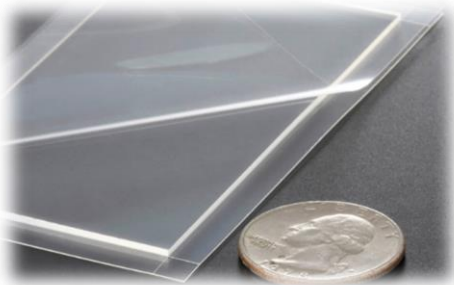
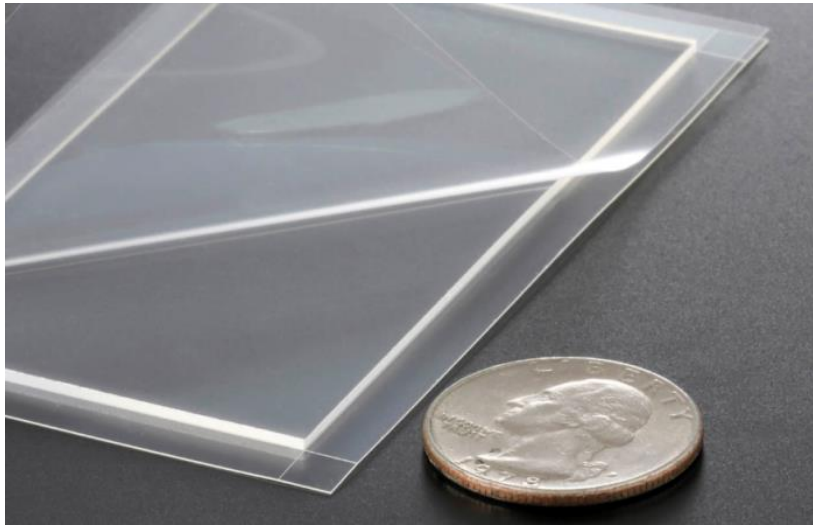


Free Crystal® Features of super thick OCA

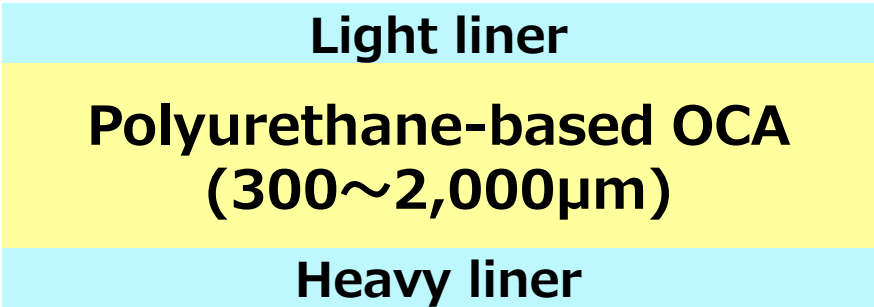


Advanced Elastomer Products Division
BANDO CHEMICAL INDUSTRIES, LTD.

Features of NT series



Structure



(Thickness line-up)
300μ, 500μ, 800μ, 1000μ, 1500μ, 2000μ

- Thickness** : Wide range of thickness 300~2000μm
- Unique design** : Both achieving high adhesion and softness
- High reliability** : No bubbles, no delamination, no color change even after environmental tests of automotive use
No bubbles, no delamination even after altitude tests of avionics use

Achieving both high adhesion and softness

OCA type		Adhesion	Softness
Competitors' OCA	Acrylic OCA	High	Hard
	Silicone OCA	Low	Soft
Free Crystal	NT series	High	Middle

Relieving stress on LCD



Relieving stress on LCD is expected by softness and thickness of OCA. It helps to **avoid LCD Mura**.

※Degree of display-mura depends on display device and/or cover material.

Bonding with competitor's OCA



Bonding with NT series



Excellent optical reliability : Anti-whitening

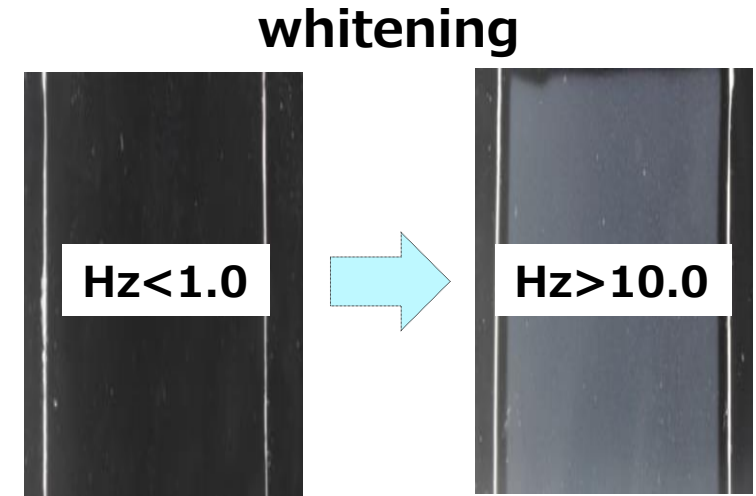


NT series_RA test results (t=1000μm)

