

CORNING Gorilla® Glass

Corning® Gorilla® Glass 5 – Corning’s latest glass design was formulated to address breakage – the greatest concern of consumer, 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

Thickness: 0.4 mm - 1.3 mm

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 ³
Young’s Modulus	76.7 GPa
Poisson’s Ratio	0.21
Shear Modulus	31.7 GPa
Vickers Hardness (200 g load)	
Un-strengthened	601 kgf/mm ²
Strengthened	638 kgf/mm ²
Fracture Toughness	0.69 MPa m ^{0.5}
Coefficient of Expansion (0 °C - 300 °C)	78.8 x 10 ⁻⁷ /°C

Chemical Strengthening

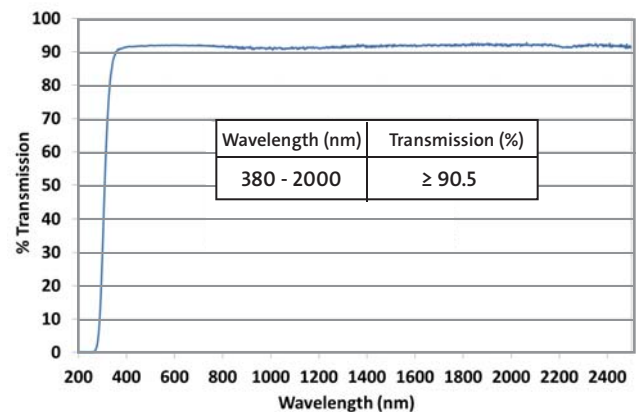
Compressive Stress Capability	≥ 850 MPa
Depth of Compression Capability	≥75 µm

Optical

Refractive Index (590 nm)

Core glass*	1.50
Compression layer	1.51
Photo-elastic constant	30.2 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® Gorilla® Glass 5-

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

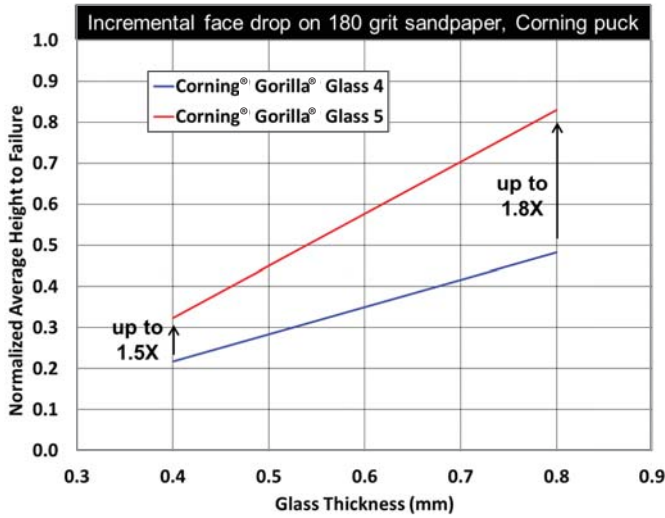
Electrical

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

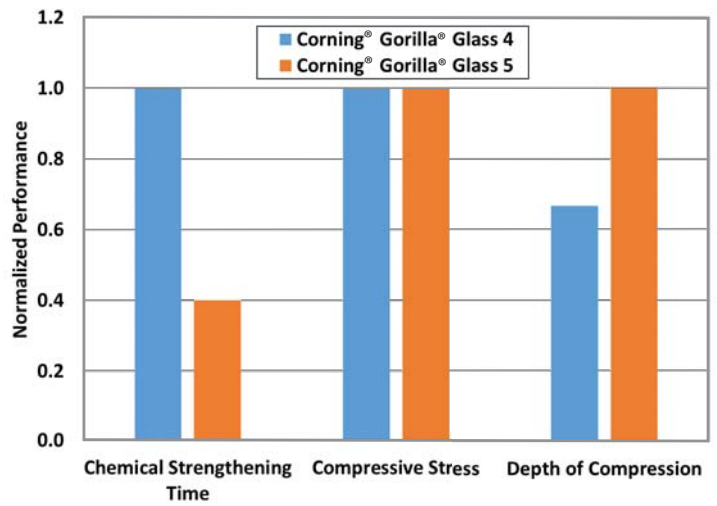
Terminated coaxial line similar to that outlined in NIST Technical Notes 1520 and 1355-R.

Putting Corning® Gorilla® Glass 5 to the test.

Improved damage resistance on rough surfaces.

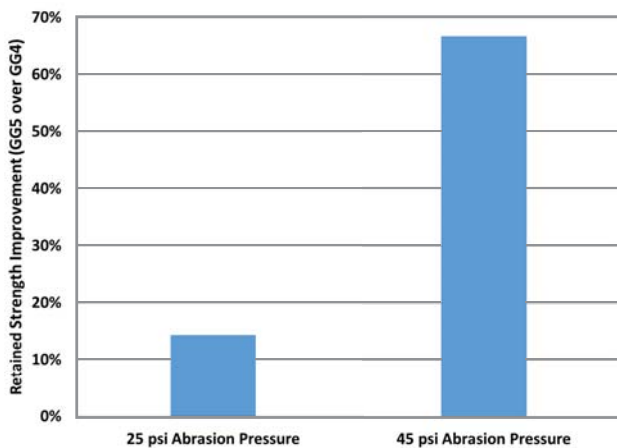


Faster chemical strengthening with high Compressive Stress and deeper Depth of Compression.



* Results may be varied by thickness and chemical strengthening recipe

Greater damage resistance with deep abrasion.



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

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

* All parts tested without ETC to probe glass response only

CORNING

For more information about Corning® Gorilla® Glass 5:

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