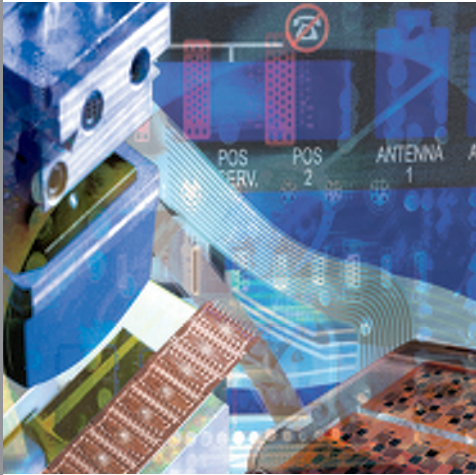


Creative Materials.

Connecting the future with specialty electronic materials.



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We're driven to excel.

Our in-depth experience with conductive filler technology, particle size and shape allows us to fine tune the performance, as well as the application process and cure cycle to best meet our customers' production requirements.

Custom application solutions.

Our core technology base includes: microelectronic grade adhesives; electrically conductive adhesives, coatings and inks; anisotropic conductive adhesives; dielectric adhesives, coatings and inks; thermally conductive adhesives; encapsulating and potting compounds. Application specific products for unique process requirements are the heart of our business.

Expertise from prototype to production.

We work closely with our customers to reduce their time to market of new products — from initial prototypes to scale-up of production. Our experience spans unique applications in microelectronics, biotechnology, electronics and electrical, medical, automotive, telecommunications and aerospace/defense markets.

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Microelectronic Adhesives

DIE ATTACH ADHESIVES

Product #	Volume Resistivity (ohms-cm)	Thermal Conductivity (W/mK)	Application Technique	Comments
118-06 (PP)	0.0002	10	Pad-print	Ionically clean, microelectronic and die attach conductive adhesive.
118-06 (SP)	0.0002	10	Screen-print	Ionically clean, microelectronic and die attach conductive adhesive.
118-06 (SD)	0.0002	10	Syringe Dispense	Ionically clean, microelectronic and die attach conductive adhesive.
118-06 (ST)	0.0002	10	Stencil	Ionically clean, microelectronic and die attach conductive adhesive.
122-38 (SD)	0.0002	2.1	Syringe Dispense	Ionically clean, microelectronic and die attach conductive adhesive. Bonds to tin, lead and gold surfaces.
125-22	0.001	6.5	Screen-print	B-Stageable, low CTE conductive epoxy adhesive.
122-33 (SD)	1 X 10 ¹⁶	1.25	Syringe Dispense	Thermally conductive, dielectric adhesive.
122-39 (SD)	1 X 10 ¹⁶	5.5	Syringe Dispense	Thermally conductive, dielectric adhesive.

SURFACE MOUNT ADHESIVES

Product #	Volume Resistivity (ohms-cm)	Thermal Conductivity (W/mK)	Application Technique	Comments
102-32	0.0001	12	Syringe Dispense	Silicone high temperature resistant. Flexible.
106-32A	0.0005	5.5	Syringe Dispense	High temperature resistant.
GPC-251 A/B	0.0002 - 0.005	6.74	Stencil	Silver filled, two part, room temperature curing epoxy adhesive. Designed for electrical and mechanical attachments of components and devices. Good for hand application.
118-15 A/B	0.0001 - 0.0004	6.5	Syringe Dispense	Easy 1 to 1 mix ratio. Low temperature curing. Long pot life.
124-08 A/B	0.0002 - 0.0004	6.5	Syringe Dispense	Excellent thermal shock resistance. Easy 1 to 1 mix ratio. Low temperature curing. Long pot life.
124-08LVC	0.0002 - 0.0004	6.5	Jet Dispense	Excellent thermal shock resistance. Easy 1 to 1 mix ratio. Low temperature curing. Long pot life.
119-05	0.00015	8.13	Syringe Dispense or Stencil	Can remain in liquid state up to 5 days without drying out. Single component.
118-06	0.0008	10	Pad-print	B-stageable, electrically conductive epoxy adhesive.

