Adhesive Guide For Electronics

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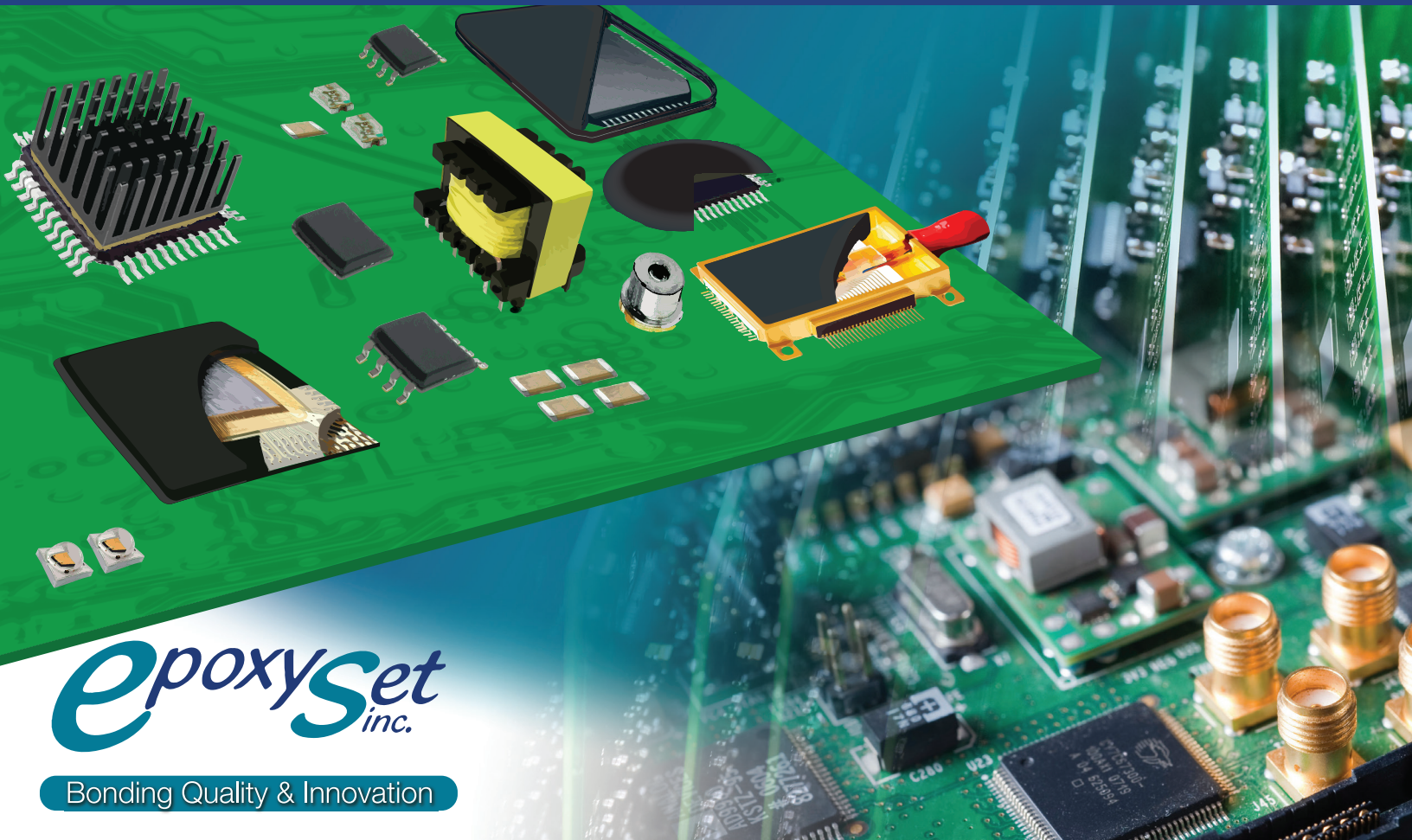

