Electrolube® APL5050RT

Acrylic Protective Lacquer – Reduced Toluene

DESCRIPTION

Electrolube® APL5050RT is a modified version of APL which provides a flexible, fast drying transparent acrylic conformal coating for the protection of electronic circuitry. **APL5050RT** has been formulated to meet many of today's commercial applications.

READ ENTIRE TECHNICAL BULLETIN BEFORE USING THIS PRODUCT

FEATURES AND BENEFITS

- Acrylic conformal coating; this blend allows for horizontal automated dip coating applications
- Improved flow characteristics; allows coating of difficult or inaccessible areas
- Excellent adhesion to a wide variety of substrates; resistant to mould growth
- Fluoresces under UV light for ease of inspection; can be removed with Electrolube ULS or ACT5050RT

APPROVALS

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

PRODUCT INFORMATION

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

PHYSICAL PROPERTIES

Category	Results
Liquid Properties	
Appearance	Clear Faint Yellow Liquid
Density (g/mL @ 20 °C)	0.877 to 0.892
VOC Content (%)	75.5 to 77.0
Solid Content (%)	23.0 to 24.5
Flash Point (°C)	-2.3
Viscosity (mPa·s @ 20 °C)	42 to 52
Touch Dry (minutes @ 20 °C)	2 to 10
Recommended Curing Time 20 °C 60 °C 90 °C	 24 hours 4 hours 2 hours
Coverage @ 25 µm	10 m^2/L
Cured Film Coating	
Color	Colorless
Operating Temperature Range (°C)	-55 to 125
Recommended Coating Thickness (µm)	25 to 75
Flexibility (IPC-CC-830C)	Meets Requirement
Shore Hardness [ASTM D2240-2005 (R2010)]	A80
Tensile Strength (MPa) (ISO37:2017)	14
Elongation at Break (%) (ISO37:2017)	289
Coefficient of Linear Thermal Expansion (ppm/°C) (ASTM E 831)	126.1
Dielectric Strength (kV/mm) (IEC 60243-1:2013)	50
Surface Resistivity (Ω) (IEC 60093:2014)	5.0×10^{12}

Category	Results
Volume Resistivity (Ω·cm) (IEC 60093:2014)	6.4×10^{15}
Moisture and Insulation Resistance (IPC-CC-830C)	Meets Requirement
Thermal Shock (IPC-CC-830C @ -65 to 125 °C)	Pass 100 cycles
Salt Spray Test (IEC 60068-2-52 @ 35±2 °C, pH: 6.5 to 7.2)	Pass 168 hours
Flammability	UL94 V-0

APPLICATION GUIDELINES

APL5050RT can be sprayed, dipped, or brushed although primarily developed for close work dipping process. 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 APL5050RT. As is the case for all solvent based conformal coatings, adequate extraction should be used (refer to SDS 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. Cleaning products produce results within Military specification.

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. ACT5050RT should be used to keep the APL5050RT coating at a suitable viscosity for dipping (50 to 80 mPa·s @ 20 °C). ACT5050RT is added periodically as the solvent evaporates. The viscosity should be checked using a viscosity meter.

The board assemblies should be immersed in the APL5050RT dipping tank in either the horizontal or vertical position, or at an angel that achieves the best results that suit the assembly configuration. Connectors should not be immersed in the liquid unless they are very carefully masked. Our Peelable Coating Mask (PCM) is ideal for this application. The immersion rate is very important, and tests should be conducted to ensure the optimal procedure for the application. A pneumatic (air or oil) semi-automatic dip coating machine is best suited for this method. Leave submerged for approximately 5 to 10 seconds until the air bubbles have

dispersed. The board or boards should then be withdrawn slowly (0.5 to 2 mm / second) 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.

INSPECTION

APL5050RT 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

Description	Shelf Life
APL5050RT Conformal Coating	48 Months
ACT5050RT Thinners	72 Months
ULS Removal Solvent	72 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.**

CONTACT INFORMATION

www.macdermidalpha.com

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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