miller-stephenson

Product Information

www.miller-stephenson.com

MS-472C
Urethane Conformal Coating

Description:

MS-472C is a non-flammable, solvent-based, one-component polyurethane conformal coating that be applied by brush, spray or dip methods. Our coating provides excellent electrical and barrier properties in a thin-film applications on components and PCBs. When fully cured, the applied urethane coating exhibits superior toughness, abrasion resistance, and excellent moisture and chemical resistance. MS-472C will maintain its properties even after long exposure to the elements with minimal color change. Benefits include:

- Superior toughness and abrasion resistance
- Reworkable and room temperature cure
- Solvent and discoloration resistant
- Fluorescent under UV light
- No cracking or crazing with vibration
- Easier to re-work than epoxy-based coatings

Preparation/Application/Cure Schedule

Note: Performance of the MS-472C and its cured film is dependent on process controls used in the application of the coating. Cleanliness of the substrate is a major factor in promoting adhesion and preventing under-film corrosion. Assemblies must be clean, oil-free, and dry. For specific recommendations please contact our Technical Support Team.

Equipment Preparation and Room Conditions:

1. All handling and application equipment coming into contact with the MS-472C must be clean, oil-free and most importantly moisture free. Allow the product to warm up to room temperature prior to use. Failure to do so will affect sprayability and can affect coating performance.

   NOTE: MS-472C uses chlorinated solvents as part of its carrier fluid package, usage of aluminum tools or spray equipment is strongly not recommended and can lead to equipment failure.

2. MS-472C should be applied at room temperature

3. MS-472C should not be applied where relative humidity is below 30% or above 70%. Ideal room conditions are the following: 50-60% humidity and 70– 80 °F.

4. If using compressed air-based spray equipment, then proper filtration of the source air supply should be in place. Failure to have contaminate, oil and moisture free air can affect product performance and final film properties.

5. MS-472C is a ready-to-use product, do not dilute or modify the product prior to use.

Application:

Application should be done in a well-ventilated area. Proper safety equipment and chemical resistant gloves are strongly recommended

1. Coats should be applied wet and allowed to dry on the surface.

   NOTE: When using spray equipment, application of a wet-film is critical to achieve the proper thin-film coatings that achieve the desire performance. Adjust your spray equipment and spray distance so an even uniform, wet coating is applied.

2. Allow coating to dry for 30-35 minutes at room temperature.

3. Apply 1-2 additional medium wet coats with 30-35 minutes between each.

4. A total cured film thickness of 2 ± 1mil is recommended.

5. Once spraying is complete, immediately purge and solvent flush your equipment. This will prevent clogging and premature equipment blockages.

6. Drying and curing of the coating depends upon evaporation of the solvent and subsequent reaction of the polymer with moisture in the air at elevated or room temperatures.

Cure Schedules:

Final film properties can be achieved by either heat acceleration or room temperature.

1. Heat Accelerated: Allow board to air dry for 30-45 minutes prior to placement into the oven.

2. Oven curing must be done at 60-68°C (140-154 °F) at a humidity level of 40-55%. This can be achieved by placing a pan of distilled water in the cure oven one hour before you place the coated assemblies inside.

   NOTE: Failure to provide humidity during the heat accelerated curing program will affect final film performance.

3. Oven cure the coated assemblies for ~ 2hrs.

4. Allow an additional 1 – 2 days at room temperature and 45-55% humidity for final film properties to be developed once removed from the oven.

5. Room Temperature / Air Cure: Allow to cure for 7 days at 70-80 °F at a relative humidity of 55-65%.

6. Coatings will typically be tack-free in 1 – 4 hours depending on the number coats, coating thickness, and room conditions.

NOTE: The cure schedules above are based on time after the assembly reaches the specific temperatures and are recommendations only. The user is responsible for determining the optimal cure conditions for their application.

Clean-up:

Uncured MS-472C can be removed with aromatic, ketones, or glycol ethers. Removal of cured MS-472C will require Miller-Stephenson MS-114D or MS-115 Conformal Coating Stripper.

Storage/Handling:

Product should be kept at 70-77°F in a dry, controlled air environment and away from direct contact with sunlight. Failure to store the product as recommended above may lead to deterioration in product performance. This product is sensitive to moisture and atmospheric humidity. Containers, once opened, should be used immediately or blanketed with dry air, nitrogen, or argon.

General information:

For safe handling information on this product, consult the safety data sheet, (SDS)

Cured Film Electrical Properties: (1.0 - 3.0 mil film)

Dielectric Strength, volts/mil	1200
Dielectric Constant, 10^5 Hz @ 25°C	4.2
Dissipation Factor, 10^5 Hz @ 25°C	0.010
Volume Resistivity (ohm-cm)	2.0×10^{13}

Cured Physical Properties:

Operating Temperature: -67 °F/-55 °C to 230 °F/ 110 °C

Appearance: No blistering, wrinkling, cracking, or peeling of film, after thermal shock and moisture resistance testing.

Flexibility: No cracking of film over a 1/8" diameter mandrel.

Fungus Resistance: Non-nutrient per ASTM G21

Fluorescent: Under ultraviolet light.

VOC Content of MS-472C: 893 g / l

NOTE:

The recommendation made here with and the information set forth with respect to the performance or use of our products are believed, but not warranted to be accurate. The products discussed are sold without warranty, as to fitness or performance, express or implied and upon condition that purchasers shall make their own test to determine suitability of such products for their particular purposes. Likewise, statements concerning the possible uses of our products are not intended as recommendations to use our products in the infringement of any patent.

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