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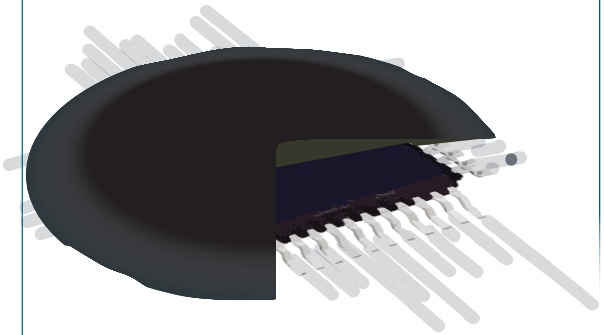
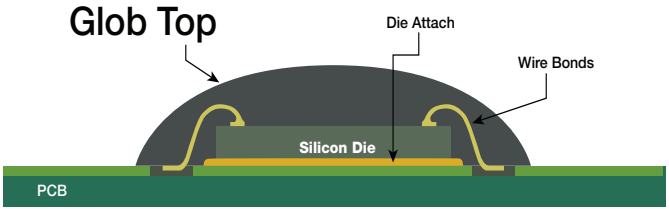


EpoxySet™ Glob Top Encapsulants

Glob Tops are specialty adhesives, generally hemispheric in shape, and are used to protect and cover specific parts on a PCB. They add mechanical strength to wirebonds, protecting sensitive connections, as well as giving added thermal shock protection.

Environmentally, glob tops can protect the chip from potential oxidation, corrosion and moisture. Black colored glob tops are often used for added security, concealing sensitive design and part numbers.



	Product*	Key Attributes	Color	Viscosity (@ 25°C cP)	Recommended Cure	Tg (°C)	CTE (α1)	Pot Life @ 25°C	Storage Temp	
Epoxy	**EB-350-1LV**	Highly Filled, high Tg, low stress	Black	25,000	20 min/125°C	120°C	32	3 months	25°C	Room Temp
	EB-350-1LV-M2	Highly filled, relatively low viscosity,	Black	20,000	30min/150°C	120°C	32	3 months	25°C	
	EB-350-3LV	Flame retardant, thixotropic, high Tg	Black	60,000	20min/150°C	130°C	45	3 months	25°C	
	EB-350M-7LV	Low viscosity, high Tg, low stress	Black	15,000	20min/150°C	132°C	45	3 months	25°C	
	EC-M22	Highly filled, high Tg, high moistrue resistance	Black	30,000	1 hr/100°C + 1 hr/150°C	146°C	25	8 hrs	*- 40°C	Freezer
	EC-M22LV-1	Low viscosity, moisture resistant	Black	9,000	30min/150°C	146°C	25	8 hrs	*- 40°C	
	EC-M29	Small particle size, moisture resistant	Black	7,000	30min/150°C	146°C	25	8 hrs	*- 40°C	
UV	**UV-5403S**	High moisutre resistance, fast cure, low viscosity	White	5,000	UV/LED 365nm, 250mW/cm, 30 seconds	75°C	40	6 months	4°C	Refrig
	UV-8509R	Low modulus, fast cure	Translucent	10,000	UV/LED 365 or 405, 200mW/cm, 3-5 seconds	40°C	120	6 months	25°C	Room Temp
	UV-8701E	Color change, fast cure, LED cure	Translucent	8,500	UV/LED 405nm, 200mW/cm, 10 seconds	110°C	60	6 months	25°C	

* All one component materials

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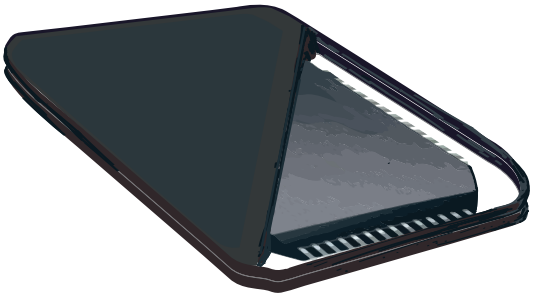
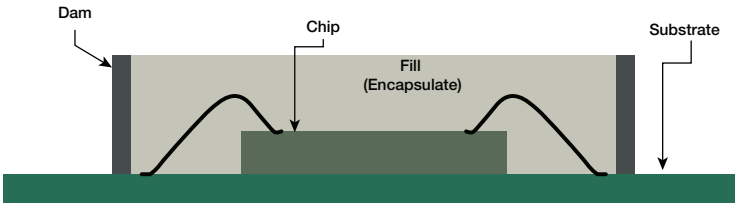


EpoxySet™ Dam & Fill

Dam & Fill is a special two step process designed to protect fragile die and wire bonds, while saving space on the printed circuit board. The first step is dispensing a dam around the perimeter of the die to be encapsulated. The dam material is a very high viscosity, thixotropic epoxy or UV material. Step two is filling the dam area with a much lower viscosity material.



