AVR80 BA
Non Toxic Acrylic Conformal Coating

FEATURES

AVR80 BA Conformal Coating is a non toxic, flexible, transparent acrylic coating developed for the protection of printed circuit boards from environmental conditions (temperature, moisture, dirt, etc); it has been formulated to meet the highest resistance requirements.

PERFORMANCE & RELIABILITY	• Room temperature dry • Repairable • UV traced • Excellent dielectric properties • Complies with IPC-CC-830 • UL94V0 and NF EN 61086 approved • Meets IPC-CC-830 standard
COST	• High speed process for increase of productivity • Energy savings as no oven curing is mandatory
ENVIRONMENT	• No toxic • No toluene • No gases generated during repair due to absence of isocyanates

TYPICAL PROPERTIES

Properties LIQUID	AVR80 BA Conformal Coating
Nature	Acrylic
Colour	Pale coulored liquid
Non-volatile content %	29-30 (22% in DS 65)
Flash Point	25° C
Viscosity @ 20°C	245 – 300 cSt (bulk)
	65 cSt in DS 65
Specific Gravity @ 20°C	0.93
Touch dry Drying time	< 10 min. For full polymerization 24 hrs

Properties CURED	AVR80 BA Conformal Coating
Colour	Transparent
Dielectric Strength	50 KV/ mm
Electrical resistivity	1 x 10^{14} Ω/ cm
Temperature range	-65°C to 150°C
Flammability	Self-extinguishing UL94VO
Dissipation factor @ 1MHz, 25°C	0.01
Isolation Resistance per MIL-I-46058C	1 x 10^{12} Ω
Rapid Temperature Variation test (-55° to 125° C, 20 cycles, 10°C/ mn)	pass
Thermal Shock per IPC-CC-830 (-55 to 125°C, 100 cycles, 25 mn/ 25 mn	pass
Dielectric withstanding Voltage per MIL-I-46058C	> 1500 V
SIR test (15 Hr/ 20° to 80°C / 90% RH)	pass
Moisture Resistance (10° to 80° C/ 95% RH +-4%/ 90 days)	pass

CHARACTERISTICS

AVR80 BA Conformal Coating provides excellent adhesion under all climatic conditions. It becomes fluorescent under UV light as an aid to inspection. It performs under a wide temperature range from -60°C to 150°C. Can be soldered through without fear of highly toxic gases being produced as it contains no isocyanides.

AVR80 BA Conformal Coating is resistant to mould growth; it is compatible with other high specification acrylic coatings, offers a quick evaporation rate, oven curing is not required, and provides excellent Dielectric properties.

AVR80 BA Conformal Coating is designed to be diluted using **DVA BA acrylic thinner**. Different versions of **AVR80 BA Conformal Coating** can also be supplied already diluted (**AVR80 BA DS65**, **AVR80 BA DS70**, other) to match customer specific viscosity requirements.

AVR80 BA Conformal Coating is designed to be removed with ABchimie SND (100% Ozone Friendly).

Properties	AVR80 BA Conformal Coating
Removable	Yes
Solder-through repairability	Yes
Solvent and chemical resistance	No
Nature	Acrylic
Shelf life	18 months, when stored in the original, unopened container
Transparent	Yes

Properties (cont.)	AVR80 BA Conformal Coating
Environmental	No Toxic
Approvals	UL QMJU2 (File E308681) NF EN 61086-2
Application options	Dipping, spray, brushing, compatible with a large range of dispensing equipments
Recommended coating thickness	25 – 50 microns

APPLICATION

AVR80 BA Conformal Coating can be sprayed, dipped or brushed. The thickness of the coating depends on the method of application. Workshop temperatures of less than 16°C or RH above 75% are unsuitable for the application of AVR80 BA.

Pre-drying or better still, vacuum desiccation of the PCB will remove most of the moisture to assure best conformal coating protection

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

Before coating, PCBs must be clean, dry and without moisture. The PCB being humidity sensor, it is important to remove humidity before coating. A pass in oven for 1 to 2 hours at 80 ° C is generally sufficient.

Due to its toxic free formulation, a light white layer (figure 1) or turbulence could be observed during shelf life. It becomes necessary to homogenize the product before use any method of application. It is sufficient to slowly rotate the drum up and down 5-10 times. Do not shake the drum as this could create bubbles. Figure 2 shows the product after homogenization.