FLIP CHIP ADHESIVES

Product #	Volume Resistivity (ohms-cm)	Comments
GPC-251 A/B	0.0002 - 0.005	Silver filled, two part, room temperature curing epoxy adhesive. Designed for electrical and mechanical attachments of components and devices. Good for hand application.
GPC-352-1 A/B-187	0.0005	Silver filled, two part, heat curing epoxy adhesive. Cures with excellent conductivity and is less sensitive to handling and ambient conditions. Typical applications are surface mount, component and heat sink attachment.
GPC-352-1 A/B119-44	0.0005	Same as above, except hardener B119-44 provides extended pot life.
121-20 A/B	1 X 10 ¹² x, y axis 0.0001 z axis	Anisotropic, silver filled, two component, low temperature curing epoxy adhesive. Applications include conductive splicing of ribbon cables, bonding of flex circuits to PC boards, E.L. panels and touch screens and bonding of electrical components where short circuits caused by closely spaced contact pads are a concern.
121-23	1 X 10 ¹² x, y axis 0.0001 z axis	Anisotropic, conductive, screen-printable, B-stageable epoxy adhesive suitable for application by screen-printing, dipping and syringe dispensing. Applications include bonding of flex circuits to PC boards and electrical attachment of surface mounted devices. Excellent adhesion to a variety of metallic contact pad compositions.

FLIP CHIP UNDERFILL MATERIALS

Product #	Volume Resistivity (ohms-cm)	Comments
120-27 A/B-187	1 X 10 ¹⁵	Black, low viscosity, two component, underfill epoxy potting and encapsulating compound. Formulated to rapidly release entrapped air during cure, providing a pin hole free surface.
113-33 A/B-187	1 X 10 ¹⁵	Black, sag resistant glob top, flame-out, two component, epoxy potting and encapsulating compound. Material is crack resistant with a working life greater than four hours.
102-11 A/B-187	1 X 10 ¹⁵	Black, crack resistant, flameout epoxy compound. Features long pot life and excellent resistance to thermal shock. Popular applications are encapsulating and bonding.
102-12 A/B-187	1 X 10 ¹⁵	Black, thermal cycle resistant, epoxy compound with excellent resistance to thermal shock. Requires mild heat cure and has working life of greater than four hours.
116-04 A/B-187	1 X 10 ¹⁵	Black, low viscosity, two component, underfill epoxy potting and encapsulating compound. Formulated for applications requiring excellent thermal conductivity.

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Touch Screen and Membrane Switch Inks and Dielectrics

SILVER INKS

Product #	Sheet Resistivity (ohms/sq/mil)	Comments
118-09 A/B	0.020	Two component, low temperature cure, solvent resistant ink for polyester and other low temperature substrates. Adheres well to ITO (Indium Tin Oxide) sputtered surfaces.
125-26 A/B	0.015	Fine line printable (3 to 4 mil), two component, low temperature cure, solvent resistant ink for polyester and other low temperature substrates. Adheres well to ITO (Indium Tin Oxide) sputtered surfaces.
120-07	0.020	Extremely flexible. Cures at temperatures as low as 50 °C. Screen printable.
118-41	0.010	Solvent resistant, flexible, silver epoxy ink.
102-05F	0.019	Bonds to ITO (Indium Tin Oxide) sputtered surfaces. Flexible and screen printable. Temperature, abrasion and chemical resistance.
125-15	0.010	Exceptional conductivity. Fast curing. (i.e., 3-5 mins. at 110 °C). Screen-printable. Conductivity and cost modification with 112-48 carbon ink.
101-59	0.015	Exceptional flexibility. Screen-printable.
125-13	0.015	Fine line printable version of 101-59.
118-43	0.010	Pad-printable version of 101-59.
113-37	0.010	Pad-printable conductive ink.
110-03	0.020	For use in spray, flexographic and rotogravure printing methods. Extremely flexible.

CARBON INKS

Product #	Sheet Resistivity (ohms/sq/mil)	Comments
104-18	75.0	Bonds to ITO (Indium Tin Oxide) sputtered surfaces. Temperature, abrasion and chemical resistance. Can be blended with 102-05F to tailor cost and conductivity of 102-05F. Can be used with 116-20, a flexible UV cured dielectric. Screen printable.
112-48	20.0	Exceptional conductivity. Screen printable. Fast curing. (i.e., 3-5 mins. at 110 °C). Can be blended with 125-15 to reduce cost and tailor conductivity of 125-15.
108-46	50.0	Exceptional flexibility. Screen printable. Can be blended with 101-59 for cost and conductivity adjustment of 101-59.
114-34A/B	150	Two component, low temperature cure, solvent resistant ink for polyester and other low temperature substrates. Adheres well to ITO (Indium Tin Oxide) sputtered surfaces. Carbon version of 118-09A/B.
119-28	50.0	Pad printable version of 108-46.
124-50	40.0	Fast drying conductive ink for ITO or polycarbonate substrates.

DIELECTRIC INKS

Product #	Sheet Resistivity (ohms/sq/mil)	Curing Method	Comments
118-12 A/B	450	Thermal	Clear, solvent resistant, flexible, low temperature curing.
118-08 A/B	450	Thermal	Translucent blue, solvent resistant, flexible, low temperature curing.
113-48	525	UV/Thermal	Very flexible.
116-20	365	UV	Clear, UV Curable.
125-17M	365	UV	Matte colorless.
125-17MB	365	UV	Matte blue.
125-17MG	365	UV	Matte green.
111-27	1300	Thermal	High dielectric strength, sprayable concentrate.
118-02	1300	Thermal	High dielectric strength, pad printable.
113-35	525	Thermal	Red, exceptional flexibility.

