



## TECHNICAL DATA SHEET

### RO-593 RADIO OPAQUE INK

RO-593 is a solvent based, heat dried ink designed for use in applications requiring visible tags on devices exposed to MRI and other imaging technologies.

#### DESCRIPTION

- Can be applied by screen or high speed high speed roll printing processes, as well as coating or dipping. It can also be applied by manual processes such as brush or syringe for making prototypes
- Cured films of RO-593 exhibit excellent adhesion to glass, metal and most plastic substrates. RO-593 is also very flexible and can be used on printed substrates that require bending or flexing.
- Can also be overprinted with other protective inks or coatings, and is compatible with Parylene overcoats
- Standard product is white and other colors are available

RO-593 is compatible with all of our silver conductive inks, carbon resistive inks, silver conductive epoxy adhesives, UV curable encapsulants and conformal coatings.

#### TYPICAL PROPERTIES

Appearance	Thick white or colored opaque paste
Viscosity, Brookfield DV III @ 25°C SC4-14 @shear rate of 10	26,000 cps +/- 10% Typical 26,030 cps
Density (Wet) @ 25°C	2.3 gm/ cm <sup>3</sup>
Shelf Life @ 25°C	6 months following storage guidelines
Cure Time	10 to 15 minutes at 140°C (depending upon air flow, humidity & print thickness)
Glass Transition Temperature (DMA)	80°C

# RO-593 RADIO OPAQUE INK

## Application Guidelines

RO-593 can be applied by screen or high speed high speed roll printing processes, as well as coating or dipping. It can also be applied by manual processes such as brush or syringe for making prototypes.

The solid filler in RO-593 will settle quickly when left in storage, and the material will thicken towards the bottom of the container. When left undisturbed for long periods, the dense filler will settle to a "hard pack" in the bottom of the container and the material will require very aggressive mixing in order to break up the hard pack and redisperse it into the material. It is essential to mix the material thoroughly before use to re-disperse any settled particles and to return the ink to a more desirable viscosity.

## Screening

A monofilament polyester (157 to 230 mesh) or a stainless steel (165 to 325 mesh) screen is recommended, with emulsion thickness between .001" and .004". A polyurethane squeegee with a Shore 'A' durometer between 60 and 70 is recommended. In order to obtain optimal opacity under emissions, a wet-wet print cycle will allow for more filler density in the final print pattern. Alternately, two or more print layers can be made between drying cycles to build up the dry film to a suitable thickness.

## Thinning & Cleanup

Use Solvent 10 or Solvent 30 for thinning and clean up. If faster drying time is required, contact Applied Ink Solutions for solvent recommendations. If solvent based inks are left on screens for any length of time, the ink will gradually thicken as solvent evaporates. If ink is to be left on an inactive press for any length of time, solvent evaporation can be minimized by pooling the ink into a small area instead of leaving it spread out over a large area. Pooling the ink reduces the surface area, thus slowing the drying process. Always check the viscosity of ink that has been recovered from a screen and add small amounts of solvent while mixing thoroughly to restore viscosity. Solvent can be added to reclaim thickened ink as long as the ink has not dried and hardened completely.

## Drying

It is essential that all residual solvent be removed from this ink once it is applied. Incomplete drying will cause the ink to appear dry on the surface while trapping solvent underneath the surface. Over time, this trapped solvent will migrate out of the ink, and can cause adhesion problems with any material (such as dielectrics) applied over the ink.

## Storage

For storage, slowly roll the container of ink continuously or for 2 to 3 hours minimum daily. If this is not possible, then the container should be turned over in storage so that the container end with the lid, sits on the bottom after one or two days and then turned over once again in one or two days. Do not let material sit undisturbed for long periods before printing.

## Health & Safety

Products manufactured by Applied Ink Solutions are intended for use in an industrial environment by trained personnel. Please follow proper health/safety processes regarding storage, handling and processing of the products.

Guidelines are intended to provide a starting point for evaluation. Applied Ink Solutions recognizes that each customer's manufacturing process is unique, and we are available to provide technical assistance to resolve your processing issues. Call us to discuss your application in more detail.

The properties are accurate to the best of our knowledge and Applied Ink Solutions makes no guarantees for customer specifications established in applications where this product is used. Customer assumes responsibility for determining fitness of use in their particular application.