

## FSC

### Flexible Silicone Coating

#### DESCRIPTION

**FSC** is a solvent based conformal coating designed to protect printed circuit boards, particularly those exposed to high humidity environments. **FSC** is widely used in the rail industry and is approved to IEC-61086.

READ ENTIRE TECHNICAL BULLETIN BEFORE USING THIS PRODUCT

#### FEATURES AND BENEFITS

- Approved for use in the rail industry, with IEC-61086 approval
- High surface insulation resistance; good resistance to humid environments
- Flexible coating; good resistance to a wide and varying temperature range
- Ideal for applications requiring rework; cured coating can be removed with Electrolube ULS

#### APPROVALS

Standard	Status
RoHS Compliant (2015/863/EU)	Yes
IPC-CC-830	Meets Requirements
UL Approval	UL746-QMJU2 (File: E138403)
MIL Approval (MIL-1-46058C)	Meets Requirements
IEC 61086-2	Meets Approval

#### PRODUCT INFORMATION

For available packaging sizes please visit:

[electrolube.com](http://electrolube.com)

### PHYSICAL PROPERTIES

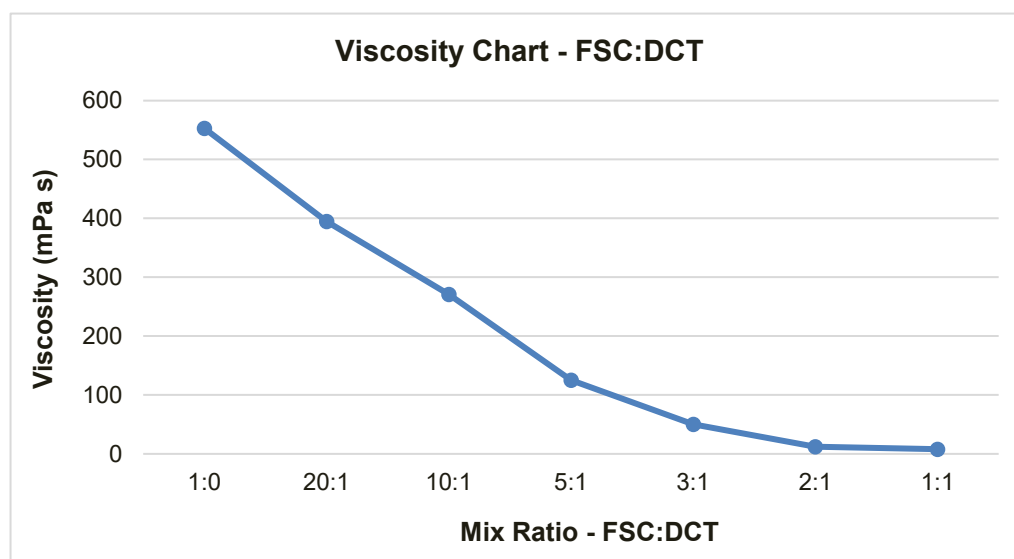
Category	Results
<b>Liquid Properties</b>	
Appearance	Clear Translucent Liquid
Density @ 20 °C (g/mL)	0.96
VOC Content Bulk Aerosol	55% 76%
Flash Point	Approximately 27 °C
Solid Content Bulk Aerosol	45% 24%
Viscosity (mPa s @ 20 °C)	550
Touch Dry Time @ 20 °C	10 to 15 minutes
Recommended Drying Time 20 °C 60 °C 90 °C	24 hours 4 hours 2 hours
Coverage @ 25µm	18 m <sup>2</sup> /L
<b>Dry Film Coating</b>	
Color	Colorless
Operating Temperature Range (°C)	-50 to 125
Flammability	Meets UL94 V-1
Thermal Cycling (IEC 60068-2-14)	Pass
Coefficient of Expansion (ppm)	150
Dielectric Strength (kV/mm)	80
Dielectric Constant	2.7
Insulation Resistance	1 x 10 <sup>20</sup> Ω

Category	Results
Dissipation Factor @ 100MHz, 25 °C	0.001
Moisture Resistance (IEC 60068-2-78)	Pass
Salt Spray (IEC 60068-2-11)	Pass

### APPLICATION GUIDELINES

FSC 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 FSC. 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.



### TYPICAL PRODUCT APPLICATION

#### **Spraying – Bulk**

FSC needs to be diluted with the appropriate thinners (DCT) before spraying. The optimum viscosity to give coating quality and thickness depends on the spray equipment and conditions, but normally a suitable spray viscosity is typically 50-80mPa s. If bulk coating material has been agitated, allow to stand until air bubbles have dispersed. FSC 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 lbssq.in). After spraying, the boards should be placed in an air-circulating drying cabinet and left to dry.

#### **Spraying - Aerosol**

When applying FSC 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/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.

#### **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. Conformal coating thinners (DCT) should be used to keep the FSC coating at a suitable viscosity for dipping. DCT 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 FSC 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 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

FSC 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 375nm should be used for inspection.

### ADDITIONAL INFORMATION

#### Shelf Life:

Description	Shelf Life
FSC Conformal Coating	36 Months
Conformal Coating Thinners	36 Months
Removal Solvent	
Aerosol	36 Months
Bulk	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

To confirm this document is the most recent version, please contact  
**TechnicalSupportTeam@hkw.co.uk**  
[www.electrolube.com](http://www.electrolube.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

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