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Flexible display endurance test of OCA

KGK Chemical Corporation
Office of Engineering

May Clean Gel Series

Items

Items	Thickness (mm)	Adhesive	Transparency	Reliability	Design philosophy	Feature	Applications	Achievements	Others
Electrostatic film applications (GF, GFF)									
MGSF Seris	0.025~1.0	Good	Excellent	Excellent	Optically superior tape with shock absorption/mitigation, reliability, and suppressed corrosive components to metal films.	Low dielectric properties	LCD, OLED, touch sensor	Electrostatic GF、GFF	-
MGSFIP Seris	0.025~1.0	Good	Excellent	Excellent	Tape with further improved level difference absorption properties of MGSF	Low dielectric properties/Step followability	LCD, OLED, touch sensor	Made to order only	-
Heat resistant and Resin lamination use (GG, Resin lamination)									
MGSRTD Seris	0.025~1.0	Good	Excellent	Excellent	Optically superior tape for bonding difficult-to-adhere optical member such as resin plates and curved displays	Heat resistant / Resin lamination use	LCD, OLED, touch sensor	Made to order only	-

Properties

Items	Thickness (mm)	Adhesive force SUS (N/25mm)	Total light transmittance (%)	HAZE	Young's modulus (MPa)
MGSFIP 2.5	0.025	9.1	92(99)	0.8	0.12
MGSF 2.5	0.025	7.0	92(99)	0.9	1.28
MGSRTD 2.5	0.025	7.3	92(99)	0.5	3.76

May Clean Gel Series

• MGSF Series

Design philosophy

Optically superior tape with shock absorption/mitigation, reliability, and suppressed corrosive components to metal films.

Feature

May clean gel MGSF series are adhesive sheet consisting of acrylic polymer.

The features are as follow.

- 1.It is superior in step absorbency
- 2.The superior durability
- 3.Transparency is high

Applications

LCD, OLED, touch sensor, etc.

May Clean Gel Series

• MGSFIP Series

Design philosophy

Tape with further improved level difference absorption properties of MGSF series.

Feature

May clean gel MGSFIP series are adhesive sheet consisting of acrylic polymer.

The features are as follow.

1. Even better level difference absorption than the MGSF series
2. The superior durability
3. Transparency is high

Applications

LCD, OLED, touch sensor, etc.

May Clean Gel Series

•MGSRTD Series

Design philosophy

Optically superior tape for bonding difficult-to-adhere optical member such as resin plates and curved displays.

Feature

May clean gel MGSRTD series are adhesive sheet consisting of acrylic polymer.

The features are as follow.

1. Reduction of corrosion of ITO and polarizing plate with acrylic acid free property
2. Excellent impact resistance
3. High reliability when laminated to PC and PMMA (blister resistance, temperature resistance)
4. High followability to warpage of resin (PC, PMMA)

Applications

LCD, OLED, touch sensor, etc.

Test method

Test method

Test content: 90 degree bending test with clamshell type folding test machine

Samples : MGSFIP2.5、MGSF2.5、MGSRTD2.5

Environment :

- ① r.t. R1.0mm x 100,000cyc. 30rpm
- ② r.t. R1.5mm x 100,000cyc. 30rpm
- ③ Chamber 60°C/90%RH R1.0mm x 80,000cyc. 30rpm
- ④ Chamber -30°C R1.0mm x 80,000cyc. 30rpm

