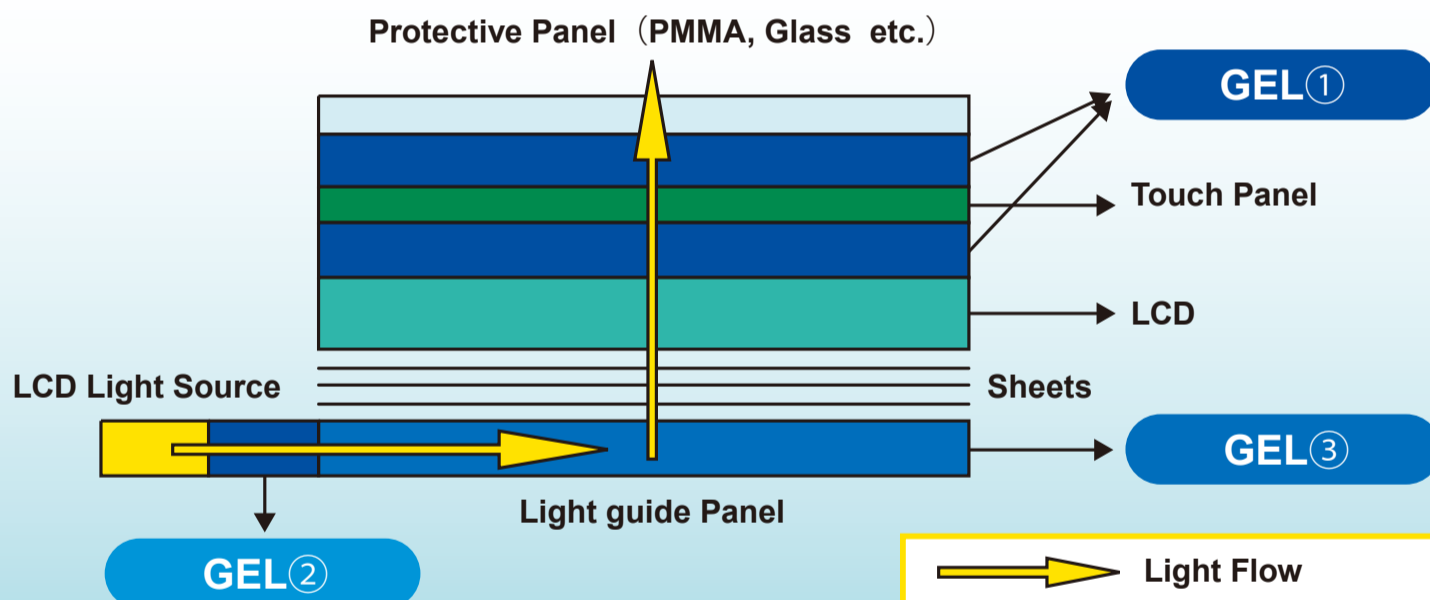


OPT α GEL[®] Application for LCD



GEL^①

Apply in between Touch Panel and LCD, or Protective Panel. (PMMA, Glass, etc.)

- Improvement in visibility (prevention of reflection of sunshine)
- Improvement in luminance (about 9%)
- Improvement in shock absorption (prevention of LCD • Touch Panel shattering)
- Its removability enables to rework on the panels

GEL^②

Apply in between LCD light source and Light Guide Panel

- Improvement in luminance (about 15%)

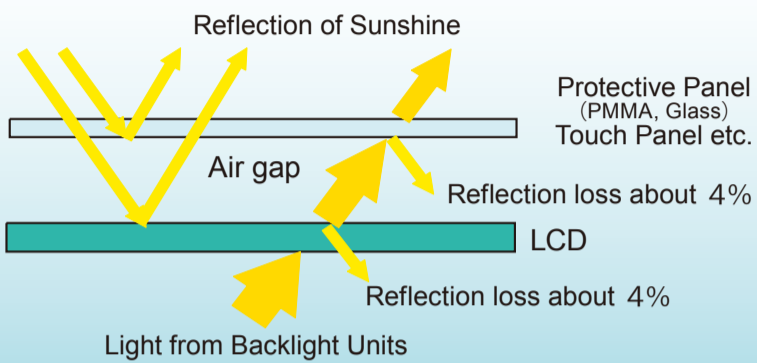
GEL^③

Apply as Optical parts.

