MacDermid Alpha ELECTRONICS SOLUTIONS

TECHNICAL DATA SHEET

Electrolube® PUC

Polyurethane Coating

DESCRIPTION

Electrolube® PUC is a tough, flexible, modified polyurethane conformal coating, specifically designed for the protection of electronic circuitry. **PUC** has excellent mechanical and dielectric properties.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

FEATURES AND BENEFITS

- High abrasion resistance; ideal for applications requiring a robust coating
- Solvent resistant coating even when room temperature cured; also resistant to acids and alkalis
- Excellent adhesion operating over a wide temperature range; protects against thermal shocks
- Can be reworked using specialist removal product, Electrolube CCRG

APPROVALS

Standard	Status
RoHS Compliant (2015/863/EU)	Yes
IPC-CC-830	Meets Requirements
MIL Approval (MIL-1-46058C)	Meets Approval
DEF-STAN 59/47	Meets Approval

PRODUCT INFORMATION

Please contact your customer service representative for information on available package sizes.

PHYSICAL PROPERTIES

Category	Results
Liquid Properties	
Appearance	Clear Purple Liquid
Density @ 20 °C (g/mL) Bulk Aerosol	 0.90 0.87
VOC Content Bulk Aerosol	 63% 66%
Flash Point Bulk Aerosol	 38 °C -4 °C
Solid Content Bulk Aerosol	 37% 34%
Viscosity (mPa s @ 20 °C)	150 to 240
Touch Dry	40 to 45 minutes
Recommended Drying Time 20 °C 65 °C 80 °C	 24 hours 180 minutes 90 minutes
Coverage @ 25µm Bulk Aerosol	 14 m^2/L 5 m^2 (400 mL Aerosol)
Cured Film Coating	
Color	Clear Amber
Operating Temperature Range (°C)	-55 to 130
Flammability	Meets UL94 V-0
Thermal Cycling (MIL-1-46058C)	Meets Approval
Coefficient of Expansion (ppm)	100

Category	Results
Dielectric Strength (kV/mm)	60
Dielectric Constant	3.6
Surface Insulation Resistance	1 x 10^{15} Ω
Dissipation Factor @ 1MHz, 25 °C	0.01
Moisture Resistance (MIL-1-46058C)	Meets Approval

APPLICATION GUIDELINES

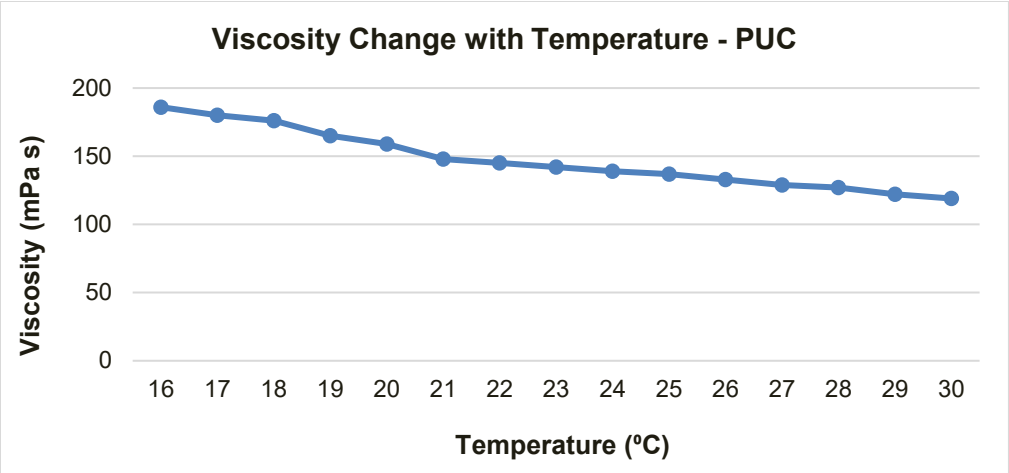
PUC can be sprayed, dipped or brushed. The thickness of the coating depends on the method of application (typically 25 to 75 microns). Temperatures of less than 16 °C or relative humidity in excess of 75% are unsuitable for the application of PUC. As is the case for all solvent based conformal coatings, adequate extraction should be used (refer to MSDS for further information).

