



**ELECTRA**

## TECHNICAL DATA SHEET

**Ronascreen™**

**1300 SERIES**

**UV CURING FLEXIBLE COVERLAY**

### PRODUCT DESCRIPTION

Ronascreen 1300 Series inks are formulated for use as covercoats on polyester based flexible printed circuits. The inks find most use for automotive printed wiring and are approved by many car producers and component suppliers. The inks are polymerised by exposure to ultraviolet light giving exceptionally flexible films with good adhesion to copper and base laminate.

1301 General purpose products for flexible circuits.

1305 Recommended where circuits are subjected to mass soldering techniques.

1320 Recommended where the covercoat is used as a plating resist (e.g. silver plating processes).

- **Optimised rheology.** Screen-print characteristics are developed and controlled using computerized rheology equipment. Products optimised for high-speed reel-to-reel printing (**3000 prints per hour**) or flat-bed printing to extremely tight tolerances.
- **100% solids.** Because there is no solvent to evaporate, **1300 Series** will not dry in the screen, allowing continuous long runs and the elimination of mid-shift clean-ups. 100% solids allow excellent track coverage.
- **Encapsulation.** **1300 Series** print characteristics allow excellent track encapsulation and fill, avoiding skips and/or micro bubbles.



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### **PRECLEANING OF SUBSTRATES BEFORE APPLICATION**

Circuits must be chemically clean before application of the 1300 Series. This can be achieved by immersion in a microetch solution or by scrubbing with commercially available materials. These must be followed by a clean water rinse and drying stage. If an anti-tarnish treatment is not given then printing must be within 4 hours of cleaning.

Alternatively, following etching and resist stripping a suitable anti-tarnish treatment should be applied. If this is carried out correctly, no further cleaning should be required before application of Ronascreen 1300 inks. Avoid contamination by lubrication fluids or Silica used on the machine.

### **VISCOSITY ADJUSTMENT**

Ronascreen 1300 inks are produced to a closely controlled viscosity specification. The viscosity of Ronascreen 1300 inks have been designed to give the best printing properties under production conditions.

### **PRINTING CONDITIONS:**

**1300 inks are suitable for flat-bed screen-printing or high-speed, reel-to reel printing in excess of 2000 impressions per hour.**

The following variables determine the optimum print quality:

- Screen mesh, type and opening (threads/cm)
- Stencil type, thickness below the mesh, and degree of absorption into the mesh
- Squeegee composition, hardness, blade type, and angle of setting
- Print speed.

Mesh: 60 -80T polyester (angled at 7-15 degrees to the frame)  
Minimum 16N tension

100-120T mesh can be used to give better definition but with lower film thickness.

Squeegee: 65-70 Shore hardness are recommended, made of polyurethane or rubber  
V-shape or chisel shape squeegee may give a better coverage and track-filling compared to a standard square cut type when using fine meshes.

Emulsion: Selected to achieve a wet film thickness of 15-25 microns

Thickness: Approximately 15-25 $\mu$ m wet.  
Above this thickness, the risk that the film will be incompletely cured increases.  
Incompletely cured film adversely affects physical and electrical properties.



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**CURING:**

For general work thorough curing of the mask is achieved with  $800\text{mJcm}^{-2}$  at 365nm wavelength.

Higher energy levels induce greater chemical and thermal resistance. E.g. 1320 requires  $1500\text{-}2000\text{mJcm}^{-2}$  to resist electrolytic silver plating.

**CLEANING:**

After printing, the screen and stencil should be cleaned of residual soldermask using Dowanol PMA or Electra screen washes (SW100, SW200).

**STORAGE:**

Store  $10\text{-}25^{\circ}\text{C}$  in a dry store. Avoid subjecting containers to temperatures below  $5^{\circ}\text{C}$  because of risk of splitting.

**SHELF-LIFE:**

24 months from date of manufacture under normal storage conditions. The lid on opened tins should be firmly sealed.

**SPECIFICATIONS:**

Typical Physical and Electrical Properties are as follows:

Adhesion to copper: 100% (cross hatch and tape)

Pencil hardness: H

Flexibility:  $180^{\circ}\text{C}$  bend to zero radius with ink on the outside of the bend (20 micron coating).

Flammability: Meets requirements of Motor Vehicle Safety Standard #302 on flame resistant polyester.

Dielectric Strength:  $>40$  volts DC per micron.

Insulation Resistance:  $4\text{-}5 \times 10^{10}$  Ohms.



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