		Product*	Key Attributes	Color	Viscosity (@ 25°C cP)	Recommended Cure	Tg (°C)	CTE (α1)	Pot Life @ 25°C	Storage Temp
Dam	Epoxy	**EB-350-4T**	High Bond strength, survives solder reflow, non-sag	Black	800,000	30min/150°C	120	34	3 m	25°C
		EC-M22T-1	Highly filled, moisture resistant	Black	250,000	2 hr/150°C	146	25	8 hrs	*-40°C
		EC-M25T	Highly filled, moisture resistant	Black	1,000,000	30min/150°C	168	17	8 hrs	*-40°C
	UV	**UV-3700F**	Highly Filled, thixotropic, fast cure at vis light	White	50,000	UV/LED 405nm, 250mW/cm, 30 seconds	135	40	6 months	4°C
		UV-3800T	Thixotropic, fast cure, low CTE, passes 85/85 1000 cycles	White	100,000	UV/LED 365nm, 250mW/cm, 30 seconds	75	40	6 months	4°C
Fill	Epoxy	**EB-350M-7LV**	Low viscosity, high Tg, low stress	Black	15,000	20min/150°C	132	45	3 months	25°C
		EC-M19HT	Low viscosity, low CTE, ultra high Tg	Black	9,000	30min/150°C	167	25	8 hrs	*-40°C
		EC-M22LV-1	Low viscosity, moisture resistant	Black	9,000	30min/150°C	146	25	8 hrs	*-40°C
		EC-M24	Lowest CTE, ultra high Tg, flowable, fast cure	Black	8,000	20min/150°C	185	23	8 hrs	*- 40°C
	UV	**UV-5403S**	High moisture resistance, low viscosity, 85/85 1000 cycles	White	5,000	UV/LED 365nm, 250mW/cm, 30 seconds	75	40	6 months	4°C
		UV-8300LV	Vis cure, low viscosity	Clear	3,000	UV/LED 365nm, 250mW/cm, 30 seconds	120	60	6 months	25°C
		UV-5400LV	Highly flowable, low ionic content, 85/85 1000 cycles	White	3,500	UV/LED 365nm, 250mW/cm, 30 seconds	75	40	6 months	4°C

* All one component materials

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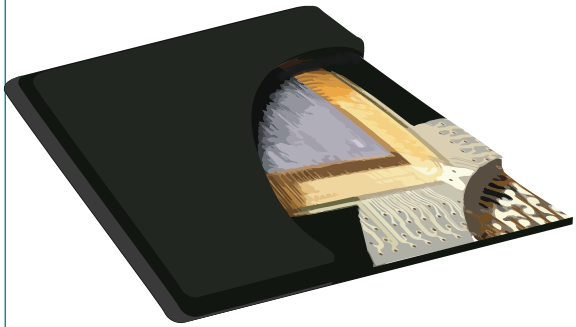
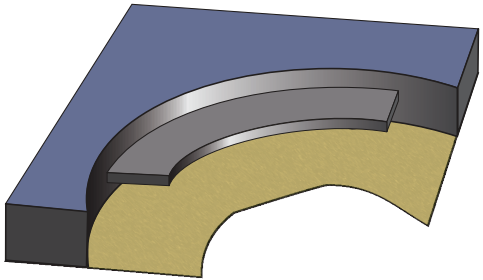


EpoxySet™ Potting

Potting Potting products are used to encapsulate components and protect devices from harsh chemicals, humidity and high temperatures.

EpoxySet™ offers three types of materials for this application: ***Epoxies-optically clear***, UL-94V0 tested, and filled for added thermal relief; ***Urethanes***, in unfilled, highly filled, or with a flame retardant and ***Silicones-*** some with low viscosity/low modulus, or UL-94V0 tested, or thermally conductive formulations.