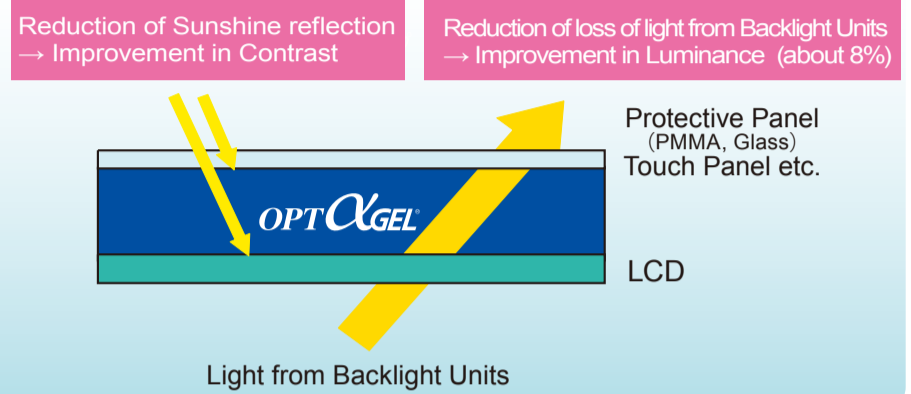
- Condensing and/or diffusing of light is possible by designing GEL shape and size
- Durable against heat & UV, and flexible due to its softness

Mechanism of improvement in LCD visibility and luminance

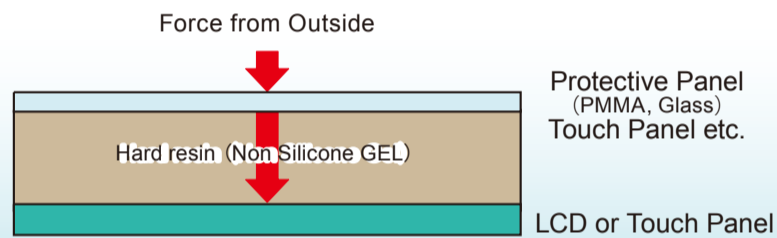
Without OPT α GEL[®]



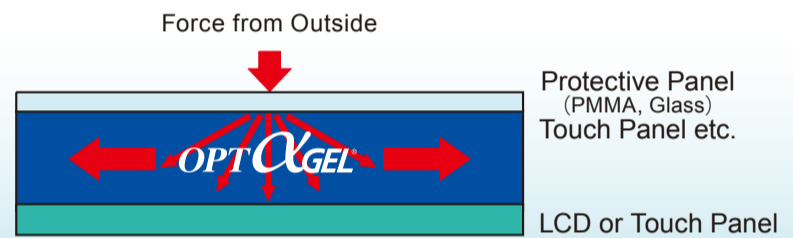
With OPT α GEL[®]



Mechanism of improvement in shock absorption



Force is directly transmitted
 ⇒ LCD, Touch Panel shattering
 ⇒ Display unevenness, moiré appearance



OPT α GEL diffuses the force
 ⇒ Prevention of LCD · Touch Panel shattering
 ⇒ Improvement in display unevenness and moiré appearance

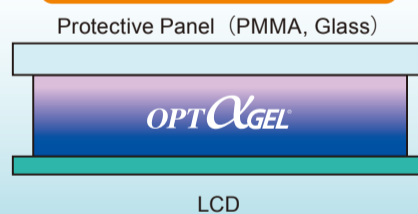
Reworkability of OPT α GEL[®]

- Peel-strength on both sides are differently designed.
- Controlled peel-strength realizes both stability and reworkability.