Environmental test in constant temperature and humidity chamber

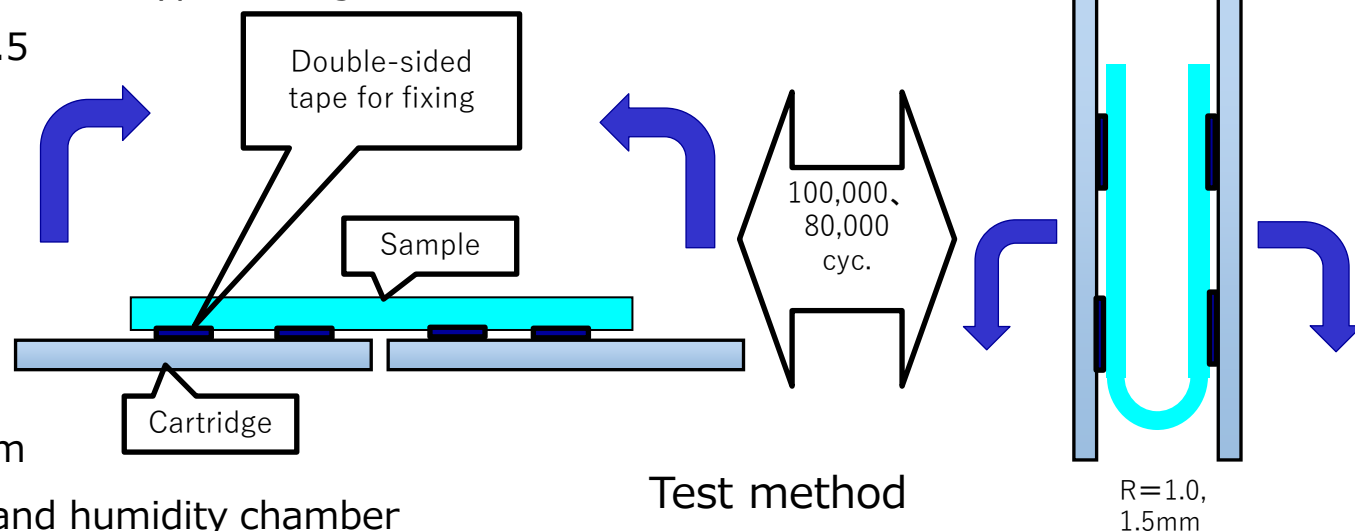
After reaching the set temperature and set humidity, the test will start after 2 hours of stabilization time.

Sample : PET separator//OCA//HCPET

Size : 25mm×100mm 160μm

Sample set method

- To prevent misalignment, fix the place away from the bent R part with double-sided tape.
- Fix with polyimide tape near the bend radius.
- Before starting the test, bend the sample by about 5° with JOG operation so that the bent portion of the sample does not become a mountain fold when the sample is initially bent.

