

How to Apply the Silicone Conformal Coating

Aerosol or Spray Application

Purpose

These instructions show how to apply our Silicone Conformal Coating using an aerosol can or spray gun. It involves multiple coats sprayed on the substrate.

Required Equipment and Supplies

For aerosol application

- Silicone Conformal Coating aerosol (Cat. No. 422B-340G)

For spray gun application

- Silicone Conformal Coating liquid (Cat. No. 422B-1L / 4L / 20L Liquid)
- (Optional) Conformal Coating Thinner (Cat. No. 435-55ML, 435-1L, 435-4L)

For both application methods

- An appropriate organic residue cleaner (Cat. No. 824, 4050, 4050A, 406B, or 435)
- (Optional) Infrared heat lamp or convection oven
- (Optional) UV-A blacklight lamp

For best results

Consider the board cleanliness and environmental conditions.

- Ensure that the printed circuit board is thoroughly clean and dry.
- Optimum at room temperature; allowed application range 10 to 32°C [50 to 90°F]
- Humidity 40% to 50%

ATTENTION! Water and traces of grease, oils, moisture, dust, and other foreign substances can easily lead to coating defects. Use proper organic cleaning solvents to prevent defects. (See supplies for cleaner recommendations.)

ATTENTION! Extreme temperature and/or humidity can cause blushing or other defects. Note that the cure time can change as a function of temperature, humidity, air flow, and other environmental factors.

Safety Issues and Other Precautions

Personal protection equipment

- Safety glasses
- Disposable gloves
- Fumehood or respirator

Tip! Wearing gloves keeps the board clean. This prevents contamination that could produce coating defects or loss of adhesion.

Wash hands thoroughly after use.

Use in the open air, in fume hoods, or in well ventilated area. For short or long term (8 hours) levels of exposures exceeding 100 ppm xylene and ethylbenzene, or 750 ppm acetone, use NIOSH approved respirator with suitable organic vapor cartridges.

Applying Conformal Coating Procedures

Each applied coat using the aerosol adds about 13 μm (0.5 mil) to the final coat thickness. For a minimum thickness of 25 μm (1 mil), apply two coats. For high moisture environments, we recommend six coats to get a final thickness of 75 μm (3 mils).

For spray gun applications, without thinning each 422B liquid coat should give 25 μm (1 mil). Using the optional 1:1 thinning with the Conformal Coating Thinner is equivalent to the aerosol.

Follow the procedure below for best results.

To apply conformal coats up to desired thickness

1. Shake the can vigorously (mix thoroughly), and spray a test pattern. This step ensures good flow quality and helps establish appropriate distance to avoid runs.
2. At a distance of 20 to 25 cm (8 to 10 inches), spray a thin and even coat onto the horizontal board. For best results, use a spray-and-release, side-to-side motion to avoid local paint excesses.
3. Before the next coat, rotate the board 90° to ensure good cross-hatched coverage.
4. Wait at least 2 minutes, and spray another coat. The delay avoids trapping solvent between coats.
5. Apply other coats until desired thickness is achieved. (Go to Step 3)
6. Let dry for 7 minutes (flash off time) at room temperature.

Tip! The spray jet should not impact the surface. Allow enough distance for the jet to turn into a mist.

Attention! If you stop spraying for a period of 3 minutes or more, clear the nozzle.

NOTE: To avoid defects, it is better to apply several thin coats rather than applying one very thick coat.

To clear the nozzle between uses or after you are done

- Invert the aerosol can upside down.
- Press button until clear propellant comes out. This helps prevent residue from blocking the nozzle valve open. Leaks due to dirty valves are difficult to detect and can lead to big messes.



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Silicone Conformal Coating 422B Instructions

To inspect coverage and evenness of coat

- Look at coated board under UV-A light source (blacklight) to check for dark zones or differences in intensity.
- Recoat as necessary.

NOTE: The thicker the coat, the more intense the glow under UV-A blacklight.

To cure at room temperature (24 hours)

At room temperature, the coat dries to the touch in 3-5 minutes. And full cure takes about 24 hours.

To accelerate the curing time (<35 minutes)

- Let the coating dry at room temperature for 5 minutes: no wet spots should be visible.
- Put under infrared lamp or in convection oven at 65°C (149°F) for 15-30 minutes.

ATTENTION! Heating a fresh coat before flash off can trap solvent in the Silicone film. This can cause bubbles and blistering, as well as harming the final coat properties and thickness.

NOTE: We have not tested other time and temperature combinations; other combinations may work.

Discussion & Conclusion

The procedure above provides an estimated thickness of conformal coating. After full cure, measure the actual coat thickness to see if it meets your requirements. Use the measured thickness to establish how many more coats are needed. Modify instructions to meet your specifications and conditions.

Your circuit board assembly is now protected with our Silicone conformal coating.

Contact us if you have any questions, improvement suggestions, or problems with this product or procedure.

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