Corning® EAGLE XG™ AMLCD Glass Substrates

Material Information

CORNING
Discovering Beyond Imagination

Display Technologies

MIE 301
Issued: January 2006
Supercedes: None

Glass Type – Alkaline Earth Boro-Aluminosilicate
Forms Available – Fusion drawn sheet
Principal Uses – Substrates for Active Matrix flat panel displays

Properties

Where applicable, units are stated in Metric and English

Mechanical

	Metric	English
Density (20°C, 68°F)	2.38 g/cc	148.5 lb/ft^3
Young's Modulus	73.6 GPa	10.7 x 10^6 psi
Shear Modulus	30.1 GPa	4.4 x 10^6 psi

Poisson's Ratio	0.23
Vickers Hardness (200 gm load, 25 sec dwell)	640

Thermal Expansion

0 - 300°C	31.7 x 10^{-7}/°C (0 - 300°C)	17.7 x 10^{-7}/°F (32 - 572°F)
Room Temperature To Setting Point	35.5 x 10^{-7}/°C (25 - 675°C)	19.7 x 10^{-7}/°F (77 - 1247°F)

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)	Specific Heat (J/gm-°K)	Thermal Diffusivity (cm^2/sec)	Thermal Conductivity (W/cm-°K)
23	0.768	0.00601	0.0109
100	0.896	0.00572	0.0122
200	0.998	0.00546	0.0129
300	1.067	0.00530	0.0134
400	1.110	0.00522	0.0137
500	1.154	0.00518	0.0142

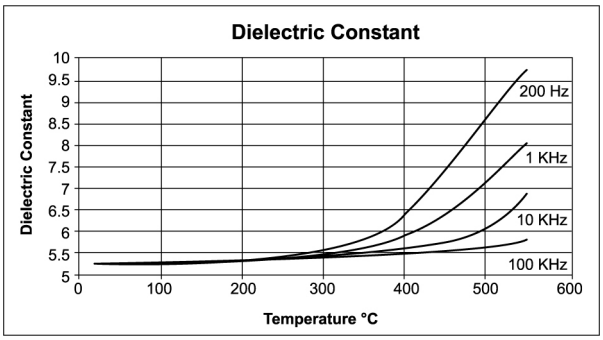
Viscosity

Working Point (10^4 poises)	1293
Softening Point (10$^{7.6}$ poises)	971
Annealing Point (10^{13} poises)	722
Strain Point (10$^{14.5}$ poises)	669

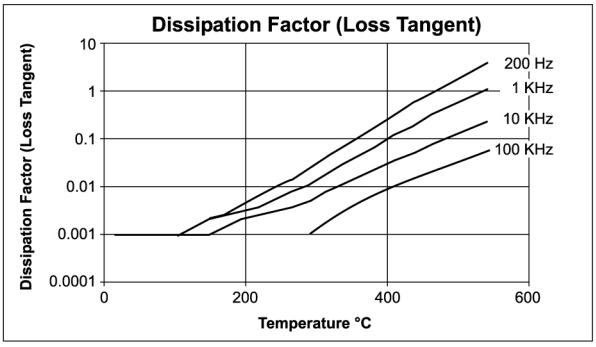
Electrical

Log_{10}Volume Resistivity (ohm-cm)

12.9	(250°C, 482°F)
8.8	(500°C, 932°F)



Dielectric Constant: 5.27
(20°C/68°F – 1 kHz)



Loss Tangent: 0.30%
(20°C/68°F – 1 kHz)

Chemical

Weathering: 1

Weathering is defined as corrosion by atmospheric-borne gases and vapor such as water and carbon dioxide. Glasses rated 1 will almost never show weathering effects, those rated 2 will occasionally be troublesome, particularly if weathering products cannot be removed, those rated 3 require more careful consideration.

Durability:

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.

