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HTC-350 HEAT STABLE CARBON FILLED ELECTRICALLY CONDUCTIVE SCREEN PRINTABLE INK/COATING

HTC-350 is a unique electrically conductive carbon filled ink utilizing a high T_g (glass transition temperature) crosslinked thermoset copolymer binder. HTC-350 is designed for screen printing in flex and additive circuit applications where stable resistance values at elevated temperatures are required. HTC-350 is tough, scuff resistant and has excellent adhesion to both treated polyester and polyimide substrates. Flexibility is outstanding when used on these substrates. HTC-350 is not recommended for use on indium tin oxide (ITO) sputtered surfaces. HTC-350 is exceptional for printing fine line/fine pitch applications, and has outstanding solvent resistance.

HTC-350 is designed to give a good balance between long open time in screen printing operations and short drying time. Once the two components are mixed, the ink will be stable over an 8 hour production run, but cannot be saved for reuse later. HTC-350 can be blended with our silver filled inks for specific resistance values, and is compatible with our UV curable dielectrics, encapsulants and conformal coatings. It is suitable for screen printing traces and discreet resistance pads, and as an overprint for silver conductive traces.

TYPICAL PROPERTIES

Appearance	Thixotropic Black Colored Paste
Mix Ratio	1 to 3 parts X-Link (by weight) to 100 parts ink
Viscosity	
Brookfield #40 cone & plate, 1 rpm	25,000 cps (After mixing two components)
Thixotropic Ratio	Greater than 2
Drying/Curing Schedule	< 10 Minutes At 145° C It is recommended that parts be postbaked for an additional 30 to 60 minutes in order to optimize mechanical properties of the cured ink.
Shelf Life	6 Months In Unopened Container
Total % NV Solids	36% +/- 2%
Hegman Gage (Ref. ASTM D-1210)	< 5.0 μ
Glass Transition Temperature (T _g)	>120° C
Surface Resistivity	100 Ω/Square
Thin Using	Carbitol (DE) Acetate or PM Acetate

MORE INFORMATION ON REVERSE SIDE OF SHEET

NOTE: Although the above properties are accurate to the best of our knowledge Conductive Compounds, Inc. 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.

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APPLICATION GUIDELINES

For 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. Always mix ink thoroughly before using, as carbon will settle to the bottom. It is also recommended that the ink be vigorously mixed in the container before applying to the screen in order to drop the viscosity. To mix, weigh out and add 1 to 3 parts of X-Link to 100 parts of the carbon ink, by weight. Using less X-Link will give a longer working time but will require longer drying to complete curing, and using more X-Link will give faster drying/curing but will have a shorter working time.

For thinning and cleanup, use DPM acetate or carbitol acetate. If faster drying time is required, contact Conductive Compounds, Inc. 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. Do not leave the ink pooled on the screen or in a container for long periods after the two parts have been mixed together because this will accelerate the curing rate. After a production run is completed, discard all remaining ink that has been mixed.

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.

To check completeness of drying, evaluate the point-to-point resistance along one of the screened conductive paths after one pass through the drying oven or one cycle in a batch-drying oven. Run the substrate through another drying cycle. Measure the point-to-point resistance again along the same path and compare it to the original reading. If the resistance decreases by less than 10%, then the ink is essentially dry after the first drying cycle or pass through the oven. If the resistance decreases by more than 10%, then more drying time is required to completely remove the solvent. Be sure to clean all equipment thoroughly before ink hardens completely on it. When blending HTC-350 ink with silver ink for specific resistance ranges, be sure to mix the materials thoroughly before screening.

The above guidelines are intended to provide a starting point for evaluation. Conductive Compounds, Inc. recognizes that each customer's manufacturing process is unique, and we can customize the rheology of HTC-350 to conform to the process parameters. We are also available to provide on-site technical assistance to resolve your processing issues. Call us to discuss your application in more detail.