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Product Information

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ShieldSys ™ 470X
High Performance Urethane Conformal Coating

Description:
ShieldSys™ 470X is high-performance solvent-based, one-component polyurethane conformal coating optimized for aerosol spray application. Ideal for coating for circuit assemblies and touch-up work. ShieldSys™ 470X provides excellent electrical and barrier properties in a tough, durable thin-film. Utilization of superior wetting and levelling agents help to correct common spraying issues and provide a more forgiving application process. When fully cured, the applied urethane coating exhibits superior toughness, abrasion resistance, and excellent moisture and chemical resistance. ShieldSys™ 470X will maintain its properties even after long exposure to the elements with minimal color change. Benefits include:

- Superior toughness and abrasion resistance
- Excellent adhesion to Phenolic and Epoxy-glass laminates
- Solvent and discoloration resistant
- Fluorescent under UV light
- No cracking or crazing with vibration
- Easier to re-work than epoxy-based coatings
- Base resin meets MIL-I-46058C for Type UR
- Base resin IPC-CC-830 qualified and UL94 V-0

Preparation/Application/Cure Schedule
Note: Performance of the ShieldSys™ 470X 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.

Aerosol Preparation and Room Conditions:

1. ShieldSys™ 470X should be allowed to equilibrate to room temperature prior to application. Excessive cold or hot aerosol can temperatures will effect the applied coating. This can take up to 48 hours in extremely cold or hot temperatures

2. ShieldSys™ 470X should be applied at room temperature to room temperature surfaces

3. ShieldSys™ 470X 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. Coated surfaces should be clean and contaminate free prior to application. This is critical to promoting proper adhesion and preventing under-film corrosion.

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

1. Can should be light agitated to ensure uniformity.

2. Coats should be applied as wet films and allowed to dry on the surface.

3. Allow coating to dry for 30-35 minutes at room temperature or until tack-free.

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

5. A total cured film thickness of 25 – 70 micron is sufficient for most applications.

6. Once spraying is complete, invert can and press the nozzle for a few seconds. This will prevent clogging and premature blockages.

7. 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 ~ 3hrs.

4. Allow an additional 1 – 2 days at room temperature at 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 cured with 24 hours at room temperature.

7. Final film properties will be achieved between 5 - 7 days

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 ShieldSys™ 470X can be removed with aromatic, ketones, or glycol ethers. Removal of cured ShieldSys™ 470X 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.

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	3500
Dielectric Constant, 1 MHz @ 25°C	2.7
Dissipation Factor, 1 MHz @ 25°C	0.020
Volume Resistivity (ohm-cm)	1.5×10^{15}

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.

LIMITATION OF LIABILITY AND REMEDIES: Manufacturer warrants that, at the time of sale by the Manufacturer, this product is free from defect in material and manufacture. If the product is proved to be defective, the exclusive remedy, at Manufacturer's option, shall be refund of the purchase price or replacement of the defective product, provided written notice of the defect is given no later than 210 days after sale by the Manufacturer. Manufacturer shall not otherwise be liable for loss or damages whether direct, indirect, incidental or consequential, regardless of the legal theory asserted, including negligence and strict liability. **Manufacturer expressly disclaims all implied warranties, including the implied warranty of merchantability and the implied warranty of fitness for a particular purpose. There are no warranties which extend beyond the description on the face hereof.**

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