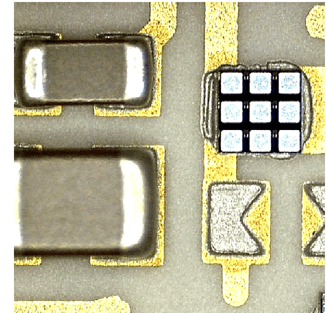
United Adhesives

United Adhesives Inc.
North America & Europe +1 (224) 436 0077 Asia +86 (139) 5605 4600 Sales@UnitedAdhesives.com
www.UnitedAdhesives.com

Epoxy Based Electrically Conductive Adhesives

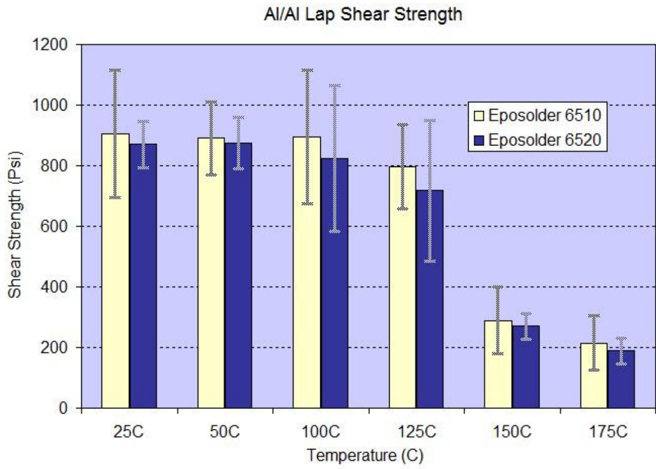
United Adhesives Inc. makes two categories of Electrically Conductive Adhesives (ECA), silver filled silicones (Silductor series) and silver filled epoxies (Eposolder series), in both one-part and two-part systems. They are either dispensable or screen /stencil printable. The Eposolder series provides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

