

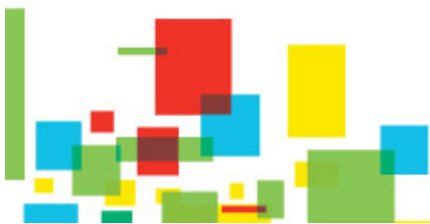
SunTronic® Products

who needs a materials partner
that delivers solutions not
simply materials?

you do.

working for you.

Solutions. Tailor-Made.™



SunChemical
a member of the DIC group 



SunTronic®

ECLIPSE PRINTED ELECTRONICS SOLUTIONS

tailor-made solutions to meet your needs.

Technology advances, markets are disrupted, new market opportunities are created. The challenges of growing and prospering in this rapidly evolving environment have never been greater. Now more than ever the path to continued success is through alliance and collaboration with committed, competent and innovative technology partners.

Sun Chemical's Electronic Materials team is ready to help your organization meet today's challenges and opportunities with our Solutions Tailor-Made approach.

We have long been a global technology leader in printing inks and coatings formulations along with the color pigments, dispersions and specialty materials that are required to meet critical performance parameters.

Our goal is to deliver solutions through close collaboration with like-minded companies seeking to develop new technologies and products. We are leveraging our worldwide technology and commercial support network to advance applications in:

- c-Si photovoltaics
- Thin film photovoltaics
- Sensors/Switches
- Touch panel displays
- Lighting
- Printed antenna
- Smart labels/smart packaging

SunTronic ECLIPSE Conductive Inks

Silver and graphite based inks are available in screen, flexographic and inkjet printable versions.

- Range of conductivities available
- Compatible with a variety of substrates
- Excellent printability and print resolution
- Suitable for RFID, smart packaging, sensors, touch panels and other printed electronics applications

SunTronic ECLIPSE Resists

Screen and inkjet printable formulations in both UV and thermal curing versions.

- Solvent and alkali strippable formulations
- Roll coating versions available

SunTronic ECLIPSE Insulators & Dielectrics

Screen and inkjet printable formulations.

- Good adhesion to commonly employed substrates
- Excellent electrical properties
- Compatible with SunTronic ECLIPSE conductive inks



**Meeting today's
opportunities with a
Solutions Tailor-Made
approach.**

SunTronic®

SOLSYS THIN FILM PV SOLUTIONS

SunTronic SOLSYS Conductive Inks

Screen printable silver ink, graphite conductive inks and ink-jettable nano silver inks.

- High conductivity
- Low sheet resistance (<0.010 Ohms/sq/mil)
- Excellent adhesion to ITO and other TCO
- Exceptional print resolution
- Low curing temperature (<150° C)

SunTronic SOLSYS Insulators & Dielectrics

Available in thermal and UV curing formulations for screen and inkjet printing.

- Good adhesion to TCO and other surfaces
- Suitable for overprinting of silver pastes
- Excellent printability and print resolution
- Compatible with SunTronic SOLSYS conductive inks

SunTronic®

CELLMET CRYSTALLINE SILICON PV SOLUTIONS

SunTronic CELLMET Metallization Pastes

- Screen printable front side silver
- Screen printable back side aluminum
- Screen printable back side silver tabbing
- Ink-jettable nanosilver inks
- Lead and cadmium free formulation
- Excellent adhesion

SunTronic CELLMET Resists

- Screen printable
- UV & thermal curing formulations
- Resistant to HF and other acids

SunTronic CELLMET Insulators & Dielectrics

- Available in solvent and UV curable formulations
- Good adhesion and printability