Reagent	Time	Temp	Weight Loss (mg/cm^2)
HCl – 5%	24 hrs	95°C	0.79
HNO_3 – 1M	24 hrs	95°C	0.49
HF – 10%	20 min	20°C	5.18
NH_4F:HF – 10%	20 min	20°C	0.84
1HF:10HNO_3	3 min	20°C	1.48
1HF:100HNO_3	3 min	20°C	0.16
DI H_2O	24 hrs	95°C	0.00
Na_2CO_3 – 0.02N	6 hrs	95°C	0.16
NaOH – 5%	6 hrs	95°C	1.83

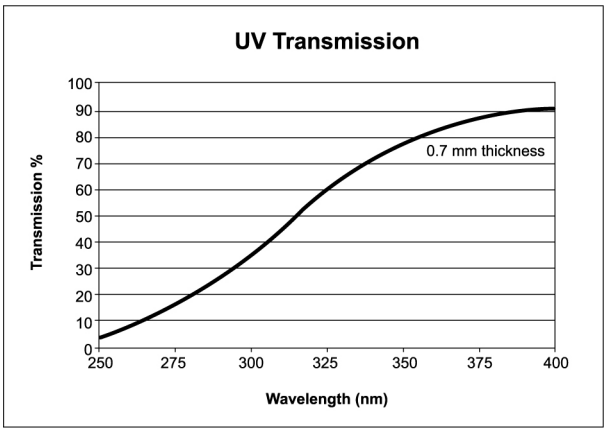
Total alkali content is approximately: 0.1 wt%
(Typical < 0.05 wt%)

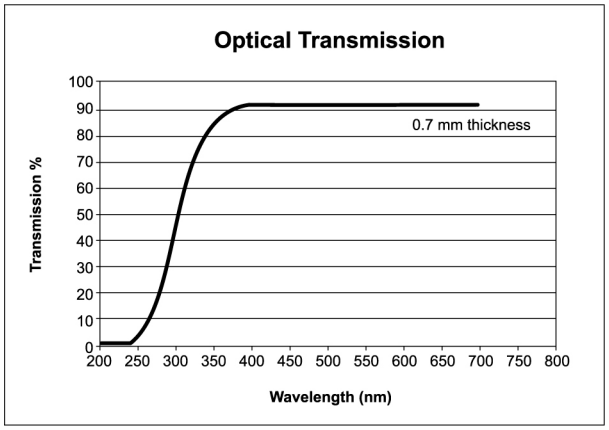
Optical Wavelength	Refractive Index
435.8 nm	1.5198
467.8 nm	1.5169
480 nm	1.5160
508.6 nm	1.5141
546.1 nm	1.5119
589.3 nm	1.5099
643.8 nm	1.5078

Birefringence Constant

331 (nm/cm)/(kg/mm^2)

Transmittance





North America and all other Countries
Corning Display Technologies
MP-HQ-W1
Corning, NY 14831
United States
Telephone: +1 607-974-9000
Fax: +1 607-974-7097
Internet: www.corning.com/displaytechnologies

Japan
Corning Japan K.K.
Main Office
Akasaka Intercity 7th floor
1-11-44, Akasaka
Minato-Ku, Tokyo 107-0052 Japan
Telephone: +81 3-5562-2260
Fax: +81 3-5562-2263
Internet: www.corning.co.jp

Nagoya Sales Office
Nihon Seimei Sasashima Bldg., 15th floor,
27-2 Meieki minami 1-chome, Nakamura-ku,
Nagoya 450-0003 Japan
Telephone: +81 52-561-0341
Fax: +81 52-561-0348

China
Corning (China) Ltd., Shanghai Representative Office
31/F, The Center
989 Chang Le Road
Shanghai 200031
P.R. China
Telephone: +86 21-5467-4666
Fax: +86 21-5407-5899
Internet: www.corning.com.cn

Taiwan
Corning Display Technologies Taiwan Co., Ltd.
Room #1203, 12F, No. 205
Tun Hua North Road,
Taipei 105, Taiwan
Telephone: +886 2-2716-0338
Fax: +886 2-2716-0339
Internet: www.corning.com.tw

Korea
Samsung Corning Precision Glass Co., Ltd.
12th floor, Taepyungro Building
310 Taepyungro-2ga
Jung-gu, Seoul, 100-767 Korea
Telephone: +82 2-728-0733
Fax: +82 2-728-0749
Internet: www.samsungscp.co.kr

EAGLE XG is a trademark of Corning Incorporated, Corning N.Y.
©2006, Corning Incorporated