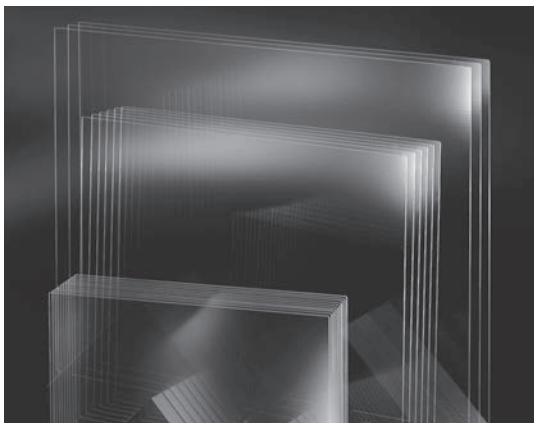
Alkali-free Glass Substrate

Ref. No. 2410-01E

OA-11



OA-11 is used as a substrate for liquid crystal displays and OLED displays, as well as a substrate for the formation of various thin films. OA-11 has particularly low deformation and deflection of gravity properties.
The substrate is both very thin and highly useful.
The high dimensional stability of this glass substrate allows it to withstand high-temperature processes, which makes it suitable for use in the LTPS and IGZO high-quality, next-generation displays.

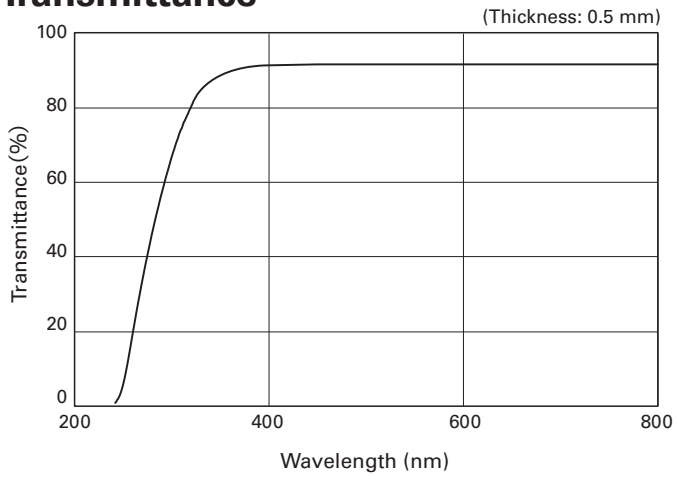
Features

1. **Smooth surface**
   Glass substrates formed using overflow technology exhibit flat precision surfaces.
2. **Alkali-free**
   With a maximum alkali oxide content of 0.1%, this product does not degrade the thin-film characteristics of amorphous or polycrystalline silicon.
3. **Thermal dimensional stability**
   A high strain point and a low thermal expansion coefficient give OA-11 high thermal dimensional stability during TFT forming process and other heat treatment processes.
4. **Chemically stable surface**
   Inert to treating agents used in the semiconductor process and the TFT forming process, so surfaces retain pristine quality.
5. **Environmentally friendly glass**
   This environmentally friendly glass does not contain environmentally hazardous substances, such as As and Sb.

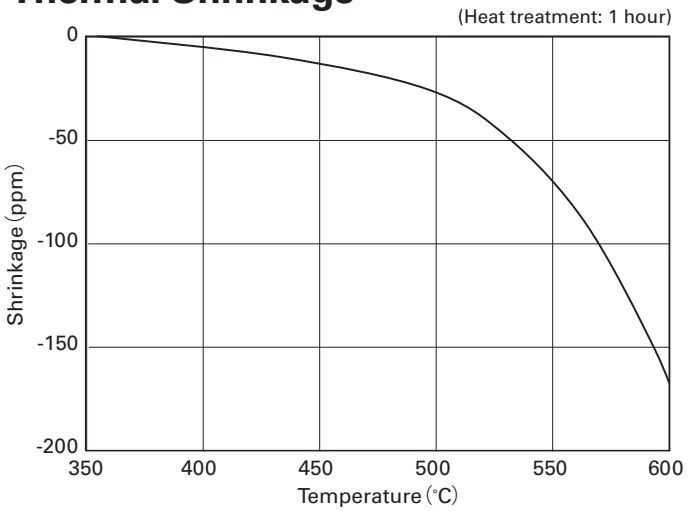
Properties

Properties/Glass Code			**OA-11**
Density		$\times 10^3$kg/m^3	2.52
Coefficient of thermal expansion	30-380°C	$\times 10^{-7}$/K	37
Strain point		°C	685
Young's modulus		GPa	78
Poisson's ratio			0.2
Vickers hardness	Hv		620
Volume resistivity Log ρ	350°C	Ω·cm	13.0
Dielectric constant	1MHz, RT		5.6
tan δ	1MHz, RT		0.001
Light transmittance	λ =550nm	%	92
Refractive index (n_d)	587.6nm		1.53
Chemical durability	10% HCl (80°C-60min)		No visual change
	63 BHF (20°C-3min)		No visual change
Alkali oxide content		wt %	0.1 max.
As, Sb content		wt %	Less than 0.1

Transmittance



Thermal Shrinkage



Flatness

Subjects	Specifications	Remarks
Waviness	0.06μm max.	Standard length 20mm (SEMI D15-1296)
Surface Roughness	Ra: 0.2nm	AFM

Only on the pattern surface

Dimensions

(mm)

Length			
L_1		L_2	
Center	Tolerance	Center	Tolerance
370	± 0.2	470	± 0.3
550	± 0.35	650	± 0.4
730	± 0.5	920	± 0.6
1100	± 0.7	1300	± 0.8
1500	± 1.0	1850	± 1.2
1950	± 1.4	2250	± 1.6
2200	± 1.6	2500	± 1.7
2940	± 2.0	3370	± 2.2

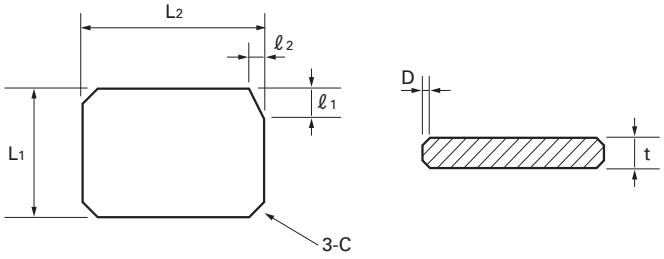
Consult us for other dimensions.

(mm)

Thickness	
t	
Center	Tolerance
0.50	± 0.05
0.40	± 0.04
0.30	± 0.03

Corner Cut		Orientation Corner 1-C		Chamfering
3-C		ℓ_1	ℓ_2	D
Center	Tolerance	Center	Tolerance	Simple Round Shape
1.5	± 1.0	4.0	± 1.0	0.05-0.55

Consult us for other shapes.



Surface Defects (Scratch, Dirt)

None observed in surface inspection carried out using oblique illuminations as shown in the following table.

Grade A	Grade B
10000 lx	1500 lx

Only on the pattern surface

Processing Defects
(Peripheral Chipping and Cracking)

Size of Defects (mm)	Maximum Number Allowed
> 1.0	None
≦ 1.0	Disregard

There were no sign of chips nor cracks developing in the glass.
Inspection conditions: Surface inspection at 1500 lux.