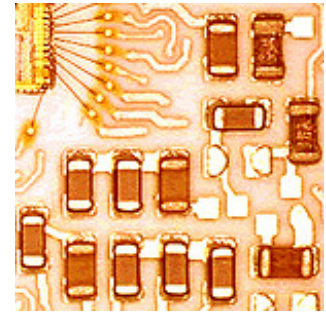


## Epoxy Based Electrically Conductive Adhesives

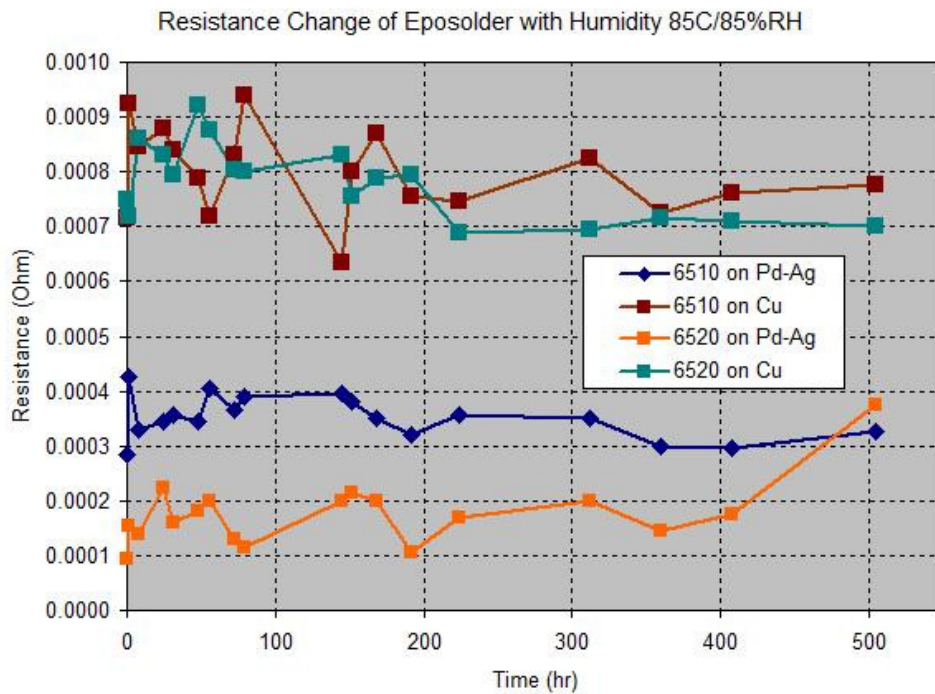
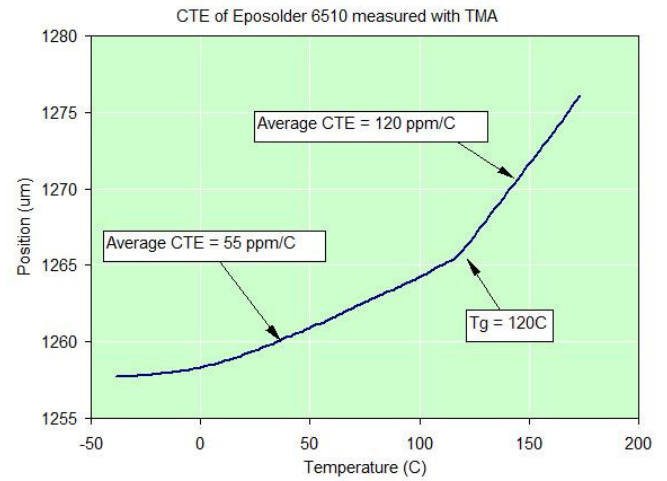
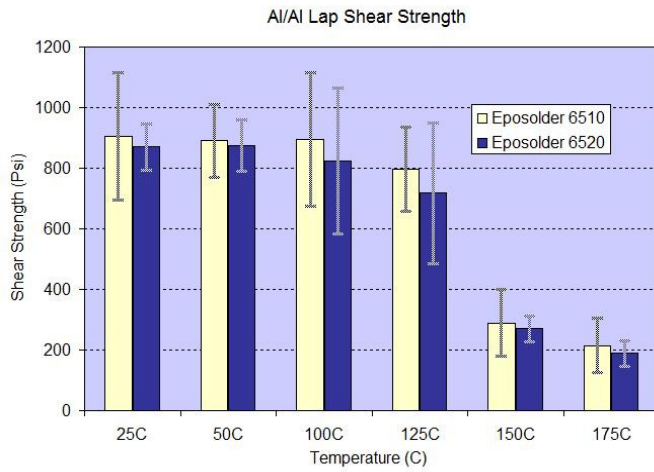
United Adhesives Inc. makes two categories of Electrically Conductive Adhesives (ECA), silver filled silicones (Silductor series) and silver filled epoxies (Eposolder series), in both one-part and two-part systems. They are either dispensable or screen /stencil printable. The Eposolder series provides superior bonding strength to most common metal/alloy surfaces while maintaining high electrical & thermal conductivity.