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Medical Device Specialty Inks and Films

ELECTRODE INKS

Product #	Sheet Resistivity (ohms/sq/mil)	Ag/AgCl Ratio	Application Technique	Comments
113-09	0.05	82-18	Screen-printable	General purpose, extremely flexible silver/silver chloride electrode ink.
117-43	0.08	85-15	Screen-printable	Waterborne, low VOC, silver/silver chloride electrode ink.
117-23	0.05	70-30	Screen-printable	Extremely flexible silver/silver chloride electrode ink.
119-10	0.05	95-5	Pad-print	Silver/silver chloride ink for application onto complex geometry.
106-12	15	55-45	Screen-printable	Silver/carbon/silver chloride electrode ink.
115-02	0.10	80-20	Flexographic & Rotogravure	Solvent based silver/carbon/silver chloride electrode ink.
124-36	0.05	66-34	Screen-printable	Extremely flexible, screen-printable.
125-20	0.02	95-5	Screen-printable	Chemically resistant, epoxy based silver/silver chloride electrode ink.
125-21	0.02	65-35	Screen-printable	Chemically resistant, epoxy based silver/silver chloride electrode ink.

ELECTRODE FILMS

Product #	Sheet Resistivity (ohms/sq/mil)	Coating Thickness (mils)	Substrate	Ag/AgCl Ratio	Comments
114-26A	0.10	0.4 - 0.5	Polyester	82-18	General purpose silver/silver chloride electrode film.
114-26B	0.05	0.8 - 0.9	Polyester	82-18	High performance silver/silver chloride electrode film.
125-42	0.10	0.3 - 0.5	Polyester	70-30	General purpose silver/silver chloride electrode film.

RADIO OPAQUE INKS

Product #	Resin Type	Application Technique	Comments
113-49	Thermoplastic	Pad-print	Good adhesion on flexible substrates.
114-29A/B	Epoxy	Pad-print	High adhesion ink for rigid substrates with hard to bond to surfaces.
113-15	Thermoplastic	Screen-print	Fast cure ink for flexible substrates.
124-35	Silicone	Syringe dispense	Good adhesion on flexible substrates with hard to bond to surfaces.
125-09	Thermoplastic	Screen-print	Extremely flexible.
119-31	Thermoplastic	Pad-print	Extremely flexible.
124-17	Epoxy	Pad-print	Excellent chemical resistance.
124-25	Epoxy	Syringe dispense	Excellent chemical resistance.

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Printed Electronic Applications

ADHESIVES

Product #	Volume Resistivity ($\Omega\text{-cm}$)	Minimum Cure Temp ($^{\circ}\text{C}$)	Application Technique	Comments
124-08A/B	0.0002	80	Syringe Dispense	Silver filled adhesive with excellent thermal shock resistance.
118-06(SP)	0.0002	150	Screen-print	Epoxy based system.
118-34	0.0002	150	Screen-print	Flexibilized epoxy based system.
110-19	0.0001	120	Screen-print	Polyimide based system.
107-25	0.2	50	Screen-print	Very flexible carbon filled hot melt adhesive.
124-33	0.0005	100	Screen-print	Very flexible silver filled hot melt adhesive.
121-23	0.001*	150	Screen-print	Z-axis conductive adhesive.

CONDUCTIVE INKS AND COATINGS

Product #	Volume Resistivity ($\Omega\text{-sq}/\text{mil}$)	Minimum Cure Temp ($^{\circ}\text{C}$)	Application Technique	Comments
118-09A/B	0.019	80	Screen-print	Two component silver ink with excellent adhesion to ITO.
118-09C	0.019	80	Screen-print	Pre-catalyzed version of 118-09A/B.
118-41	0.010	150	Screen-print	Solvent resistant, flexible, silver epoxy ink.
120-24	50	150	Screen-print	Carbon version of 118-41.
120-07	0.010	50	Screen-print	Urethane based, fast curing silver ink with good adhesion to ITO.
124-02	0.05	125	Flexographic	Waterbased, low VOC, silver ink.
124-39	20	100	Flexographic	Waterbased, low VOC, carbon ink.
112-48	20	50	Screen-print	Thermoplastic based carbon ink.
125-28	0.020	50	Flexographic	Fine line printable ink (6 mil line widths).
124-40	0.015	50	Screen-print	Fine line printable ink (6 mil line widths).
125-13	0.015	100	Screen-print	Ultra fine line printable ink (4 mil line widths).
125-26A/B	0.015	100	Screen-print	Ultra fine line printable epoxy ink (4 mil line widths) with excellent adhesion to ITO.
125-10	0.015	100	Screen-print	Lower cost conductive ink.
124-31	5000	100	Screen-print	Translucent conductive ink.
124-43	20	100	Flexographic	Waterbased, low VOC, carbon ink.