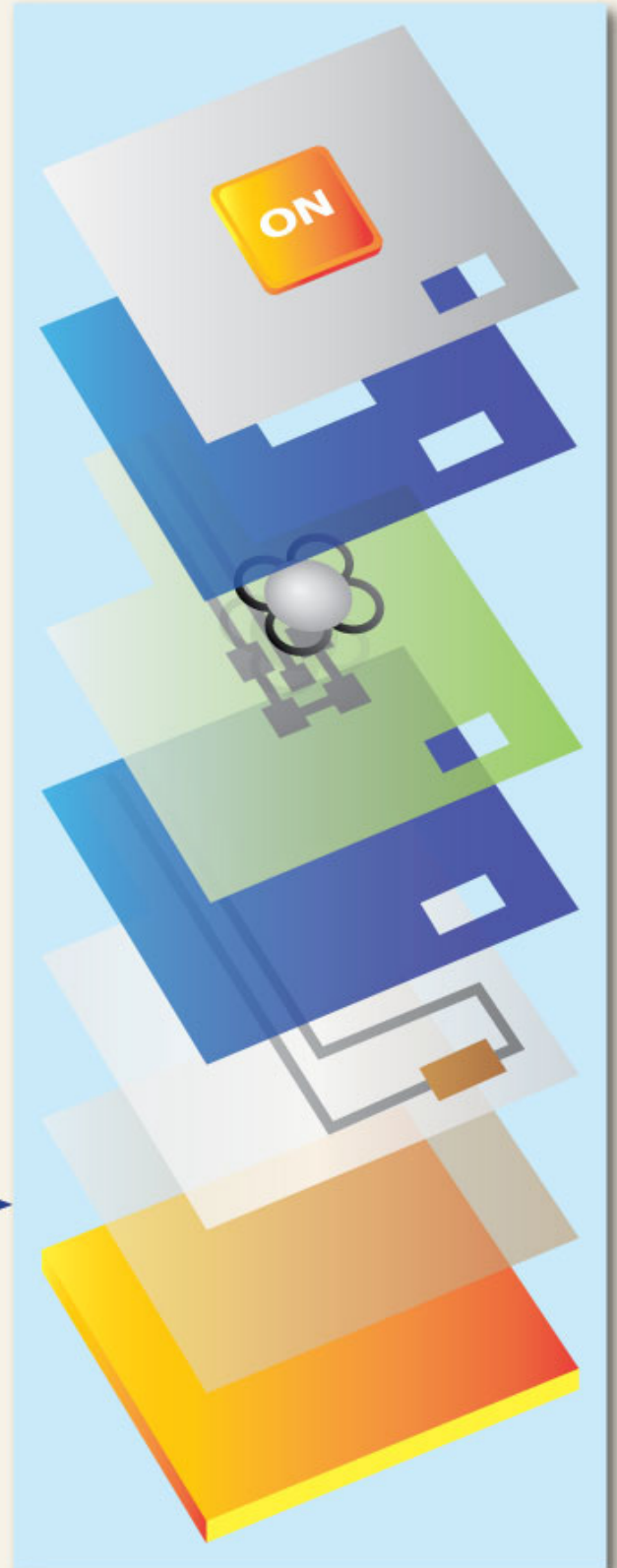


ECLIPSE Printed Electronics Solutions

Sensors and Switches

SunTronic ECLIPSE products for switches and Sensors are designed to offer superior process and performance by incorporating formulations for various printing options including screen, offset and inkjet. The electrical performance of our conductors and dielectrics are some of the best in class. The ECLIPSE family of inks and materials offer a broad range of solutions to various switch and sensor designs including membrane, touch and back lit switches as well as sensors for industrial and medical applications.