		Product*	Key Attributes	Color	Viscosity (@ 25°C cP)	Recommended Cure	Tg (°C)	Thermal Conductivity (W/mK)	Pot Life @ 25°C
Epoxy	Thermal	EC-1009	RT cure, low viscosity	Black	4,000	3 hrs/65°C	70°C	1.6	3 hrs
		EC-1015	High Tg, low viscosity	Black	4,000	2 hrs/70°C + 1 hr/150°C	145°C	1.2	8 hrs
		EC-1850FT	High conductivity, RT cure, high compression strength	Black	50,000	2hr/70°C	86°C	1.53	1 hr
	General	EC-1012M	Flame retardant, long work life, RT cure	Black	6,000	24 hrs/25°C	85°C	0.9	4 hrs
		EC-1012M-3	Flame retardant, blue color, long work life	Black	4,500	3 hrs/65°C	75°C	0.8	3 hrs
		EC-1026	Low CTE, high Tg, High temp resistance	Black	4,000	2 hrs/70°C + 1 hr/150°C	125°C	0.6	6 hrs
		EC-1207	UL-94V0, 1:1 ratio, RT cure	Black	10,000	2 hrs/65°C	55°C	0.75	2 hrs
	Optical	EB-135	Low Viscosity, ultra clear, low exotherm	Clear	4,000	3hrs/65°C	72°C	NA	30 min
		EB-177	High Tg, low viscosity, Long pot life	Clear	250	1 hr/150°C	110°C	NA	8 hrs
		EB-270	Non-Corrosive to metallic components, cartridge ready, RT cure	Clear	7,500	24hrs/25°C	55°C	NA	1 hr
Urethane		UC-050217-1	Short pot life, highly filled	Black	6,000	8 hrs/25°C	25°C	0.5	10 min
		UC-2524	Flame retardant, long pot life	Black	2,500	1hr/80°C	35°C	0.79	1 hr
		UC-2356	Low viscosity, unfilled, long pot life	Black	800	1hr/80°C	25°C	0.3	1 hr
Silicone		SC-417	Ultra Clear, 1:1 ratio, low modulus	Clear	300	24hrs/25°C	NA	0.2	30 min
		SC-454M-6	Thermally Conductive, variable pot life	Red	5,000	24hrs/25°C	NA	1.4	1 hr
		SC-550LV-RT	Low viscosity, RT cure, UL-94V0	Grey	1,000	2hrs/70°C	NA	0.7	2 hr
		SC-550LV-TC-1	Thermally Conductive, 1:1 ratio	Grey	4,000	2hrs/70°C	NA	1.2	2 hr

* All two component materials

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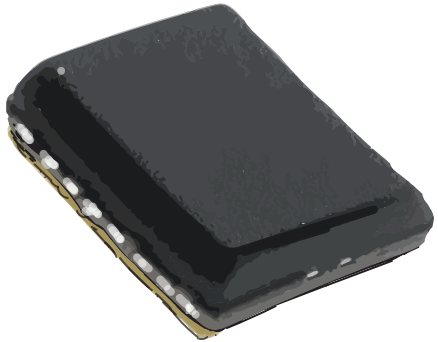
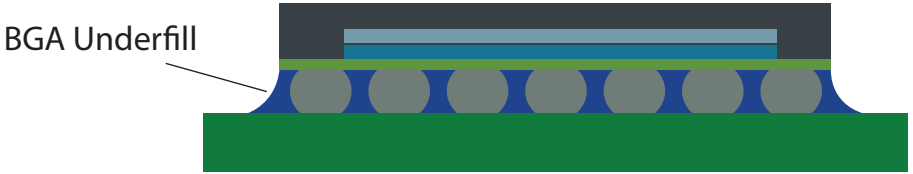


EpoxySet™ Underfill

Underfill epoxies are specially formulated polymers used to structurally reinforce the bonding of the chip to the substrate, helping to decrease thermal stress and lower strain on any solder joints.

They are applied either on a corner or in a line on the edge of the chip. It is then heated and through capillary action flows into any gaps and cured. Underfills help to extend the life of the chip by improving both thermal and impact resistance. EpoxySet™ underfills deliver excellent drop and shock resistance.