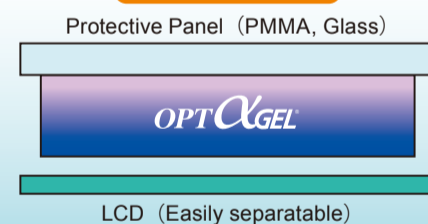
Example of Use



Lamination of GEL

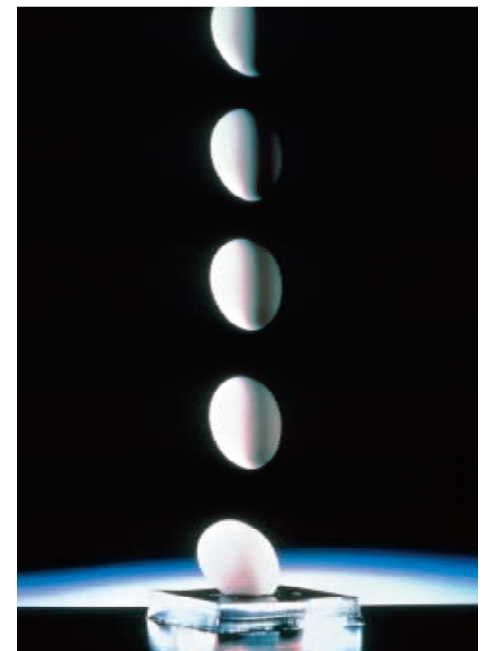


Rework



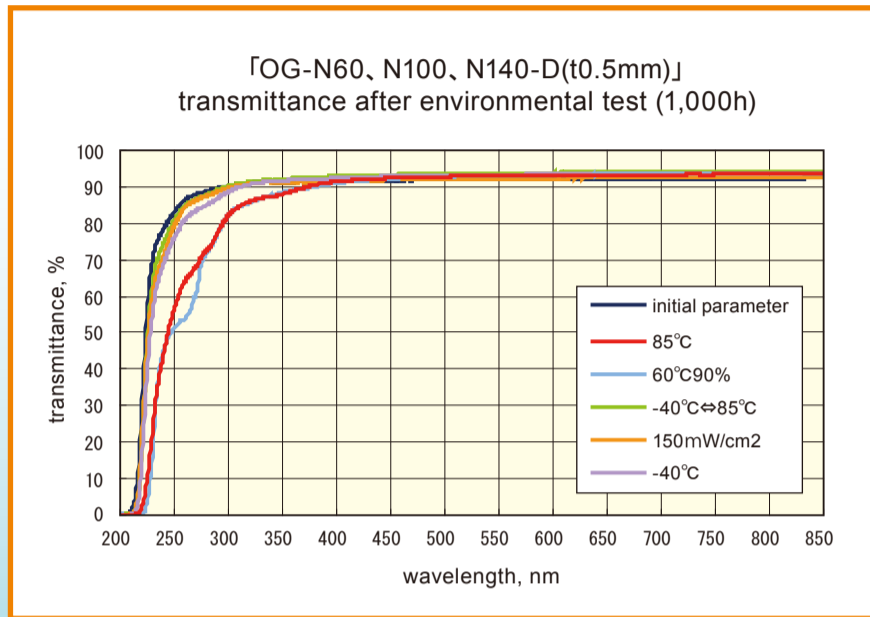
Comparison of OPT α GEL[®] and other materials

	OPT α GEL [®]	UV curable resin	Optical adhesive tape
Material	Silicone	Urethane, Acryl	Acryl
Assembly method	Vacuum lamination	Gap Filling	Autoclave
Thickness (μ m)	200~1000	≤ 100	50~200
Visibility	○	○	○
Durability	○	× (Yellowing)	× (Yellowing)
Shock-absorption	○	×	×
Stress diffusion	○	×	×
Reworkability	○	×	×
Cost	○	△	×~△



OPTαGEL® property data

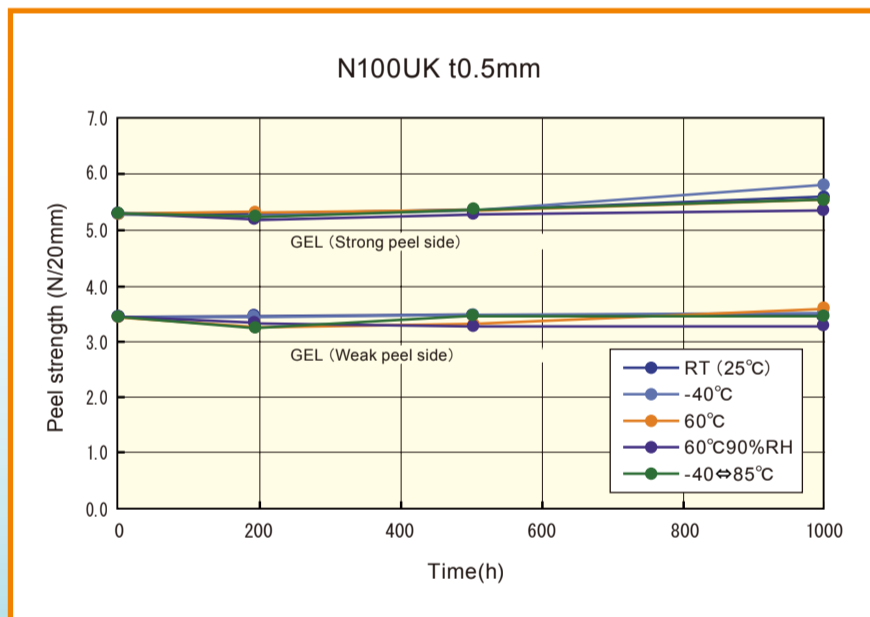
Transmittance after environmental test (1000hrs)



