



# Technical Data Sheet

## PUC Polyurethane Coating

### Product Description

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

### Features

- Excellent adhesion to a wide variety of substrates.
- Fluoresces under UV light for ease of inspection.
- Good resistance to a wide variety of chemicals including acids and alkalis.
- Wide operating temperature range.
- Can be soldered through without fear of highly toxic gases being produced (contains no isocyanates).
- Non-corrosive to Cadmium and Zinc plate (contains no phenols).
- Resistant to mould growth.
- Cured coating can be removed with Electrolube Electrolube remover gel (DRG).
- Excellent Dielectric properties
- Excellent mechanical properties including abrasion resistance

<b>Approvals</b>	<b>MIL Approval (MIL-1-46058C): RoHS Compliant (2002/95/EC): IPC-CC-830 DEF-STAN 59/47</b>	<b>Meets approval Yes Meets approval Meets approval</b>
<b>Liquid Properties</b>	Appearance: Specific Gravity (Density) @ 20°C: VOC Content: Flash Point: Solids content: Viscosity @ 20°C: Touch Dry: Recommended Drying Time:  Coverage @ 25µm:	Clear amber liquid 0.90 (Bulk), 0.870 (Aerosol) g/ml 63% (Bulk) 66% (Aerosol) 38°C (Bulk), -4°C (Aerosol) 37% (Bulk), 34% (Aerosol) 150 - 240 Centipoise (Bulk) 40 - 45 minutes 24 hours @ 20°C 180 minutes @ 65°C 90 minutes @ 80°C 13m <sup>2</sup> per litre (Bulk), 5m <sup>2</sup> (400ml Aerosol)
<b>Dry Film Coating</b>	Colour: Operating Temperature Range: Flammability: Thermal Cycling (MIL-1-46058C): Coefficient of Expansion: Dielectric Strength: Dielectric Constant: Insulation Resistance:	Clear amber -55°C to +130°C Meets UL94-HB Meets approval 100ppm 60 kV/mm 3.6 1 x 10 <sup>15</sup> Ohms/cm (DEF-STAN 59/47)

Dissipation Factor @ 1MHz @ 25°C 0.01  
Moisture Resistance (MIL-1-46058C): Meets approval

<u>Packaging</u>	<u>Description</u>	<u>Order Code</u>	<u>Shelf Life</u>
<u>PUC Conformal Coating</u>	400ml Aerosol	PUC400	36 Months
	5 Litre Bulk	PUC05L	24 Months
<u>Polyurethane Thinners</u>	5 Litre	PTH05L	36 Months
<u>Removal Solvent</u>	1 Litre	DRG01L	36 Months

## **Directions For Use**

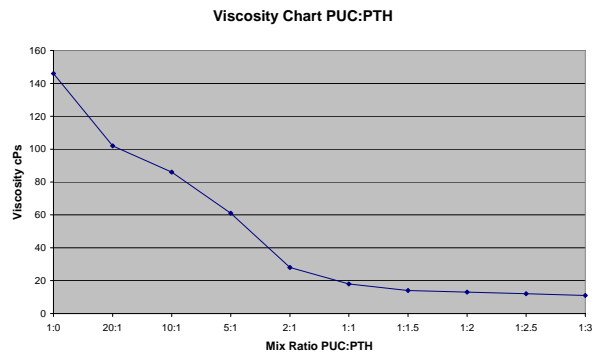
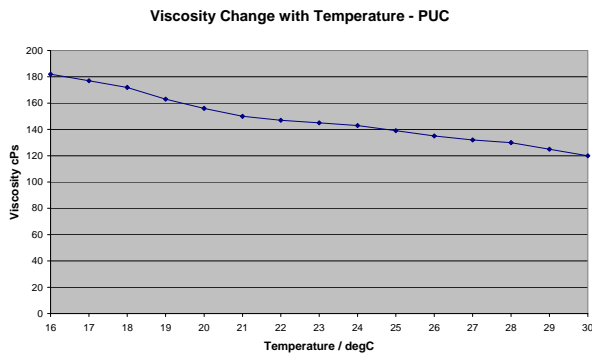
PUC can be sprayed, dipped or brushed. The thickness of the coating depends on the method of application (typically 25 microns). Temperatures of less than 16°C or relative humidity in excess of 75% are unsuitable for the application of PUC. As is the case for all solvent based conformal coatings, adequate 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. Electrolube manufacture a range of cleaning products using both hydrocarbon solvent and aqueous technology. Electrolube 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 2:1 (PUC to PTH) is required. Suitable spray viscosity is typically 50-80 centipoise. 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 - 60 lbs/sq.inch). 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 200mm from the substrate to be coated. The valve should then be depressed when the can is pointing slightly off target and moved at about 100mm / second 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.



## **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 (200 – 300cps @ 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. Electrolube Peelable Coating Mask (PCM) is 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 2 Seconds / 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.

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