



Material Information

AF37

January 14, 2004

AF 37 with its specific properties is exceptionally well suited for a number of display technologies, especially for liquid crystal displays such as Active Matrix LCD.

The float glass technology permits large and homogenous substrates.

AF 37 is an alkaline-earth aluminosilicate glass with a high content of Al_2O_3 . It is alkali- and arsenic free in synthesis.

Features are

- high heat resistance and low shrinkage
- high chemical resistance
- low density and low sagging
- alkali and arsenic free in synthesis

Mechanical Properties

Density	2.48 g/cm ³
Young's Modulus	78 kN/mm ²
Poisson Ratio	0.24
Vickers Hardness (2N, 25sec)	640



Chemical Durability

The following resistance classes refer to international standard test methods (DIN and ISO).

Hydrolytic resistance
(DIN ISO 719, DI H₂O, 1h, 98°C) Class H1

Acid resistance
(DIN 12116, HCl, 6mol/l, 6h, 108°C) Class S4

Alkali resistance
(ISO 695, NaOH 1mol/l
+ Na₂CO₃ 0,5mol/l, 3h, 102°C) Class A2

Chemical durability is measured by weight loss per surface area after immersion under certain conditions. The concentrations of the following reagents refer to weight percent.

NaOH
(5%, 1.3mol/l, 6h, 95°C) 1.3 mg/cm²

NH₄F:HF
(10%, 1.8mol/l, 20min, 23°C) 0.68 mg/cm²

HCl
(5%, 1.4mol/l, 24h, 95°C) 0.44 mg/cm²

DI H₂O
(24h, 95°C) < 0.01 mg/cm²



Thermal Properties

Coefficient of thermal expansion (20 – 300°C)	3.77 *10 ⁻⁶ /K
Shrinkage (Hold 1h at 400°C, ramping 2.5°C/min)	≤ 5 ppm
Transformation temperature T _g	711 °C
Temperatures for the viscosities of:	
Strain point (10 ^{14.5} dPa)	684 °C
Annealing point (10 ¹³ dPa)	722 °C
Softening point (10 ^{7.6} dPa)	942 °C
Working point (10 ⁴ dPa)	1263 °C
Heat conductivity (90°C)	1.12 W/mK
Mean specific heat capacity (20-100°C)	0.78 kJ/kgK

Electrical Properties

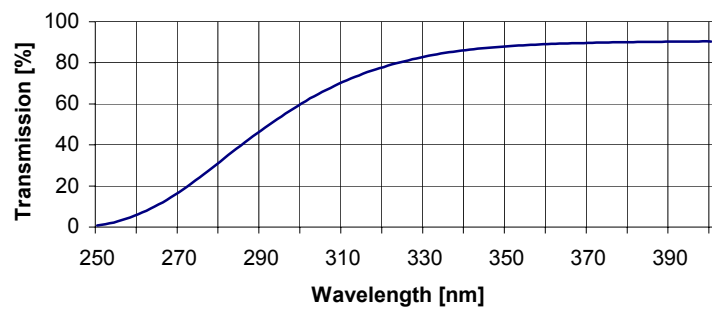
Dielectric constant (1 MHz, 25°C)	5.5
Loss tangent (1 MHz, 25°C)	0.19 %
Volume resistivity (250°C)	10 ^{12.4} Ωcm
Volume resistivity (350°C)	10 ^{10.7} Ωcm
Temperature T _k 100 (for volume resistivity of 10 ⁸ Ωcm)	627 °C



Optical Properties

Refractive index n_d (wavelength 587nm)	1.52
Birefringence constant (wavelength 588nm, 21°C)	$3.18 \cdot 10^{-6} \text{ mm}^2/\text{N}$
Transmittance:	
Average (400 to 700nm)	91.1%
Edge at 50% transmission	292 nm

Transmission 250 - 400nm



Transmission 400 - 700nm

