



### SILICONE COATING

#### **PRODUCT DESCRIPTION**

SVP52 is a flexible, transparent modified silicone resin conformal coating.

SVP52 is designed to be resistant to common solvents. It may be soldered through to allow rework.

It is suitable for dip coating, spraying and brushing.

SVP52 is also available in 100% Ozone Friendly aerosol form.

A black version of SVP52 also exists.

#### **PRODUCT USE**

SVP52 is for use in the protection of electronic circuitry to meet the highest defence and aerospace industry requirements. Common uses include in telecommunications, radar and associated applications.

#### **FEATURES**

- \* Excellent adhesion under all climatic conditions
- \* Resistant to most solvents, lubricants and cooling fluids.
- \* Excellent resistance to mould growth and ultra violet light, and to prolonged exposure to tropical life and salt spray.
- \* Wide temperature range -60°C to 200°C.
- \* High gloss finish and high surface resistivity.
- \* Coating thickness typically being 25 to 50 micron.
- \* Fluorescent under ultra violet light as an aid to subsequent inspection.
- \* Can be soldered through without fear of highly toxic gases being produced.

#### **APPLICATION**

SVP52 can be sprayed, dipped 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 humidities in excess of 75% are unsuitable for the application of SVP52. All PCBs, being composite materials, absorb moisture. If this is not removed, the conformal coating may not protect to its fullest extent. Pre-drying, or better still, vacuum desiccation, will remove most of the moisture.

SVP52 contains a UV trace which allows inspection of the PCB after coating to ensure complete and even coverage. The stronger the reflected light, the thicker the coating layer is.

## **CLEANING**

Boards should be thoroughly cleaned before coating and moisture exempt. This is required to ensure that satisfactory adhesion to the substrate is possible. Also all flux residues must be removed as they become corrosive if left on the PCB. ABchimie manufacture a range of 100% Ozone Friendly cleaning products in both the hydrocarbon solvent and aqueous fields. Please contact ABchimie for further information.

## **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.

SVP52 Thinners (DVS) should be used to keep the SVP52 coating at a suitable viscosity for dipping. DVS 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 SVP52 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. ABchimie Peelable Coating Mask (LDM) is ideal for this application.

Leave submerged for about 1 minute until the air bubbles have dispersed. The board or boards should then be withdrawn VERY SLOWLY (5 to 20 centimetres/mn) 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.

## **SPRAYING**

Bulk SVP52 needs to be thinned with SVP52 Thinners (DVS) 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. If bulk coating material has been agitated, allow to stand until air bubbles have dispersed.

SVP52 is suitable both 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 x 106 kN/m<sup>2</sup> to 34.5 x 106 kN/m<sup>2</sup> (40 50 lbs/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.

After spraying, 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.

Possible to supply SVP52 at a predenined viscosity for selectcoat machine.

## **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. Gently apply the coating with a good quality brush (silk) 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 2 hours at room temperature prior to any heat curing.

## **DRYING TIMES AND CURING CONDITIONS**

The properties gained from SVP52 are dependent on the curing schedule employed. It is essential that the coating is allowed a minimum of two hours drying time at ambient temperature prior to any heat curing.

This is necessary to allow the solvent system to evaporate.

Most commercial users will gain satisfactory performance from this coating by curing for two hours at 90°C after the two hour ambient cure. This will give limited resistance to solvents such as 113 trichlorotrifluoroethane.

If the assemblies are to be used under hazardous conditions of high temperature or be exposed to extremes of thermal cycling, the coating should be cured for 12 hours at ambient followed by 24 hours at 90°C. This curing schedule will give resistance to more aggressive solvents such as 1.1.1 trichloroethane.

It is recommended that the coating be thoroughly cured on circuits which have design areas of very high impedance which require adjustment after application.

## **DOUBLE COATING**

Two coats of SVP52 are not usually required if the curing schedule is followed. However if two coats are required, the second coating should be applied within 15 minutes of the first. This will ensure that the two coats will bond satisfactorily.

## **PLASTIC COMPATIBILITY**

Please note the solvent system for this product contains Xylene which could possibly affect polystyrene and polycarbonates.

## **TYPICAL PROPERTIES**

### **Liquid SVP52**

Colour:	Clear Pale Straw
Non-volatile Content:	35% approx (bulk material)
Viscosity @ 20°C (Zahn 2):	120 - 160 cSt (bulk material)
Viscosity DS65	65 cSt (selectcoat application)
Specific Gravity @ 20°C:	0.97(bulk)
Flash Point:	25°C
Coverage (for 400ml Aerosol):	16000cm <sup>2</sup> @ 25 microns approx

**Cured SVP52 Coating**

Résistance d'isolement ( $\Omega$ )	$10^{12}$ (MIL-I-46058C)
Dielectric withstanding voltage	> 1500V (MIL-I-46058C)
VRT	-25°C +25°C, 100 cycles, palier 15Mn, 5°C/Mn
Thermal chocking	-25°C +50°C, 50 cycles, 15Mn/15Mn
SIR Test 15H	20°C-80°C, 90%RH, sous tension
Moisture resistance(déi water)	10-80°C, 95%RH +-4%, 90 jours
Salt resistance (fog)	NF X41-002, 600 Hours, salt solution 5%
Dielectric Strength:	90kV/mm
Electrical Resistivity	1 x 10 <sup>15</sup> Ohms/cm
Flammability:	Self-extinguishing
Temperature Range:	-60°C to +200°C

**AVAILABLE PACKAGING****SVP52 Conformal Coating**

400ml Aerosol	SVP52 400
1 Litre Bulk	SVP52 01L
5 Litre Bulk	SVP52 05L

**SVP52 Thinners**

5 Litre Bulk	DVS05L
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*All information is given in good faith but without warranty. Properties are given as a guide only and should not be taken as a specification. ABchimie cannot be held responsible for the performance of its products within any application determined by the customer, who must satisfy themselves as to the suitability of the product.*