	Product	Key Attributes	Comp. #	Color	Viscosity (@ 25°C cP)	Recommended Cure	Tg (°C)	CTE (α1)	Pot Life @ 25°C	Storage Temp
Capillary	**EB-119M**	Low viscosity, snap cure, high Tg	2	Dark Amber	800	5min/150°C	146	59	8 hrs	25°C
	EB-177	Low viscosity, moisture resistant	2	Clear	250	1 hr/150°C	110	59	8 hrs	25°C
	EC-M19-LV	Small particle size, moisture resistant	1	Black	9,000	30min/150°C	146	26	8 hrs	*-40°C
	EC-M21	Small particle size, moisture resistant	1	Black	5,000	30min/150°C	124	37	8 hrs	*-40°C
Reworkable	**M3119RW**	Low viscosity, fast cure, fills small gap size	1	Amber	1,000	10min/130°C	106	55	7 days	*-40°C
	M3120RW	Low viscosity, long pot life, easy reworkability, unfilled	1	Amber	950	10min/130°C	100	55	14 days	*-40°C
	M3121RW	Low viscosity, lower Tg for easy reworkability	1	Amber	900	3min/175°C	80	55	7 days	*-40°C
Edgebond	**EB-350-1LV**	Highly Filled, high Tg, low stress	1	Black	25,000	20 min/125°C	120	32	3 months	25°C
	EB-350-3LV	Flame retardant, thixotropic, high Tg	1	Black	60,000	20min/150°C	130	45	3 months	25°C
	UV-3700F	UV/VIS cure, highly filled	1	White	25,000	TBD	TBD	45	6 months	4°C
Flip Chip	**EC-M19HT**	Small particle size, moisture resistant, high Tg	1	Black	12,000	30min/150°C	167	37	8 hrs	*-40°C
	EC-M22LV-1	Low viscosity, moisture resistant	1	Black	9,000	30min/150°C	146	25	8 hrs	*- 40°C
	EC-M29	Small particle size, moisture resistant	1	Black	7,000	30min/150°C	146	25	8 hrs	*- 40°C

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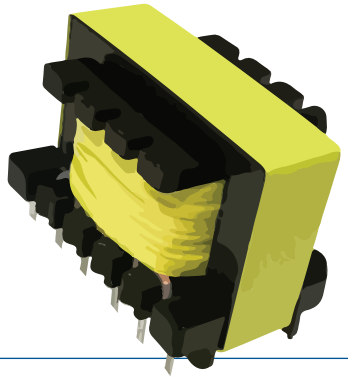
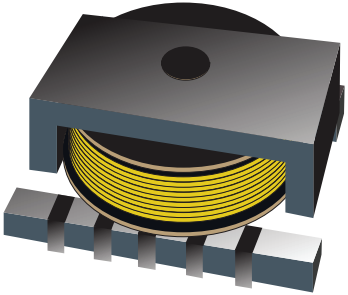
Impregnation/Insulation/Potting of Ferrite Cores and Magnets

EpoxySet™ has a number of specialized materials for use in bonding ferrite (magnet) cores, as well as for bonding and insulating copper coil windings and potting the transformer. These type of applications specifically need materials with a high Tg and high bond strength. *Additionally, three products available are flame retardant.*





	Product	Key Attributes	Comp. #	Color	Viscosity (@ 25°C cP)	Recommended Cure	Tg (°C)	CTE (α1)	Pot Life @ 25°C	Storage Temp
Ferrite Core	EB-315	Low CTE, high Tg, high bond strength	2	Black	80000	2 hrs /100°C +2 hrs @ 175°C	182	25	2 hrs	25°C
	EB-350-1LV	Highly filled, high Tg, low stress	1	Black	25,000	20 min/125°C	120	32	3 months	25°C
	EB-350-3LV	Flame retardant, thixotropic,high Tg	1	Black	60,000	20min/150°C	130	45	3 months	25°C
	EB-350-4T	High bond strength, survives solder reflow, non-sag	1	Black	800,000	30min/150°C	120	34	3 months	25°C
CU Coil Winding	EB-177	High Tg, High temperature resistance,	2	Clear	250	1 hr/150°C	110	54	8 hrs	25°C
	EB-153	Fast cure, high Tg, long work life	2	Dark Amber	3,000	1 min/150°C	100	57	3 hrs	25°C
	EC-1012M	Flame retardant, long work life, RT cure	2	Black	6,000	24 hrs/25°C	85	35	4 hrs	25°C
	EC-1015	High Tg, low viscosity, long pot life	2	Black	4,000	2 hrs/70°C + 1 hr/150°C	145	40	8 hrs	25°C
Potting	EC-1009	RT cure, low viscosity	2	Black	4,000	3 hrs/65°C	70	56	3 hrs	25°C
	EC-1850FT	High conductivity, RT cure, high compression strength	2	Black	50,000	2hr/70°C	86	26	1 hr	25°C
	EC-1012M	Flame retardant, long work life, RT cure	2	Black	6,000	24 hrs/25°C	85	38	4 hrs	25°C
	EC-1015	Thermally Conductive, High Tg, low viscosity	2	Black	4,000	2 hrs/70°C + 1 hr/150°C	145	34	8 hrs	25°C