	Initial	High temperature	High temperature + High humidity	Heat cycle	Lightfastness	Low temperature
		85°C	60°C×90%RH	-40~85°C	Xenon Lamp 150mW/cm2	-40°C
400nm	91	91	91	91	91	91
800nm	91	91	91	91	91	91

※No transmittance change, no color change

Peel strength after environmental test (1000hrs)

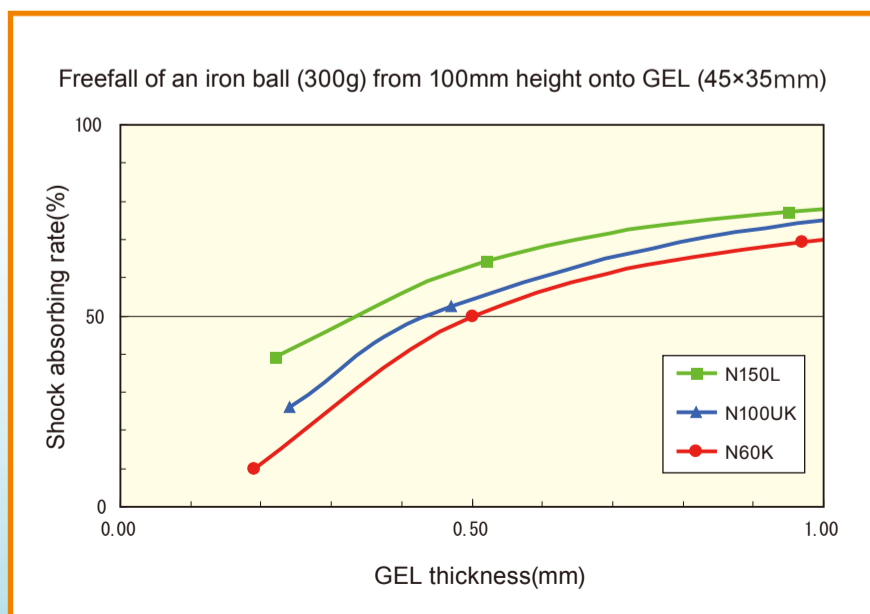


	Item	Time (h)			
		0	192	500	1000
Weak peel side	RT (25°C)	3.4	3.5	3.5	3.5
	-40°C	3.4	3.4	3.5	3.5
	60°C	3.4	3.2	3.3	3.6
	60°C 90%RH	3.4	3.3	3.3	3.3
	-40⇔85°C	3.4	3.2	3.4	3.5
Strong peel side	RT (25°C)	5.3	5.3	5.4	5.6
	-40°C	5.3	5.3	5.4	5.8
	60°C	5.3	5.3	5.3	5.3
	60°C 90%RH	5.3	5.2	5.3	5.4
	-40⇔85°C	5.3	5.3	5.4	5.5

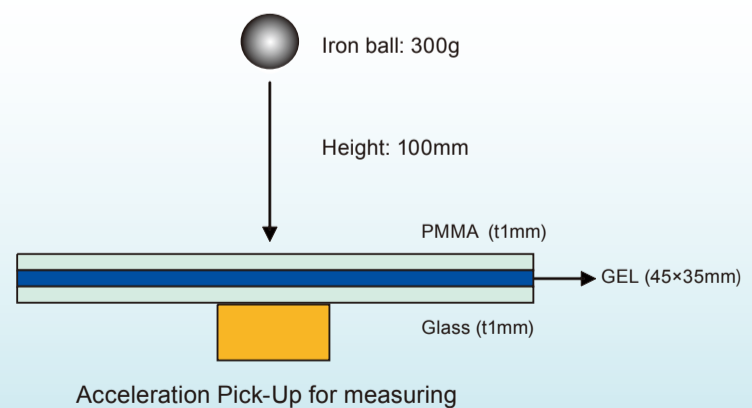
GEL : OPTαGEL 「N100UK (t0.5mm)」
Test piece : PMMA

