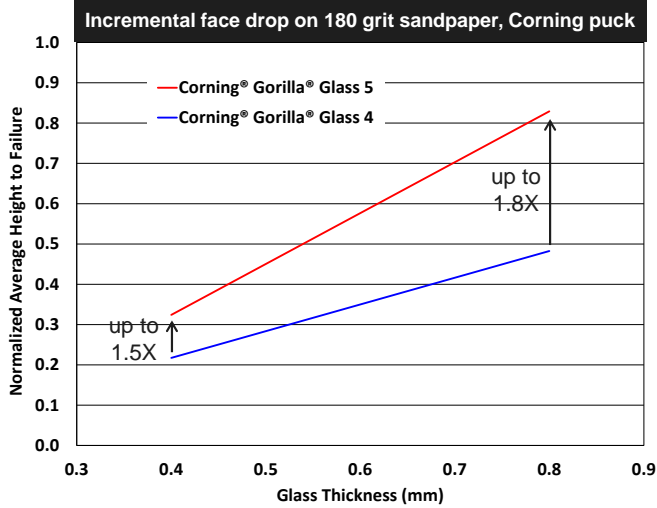
### Electrical

Frequency (MHz)	Dielectric Constant	Loss Tangent
54	7.08	0.009
163	7.01	0.010
272	7.01	0.011
381	7.00	0.010
490	6.99	0.010
599	6.97	0.011
912	7.01	0.012
1499	6.99	0.012
1977	6.97	0.014
2466	6.96	0.014
2986	6.96	0.014

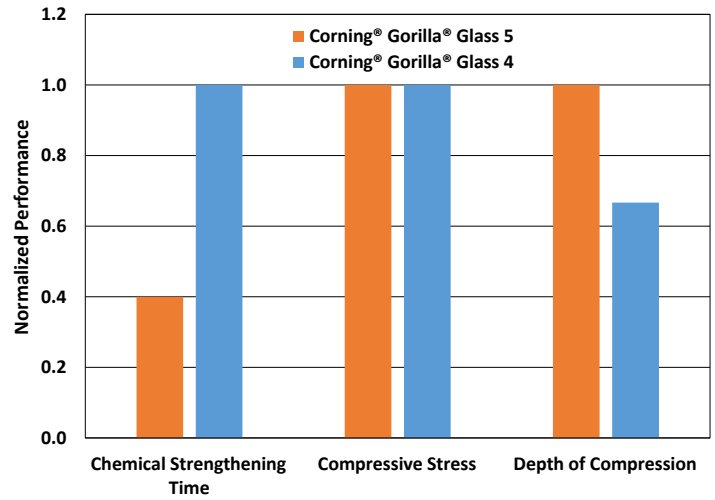
Terminated coaxial line similar to that outlined in NIST Technical Notes 1520 and 1355-R.

# Putting Corning® Gorilla® Glass 5 to the test.

## Improved damage resistance on rough surface.

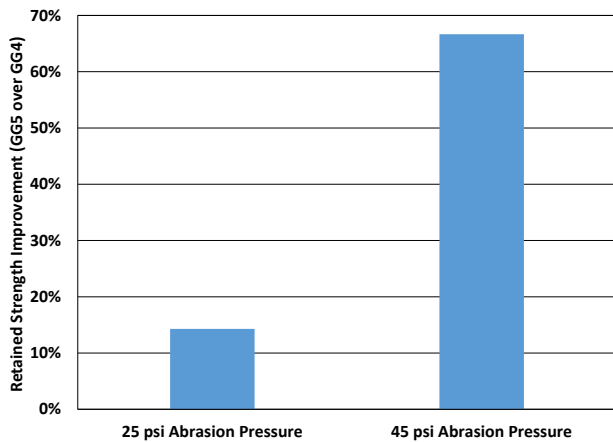


## Faster chemical strengthening with high Compressive Stress and deeper Depth of Compression.



\*Results may be varied by thickness and chemical strengthening recipe

## Greater damage resistance with deep abrasion.



## Similar scratch performance to previous Gorilla® Glasses. Clearly outperforms soda-lime glass.

Lab tests that replicate most common field scratches

	Soda-lime	GG3	GG4	GG5
<b>Garnet Test</b> Surrogate for severe use conditions 150 grit sandpaper abrasion ½ cycle (single pass) 1 kg load				
<b>Taber Test</b> Linear CS-17 abrasion 25 cycles/min 1" cycle length 500 cycles 6.7mm contact diameter 850 g load				
<b>Tumble Test</b> Random purse tumble 15 min duration				
<b>Pixel-by-pixel Quantitative analysis:</b>				
<b>Surface Damaged Area (SDA) %</b>	0.84%	0.52%	0.39%	0.39%
<b>Standard Deviation (SDA) %</b>	0.73%	0.31%	0.13%	0.22%

\*all parts tested without anti-smudge coating to probe glass response only

# CORNING

For more information about Corning® Gorilla® Glass 5:  
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