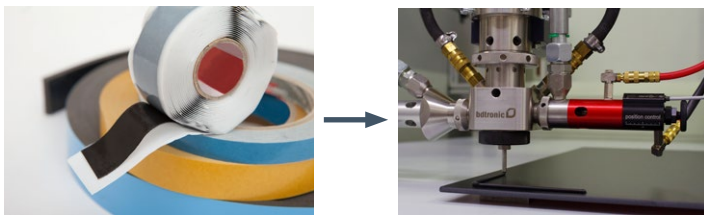


DOWSIL™ UV-curable Black Silicone Adhesives

Applications

- In display materials or modules
 - Using difficult heat cure resin
 - Because several display materials are distorted or melted
 - UV curable resin is necessary to prevent it
- UV curable Black Adhesives can replace black shielding tape, UV-heat, and UV-RT products

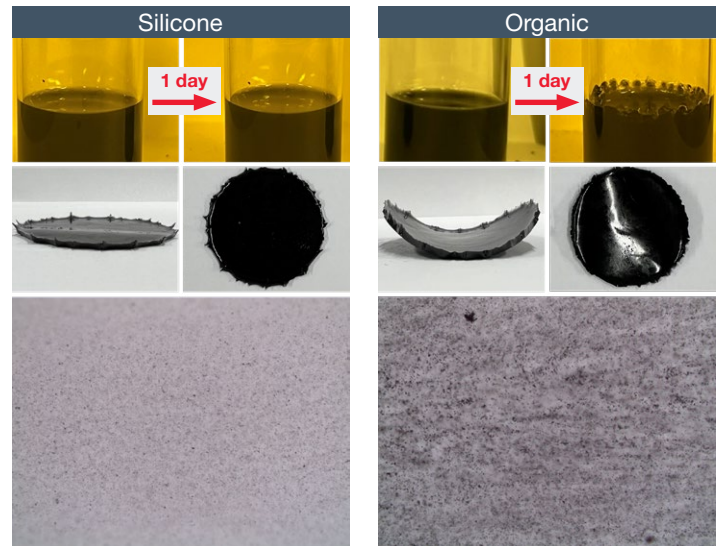


UV curable Black Adhesives	
Advantages	Reduce process time
	Mechanization is possible
	Thermal deformation of the material can be prevented
Applications	Black side seal (replace to black tape)
	Black gap fill resin
	Electrically conductive ink
	EMI shielding effect
	Etc.

Silicone vs organic

- UV curable and fast cure at low intensity of energy
- Low viscosity to fill thin gaps
- Low deformation (Low shrinkage)
- High thixotropy (>2.0)
- Deep curable and High OD

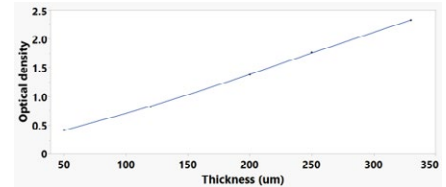
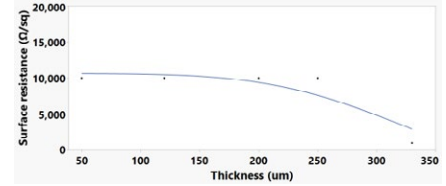
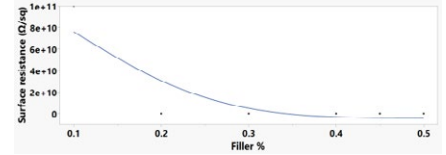
	Silicone	Organic
Phase separation	X	O
Shrinkage	X	O
Dispersibility	X	O
Filler aggregate	X	O



UV-curable Black Adhesive can be tuned to fit various application needs

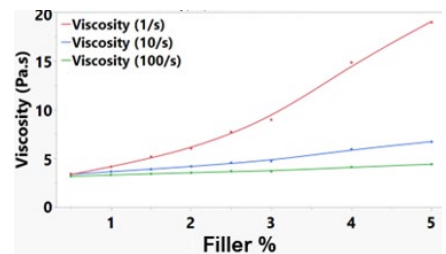
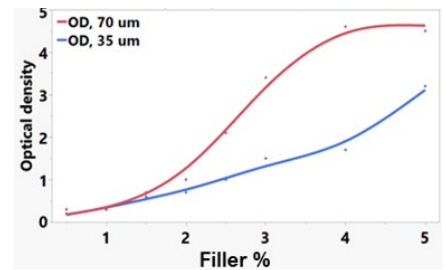
Tunability of UV-curable silicone electrically conductive adhesive

		Electrically Conductive Adhesive		
Properties		XX-5236	XX-5140 (deep curable)	XX-5550
1	Cure type	UV single cure	UV HT or UV single	UV single cure
2	Cure condition	UV 5J @ 365 or 405 nm	UV 5J @ 365 or 405 nm + 1 hour or UV 5J @ 365 or 405 nm + 75°C, 20 min	UV 5J @ 365 or 405 nm
3	Cure depth	320 μ m	400 μ m	200 μ m
4	Viscosity (mPa.s)	28,300 @ 0.5 rpm 8,127 @ 5 rpm	42,400 @ 0.5 rpm 21,000 @ 5 rpm	46,000 @ 0.5 rpm 11,900 @ 5 rpm
5	Thixotropy index	3.5	2.0	3.9
6	Optical density	2 @ 300 μ m	0.9 @ 300 μ m	1.85 @ 30 μ m
7	Color	Black	Black	Black
8	Surface resistance (Ω /sq)	10 ³	10 ⁴	10 ⁵



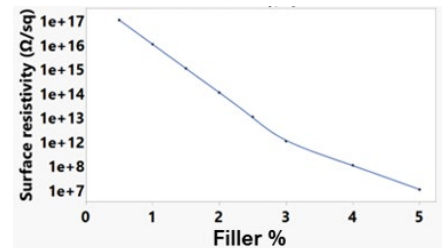
Tunability of UV-curable silicone electrically conductive adhesive

		High OD		
Properties		XX-2100	XX-2210	XX-9015TH
1	Cure type	UV Single cure	UV Single cure	UV Single cure
2	Cure condition	UV 5J @ 365 or 405 nm	UV 5J @ 365 or 405 nm	UV 5J @ 365 or 405 nm
3	Cure depth	400 μ m	50 μ m	100 μ m
4	Viscosity (mPa.s)	4,800 @ 0.5 rpm 3,500 @ 5 rpm	25,400 @ 0.5 rpm 9,200 @ 5 rpm	14,700 @ 0.5 rpm 5,900 @ 5 rpm
5	Thixotropy index	1.4	2.7	2.5
6	Optical density	2.6 @ 400 μ m	3.8 @ 35 μ m	2.4 @ 35 μ m 4.8 @ 70 μ m
7	Color	Black	Black	Black
8	Surface resistance (Ω /sq)	Insulative	Insulative	Insulative



Summary

- It is cured after UV irradiation, immediately
- Fillers are dispersed better in silicone than organics, and low deformed after cure
- UV curable Black Adhesives are controllable in the surface resistance, optical density, and cure depth to applications
 - Surface resistance (Ω /sq): Insulative to 10³
 - Optical density: Clear to > 4



Images: dow_40265133554, dow_68810023957

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