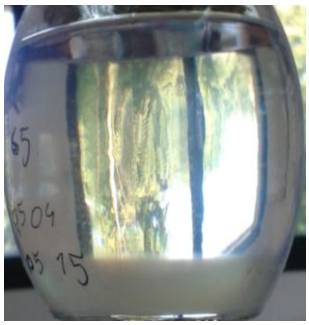

Figure 1

Figure 2

Cleaning

Boards should be thoroughly cleaned before coating. This is required to ensure that satisfactory adhesion of the coating to the substrate is achieved. Solder paste flux residues must also be removed as they may become corrosive when left on the PCBA.

In past years there have been major improvements in flux residues reliability and their compatibility with conformal coating. This improvement in electrochemical corrosion has been achieved using the BONO corrosion test as key technique to assure the chemical residue of the flux is chemically inert after soldering providing a reliable adhesion. **AVR 80 BA Conformal Coating** is compatible with the flux residue of **ECOREL™** solder paste Bono test compliant from Inventec

To clean equipments of **AVR 80 BA Conformal Coating** conformal coating not cured, it is recommended to use cleaning solvent SND.

Dip Coating application

Acrylic Thinners DVA BA should be used to keep the **AVR 80 BA Conformal Coating** at a suitable viscosity for dipping. DVA BA is added periodically as the solvent evaporates. The viscosity should be checked using a viscosity meter or "flow cup" (Zahn 2). Wait until the air bubbles have been fully dispersed before dipping the boards.

The board assemblies should be immersed in the tank in a vertical position, or at an angle as close to the vertical as possible. Connectors should not be immersed in the liquid unless they are carefully masked. ABchimie Peelable Coating Mask (LDM) is ideal for this application.

Leave the board dipped for about 1 minute until the air bubbles have dispersed. The boards should then be very slowly withdrawn (10 to 20 cm/min) 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 (1 to 2 hr at 60°C)

Spray application (by gun or aerosol)

Bulk **AVR80 BA** needs to be thinned with **DVA BA 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. These dilution rates are only for reference as every installation is different. If bulk coating material has been agitated, allow to stand until air bubbles have dispersed. **AVR80 BA** 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 in crossed movements to give an even coating.

The version **AVR80 BA DS** (viscosity adapted to customer demand) has been developed for application in selective process. The coating is delivered in a ready to use viscosity, and it is not required additional dilution.

After spraying, the boards should be placed in an air-circulating drying cabinet and left to dry (1 to 2 hr at 60°C)

Brushing application

AVR80 BA must be diluted with thinner **DVA BA** if needed regarding the desired viscosity. 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 (1 to 2 hr at 60°C)

Double Coating application

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

Dry Times and Curing Conditions

AVR 80 BA Conformal Coating will be touch dry after 15 - 20 minutes at room temperature and does not require a thermal cure. The full polymerization of the coating will be obtained after a 24 hours at room temperature.

For a fast process, it is adviced to use the flash zone (solvent aspiration during approximately 5 min. followed by 10 min in heating tunnel).

This can be accelerated by the use of a thermal cure of 2 hours at 60°C. Heat operation will increase adhesion. All solvents must be evaporated

PACKAGING

AVR80BA
5 l drum container or 400 ml Aerosol bottle (100% ozone friendly)

AVR80BA DS (viscosity adapted to customer demand)
5 l drum container

Acrylic Thinner DVA BA
5 l drum container

Acrylic Thinner DVA BA R (Thinner for spray gun)
5 l drum container

Removal Solvent SND
5 l drum container or 400 ml Aerosol bottle (100% ozone friendly)

STORAGE

18 months from date of manufacture in unopened original container and stored under conditions of 5° to 35°C

HSE

Before using this product, please read the current product material safety data sheet (available through your sales or technical service representative) and the precautionary statement on the product package. Follow all applicable precautions and directions.

AVR 80 BA Conformal Coating complies with REACH and RoHS regulations. A certificate can be provided upon request to this email: info@abchimie.com

This data is based on information that the manufacturer believe to be reliable and offered in good faith. In no event will INVENTEC be responsible for special, incidental and consequential damages. The user is responsible to the Administrative Authorities (regulations for the protection of the Environment) for the conformity of his installation.

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