

## SC103LV

SC103LV is a flexible, transparent 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. SC103LV is used in the protection of high performance electronic circuitry in telecommunication, automotive, aerospace and defence industries.

### Application

- Dip coating
- Spraying and brushing

### Key Properties

- Fast room temperature drying
- Contains UV trace and antifungal agents
- Resistant to most solvents, lubricants and cooling fluids
- Excellent adhesion under all climatic conditions including high altitude/decompression to BS.3G100, MIL-STD-810C, RTCA D0160A, ARINC 600
- High gloss finish and clarity
- Non-corrosive to Cadmium and Zinc plate (contains no Phenol)

### Description

- One-part system

### Drying times and curing conditions

Temperature	Touch dry time (minutes)	Initial cure time (minutes)	Full Cure time (hours)	Post cure* (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.

### Typical Properties

Test	Result	Unit
Appearance	Clear	(Fluorescent)
Non-volatile Content	36	%
Viscosity (@ 20°C)	100-200	mPa.s
Specific gravity	0.97	
Flash point	27	°C
Dielectric Strength	90	kV/mm
Dielectric Constant (@ 20°C)	2.8	100Hz
Dissipation factor (@ 20°C)	0.0004	100Hz
Volume Resistivity	$1 \times 10^{15}$	ohm.cm
Hardness	20	Shore D
Flammability UL94 – V0	25 – 50 55 – 65	microns microns
Operating Temperature range	-70 to +250	°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

SC103LV 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 in excess of 75% are unsuitable for the coating.

SC103LV 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

SC103LV 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 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 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. SC103LV 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 an even spray to suit the prevailing viscosity of the coating material. The normal spray gun pressure required is  $27.6 \times 10^6 \text{ kN/m}^2$  to  $34.5 \times 10^6 \text{ kN/m}^2$  (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 a greater degree of 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 Compatability

Please note the solvent system in SC103LV may affect components containing polystyrene and polycarbonate.

### Approvals

RoHS compliant	Yes
UL94-V0	No
REACH (SVHC concentration)	0%

## Availability

Available through distribution [www.resins-online.com](http://www.resins-online.com) and [sales@robnor.co.uk](mailto:sales@robnor.co.uk)

## Part Numbers

SC103LV/NC/1LT  
SC103LV/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 three years.

Once used the containers must be kept sealed to prevent effects from water, air or contaminants.

## Health and Safety

Anyone handling SC103LV should protect the eyes against splashes by wearing safety glasses or goggles. If inadequate precautions should allow solvent to reach the eyes, copious rinsing with fresh water should be carried out immediately and continued for not less than 15 minutes, after which examination by a doctor is advisable. Skin contact also should be avoided: polythene gloves are recommended. On account of the halogenated material in SC103LV, workers in an atmosphere containing SC103LV vapour must be instructed to refrain from smoking. In the event of an abnormal increase in the concentration of SC103LV vapour in the workroom atmosphere - e.g., through accidental process spillage - anyone showing signs of drowsiness as a result of this should be removed to a fresh-air zone immediately and first-aid measures should be applied as indicated in the SC103LV Safety Data Sheet.

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## Contact Details

Robnor Resins Limited  
Hunts Rise  
South Marston Park  
Swindon SN3 4TE  
United Kingdom

Tel: +44 (0) 1793 823741

Fax: +44 (0) 1793 827033

Email: [Support@robnor.co.uk](mailto:Support@robnor.co.uk)

Web: [www.robnor.co.uk](http://www.robnor.co.uk)

Buy Online: [www.resins-online.com](http://www.resins-online.com) (UK only)