Condition	Time	Haze (%)
Initial	—	0.39
85°C/85%	1000h	0.30
95°C/dry	1000h	0.35
UV_60W/m2	1000h	0.42

- Haze is measured on Glass/OCA/Glass structure

No whitening



Example of competitor's silicone OCA evaluation (whitening on 85°C/85%)

Excellent optical reliability : Anti-yellowing

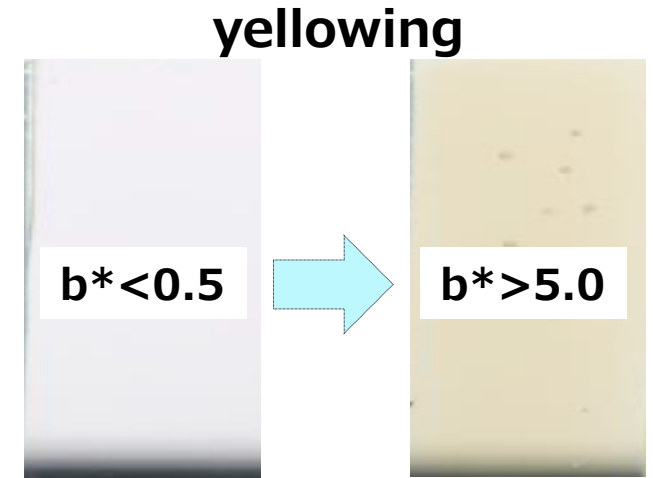


NT series_RA test results (t=1000μm)

Condition	Time	b*
Initial	—	0.26
85°C/85%	1000h	0.32
95°C/dry	1000h	0.39
UV_60W/m2	1000h	0.44

- b* is measured on Glass/OCA/Glass structure
- b* of Glass/Glass is 0.23

No Yellowing



Example of competitor's acrylic OCA evaluation (yellowing & bubbles on UV)

Excellent adhesion reliability : Altitude test

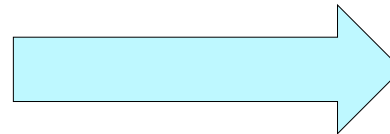


In avionics use, it is required that no bubbles occur after altitude test.
NT series has no bubbles even after 55,000ft altitude test.

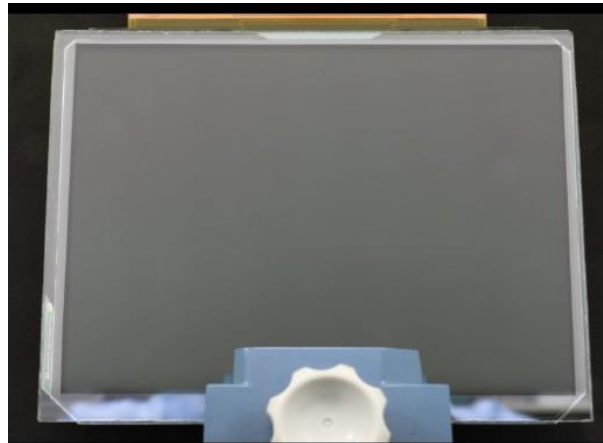
Competitor's
OCA



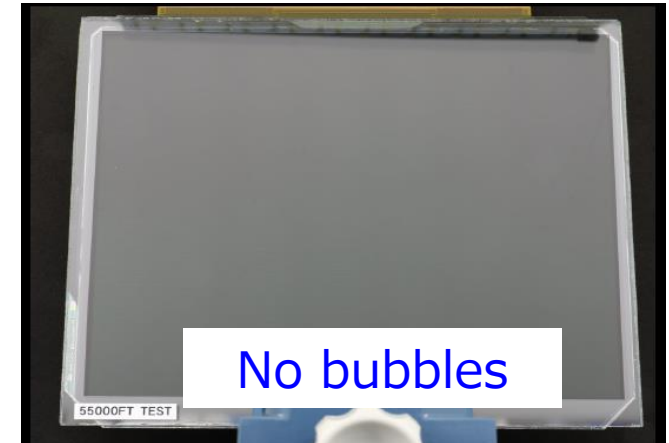
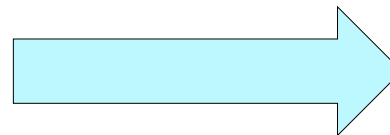
Decompression
(35,000ft Altitude)



