TECHNICAL DATA SHEET

AVR80 Aug. 2019

ACRYLIC REMOVABLE COATING

PRODUCT DESCRIPTION

AVR80 Conformal Coating is a flexible transparent acrylic coating for the protection of electronic circuitry formulated to meet the highest resistance requirements. AVR80 is designed to be removed with ABchimie SND or DNS (100% Ozone Friendly).

FEATURES

- Excellent adhesion under all climatic conditions,
- Fluoresces under UV light as an aid to inspection,
- Wide temperature range -65°C to +150°C,
- Can be soldered through without fear of highly toxic gases being produced (contains no isocyanates),
- Resistant to mould growth,
- Can be totally removed with ABchimie SND or DNS,
- Compatible with other high specification acrylic coatings,
- Excellent Dielectric properties,
- **UL94V0 approval. (File E308681),**
- **NF EN 61086-2 Approval,**
- **NF EN 4554, NF EN 16101, NF EN 16102 Approvals,**
- **Meets IPC-CC-830 and MIL-I-46058C,**
- **Non toxic version available (AVR80 BA).**

APPLICATION

AVR80 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 AVR80.

AVR80 contains a UV trace which allows inspection of the PCB after coating to ensure complete and even coverage. The stonger the reflected light, the thicker the coating layer is.

Before coating, PCBAs should be clean, dry and without moisture. The CI, being composite materials, absorb moisture. It is important to remove it before coating. A passage in oven for 3 to 4 hours at 60°C is generally sufficient.

After a soldering process, PCBAs can be coat immediately. If there is an intermediate storage up to 48 hours you will have to dry PCBAs.

Homogenization of AVR80 is necessary before use. Trouble or a white veil can also

be observed in the varnish AVR80, then just mix the varnish before use.

Cleaning

AVR80 can be applied on uncleaned PCBs. A cross cut test may to do to check the good adhesion on the PCB.

Cleaning will increase adhesion on the substrat. ABchimie manufacture a range of 100% Ozone Friendly cleaning products in both the hydrocarbon solvent and aqueous fields. All products produce results within the Military specification (<1.56mg NaCL/cm2). 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.

Acrylic Thinners (DVA) should be used to keep the AVR80 coating at a suitable viscosity for dipping. DVA is added periodically as the solvent evaporates. The viscosity should be checked using a viscosity meter or "flow cup" (Zahn 2).

The board assemblies should be immersed in the AVR80 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 cm/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.

Spraying

Bulk AVR80 needs to be thinned with DVA R before spraying. The optimum viscosity to give coating quality and thickness depends on the spray equipment and conditions but a starting point could be 1 parts coating to 1 part thinners. If bulk coating material has been agitated, allow to stand until air bubbles have dispersed.

AVR80 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.

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.

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.

Drying Times and Curing Conditions

AVR80 will be touch dry after 5 - 10 minutes at room temperature and does not require a thermal cure. The full properties of AVR80 will be obtained after a 24 hours at room temperature. This can be accelerated by the use of a thermal cure of 2 hours at 50°C. Heat operation will increase adhesion.

Double Coating

Two coats of AVR80 are not usually required. However if two coats are required, the second coating should be applied after the first coating is dry. This will ensure that the two coats will bond satisfactorily.

TYPICAL PROPERTIES

Liquid AVR80

Colour:	Pale coloured liquid
Non-volatile content:	33% (Bulk)
Viscosity @ 20°C (ASTM D4212):	225-275 cSt (Bulk)
Specific Gravity @ 20°C:	0.93
Drying Time:	<15 min. touch dry
	24 hours optimum properties

Cured AVR80 Coating

Colour:	Transparent (blue reflection)
Dielectric Strength:	50 kV/mm
Insulation resistance (Ω)	10^{12} Ω (*MIL-I-46058C*)
Dielectric withstanding voltage	> 1500V (*MIL-I-46058C*)
Temperature Range:	-65°C to +150°C
Flammability:	Self-extinguishing (UL94V0)
Dissipation Factor (1MHz, 25°C):	0.01
Glass Transition Temperature (Tg)	29°C
Thermal expansion coefficient	130ppm/°C (if T <Tg)
	280ppm/°C (if T >Tg)
CTI	>600 (*DIN EN 60112 on FR4*)
SIR test	20°C-65°C, 95%RH, 7days (*IPC CC 830*
Damp heat test	85°C, 85%RH, 1000h (*IEC 600068-2-67)*
Salt Mist Test	35°C, 5% salt, 48h (*IEC 60068-2-11)*
VRT	-55°C +125°C, 20 cycles, pente 10°C/mn
Thermal chock	-65°C +125°C, 100 cycles, (*IPC CC 830*)
	-40°C +105°C, 1500 cycles (*IEC 60068-2-14*)
Flowing mix gas	OK (*IEC 60068-2-60*)

(4 gas test/ 21d, 75% RH; 25°C; C12: 10ppm; No2: 200; H2S 10ppm; SO2 : 200 ppm)

The conformal coating AVR80 is compliance with REACH and RoHS regulations. If you want a certificate, please contact us (info@abchimie.com).

PACKAGING

AVR 80 Conformal Coating

400ml Aerosol (100% Ozone Friendly)	AVR80 400
5 Litre Bulk	AVR80 05L

Acrylic Thinners

5 Litre	DVA 05L
5 Litre	DVA R 05L

Removal Solvent SND (100% Ozone Friendly, Flammable)

400ml Aerosol	SND 400B
5 Litre Bulk	SND 05L
30 Litre Bulk	SND 30L

No toxic Removal Solvent DNS

5 Litre Bulk	DNS 5L
30 Litre Bulk	DNS 30L

STORAGE AND SHELF LIFE:

Storage:
Storage temperature: 5 to 30°C
A temporary lower temperature during few days (transport) doesn't distort varnish properties.

Date by use: 18 months after the date of manufacturing (12months in aerosol)

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.