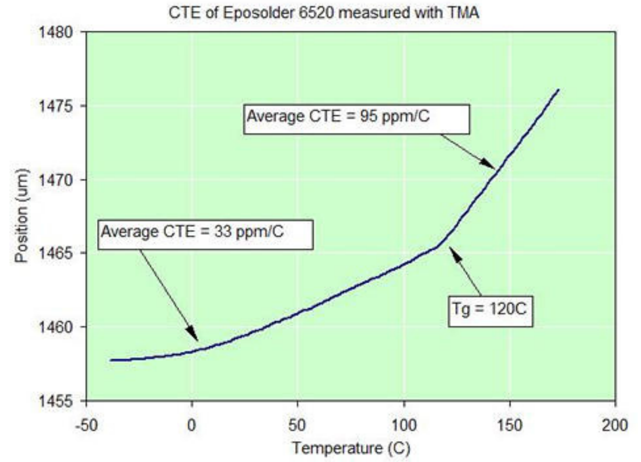


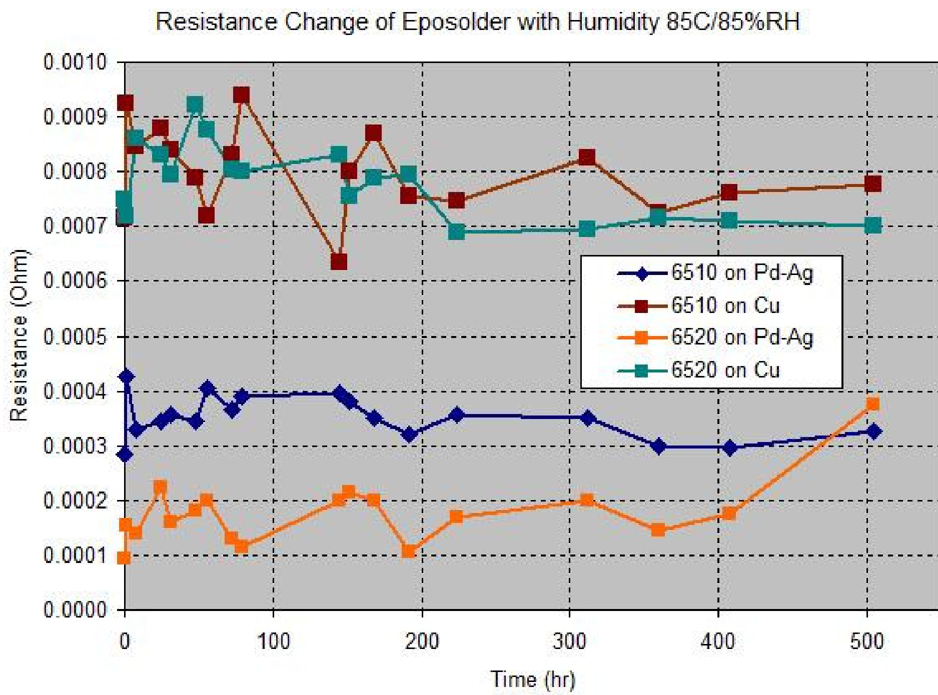
The typical applications are for mounting of heat sensitive dies or components in sensors, disk drive, flip-chip, die attach assembly or packaging, MEMS, LED Driver IC's, CCD chip attach, wafer lamination, CSP. Epoxy based ECAs provide electrically conductive bonding between components and mounting surfaces, 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 6522	Eposolder 6537	Eposolder 6761	Eposolder 6763	Eposolder 6869
Chemical Base	Epoxy / Ag	Epoxy / Ag	Epoxy / Ag	Epoxy / Ag-Cu	Epoxy / Ag-Cu	Epoxy / Ag
Features / Advantages	High electrical & thermal conductivity. Strong bonding strength. One component. Strong bonding strength.	Flexible epoxy to reduce thermal stress. High electrical & thermal conductivity.	Snap cure. High electrical & thermal conductivity. Very low out-gassing. Strong bonding strength.	Flexible epoxy to reduce thermal stress. Low cost. High electrical & thermal conductivity.	One part, dispensable and printable. Low cost. Solvent-free. High thermal stability	Very high thermal conductivity. Strong bonding strength. Long room temp pot life
Typical Application	For die attach, solder replacement, chip bonding, lead terminations, printed circuit, EMI / RFI shielding.	For die attach, low temp chip bonding, lower stress conducting bonding applications	For die attach, solder replacement, chip bonding, lead terminations, printed circuit, EMI / RFI shielding.	Low stress bonding & conducting inSensors, Filters, Crystal Oscillators, MEMS, LCD,Driver IC's, CCD chip attach, etc.	For die attach, 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 Printable	Printable	Dispensable and Printable	Dispensable and Printable	Dispensable and Printable	Dispensable and Printable
Part / Component	One	One	One	One	One	One
Viscosity (25C, cps)	35,000	41,000	48,000	39,000	47,000	98,000
Thixotropic Index (0.5 /5 rpm)	3.2	3.5	3.6	3.0	3.2	3.0
Density (g/ml)	4.6	3.6	4.5	3.6	3.6	3.3
Work life (hr)	24	24	6 Months	24	24	10 Days
Cure Rate	85C 60 min 125C 60 min	80C 3 hrs 125C 20 min	125C 5 min 1850C 15 sec	125C 60 min	80C 6 hrs 125C 60 min	125C 60 min
Storage	-40 C	-40 C	< 4C	-40 C	-40 C	< 4C
Shelf Life (days)	6 month @ -40C	6 month @ -40C	6 month @ 4C	6 month @ -40C	6 month @ -40C	6 month @ 4C
Thermal Stability	-40C to 180C	-55C to 180C	-40C to 180C	-50C to 230C	-40C to 180C	-40C to 150C
Tg	65 C	n.a.	140 C	n.a.	n.a.	90 C
CTE (ppm/C)	<110 (above Tg) <40 (below Tg)	< 160	<125 (above Tg) <42 (below Tg)	< 210	<130	147 (above Tg) 56 (below Tg)
Hardness (ASTM D2240)	Shore D = 78	Shore A = 42	Shore D = 85	Shore A = 72	Shore D = 60	Shore A = 70
Vol. Resistivity (Ohm-cm)	< 2x10-4	< 2x10-4	< 2x10-4	< 1x10-3	< 5x10-3	< 1x10-4
Adhesion (Al/Al Lap Shear, ps	> 1200 psi	> 400 psi	> 1500 psi	> 400 psi	> 800 psi	> 400 psi
Thermal Conductivit (W/mK)	>5	>5	1.8	> 4	>4	9.0

▶ Mechanical and Electrical Properties of Eposolder ECAs







4-points probe resistance measurement