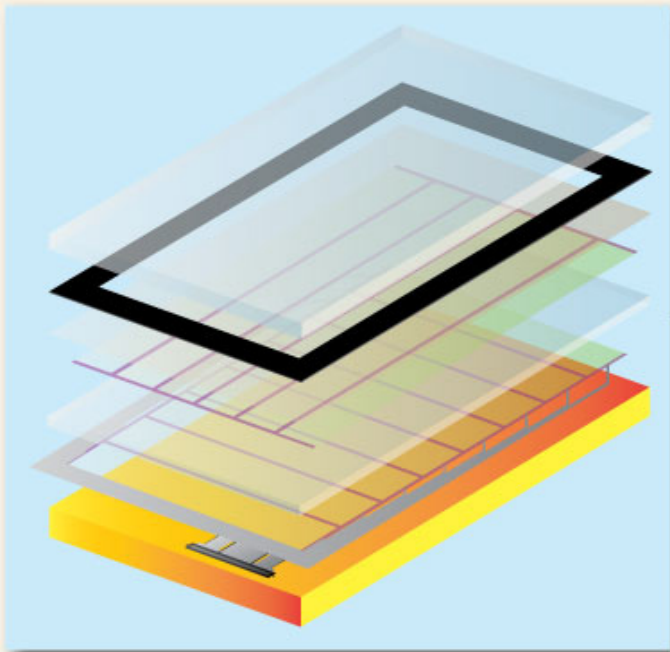
- SunTronic ECLIPSE Series silver and graphite printable conductive inks
- SunTronic ECLIPSE Series dielectrics
- Sun Chemical graphic ink
- DIC coated tape and adhesives



Display and Touch Panel

SunTronic ECLIPSE conductors and dielectrics combine to support a wide range of manufacturing processes. Our tailor-made products offer a range of performance options from the very high conductivities for our conductive inks to the highly insulating properties for our dielectrics. SunTronic ECLIPSE offers top to bottom solutions for touch screens including a scratch and finger print resistant glass coating to electrically functional conductors and dielectrics as well as assembly materials and graphics inks.

- SunTronic ECLIPSE Series silver and graphite printable conductive inks
- SunTronic ECLIPSE Series dielectrics
- Sun Chemical graphic ink
- DIC coated tape and adhesives
- DIC fluorochemical based coatings
- Optical boundary coatings (black, white)



Printed Antenna

SunTronic ECLIPSE Series for printed antenna offers the industries a wide range of supporting products for antenna and RFID. The ECLIPSE series for printed antenna can conform to a wide range of processes including plating resists for subtractive process to fully additive processes including high speed roll to roll and inkjet printing. The ECLIPSE products also support advanced antenna designs which incorporate security and tamper proofing utilizing our release technology. ECLIPSE can also address the demand for advanced mobile phone antenna designs involving digital and 3D printing.

- SunTronic ECLIPSE Series silver and graphite printable conductive inks
- SunTronic ECLIPSE Series dielectrics
- Sun Chemical graphic ink and release coatings
- DIC coated tape and adhesives

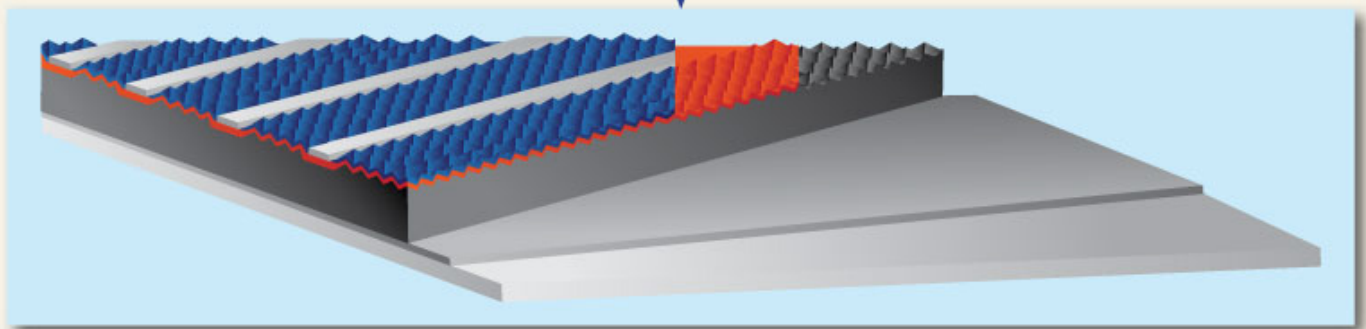


CELLMET Crystalline Silicon PV Solutions

Selective Emitter

The CELLMET series of pastes for selective emitter process are currently in use by the top tier cell manufacturers around the world. Our products include masking inks which can be applied via inkjet or through conventional screen. The CELLMET series also includes silver conductors for both inkjet and screen application.

