

CONATHANE® CE-1164
- QUALIFIED TO MIL-I-46058C, Type UR -

CONATHANE® CE-1164 is a single-component, air drying, room temperature curing, polyurethane conformal coating which meets the requirements of MIL-I-46058C for Type UR coatings and appears on the Qualified Products List (QPL).

CE-1164 is a solvent-based coating designed for thin-film applications on electronic components and printed circuitry. It was developed specifically to provide the ultimate in humidity resistance and hydrolytic stability, while retaining excellent flexibility to prevent fracturing of fragile components during thermal cycling.

Cured films maintain excellent adhesion to phenolic and epoxy -glass laminates even in adverse environmental conditions. A tracer dye has been incorporated to aid inspection under ultraviolet light.

TYPICAL PRODUCT CHARACTERISTICS

(THESE ARE TYPICAL DATA AND ARE NOT MEANT TO SERVE AS SPECIFICATIONS.)

Color	Clear, Light Amber
Brookfield Viscosity @ 25°C, cps	100
Specific Gravity @ 25°C	1.05
Solids Contents, %	50
NCO Contents, %	5.5
Flashpoint (Closed Cup), °F	55
Shelf Life @ 25°C. (Original, Unopened containers) from date of manufacture	15 months

TYPICAL CURED PROPERTIES

(THESE ARE TYPICAL DATA AND ARE NOT MEANT TO SERVE AS SPECIFICATIONS.)

PHYSICAL PROPERTIES

Color	Clear Light Amber
Chemical and Solvent Resistance	Excellent
Appearance - No blistering, wrinkling, cracking, or peeling of film nor discoloration of copper conductors or substrates after thermal shock, moisture resistance cycling, or hydrolytic stability testing (Per MIL-I-46058-C).	
Hydrolytic Stability - After aging 120 days at 160°F and 95% R.H., the only change in the appearance of the coating from the original was slight yellowing in color. There was no evidence of softening, tackiness, reversion to a liquid state, chalking, blistering, cracking, or loss of adhesion (Per MIL-I-46058C).	
Flexibility - No cracking or crazing in bend over 1/8" diameter mandrel (Per MIL-I-46058-C).	
Thermal Shock - No cracking, blistering, wrinkling, or peeling when cycled from -65°C to 125°C. (Per MIL-STD-202, Method 107)	
Fungus Resistance	Non-nutrient per MIL-STD 8108B
Solderability	Excellent
Inspection	Invisible dye, fluorescent under U.V. light

ELECTRICAL PROPERTIES

Insulation Resistance, ohms (2.0 mil films)	
Initially @ 25°C and 50% R.H.	2.5 x 10 ¹³
After 10 Days @ 65°C and 95% R.H.	1.3 x 10 ¹⁰
After conditioning 24 hours @ 25°C and 50% R.H.	4.5 x 10 ¹²
Dielectric Withstanding Voltage, 1500 V.A.C	No Flashover or Breakdown
Dielectric Constant, 1 MHz @ 25°C	2.70
Dissipation Factor, 1 MHz @ 25°C	0.020
Dielectric Strength, VPM, 1 mil Film	3500
Volume Resistivity @ 25°C, ohm-cm	1.5 x 10 ¹⁵

APPLICATION INFORMATION

CONATHANE® CE-1164 is a high-performance conformal coating specifically designed as an electrical insulating coating for printed circuitry and components. The ultimate performance of the cured film is dependent on process controls used in application of the coating. Cleanliness of the substrate is a major factor in promoting adhesion and preventing under-film corrosion. Assemblies must be clean, oil-free, and dry. For specific recommendations, please request Technical **Bulletin C-115**.

CE-1164 may be applied by spraying, dipping, or brushing. If viscosity reduction is desired, dilutions of 10-20% by weight with **CONAP® S-8** solvent are recommended for most applications. It should be noted that CE-1164 reacts with moisture in the air, and dip tanks should be covered and blanketed with dry air or nitrogen when not in use to prevent waste of material in the tank.

Two coats are recommended for optimum protection. A total cured film thickness of 2 ± 1 mil is recommended. CE-1164 may be re-coated, if desired, after the previous film is tack-free.

CURE: Curing of the film is dependent upon evaporation of solvents and subsequent reaction of the polymer with moisture in the air to effect its cure. The coating will dry tack-free in approximately 20-30 minutes and will cure in 24 hours at room temperature. Optimum physical and electrical properties require a post-cure of 5 to 7 days at room temperature. (An alternate cure of 3 hours at 60°C plus 2-3 days at room temperature may also be used). NOTE: CE-1164 should not be used where humidity conditions are less than 30%.

BULLETIN: C-114(f)

Page 1 of 2

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CONAP® S-8 Solvent is recommended for cleaning equipment and for removing uncured CE-1164.

STORAGE AND HANDLING

Maintain containers at temperatures of 65°-85°F and keep securely closed when not in use; moisture may cause polymerization. To extend shelf life once opened, containers should be flushed with nitrogen (see *CONAP® Dri-Purge*) each time they are opened unless the contents are used within one day.

CONATHANE® CE-1164 has a minimum shelf life of 15 months from date of manufacture when stored in original unopened containers at 65°-85°F.

CAUTION: CE-1164 contains traces of monomeric isocyanate. Use only in well-ventilated areas. Adequate ventilation should be provided during and immediately after application. Avoid breathing of vapors or spray. Prevent skin contact. If contact occurs, wash with soap and water.

Material is flammable. Do not use in presence of open flames or sparks.

AVAILABILITY

CONATHANE®CE-1164 is available in quart, gallon, 5-gallon, and 55-gallon containers.

An EVALUATION KIT is available at a nominal fee.

“CONATHANE” is a registered trademark of Cytec Industries Inc.

See the *Conformal Coatings Comparison Chart* for other similar Cytec Products.

The information presented here is based on carefully conducted laboratory tests and is believed to be accurate. However, results cannot be guaranteed and it is suggested that customers confirm results in their own laboratory before plant tests are made. Nothing contained in this bulletin shall be construed as a recommendation to use any product or process in violation of the claims of any patent now in effect.

NOTICE: Precautionary labels and Materials Safety Data Sheet(s) for all materials referred to, whether the materials are produced by Cytec Industries Inc. or other manufacturers, should be fully read and understood by all supervisory personnel and employees before using. For additional safety and health information, contact Cytec Industries Inc. Purchaser has the responsibility for determining any applicability of and compliance with federal, state, and local laws and/or regulations involving labeling, use, and waste disposal, particularly in making consumer products.