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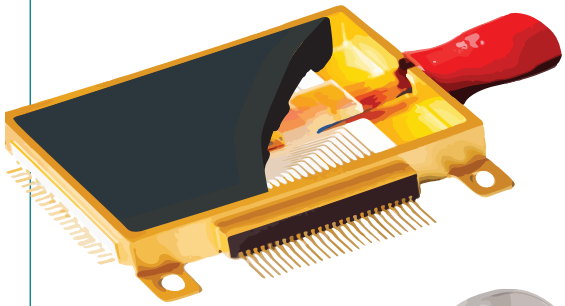
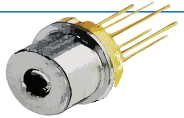
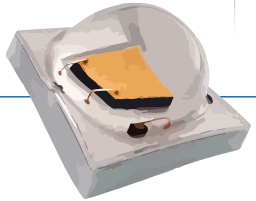
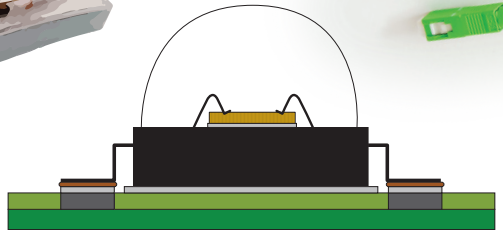
EpoxySet™ Fiber Optics/Photonics/LED

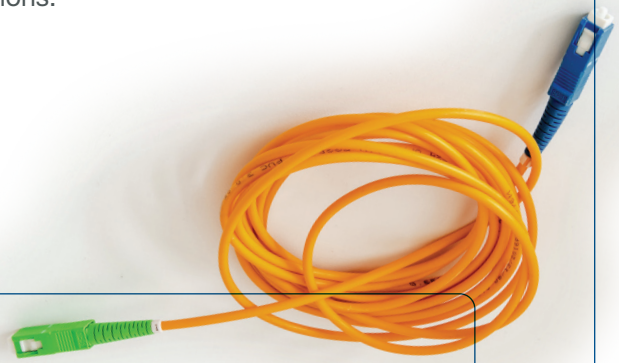
Photonics The diversity of products in this area depends on which application is being considered and has lead to a wide offerings from EpoxySet™— of electrically conductive materials (ECAs) for high thermal and electrical conductivity, to clear or optimal spectral transmission material, to UV materials for bonding optical components and bundling fibers, used primarily in high tech applications.