NT series



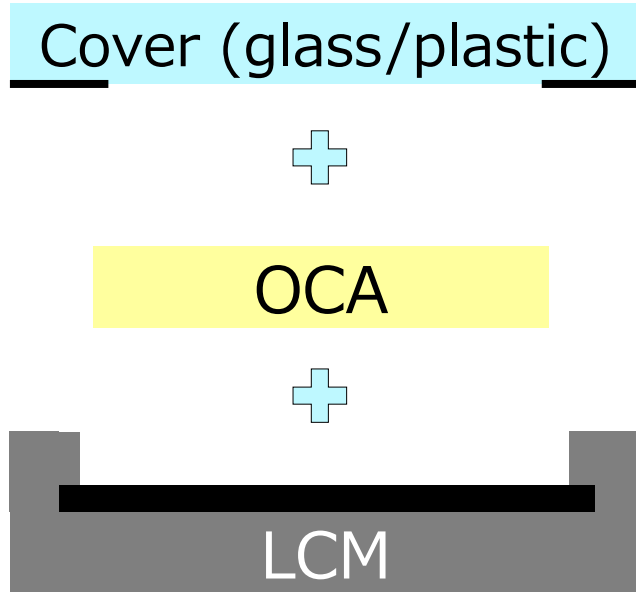
Decompression
(55,000ft Altitude)



Available applications

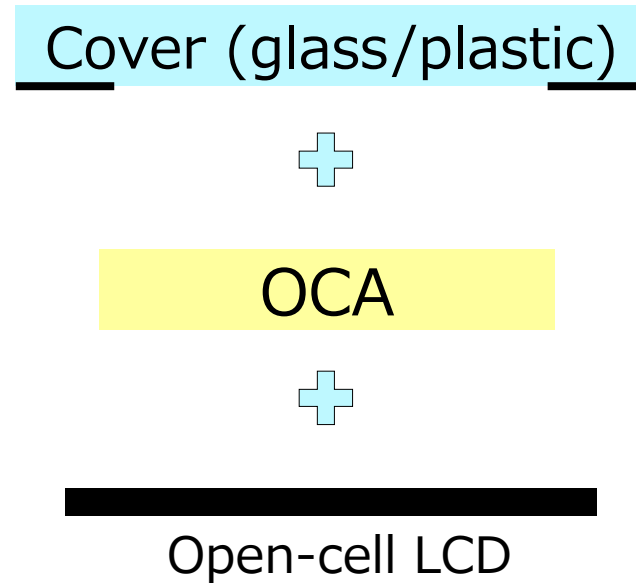


Bonding of flat LCM with metal bezel



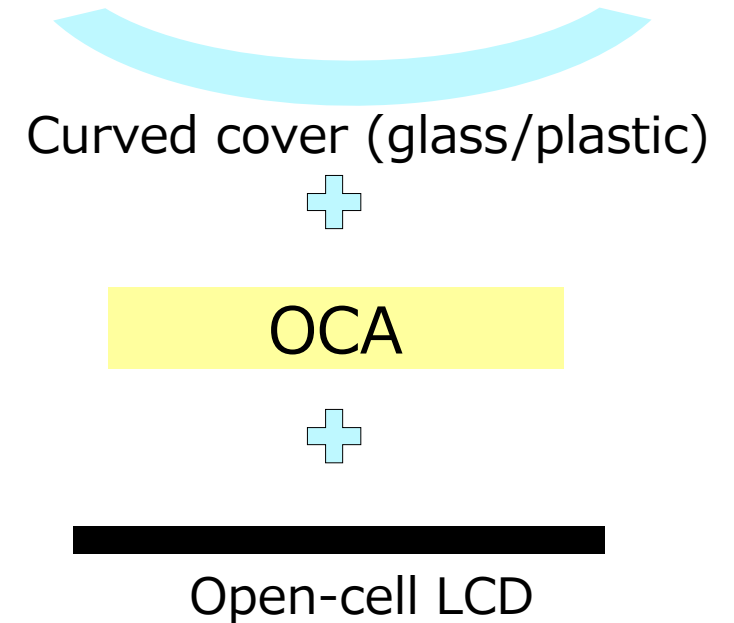
- Fill the gap of LCM bezel height.

Flat LCD cell bonding



- Absorb the warpage of large size cover material
- Relieve the stress from expansion & shrinkage of cover plastic

Curved bonding



- Avoid the delamination from the force of LCD cell to be flat

Contact Window



Sales & Marketing Dept.
Advanced Elastomer Products Div.
BANDO CHEMICAL INDUSTRIES, LTD.

Please fill out the inquiry form from the following URL.

https://marketing.bandogrp.com/EN-E-TS-2001-E-EN_inquiry.html