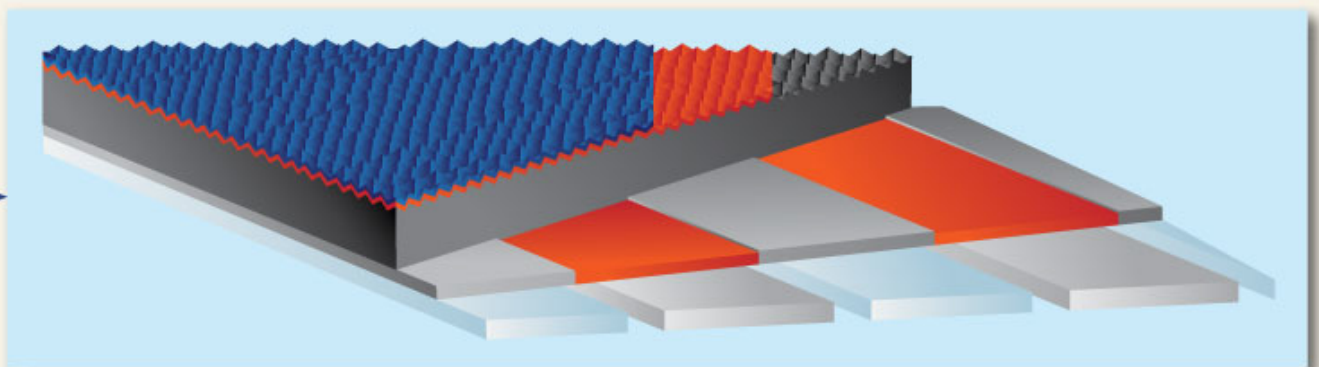
- CELLMET front contact silver paste
- CELLMET front contact nano silver for pre-plate
- CELLMET silver tabbing paste
- CELLMET aluminum BSF
- CELLMET hot melt (inkjet)
- Screen printable resists



Interdigitated Back Contact

The CELLMET series of materials for IBC (Integrated Back Contact) are widely used and have a proven 10 years field performance. The CELLMET products offer a full range of resists and coatings to support the entire IBC process, including for screen printing as well as roll coating and high performing polyimide dielectrics.

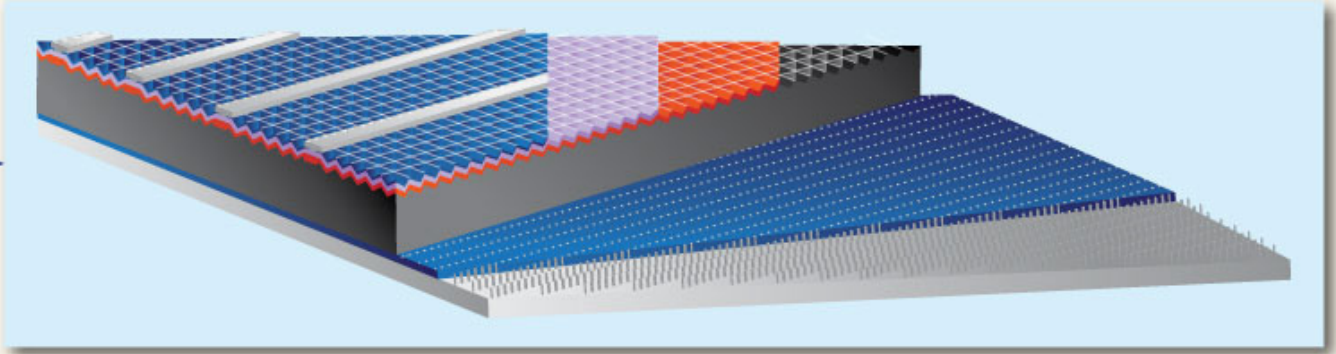
- CELLMET resists: screen print & roll coat
- Isolation layer (polyimide)
- Back sheet metallization