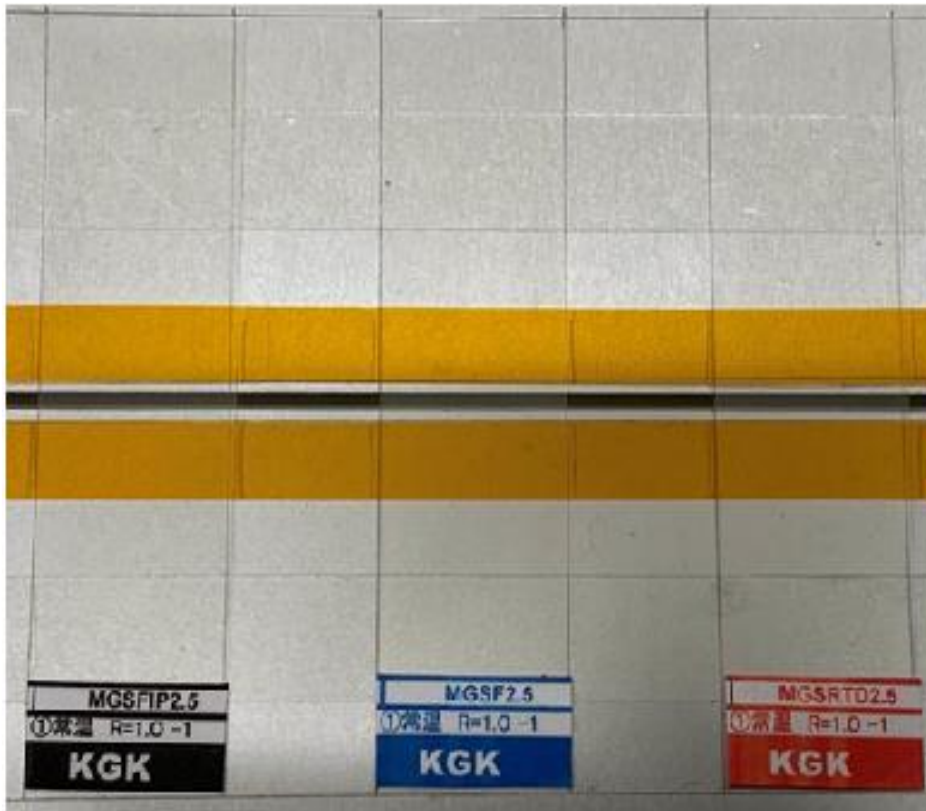


Samples 25mm×100mm 160μm

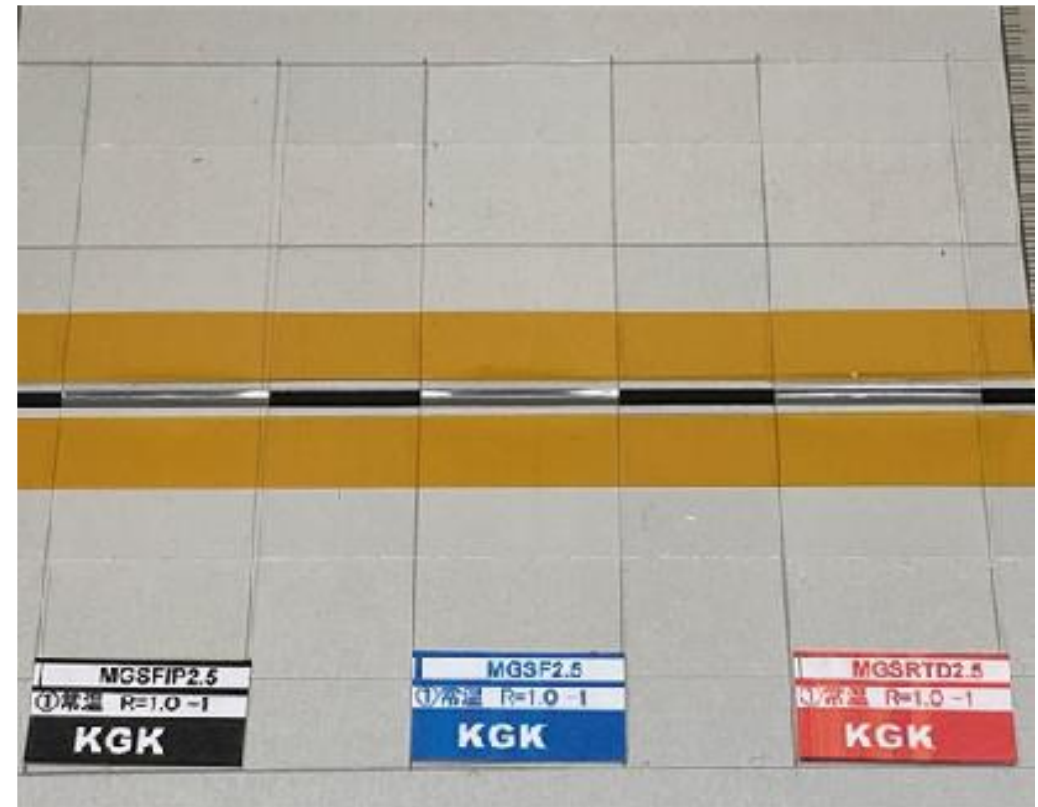
Result

① r.t. R1.0mm x 100,000cyc. 30rpm

Before



After



Result

② r.t. R1.5mm x 100,000cyc. 30rpm

Before



After



Result

③ Chamber 60°C/90%RH R1.0mm x 80,000cyc. 30rpm

Before



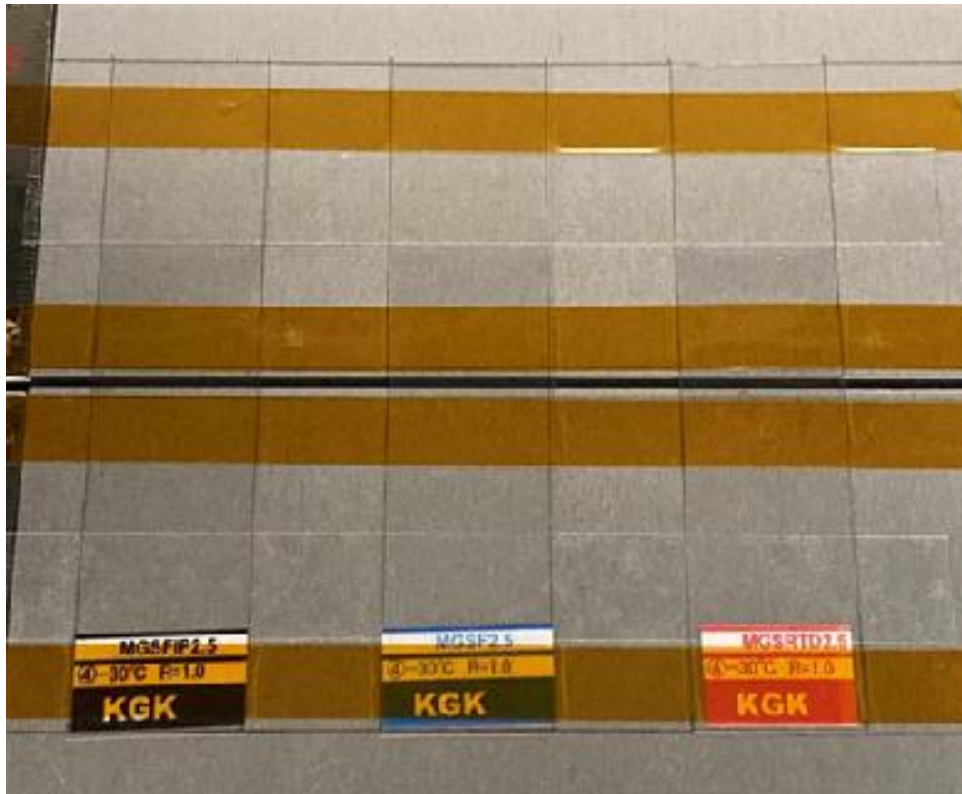
After



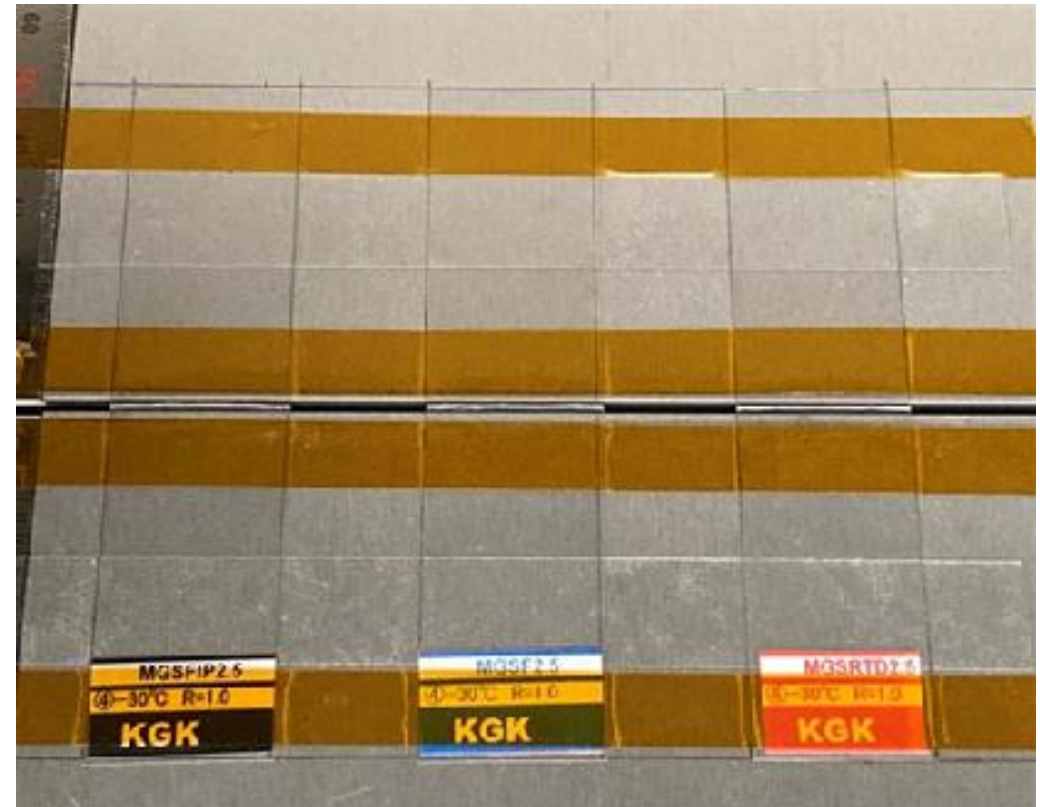
Result

④ Chamber -30°C R1.0mm x 80,000cyc. 30rpm

Before



After



Result

Result

		MGSFIP	MGSF	MGSRTD
①r.t. R1.0mm x 100,000cyc.	OCA	Crease	No marks	No marks
	HCPET	Crease	Crease	Crease
②r.t. R1.5mm x 100,000cyc.	OCA	Crease	Crease	Crease
	HCPET	Crease	Crease	Crease
③Chamber 60°C/90%RH R1.0mm x 80,000cyc.	OCA	No marks	No marks	No marks
	HCPET	Crease	Crease	Crease
④Chamber -30°C R1.0mm x 80,000cyc.	OCA	Rupture	Crease	Crease