The typical applications are for mounting of heat sensitive dies or components in sensors, disk drive, flip-chip, die attach assembly or packaging, MEMS, LED Driver IC's, CCD chip attach, wafer lamination, CSP. Epoxy based ECAs provide electrically conductive bonding between components and mounting surfaces, and serve as thermal interface material for conducting heat through heat spreader. They are alternatives for solder replacement, chip bonding, and lead terminations.



Name	Eposolder 6510	Eposolder 6512	Eposolder 6520	Eposolder 6760
Chemical Base	Epoxy / Ag	Epoxy / Ag	Epoxy / Ag	Flexible Epoxy Ag coated Cu
Features / Advantages	Dispensable one part. High electrical & thermal conductivity. Strong bonding strength. One component. Strong bonding strength.	Dispensable and Printable. Room temp curable two-part. High electrical & thermal conductivity.	One part, dispensable and printable. High electrical & thermal conductivity. Very low out-gassing. Solvent-free. Strong bonding strength.	Screen/Stencil Printable. High electrical & thermal conductivity. Very low out-gassing. Solvent-free, 1-component. Strong bonding strength.
Typical Application	For die attach, solder replacement, chip bonding, lead terminations, printed circuit, EMI / RFI shielding.	For die attach, solder replacement, chip bonding, lead terminations, printed circuit, EMI / RFI shielding.	For die attach, solder replacement, chip bonding, lead terminations, printed circuit, EMI / RFI shielding.	For die attach, solder replacement, chip bonding, lead terminations, printed circuit, EMI / RFI shielding.
Rheology	Dispensable	Dispensable	Dispensable and Printable	Printable
Part / Component	One	Two	One	One
Viscosity (25C, cps)	44,000	34,000	67,000	38,000
Rhixotropic Index (0.5 /5 rpm)	3.2	3.5	4.2	3.5
Density (g/ml)	2.7	4.3	2.85	1.8
Work life (hr)	24	15 min	32	24
Cure Rate	125C 60 min	RmT 8 hrs 125C 15 min	125C 60 min	125C 30 min
Storage	-40 C	< 25C	-40 C	-40 C
Shelf Life (days)	6 month @ -40C	12 month @ < 25C	6 month @ -40C	6 month @ -40C
Thermal Stability	-40C to 180C	-40C to 150C	-40C to 180C	-50C to 230C
Tg	120 C	~120 C	125 C	~ 75 C
CTE (ppm/C)	<120 (above Tg) <65 (below Tg)	< 140	<120 (above Tg) <65 (below Tg)	< 210
Hardness (ASTM D2240)	Shore D = 78	Shore D = 75	Shore D = 85	Shore A = 45
Volume Resistivity (Ohm-cm)	< 2x10 <sup>-4</sup>	< 2x10 <sup>-4</sup>	< 2x10 <sup>-4</sup>	< 3x10 <sup>-3</sup>
Adhesion (Al/Al Lap Shear, psi)	Strong > 800 psi	Strong > 800 psi	Strong > 1000 psi	Strong > 400 psi
Thermal Conductivity (W/mK)	>5	>5	>5	> 3.5

## ► Mechanical and Electrical Properties of Eposolder ECAs



4-points probe resistance measurement

