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Innovative Chemistry For High-Tech Applications

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UV-2531 ULTRAVIOLET CURABLE, SCREEN PRINTABLE, GLOSSY DIELECTRIC COATING

UV-2531 is a 100% solids, UV curable screen printable material which has outstanding adhesion to print treated polyester films, conductive inks and copper used in flexible circuits and membrane switches. High strength, toughness, outstanding flexibility, inherent moisture resistance, and low odor make this material an excellent candidate for screen printed dielectric layers in membrane switch crossover and tail coat applications. Cured UV-2531 will withstand extreme thermal shock cycling, from +150°C to well below -50°C, and maintains its electrical integrity over a wide temperature and frequency range. UV-2531 can be cured with UV light in seconds, allowing for high-speed production. UV-2531 is compatible with our silver filled conductive inks, carbon resistive screen printable inks, silver conductive epoxies and UV curable encapsulants and conformal coatings. UV-2531 is available in clear, blue or green colors.

TYPICAL PROPERTIES (Uncured Liquid)

Appearance	Clear Or Colored Thixotropic Liquid
Viscosity, Brookfield RVT @ 25°C #5, 10 rpm	13,400 cps
Weight Per Gallon @ 25°C	9.4 lbs
Specific Gravity @ 25°C	1.1
Flash Point, PMCC	>212°F (100°C)
Shelf Life @ 25°C	6 Months

TYPICAL CURED PROPERTIES

MECHANICAL PROPERTIES

Shrinkage On Cure (Volumetric)	2.4%
Tensile Strength	920 psi
% Elongation	11%
Tg by DMA (Dynamic Mechanical Analysis)	41°C

ELECTRICAL PROPERTIES

Volume Resistivity @ 25°C	$1.2 \times 10^{14} \Omega\text{-cm}$
Surface Resistivity @ 25°C	$5.0 \times 10^{15} \Omega/\text{Square}$
Dissipation Factor 60 Hz, @ 25°C	0.027
Dielectric Constant @ 25°C	3.6

More Information On Reverse Side Of Page

NOTE: Although the above typical 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.

UV-2531 UV CURABLE SCREEN PRINTABLE GLOSSY DIELECTRIC COATING

APPLICATION METHODS:

UV-2531 can be applied by screen printing using stainless steel or monofilament polyester screens from 305 to 390 mesh, with emulsion thickness from .001" to .003". For thicker coatings, use smaller mesh sizes and thicker emulsions. A polyurethane squeegee with a Shore 'A' durometer between 60 and 70 is recommended. Other conventional methods of application include dip, roll or knife over roll coating, curtain coating or die application. The excellent pot life and UV cure mechanism allow for the heating of the material to precisely control viscosity for consistent application weights.

When using this material as a screen printed dielectric for membrane switches and other additive circuits, it is essential to make sure that pinholes and contamination in the cured material do not allow shorting between conductive paths. It is recommended that two layers of UV-2531 be applied in order to assure that any pinholes or defects are eliminated. After screening the first layer of UV-2531, it should not be cured completely in order to allow for optimal chemical bonding between the two layers when the second layer of UV-2531 is screened. After screening and curing two layers of UV-2531 on a test substrate, perform a cross hatch/tape adhesion test. If you find that the two layers of dielectric are separating from each other, then the UV lamp density needs to be reduced for curing the first layer, or the line speed needs to be increased for curing the first layer so that it is slightly under cured. Before screening the second layer of UV-2531, be sure to reset the line speed and lamp density to allow for complete curing.

METHOD OF CURE:

UV-2531 must be exposed to ultraviolet light of the proper wavelength to activate the curing mechanism. This can be done with any ultraviolet light source, which puts out wavelengths of <380 nanometers. The most common commercial light source is the medium pressure mercury vapor (MPMV lamps), electrode or microwave activated arc, with or without spectral enhancement (doped). Cure can also be accomplished with xenon or carbon arc lamp sources, UV lasers or electron beam sources. These sources are available in increasing arc lengths and varying intensities for specific applications from a large number of manufacturers. It is highly recommended that a radiometer be used to verify energy levels in any UV curing system. As a general guideline, lamp input power settings should be at the highest level (300 watts in most systems), and the belt speed should be adjusted until a reading of between 400 and 700 millijoules/square centimeter (mj/cm^2) is obtained on the radiometer. Keep in mind that some systems may require values outside of this range in order to completely cure UV materials. Always verify completeness of curing of UV materials in an initial process capability study, and then use the energy readings that provide this optimal curing as a set up parameter each time the UV line is set up to run production.

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