

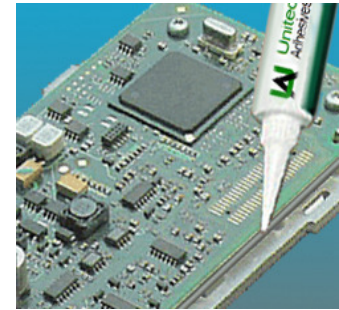
## Thermally Conductive Adhesives – One Part System

United Adhesives Inc. makes thermally conductive adhesives (TCA) for bonding electronic devices with heat dissipations. The one-component products have following features:

- Very high thermal conductivity.
- High bonding strength to most common plastics and metals
- Soft rubber and flexible (Thermondbond series) to couple thermal stress while dissipating heat
- High dielectric strength for voltage insulation

### Potential Uses

For high heat dissipation bonding in automotive electronics, semiconductors, and telecommunications, typically applied between a high heat power device and heat sink; any places where require coupling thermal stress while dissipating heat, or require thermally conductive vibration dampening; attachment of PCB to heat sink, cooling fans to devices, bonding or encapsulation of powder devices.



Name	Thermondbond 3508	Thermondbond 3513	Thermondbond 3517	Eposolder 6869	ET1645	ET1653BN
Chemical Base	Silicone	Silicone	Silicone	Epoxy / Silver	Epoxy	Epoxy
Features / Advantages	High bonding Strength. Easy flow.	High bonding Strength. Non-Slump.	Very high thermal conductivity. Strong bonding Non-Slump.	Extremely high thermal conductivity with silver filler.	High thermal conductivity. High bonding Strength. Low CTE. Easy flow	Boron nitride filled to provide very high thermal conductivity. High bonding Strength.
Typical Application	Strong bonding for heat dissipations in electronics.	Strong bonding for heat dissipations in electronics.	For high heat dissipations and bonding in electronics.	For extreme heat dissipation bonding in electronics such as die attach.	Strong bonding for heat dissipations in electronics.	For high heat dissipations in electronics.
Rheology	Flowable	Thixotropic, Dispensable	Thixotropic, Dispensable	Dispensable	Flowable	Dispensable
Viscosity @25C (cps)	56,000	78,000	120,000	98,000	50,000	230,000
Work life (hr)	> 8 hrs	> 8 hrs	> 8 hrs	> 10 days	> 8 hrs	> 8 hrs
Cure Rate	125C 60 min	125C 60 min	125C 60 min	125C 60 min	150C 45 min	125C 60 min
Shelf Life (days)	6 month @ < 4C	6 month @ < 4C	6 month @ < 4C	6 month @ 4C	6 month @ -40C	> 6 month @ -40C
Thermal Conductivity (W/mK)	0.8	1.4	1.9	9.0	1.5	3.0
Thermal Stability Tg	-50 to 200C	-50 to 200C	-50 to 200C	-50C to 180C	-80C to 180C	-80C to 180C
CTE (ppm/C)	140 ppm/C	120 pm/C	90 ppm/C	<147 (> Tg) <56 (<Tg)	<80 (> Tg) < 30 (<Tg)	146(> Tg) 53 (<Tg)
Hardness / Modulus	Shore A = 63	Shore A =70	Shore A = 90	Shore A = 70	Shore D = 70	6.5 GPa
Volume Resistivity (Ohm-cm)	> 10E+14	> 10E+14	> 10E+14	Conductive	> 10E13	> 10E+12
Dielectric Strength (KV/mm)	450 V/mil	450 V/mil	450 V/mil	N/A	550 V/mil	500 V/mil
Adhesion (Al/Al Lap Shear, psi)	> 600 psi	> 600 psi	> 550 psi	> 400 psi	> 1000 psi	> 800 psi

► **Modulus and Adhesion of Thermobond Adhesives**