	Product	Key Attributes	Comp. #	Color	Viscosity (@ 25°C cP)	Recommended Cure	Tg (°C)	CTE (α1)	Pot Life @ 25°C	Storage Temp
Photodiode	EO-20E	Can be snap cured in line, long work life, 260C solder reflow	2	Silver	3,000	2 min/150C	100	10	48 hours	25°C
	EO-84M-1HTK	Rapid curing hyper-conductive die-attach paste, RT stable	1	Silver	13,500	1 hr/150°C	110	19	4 months	0°C
	EO-84M-1T	High die shear strength, RT stable for 2 weeks, low ionic content	1	Silver	40,000	1 hr/150°C	106	19	3 months	4°C
	EO-97M	Low visosity, high resistivity, minimal tailing and stringing	1	Silver	12,000	30min/150°C	82	19	3 months	4°C
	EO-98HT	High conductivity, rapid cure, High Tg	1	Silver	40,000	5 min/150C	136	18.2	3 m @ 10°C	4°C
Optical	EB-107LP-2	Optically Clear, long work life, low viscosity	2	Clear	250	3hr/80°C	80	>15	8 hrs	25°C
	EB-107LY	Extremely low yellowing, low viscosity, long work life	2	Clear	250	3hr/80°C	60	>15	8 hrs	25°C
	EB-135	Ultra clear, low exotherm, low cure shrinkage, cartridge ready	2	Clear	4,000	3hr/65°C	72	>10	30 min	25°C
	EB-119M	Low viscosity, fast cure, long work life,	2	Dark Amber	800	5min/150°C	158	>10	12 hrs	25°C
	EB-153	Low viscosity, very fast cure, high temperature resistant	2	Dark Amber	4,000	5min/150°C	115	>10	3 hrs	25°C
	EB-177	Low viscosity, low cure shrinkage, high temperature resistant	2	Yellow Clear	250	1 hr/150°C	177	>110	8 hrs	25°C
UV	UV-5608DC	Delay cure capable, high bond strength,	1	Clear	4,000	100-300 mw/cm2, 20-30 sec,365-405nm	81	>12	6 months	25°C
	UV-6502CL	Low viscosity, fast cure, low shrinkage, non-yellowing	1	Clear	300	100-300 mw/cm2, 10-20 sec, 320-365nm	135	>10	1 year	25°C
	UV-8300LV	Visible light curable, low viscosity, High Tg	1	Clear	3,000	100-200 mw/cm2, 10-20 sec, 365-405nm	135	>10	1 year	25°C
	UV-8403	Low viscosity, clear, humidity resistant	1	Clear	800	200-300 mw/cm2, 10-20 sec, 320-365nm,	70	>10	1 year	4°C

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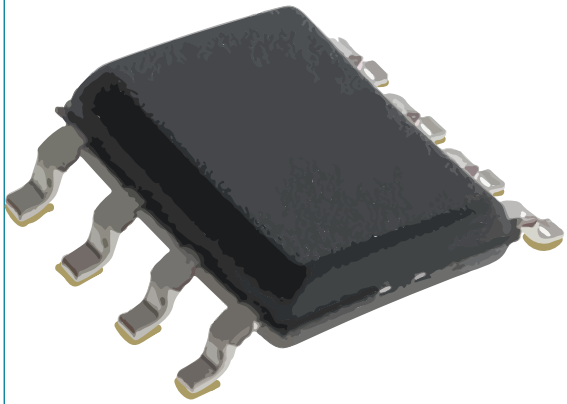


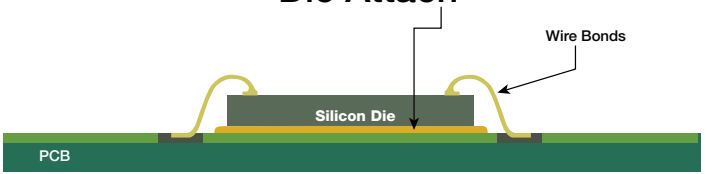
EpoxySet™ Die Attach

Die Attach adhesives can be either conductive or non-conductive and are used for mechanical attachment, as well as heat dissipation.

Non-conductive adhesives act as insulators and are generally applied in specific patterns. They help to dissipate heat, while also being electrically insulating.

Conductive adhesives are electrically and thermally conductive and usually have silver in their formulation. They have the highest heat dissipation and are generally used when high dissipation is needed and electrical insulation is not a problem. They are used for direct electrical connection.

Die Attach



	Product	Key Attributes	Comp. #	Color	Viscosity (@ 25°C cP)	Recommended Cure	Tg (°C)	Die Shear	Pot Life @ 25°C	Storage Temp
Conductive	EO-20E	Can be snap cured in line, long work life, 260C solder reflow	2	Silver	3,000	2 min/150C	100	10	48 hours	25°C
	EO-84M-1HTK	Rapid curing hyper-conductive die-attach paste, RT stable	1	Silver	13,500	1 hr/150°C	110	19	4 months	0°C
	EO-84M-1T	High die shear strength, RT stable for 2 weeks, low ionic content	1	Silver	40,000	1 hr/150°C	106	19	3 months	4°C
	EO-97M	Low visosity, high resistivity, minimal tailing and stringing	1	Silver	12,000	30min/150°C	82	19	3 months	4°C
	EO-98HT	High conductivity, rapid cure, High Tg	1	Silver	40,000	5 min/150°C	136	18.2	3 months @ 10°C	4°C
Non-Conductive	EB-304	Low temperature cure, low CTE, low moisture absorbance	2	White	8,000	30min/100°C	82	16	3 hours	*-40°C
	EB-350-1LE	Low CTE, low stress, fast cure	1	Black	35,000	30 min/150°C	120	19	4 months	25°C
	EB-403-1LV	Thermally Conductive, flowable, fast cure	1	Black	150,000	30 min/150°C	132	16	6 months	0°C
	EB-470	Thermally Conductive, insulating, designed for chip bonding	2	Grey	7,000	10min/150°C	98	10	2 days	25°C