	HCPET	Crack	Crack	Crease

Degree of damage

OCA rupture > crease > no marks

HCPET crack > crease > no marks

The order of damage is

$MGSRTD2.5 < MGSF2.5 < MGSFIP2.5$

This is consistent with the Young's modulus (hardness) of OCA,

(Young's modulus : $MGSRTD2.5 (3.76MPa) > MGSF2.5 (1.28MPa) >> MGSFIP2.5 (0.12MPa)$)

So regarding bending resistance,

High Young's modulus (hard) → Good at Flexibility test

MGSRTD2.5 is more advantageous.

End of presentation

User is responsible for determining whether the KGK product is fit for a particular purpose and suitable for user's method of application. Please remember that many factors can affect the use and performance of a KGK product in a particular application. The materials to be bonded with the product, the surface preparation of those materials, the product selected for use, the conditions in which the product is used, and the time and environmental conditions in which the product is expected to perform are among the many factors that can affect the use and performance of a KGK product. Given the variety of factors that can affect the use and performance of a KGK product, some of which are uniquely within the user's knowledge and control,

It is essential that the user evaluate the KGK product to determine whether it is fit for a particular purpose and suitable for the user's method of application. KGK make no warranties on above data.

KGK Chemical Corporation.
940 Minaminagai Tokorozawa-City Saitama-Pref
359-0011 Japan
Tel : +81 4 2944 5151
Mail : info-k@kgk-tape.co.jp
URL : <https://www.kgk-tape.co.jp/>