※No peel strength change under severe circumstances

Shock absorbing effect



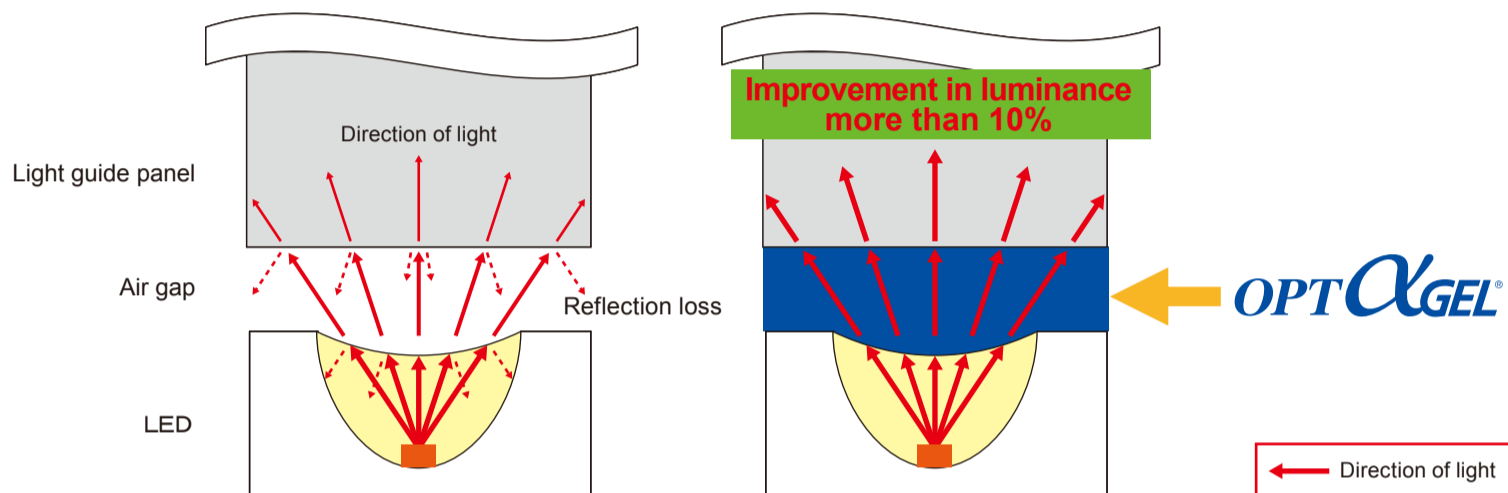
Ball Drop Test



※Shock absorbing rate(%)=(1-acceleration with GEL) / acceleration without GEL)×100

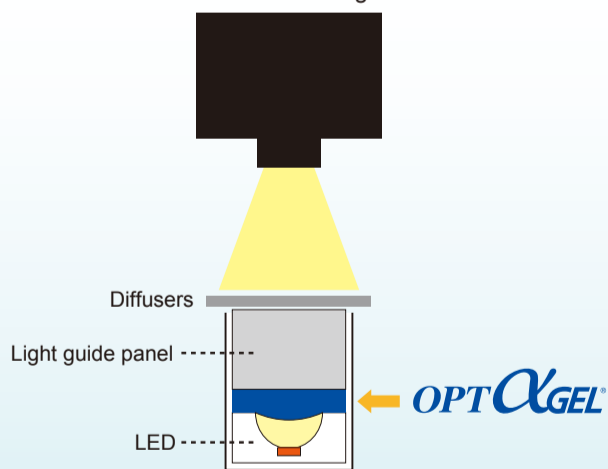
Application for Backlight Units

Mechanism of improvement in luminance



When the light comes out from encapsulant to the air gap, and comes into the light guide panel, a reflection loss occurs due to the difference of refractive index of the air and the parts, which leads to decrease of luminance. Applying **OPT α GEL** prevents the reflection loss, and improves the luminance.

Instrument of measuring luminance



---Settings---
 Luminance meter : KONICA MINOLTA CA-2000
 LED : 3 lights
 Measured surface : 48×10mm
 Measured points : 10,000
 Distance b/w light guide panel and LED : 1mm

Luminance Improvement with OPT α GEL[®]