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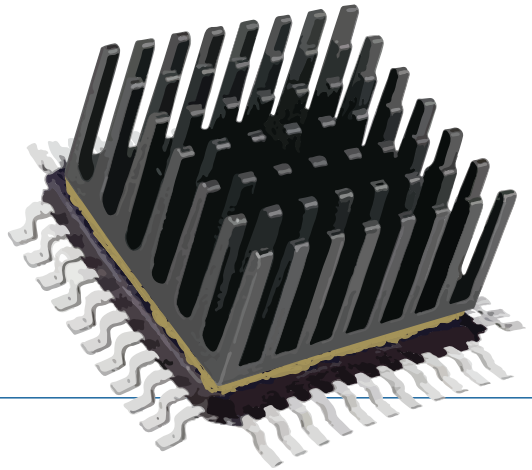
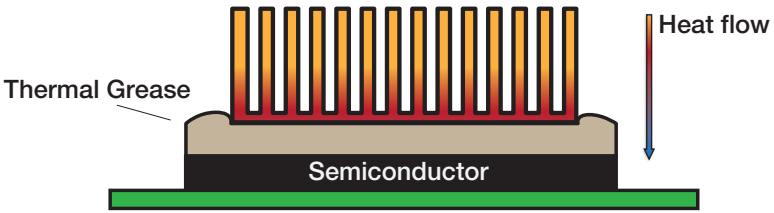
EpoxySet™ Thermal Grease

Thermal Grease, often also referred to as thermal compounds, thermal pastes or Thermal Interface Materials (TIM) are thermally conductive (usually electrically insulating) chemical formulations. They are most commonly used as an interface between a heat sink and a heat producing source in electronic and industrial applications.

These products have relatively high thermal conductivity and high temperature stability, essential for optimal transfer and heat dissipation.





	Product	Key Attributes	Color	Thermal Conductivity (W/mK)	Thermal Resistance (°C-In2 /W)	Temperature Max
Silicone	STG-41	High thermal conductivity and low thermal resistance with a soft, non-flowable consistency	White	2.0	0.05	205°C
	STG-45	High thermal conductivity, low thermal resistance, low bleed and evaporation	Black	3.7	0.05	205°C
	STG-51TC	Thermal conductivity, low bleed and ultra low thermal resistance	Grey	3.2	0.014	205°C
Non-Silicone	TG-45LV	Low viscosity/screen printable consistency to achieve low BLT and high thermal conductivity	Gray	5.0	0.005	200°C
	TG-62M	Low viscosity/screen printable consistency, high conductivity	White	2.0	0.02	200°C
	TG-69	High conductivity paste, non-flowing, no bleed or migration	White	3.5	0.02	200°C
	CTG-81	Epoxy liquid base, non-curing, silver filled electrically and thermally conductive grease	Silver	7.2	0.005	200°C
	CTG-87NS	Non-silicone, non-epoxy, silver filled, high conductivty thermal compound	Silver	7.0	0.005	200°C
High	HTG-71	High thermal conductivity, low bleed and high-temperature stability	White	1.0	0.05	300°C
	HTG-72	Highest temperature resistance, low bleed, low migration	White	0.8	0.06	360°C
	HTG-72TC	Highest temperature resistance, highest thermal conductivity, non-sag, low thermal resistance	Grey	3.2	0.05	360°C

* All one component materials

Bonding Quality & Innovation

EpoxySet™ is an innovative formulator & manufacturer with an extensive line of high-quality adhesives, sealants and potting compounds for advanced industries worldwide.

In addition to our catalog products, we offer custom formulation products, relied upon by leaders in the many high tech industries we serve including: Electronics, Semiconductor, Medical, Aerospace, Optoelectonics, LED and Automotive.

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