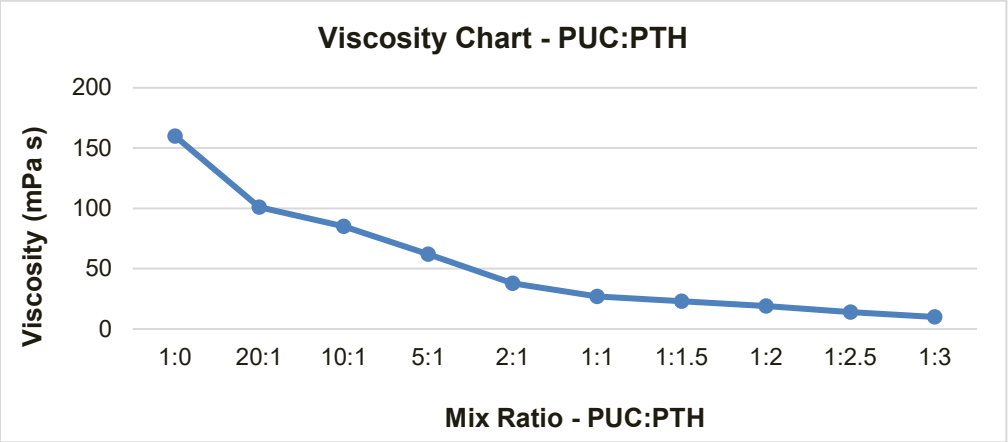
Substrates should be thoroughly cleaned before coating. This is required to ensure that satisfactory adhesion to the substrate is achieved. Also, all flux residues must be removed as they may become corrosive if left on the PCB. We manufacture a range of cleaning products using both hydrocarbon solvent and aqueous technology. Our cleaning products produce results within Military specification.

Spraying – Bulk

PUC needs to be diluted with the appropriate thinners (PTH) before spraying. The optimum viscosity to give coating quality and thickness depends on the spray equipment and conditions, but normally a dilution ratio of 5:1 to 2:1 (PUC:PTH) is required. Suitable spray viscosity is typically 50 to 80mPa s. If bulk coating material has been agitated, allow to stand until air bubbles have dispersed. PUC is suitable both for use in manual spray guns and selective coating equipment.

The selected nozzle should enable a suitable even spray to be applied in addition to suiting the prevailing viscosity. The normal spray gun pressure required is 274 to 413 kPa (40 to 60 lb./sq.in.). After spraying, the boards should be placed in an air-circulating drying cabinet and left to dry.





Spraying - Aerosol

When applying PUC in aerosol form care must be taken to ensure the can is not shaken before use. Shaking the can will introduce excessive air bubbles and will give a poor coating finish. The can should be held at 45° and 200 mm from the substrate to be coated. The valve should then be depressed when the can is pointing slightly off target and moved at about 100 mm/s across the target. To ensure the best coating results are achieved try to use a smooth sweeping motion with small overlap for successive rows.

To ensure penetration of the coating beneath the components and in confined spaces, spray the assembly from all directions to give an even coating. After spraying, the boards should be placed in an air-circulating drying cabinet and left to dry.

TYPICAL PRODUCT APPLICATION

Dip Coating

Ensure that the coating material in the container has been agitated thoroughly and has been allowed to stand for at least 2 hours for all the air bubbles to disperse.

Polyurethane Thinners (PTH) should be used to keep the PUC coating at a suitable viscosity for dipping (150 to 300mPa s @ 20 °C). PTH is added periodically as the solvent evaporates. The viscosity should be checked using a viscosity meter or "flow cup".

The board assemblies should be immersed in the PUC dipping tank in the vertical position, or at an angle as close to the vertical as possible. Connectors should not be immersed in the liquid unless they are very carefully masked. Our Peelable Coating Masks (PCM/PCS) are ideal for this application.

Leave submerged for approximately 10 seconds until the air bubbles have dispersed. The board or boards should then be withdrawn slowly (1 to 2s/mm) so that an even film covers the surface. After withdrawing, the boards should be left to drain over the tank or drip tray until the majority of residual coating has left the surface.

After the draining operation is complete, the boards should be placed in an air-circulating drying cabinet and left to dry.

Brushing

Ensure that the coating material has been agitated thoroughly and has been allowed to settle for at least 2 hours. The coating should be kept at ambient temperature.

When the brushing operation is complete the boards should be placed in an air-circulating drying cabinet and left to dry.

INSPECTION

PUC contains a UV trace, which allows inspection of the PCB after coating to ensure complete and even coverage. The stronger the reflected UV light, the thicker the coating layer is. UV light in the region of 375 nm should be used for inspection.

ADDITIONAL INFORMATION

Shelf Life

Description	Shelf Life
PUC Conformal Coating	
Aerosol	36 Months
Bulk	24 Months
Polyurethane Thinners	36 Months
Conformal Coating Removal Gel	36 Months

SAFETY & WARNING

It is recommended that the company/operator read and review the Safety Data Sheets for the appropriate health and safety warnings before use. **Safety Data Sheets are available.**

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Also read carefully warning and safety information on the Safety Data Sheet. This data sheet contains technical information required for safe and economical operation of this product. READ IT THOROUGHLY PRIOR TO PRODUCT USE . Emergency safety directory assistance: US 1 202 464 2554, Europe + 44 1235 239 670, Asia + 65 3158 1074, Brazil 0800 707 7022 and 0800 172 020, Mexico 01800 002 1400 and (55) 5559 1588