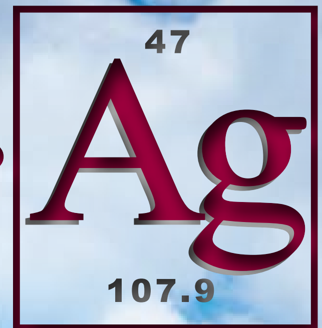
Making Solar Better



solar material series

• conductive adhesives • grid inks • insulators
• potting compounds • custom support

ECM provides technology solutions for your exact needs

SOLAG PRODUCT SOLUTIONS

- SILVER GRID INKS
- SILVER ASSEMBLY ADHESIVES
- INSULATORS FOR SILVER JUMPERS IN MONOLITHIC MODULE ASSEMBLY
- ENCAPSULANTS TO REINFORCE CONNECTIONS
- POTTING COMPOUNDS TO HERMETICALLY SEAL AND PROTECT

There are many technological approaches to making the best photovoltaic cell and module, both in materials and fabrication process. Many more will be developed with the search for higher energy conversion efficiencies and lower cost. You need a partner who will work with you to formulate **the best electrical interface for your exact needs**, one who understands the technical requirements and how to optimize for higher efficiency and longer life.

The majority of solar field failures are caused by poor electrical connections. ECM understands the failure mechanisms and has developed conductive inks, adhesives, insulators, encapsulants and potting compounds that exhibit superior stress compatibility and electrical contact resistance, in thousands of hours of damp heat exposure. **ECM has become an established supplier in commercial solar applications.**

INTERLAYER STRESS COMPATIBILITY

The interface for the silver ink or adhesive is a delicate combination of sputtered or vacuum deposited thin films so interlayer stress management is key to long life performance. ECM products are engineered to provide a low stress solution for the specific substrate as this has proven to be a critical requirement for **longer life in outdoor exposure**.

LOW ELECTRICAL CONTACT RESISTANCE

The contact resistance between the conductive silver ink or adhesive and the conductive PV cell surface should be as low as possible to deliver **higher efficiency and fill factor**. With the various technologies and PV surfaces that exist it is important that the conductive material selection can be optimized. ECM understands the mechanisms to deliver the lowest contact resistance for your substrate.

BULK RESISTIVITY

ECM's extensive formulating experience can deliver resistivity approaching 10^{-6} Ω·cm to provide **higher current carrying capacity** and more **efficient power output**.

APPLICATION MANAGEMENT

ECM products are applied by screen, stencil, jet and needle dispensing in sheet fed or roll to roll systems. ECM will work with your system integrator to engineer the product for the process.

- Print fine lines for reduced shadowing
- Low stress/low shrinkage
- Exceptional adhesion
- UV resistance
- Temperature cycling stability
- Low impurities
- RoHS compliant
- Moisture resistance
- Corrosion resistance in presence of moisture
- >90% solids

CALL OUR APPLICATIONS ENGINEERS TO DISCUSS YOUR APPLICATION.

	Description	Resistivity (ohm•cm)	Tg (˚C) Tan Delta	Viscosity cP ($5.0\ s^{-1}$)	Application Method
Sol·Ag	**Conductive Ribbon/Stringer Attach Adhesives**				
DB-1535	2 part, flexible with high peel strength, 2 min @180˚C cure	2×10^{-4}	25	55,000	Dispense
DB-1541-J	Flexible, high peel strength, damp heat conductivity stability on tin and tin-silver ribbon	3×10^{-4}	0	8,000	Jet Dispense
DB-1541-L	Flexible, high peel strength, damp heat conductivity stability on tin and tin-silver ribbon	1×10^{-4}	8	25,000	Dispense
DB-1541-S	Best damp heat conductivity stability on tin and tin-silver ribbon, flexible, high peel strength	2×10^{-4}	0	22,000	Dispense
DB-1548	High shear and high peel strength, high Tg, conductivity stability on tin and tin-silver ribbon	4×10^{-4}	70	12,000	Dispense
DB-1558	High strength and high Tg, snap cure at 90 sec @ 150˚C cure	2×10^{-4}	80	16,000	Dispense
DB-1551	Flexible, high peel strength, snap cure at 90 sec @ 150˚C cure	2×10^{-4}	35	20,000	Dispense
Sol·Ag	**Conductive Via Fills**				
DB-1541	Flexible, high peel strength, damp heat conductivity stability on tin and OSP treated copper	1×10^{-4}	14	35,000	Stencil Print
DB-1550-2	High Tg, high shear strength, damp heat conductivity stability on tin and OSP treated copper	2×10^{-4}	117	50,000	Stencil Print
Sol·Ag	**Conductive Grid Inks**				
CI-1031-2	Fine line printing, lowest contact resistance	1.5×10^{-5}	75	12,000	Screen Print
CI-1031-4	High solids high aspect ratio print	1.5×10^{-5}	75	25,000	Screen Print
CI-1043	Thin deposit	2.5×10^{-5}	80	17,000	Screen Print
Sol·Ag	**Dielectric Inks**				
	Description	**Viscosity cP ($5.0\ s^{-1}$)**	**Cure Method**	**Print Thickness**	**% Solids**
DI-7030	Insulator for silver jumper in monolithic module integration, low ionic impurities, low stress	6,500	Thermal	22 (μm) 1 mil emulsion	>99%
DI-7510	Insulator for silver jumper in monolithic module integration, high moisture resistance	4,000	UV	23 (μm) 1 mil emulsion	100%

ECM TECH SUPPORT

ECM has a seasoned staff of polymer chemists, formulators and application engineers to assist with your most difficult application problems.
ECM has a full compliment of laboratory and analytical equipment to develop adhesives and inks and solve application challenges.

ISO 9001:2000

QUALITY STATEMENT

At ECM, our ability to define, develop and create an engineered material solution is an asset that sets us apart. We are continually upgrading equipment and educating staff to better serve our customers

WORLDWIDE

ECM manufacturing and development facilities are located in Ohio, USA and Dongguan China.
Visit www.conductives.com to find our sales office near you.

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