PERC/PERL

The CELLMET AI for PERC is formulated to enhance the performance of this emerging c-Si back side design option. Our AI formulation for PERC offer the same low bowing and high VOC performance as our standard AI pastes.

- CELLMET front contact silver paste
- CELLMET silver tabbing paste
- CELLMET PERC aluminum BSF



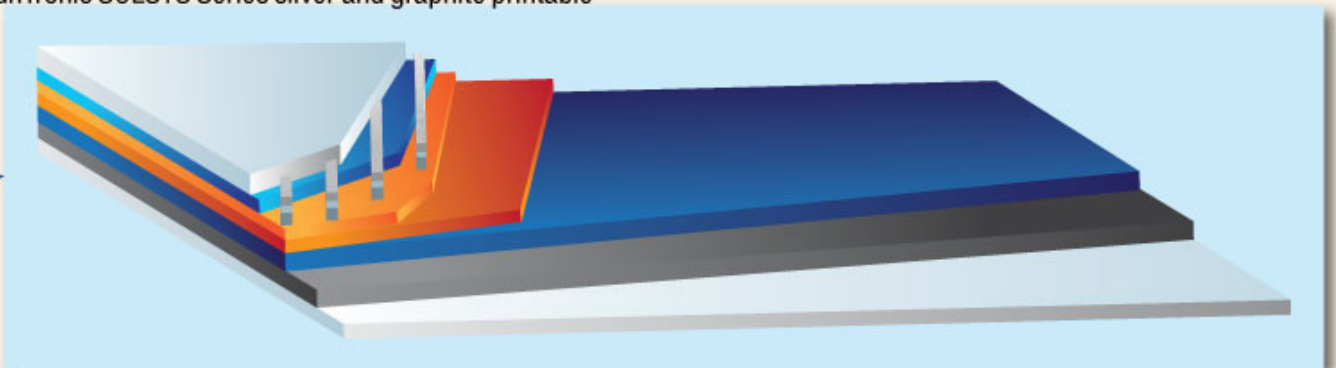
Thin Film Photovoltaics

SunTronic SOLSYS products are designed specifically to support the wide range of thin film photovoltaic processes and designs, including full or partially subtractive and additive process. Our printable conductors available in silver and graphite are highly conductive and very stable. Our resists and dielectrics are formulated to protect the device during manufacturing as well as remain a permanent part of the design.

- SunTronic SOLSYS Series silver and graphite printable



- conductive inks
- SunTronic SOLSYS series dielectrics
- DIC coated tape and adhesives
- Ink-jettable dielectrics for isolation



quality

service

innovation

Sun Chemical - Global Success in Material Solutions

Today's environment requires more than change. It demands transformation and a partner who's willing to transform with you. As the world's leading producer of inks and pigments, Sun Chemical gives you over 8,000 people working in more than 250 locations in 56 countries. And every one of those people is working every day to create new solutions for the increasing challenges in inks, coatings, colorants, resists, dielectrics and specialty electronic materials. We are committed to meeting your needs, while never losing sight of the business essentials: reliable, on-time delivery, consistent product quality, dependable service and groundbreaking innovation. As you move forward into a world of stiffer competition, faster turnarounds, more complex product demands, count on Sun Chemical to be your partner.

To learn more about our Electronic Materials products and capabilities please contact your local Sun Chemical representative.

working for you.

www.sunchemical.com

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