Technical Data Sheet
July 2020

SC123CF

SC123CF is a flexible, transparent modified silicone conformal coating designed to meet the highest defence standards in both Europe and the United States and is approvable to the British Ministry of Defence (MOD) DEF_STAN 59/47 Issue 4, and Underwriters Laboratories (UL) QMJU2. SC123CF is used in the protection of high-performance electronic circuitry in telecommunication, automotive, aerospace and defence industries.

Key Properties

- Fast room temperature drying
- Contains UV trace and antifungal agents
- UL approved
- Approvable to UK defence standards DEF STAN 59/47 Issue 4
- Excellent adhesion under all climatic conditions including high altitude/decompression to BS.3G100, MIL-STD-810C, RTCA D0160A, ARINC 600
- Resistant to most solvents, lubricants, and cooling fluids
- Excellent resistance to mould growth, ultraviolet light, prolonged exposure to tropical life and salt spray.
- Wide temperature range –70°C to 200°C
- Good dielectric properties at all frequencies to DEF-STAN 59-4/2 Annex C
- Fluorescent under ultraviolet light as an aid to subsequent inspection
- Can be soldered through without fear of toxic gases being produced, e.g. isocyanate
- Non-corrosive to Cadmium and Zinc plate (contains no Phenol)

Description

One-part modified silicone coating

SC123CF is suitable for dip coating, spraying, and brushing and is designed to be resistant to most common solvents and may be soldered through to allow rework. The standard colour of SC123CF is clear.
Other colours are available, but this will detract from the UL certification.

Drying times	Touch dry time	Initial cure time	Full Cure time	Post cure*
Temperature	(minutes)	(minutes)	(hours)	(hours)
30°C	20	60	24	-
60°C	5	20	12	-
80°C	3	5	4	12
100°C	-	-	2	6
120°C	-	-	1	3

* For maximum performance and chemical resistance, a post cure is recommended. In general, the higher the post cure temperature the greater the chemical resistance. The above times will vary dependant on coating thickness, humidity and component density and are given as a guide only. At elevated temperatures the colour of SC123CF may gradually darken. This is a cosmetic effect and does not affect the performance of the coating.

Typical Properties		Result	Unit
Colour		Clear pale straw Black	
Non-volatile Content		38	%
Viscosity @ 20°C		165-215	mPas
Specific gravity @ 20°C		0.95	
UV Lamp Check		Visible blue tint	
Flash point	(Xylene)(bulk) (aerosol)	27 0	°C °C
Dielectric Strength		90	kV/mm
Electrical Resistivity		1 x 10^{15}	ohm.cm
Hardness	Perzos Sward	265 60	Seconds Seconds
Flammability	UL94 – V0 UL94 – V1	25 – 50 55 – 65	Microns Microns
Temperature range		-70 to +200	°C (The coating will darken above 100°C)
Drying time	@ 25°C	<20	Minutes
Coating Thickness	1 coat 2 coats	20 – 30 40 – 60	Micron Micron

Contact: **Technical Support on 01793 823741 or support@robnor.co.uk** for details.

Processing

SC123CF can be dipped, sprayed, or brushed. The thickness of the coating depends on the method of application, but a dip coater normally deposits a film thickness of about 25 microns (single coat). Workshop temperatures of less than 16°C or relative humidity more than 75% are unsuitable for the coating. SC123CF contains a UV trace that allows inspection of the PCB after coating to ensure complete and even coverage. The stronger the reflected light, the thicker the coating layer.

PCB Cleanliness

It is essential that the PCB is thoroughly cleaned and dry before coating to ensure maximum adhesion and coating performance. No clean flux residues must also be removed as they inhibit adhesion of the coating.

Dilution

SC123CF is supplied ready use for dipping or brushing. During extended open times some solvent loss will be experienced and this will increase the viscosity and coating thickness. The solvent loss can be recovered by adding TS106 thinners. The TS106 thinners is normally added at increments of approximately 10% by volume until the desired viscosity is achieved. After blending with TS106 thinners the product should be allowed to stand for approximately 10 minutes or until all bubbles have been dispersed.

Viscosity Control

The viscosity should be checked using a viscosity meter or "flow cup". Another method of controlling the viscosity is by measuring the cured coating thickness on a glass slide.

Dip Coating

The board assemblies should be immersed in the dipping tank in the vertical position, or at an angle as close to vertical as possible. Connectors should not be immersed in the liquid unless they are very carefully masked. Leave the PCB submerged until the air bubbles have dispersed. The board or boards should then be withdrawn VERY SLOWLY so that an even film covers the surface. After withdrawing, the boards should be left to drain over the tank until most 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 for 2 hours at room temperature prior to any heat curing.

Brushing

Gently apply the coating with a good quality brush so as not to leave brush marks and so that the components and wiring are not disturbed. When the brushing operation is complete the boards should be placed in an air-circulating drying cabinet and left to dry for 30 minutes at room temperature prior to heat curing.

Spraying

Bulk material needs to be thinned with TS106 thinners before spraying. The optimum viscosity to give coating quality and thickness depends on the spray equipment and conditions but a starting point could be 2 parts coating to 1-part thinners. Allow bulk material to stand if it has been agitated, until air bubbles have dispersed. SC123CF is suitable for use in manual spray guns and computer controlled airless spray equipment that only coats the required areas of the PCB, eliminating the need for masking. The nozzle of the spray gun requires to be selected to give and even spray to suit the prevailing viscosity of the coating material. The normal spray gun pressure required is 27.6×10^6 kN/m^2 to 34.5×10^6 kN/m^2 (40 –50lbs/sq. inch) To ensure penetration of the coating beneath the components and in confined spaces, spray the assembly from all directions to give an even coating.

Double Coating

Coatings by their nature do not give 100% protection and contamination, poor coating and surface tension on components may lead to microscopic 'pin holes' in the coating. In most cases two coats are not usually required if the board is clean and the coating operation is controlled adequately. Two coats will generally give more protection as the second layer can mask 'pin holes' created in the first coating layer and thus give greater protection. However, if two coats are required, the second coating should be applied within 30 minutes of the first to ensure that the two coats will bond satisfactorily.

Plastic Compatibility

Please note the solvent system in SC123CF may affect components containing polystyrene and polycarbonate.

Approvals	
RoHS compliant	Yes
UL94 V-0	http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/showpage.html?name=QMFZ2.E76072&ccnshorttitle=Plastics+-+Component&objid=1073830268&cfgid=1073741824&version=versionless&parent_id=1073827222&sequence=1
REACH (SVHC concentration)	Refer to SDS

Availability

Available through distribution www.robnor-resinlab.com and sales@robnor.co.uk

Part Numbers

SC123CF/BK/5LT
SC123CF/NC/1LT
SC123CF/NC/5LT

Storage and Shelf Life

Material stored in the original unopened containers under cool dry condition between 10 and 25°C will have a shelf life of 24 months.
Once used the containers must be kept sealed to prevent effects from water, air or contaminants.

Health and Safety

Users should familiarise themselves with the Health and Safety information SC123CF provided by the Company

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The results and information above do not constitute a specification and is given in good faith and without warranty. The information is derived from test/or extrapolations believed to be reliable and is quoted for guidance only. The product is offered for evaluation on the understanding the customer satisfies himself that the product is suitable for the intended application by proper evaluation and testing.

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