

NA-35/32R

Alumino Silicate Glass Non-Alkali, Flat Panel Glass

PRODUCT DESCRIPTION

HOYA's NA-35 is an alumino silicate glass with excellent thermal characteristics. It displays minimal surface cloudiness from contact with fluoric acid and is ideal for device substrates requiring high deposition temperature or fine patterning, such as poly-Si TFT and EL.

LOW SHRINKAGE

NA-35 exhibits lower thermal shrinkage in high temperature heat treatment, even when compared to borosilicate glass. The NA-35's softening point is at 650°C, so its stability in shape and measurement during extremely high heat treatment (~600°C) makes it ideal for substrates of devices that require high process temperatures and patterning accuracy. It also has superb heat resistant characteristics, due to its low CTE at $\sim 37 \times 10^{-7}/^{\circ}\text{C}$.

MINIMAL CLOUDINESS

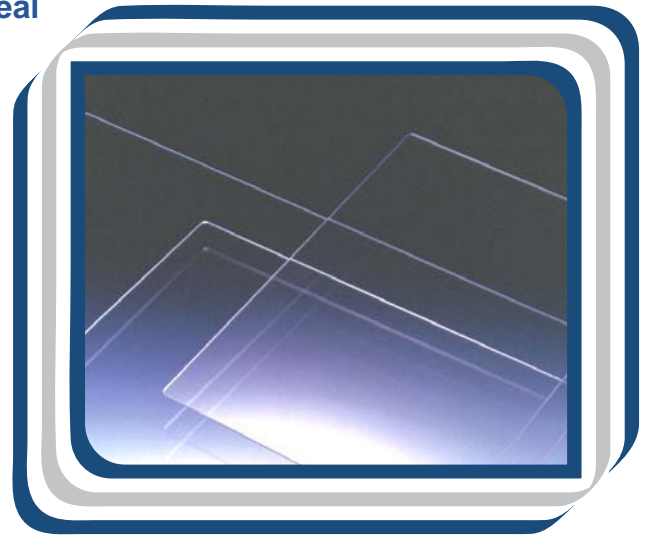
The NA-35 is almost impervious to fluoric acid solution and exhibits minimal cloudiness when washing process using HF, NH_4F , HF-HNO_3 , or $\text{HF-NH}_4\text{F}$.

CONSISTENCY

Our facility is designed to handle and monitor all aspects of glass making. We melt and form, anneal, cut and chamfer, polish and inspect, all in-house. Due to this streamlined manufacturing process, we are able to maintain a very low level of defects.

APPLICATIONS

- ▶ Flat Panel Displays
- ▶ Diode Liquid Crystal Displays
- ▶ Masks
- ▶ Sensors



FEATURES

- ▶ Low Shrinkage
- ▶ Minimal Cloudiness
- ▶ High Stability
- ▶ Diverse Functionality
- ▶ Non-Contact Drawn Formation
- ▶ Non-Contact Annealing
- ▶ No Surface Defects
- ▶ No SiO_2 Coating Needed
- ▶ Standard Thickness 0.70mm

HOYA

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PRODUCT SPECIFICATIONS

Glass Properties	NA35	NA32R
Mechanical		
Specific Gravity (g/cm ³)	2.49	2.41
Young Modulus (Gpa)	68.3	70.9
Modulus of Rigidity	28.3	28.7
Modulus of Volume Elasticity	45.2	44.8
Knoop Hardness	4.9	5.2
Poisson's Ratio	0.24	0.23
Roughness (RMS, nm) 1um x 1 umesiz	0.324	0.260
Thermal		
CTE (x 10 ⁻⁷ /°C)	38.0	33.8
Strain Point (°C)	645	654
Shrinkage (ppm @ 400°C, 1 hr hold)	8.42	6.98
Shrinkage (ppm @ 450°C, 1 hr hold)	17.86	13.59
Transformation Temp, Tg (°C)	702	717
Sag Temp, Ts (°C)	768	770
Optical		
Refractive Index (Nd)	1.51300	1.50890
Abbe Number (Vd)	62.2	62.5
Transmittance (nm, @ 5%/80%)	235/323	236/326
Electrical		
Volume Resistivity (Log-Ohm, @ 350°C)	11.03	10.92
Dielectric Constant (S/m)	4.70	4.44
Chemical Drability		
(weight loss/unit area, mg/cm) ²		
HCl (5%/24hr/95°C)	1.55	1.60
H ₂ SO ₄ (1M/24hr/95°C)	1.18	1.24
HNO ₃ (1M/24hr/95°C)	0.70	0.78
HF (10%/20min/22°C)	4.36	3.48
NaOH (5%/6hr/95°C)	1.26	1.13
KOH (5%/6hr/95°C)	0.70	0.63

Specifications subject to change without notice.



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