

CONATHANE® CE-1155



DESCRIPTION

CONATHANE CE-1155 is a two-component, solvent-based polyurethane printed circuit board coating designed for use in adverse environments. CONATHANE CE-1155 provides outstanding resistance to moisture and good abrasion resistance.

The cured film is hard and tough and has excellent adhesion to phenolic and epoxyglass laminates. When tested over printed circuit patterns, excellent results are obtained with 1.5 mil films. Defective components can be replaced in coated areas using ordinary repair procedures without degradation or discoloration. Spot recoating can then be accomplished.

CONATHANE CE-1155 may be applied by spray, dip, or brush techniques and will cure at room or elevated temperatures. The cured film is suitable for continuous operation up to 130°C. The system contains a fluorescent dye to aid inspection under ultraviolet light.

CHARACTERISTICS AND PROPERTIES

Table 1 | Product Description

Property	Prepolymer PART A	Curative PART B
Brookfield Viscosity @ 25°C (77°F)	300 cps	70 cps
Specific Gravity @ 25°C (77°F)	1.13	0.96
Color	Clear Amber	Clear Amber
NCO Content, %	10.2 – 10.7	
Solids Content, %	60	64-66
Flashpoint, °F, Seta Flash	81	45
Shelf Life @ 25°C (77°F) (from date of manufacture when stored in the original, unopened containers)	15 months	15 months

Table 2 | Cured Properties

Property	Value
Color	Clear
Abrasion Resistance	Excellent
Chemical and Solvent Resistance	Excellent
Hardness, Sward Rocker Pencil	70 HB
Hydrolytic Stability – After aging 120 days @ 85°C (185°F) and 95% R.H. there was no evidence of discoloration, softening, tackiness, reversion to a liquid state, chalking, blistering, cracking, or loss of adhesion (per MIL-I-46058-C)	
Appearance – No blistering, wrinkling, cracking, or peeling of film after thermal shock or after moisture resistance cycling.	
Flexibility – No cracking or crazing of film in bend over 1/8" mandrel.	
Ruggedization – No cracking or crazing of film nor lifting or breaking of components.	

Fungus Resistance	Non-nutrient per ASTM G21
Inspection – Invisible dye, fluorescent under black light.	

Table 3 | Electrical Properties

Property	Value
Insulation Resistance, ohms (1.52.0 mil film)	
Initial @ 25°C 50% R.H.	$>2.5 \times 10^{13}$
1st Cycle @ 65°C 95% R.H.	3.7×10^{11}
4th Cycle @ 65°C 95% R.H.	1.4×10^{11}
7th Cycle @ 65°C 95% R.H.	8.8×10^{10}
10th Cycle @ 65°C 95% R.H.	6.1×10^{10}
24 hours after 10th Cycle @ 25°C 50% R.H.	6.0×10^{12}
NOTE: The films maintained excellent adhesion to the panels (epoxy-glass) during the ten day humidity cycling tests. No under-film corrosion of the copper conductors was observed.	
Dielectric Withstanding Voltage, 1500 volts, 60 Hz – No flashover or breakdown BEFORE or AFTER thermal shock and moisture exposure.	
Dielectric Constant @ 25°C (77°F) @ 100 Hz	3.50
@ 1 KHz	3.43
@ 1 MHz	3.21
Dissipation Factor @ 25°C (77°F) @ 100 Hz	0.0142
@ 1 KHz	0.0138
@ 1 MHz	0.0162
Volume Resistivity @ 25°C (77°F), ohmcm	1.18×10^{16}
Surface Resistivity @ 25°C (77°F), ohms	5.66×10^{14}
Dielectric Strength, vpm, 0.002" Film	3000
0.022" Film	1045

APPLICATION AND PROCESSING INFORMATION

Mix Ratio by Weight, Prepolymer/Curative (Part A / Part B)	100 / 70
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Mixed Viscosity @ 25°C (77°F)	Brookfield, cps	#4 Ford Cup, sec.
Initial	72	20.5
1 hour	92	24.5
3 hours	172	4.05
6 Hours	432	10.5

Pot Life, 400 Gram Mass @ 25°C (77°F)	6 hours
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Cure: one of the following cure schedules is recommended to obtain optimum properties:

Temperature	TackFree Time	Cure Time
25°C (77°F)	5-6 hours	5-7 days
60°C (140°F)	30-45 minutes	3 hours
100°C (212°F)	10-15 minutes	1 hour

Mix the two components together thoroughly. Air bubbles introduced through mixing will normally dissipate in a few minutes.

Specific substrates to be used in production should be thoroughly evaluated. For example; there may be differences in performance on G10, G11, or other laminates. Cleanliness of the substrates is a major factor in promoting adhesion and preventing under-film corrosion. Boards **MUST** be clean, oil-free, and dry. Request **Technical Bulletin C-115** for specific cleaning recommendations prior to coating.

Because CONATHANE CE-1155 is a solvent-based system, it is not recommended that more than 2 to 2.5 mils of wet film thickness be applied during one application. This will prevent the possibility of solvent entrapment. If more than one coat is desired, allow 2 hours at room temperature or 1/2 hour at 60°C before recoating.

CONATHANE CE-1155 may be applied by spraying, dipping, or brushing. CONATHANE CE-1155 may be thinned with CONAP® S8 solvent to lower the viscosity or to adjust film thickness. Dilutions of 10%-20% are recommended for most applications, although higher dilutions may be used which will result in thinner films per application.

AVAILABILITY

CONATHANE CE-1155 is available in quart, gallon, 5 gallon, and 55gallon drum units. Each unit consists of pre-weighed quantities of Part A and Part B packaged in individual containers. An EVALUATION KIT is available at a nominal fee.

SEE **Conformal Coatings Comparison Chart** for other Cytec conformal coatings.

HANDLING AND STORAGE INSTRUCTIONS

CONATHANE CE-1155 should be stored at temperatures of 65°F85°F in tightly closed containers. If containers are opened and the contents only partially used, the containers should be flushed with dry nitrogen (see CONAP® DriPurge) or dry air before being resealed.

The shelf life of CONATHANE CE-1155 Part A and Part B is 15 months from date of manufacture when stored in the original, unopened containers at the above recommended temperatures.

Note: CONATHANE CE-1155 Part A may crystallize when subjected to lower temperatures. If this occurs, heat the container for 24 hours at 50°C60°C until it clears. Allow to cool to room temperature before use.

CONATHANE CE-1155 Part A contains traces of monomeric isocyanate. Adequate ventilation should be provided during and immediately after application. The use of masks suitable for organic vapors is recommended. Ovens should be vented to the atmosphere. Avoid breathing of vapors or spray and prevent contact with the skin and eyes. If contact does occur, wash with soap and water.

CAUTION

Responsible handling of Cytec Industries Inc. products requires a thorough review of safety, health, and environmental issues prior to use. Review the Material Safety Data Sheets(s) for the specific Cytec Industries Inc. product(s) and container label information before opening containers. Ensure that employee exposure issues are understood, communicated to all workers, and controls are in place to prevent exposures above Permissible Exposure Limits (PELs). Review safety and environmental issues to be certain controls are in place to prevent injury to employees, the community, or the environment, and ensure compliance with all applicable Federal, State, and Local laws and regulations. For assistance in this review process, please call your Cytec Industries Inc. representative or our office noted below.

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