CORNING

Astra™ Glass

High-Performance Display Glass Optimized for Enabling High Resolution

As Corning's newest high-performance display glass, Corning® Astra™ Glass is a composition balanced to accommodate stringent customer needs for high resolution across a broad range of processing temperatures. Astra Glass features a blend of low total pitch variation, low total thickness variation, and low sag to enable high-performance and high-resolution applications.

With an ideal blend of attributes and attractive panel economics, Corning Astra Glass is ideally suited to perform well in oxide thin-film transistor (TFT) backplane manufacturing processes, including Oxide-OLED and Oxide-LCD tablets and notebooks, or next-generation 8K LCD and OLED TVs.

Product & Material Information

Corning® Astra™ Glass is produced to the following type specifications:

Product Specifications		
Maximum Size	Gen 10.5 Substrate	
Thickness Tolerance	± 0.02 mm	
Thickness Ranges	≤ 9µm (150mm Moving Window)	
Edges	R-Beveled	
Corner Cuts	1.5 ± 1.0 mm	
Orientation Corner(s)	Various	
Squareness	± 0.03 mm	
Sheet Warp	≤ 0.20 mm	
Waviness	Cut off: 0.8-8 mm	≤ 0.06 µm
	Cut off: 0.8-25 mm	≤ 0.33 µm

Substrate Inspection & Packaging		
Scratch & Stain	Pattern Surface	*None visible using 5K lux or 10K lux*
	Back Surface	*1.5K or 5K Limit Sample using 1.5K lux*
Inclusions	≤ 0.1 mm	
Edge Chips	≤ 1.0 mm	
Edge Cracks	None visible using 1.5K lux	
Packaging	Corning® DensePak® (products larger than 730 x 920 mm)	
Quality Area	Scratch, stain and inclusion fault criteria apply to all except a border area on each substrate which has a width of 10 mm	

Material Information		
Glass Type	Alkaline Earth Boro-Aluminosilicate	
Forms Available	Fusion Drawn Sheet	
Principle Uses	Substrates for high-performance displays with a-Si and oxide-TFT technologies	
Mechanical Properties	Density (20°C)	2.52 g/cm^3
	Young's Modulus	81 GPa
	Shear Modulus	33 GPa
	Poisson's Ratio	0.23
Thermal Expansion	Coefficient of Thermal Expansion (0 - 300°C)	33 x 10^{-7}/°C
Viscosity	Softening Point (10$^{7.6}$ poises)	1013°C
	Annealing Point (10^{13} poises)	778°C
	Strain Point (10$^{14.7}$ poises)	725°C
Electrical Properties	Log_{10} Volume Resistivity	at 25°C *25.2 ohm- cm*
		at 250°C *14.1 ohm- cm*
		at 500°C *9.7 ohm- cm*
	Dielectric Constant (20°C, 1kHz)	5.82
	Loss Tangent (20°C, 1kHz)	0.2%

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Dimensional Measurement

	Size	Thickness	Chamfer	Corner Cut	Orientation corner	Squareness	Warp	Waviness	Compaction
Laser Gauge	X	X				X			
Calipers	X								
Micrometer		X							
Scale Loupe			X	X	X				
Squareness Gauge						X			
Warp Gauge							X		
Profilometer								X	
Compaction Gauge									X

Visual Inspection

	Pattern Surface	Back Surface	Inclusions	Chips	Cracks
Environment	Darkened Clean Room				
Light Source	Halogen (10K lux), Halogen (5K lux), or Flourescent (1.5K lux)				
Brightness	5K or 10K lux	1.5K lux	1.5K lux	1.5K lux	1.5K lux
Method	Automated				

Thermal Conductivity

Thermal conductivity is a calculated value, and is equal to the product of the thermal diffusivity multiplied by specific heat multiplied by density of the glass.

Temp (°C)	Diffusivity (cm^2/s)	Cwp (J/kgK)	Conductivity (W/mK)
100	0.0059	770.3	1.128
200	0.0057	906.9	1.285
300	0.0055	949.2	1.303
400	0.0055	1016.9	1.402
500	0.0054	1066.6	1.446

Chemical Durability

Chemical durability is measured via weight loss per surface area after immersion. Values are highly dependent upon actual testing conditions. Unless otherwise noted, concentrations refer to weight percent

Reagents	Time	Temp	Weight Loss (mg/cm^2)
HCl - 5%	24 hrs	95°C	0.09
HNO_3 - 1M	24 hrs	95°C	0.06
HF - 10%	20 min	20°C	5.18
110BHF	5 min	30°C	0.38
1HF:10HNO_3	3 min	20°C	1.56
1HF:100HNO_3	3 min	20°C	0.17
DI H_2O	24 hrs	95°C	0.00
Na_2CO_3 - 0.02N	6 hrs	95°C	0.11
NaOH - 5%	6 hrs	95°C	1.58

For additional product or technical information, please visit www.corning.com/worldwide/en/products/display-glass.html. To obtain additional technical information, an engineering sample, or to place an order for this product, please contact us at: Tel: +1-607-974-9000 mail: display@corning.com

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