DIELECTRIC INKS AND COATINGS

Product #	Dielectric Strength (volts/mil)	Curing Method	Application Technique	Comments
116-20	365	UV	Screen-print	Clear, UV Curable.
118-12A/B	450	Thermal	Screen-print	Solvent resistant and sticks to ITO.
125-17M	365	UV	Screen-print	Matte colorless. Other colors available.
113-48	525	UV/Thermal	Screen-print	Very flexible.

* in Z-axis only

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Electronic Components Assembly Materials

EMI/RFI SHIELDING OF RIBBON CABLES AND FLEX CIRCUITS

SILVER INKS

Product #	Sheet Resistivity (ohms/sq/mil)	Application Technique	Comments
102-05F	0.019	Screen-printable	Flexible, temperature and chemical resistant.
105-43	0.019	Sprayable Concentrate	Flexible, temperature and chemical resistant.
117-48	0.040	Screen-printable	Flexible, temperature and chemical resistant.
120-07	0.010	Screen-printable	Extremely flexible. Can be diluted for spray applying.
118-41	0.010	Screen-printable	Excellent adhesion to Kapton and other materials where higher temperature is required. Resistant to abrasion and scratching.
125-24	0.020	Sprayable	Very resistant to abrasion, scratching and flexing. Can be dried at room temperature.

DIELECTRIC INKS AND COATINGS

Product #	Dielectric Strength (volts/mil)	Curing Method	Application Technique	Comments
113-48	525	UV/Thermal	Screen-print	Very flexible.
116-20	365	UV	Screen-print	Clear, UV Curable.
118-12A/B	450	Thermal	Screen-print	Solvent resistant.
125-17M	365	UV	Screen-print	Matte colorless.
125-17MB	365	UV	Screen-print	Matte blue.
125-17MG	365	UV	Screen-print	Matte green.

POTTING AND ENCAPSULATING MATERIALS

ONE COMPONENT SYSTEMS

Product #	Volume Resistivity (ohms-cm)	Viscosity @ 25°C (cps)	Viscosity @ 50°C (cps)	Comments
108-50	1 X 10 ¹⁴	100,000 - 160,000	30,000 - 50,000	Exceptional resistance to thermal cycling. Low stress, low shrink potting compound and adhesive. Ideal for stress sensitive substrates.
110-18	1 X 10 ¹⁵	10,000	60,000	Cures at low temperatures with minimum amount of exotherm, releases air rapidly, resulting in smooth pinhole free surface. Useful for bonding and potting of dissimilar materials requiring Class "B" service temperature rating.
109-12	1 X 10 ¹⁴	500,000	60,000	Exceptional resistance to thermal cycling. Bonds dissimilar materials requiring Class "F+" service temperature rating. More thermally conductive version of 108-50.

TWO COMPONENT SYSTEMS

Product # Part A	Product # Part B	Mix Ratio By Weight	Viscosity (cps)	Working Life @ 21°C	Comments
F940A	F940B	100:12	2,750	30 mins.	Black, flame-out, epoxy potting and encapsulating compound. Low viscosity, self de-aerating, thermally conductive. Room temperature cure.
F940A	B-187	100:3	3,000	> 4 hours	Low viscosity with long pot life. Requires mild heat cure.
F947A	F947B	100:12	5,000	30 mins.	Room temperature, improved heat resistance. Other properties similar to F940A/B.
F947A	B-187	100:3	7,000	> 4 hours	Excellent heat resistance, extended pot life. Requires mild heat cure.
102-11A	102-11B	100:12	6,000	30 mins.	Crack resistant, black, flame-out, epoxy compound. Room temperature cure, improved resistance to thermal cycling. Other properties similar to F947A/B.
102-11A	B-187	100:3	7,000	> 4 hours	Excellent resistance to thermal shock, longer pot life. Requires mild heat cure.
102-12A	102-12B	100:9	15,000	30 mins.	Thermal cycle resistant, black, epoxy compound. Room temperature cure, improved crack resistance. High thermal conductivity.
102-12A	B-187	100:2.5	16,000	> 4 hours	Same as above, but extended pot life; better resistance to thermal cracking.
113-33A	113-33B	100:15	380,000	> 30 mins.	Crack resistant, black, flame-out, glob top epoxy. Non sag encapsulant.

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