

ShieldSys™ 462S High Performance Silicone Conformal Coating

Description:

ShieldSys™ 462S is a solvent-based, one-component silicone resin conformal coating designed to provide long-term protection from moisture and atmospheric contaminants. A transparent, soft, flexible coating which offers good dielectric properties and excellent light transmission capabilities (ideal for solar applications). ShieldSys™ 462S has good weatherability excellent resistance to U.V. light, and dirt pick-up. It is also solderable for easy repair. Typically, application include coating of thick film circuitry, porous substrates, and printed circuit boards. ShieldSys™ 462S uses proprietary adhesion promotion and crosslinking forming a durable, abrasion resistance coating. Our carefully selected wetting and levelling additives help to ensure an even, uniform coating utilizing both automated spray, manual spray and dip application methods. This silicone resin meets the requirements of MIL-I-46058C, Type SR, IPC-CC-830 and UL 746E approved. It is also compatible with WEEE and RoHS. Benefits of coating include:

- One-part, moisture cure system
- Tough, Elastoplastic, Abrasion resistance film
- Reworkable and room temperature cure
- Excellent adhesion and flexibility
- Fluorescent under UV light
- No cracking or crazing with vibration
- Can be used with low-solids (no-clean) and no-lead solders

Preparation/Application/Cure Schedule

Note: Performance of the ShieldSys™ 462S 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. All handling and application equipment coming into contact with the ShieldSys™ 462S 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.
2. ShieldSys™ 462S should not be applied where relative humidity is below 30%. Ideal room conditions are the following: 50-60% humidity and 70 - 80 °F.
3. 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.
4. ShieldSys™ 462S 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 desired performance. Adjust your spray equipment and spray distance so an even uniform, wet coating is applied.
2. Once spraying is complete, immediately purge and solvent flush your equipment. This will prevent clogging and premature equipment blockages.
3. 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 or until tack-free prior to placement into the oven.
NOTE: Use of air-circulating oven is strongly recommended
2. A typical cure schedule for a 0.1mm thick coating is 10 minutes at room temperature followed by 10 minutes at 80°C (176°F).
3. If the coating blisters or contains bubbles, allow additional time at room temperature for the solvent to flash off prior to oven cure.
4. Thicker coatings will require longer times at room temperature and longer oven cure time.
5. Room Temperature / Air Cure: Allow board to air dry for 30-45 minutes or until tack-free.
6. A typical cure schedule for a 0.1mm thick coating is 30-45 minutes at room temperature followed for a tack-free coating which can be handled and
7. Allow 72 hours at a minimum of 23°C (73.4 °F) and 50% RH. Higher temperatures and relative humidity will accelerate rate of cure.



Product Information

www.miller-stephenson.com

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™ 462S can be removed with aromatic, ketones, or glycol ethers. Removal of cured ShieldSys 462S will require Miller-Stephenson MS-114D or MS-115 Conformal Coating Stripper.

Storage:

Containers should be kept at 70-77°F and away from direct contact with sunlight.

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	400
Dielectric Constant, 10 ⁵ Hz @ 25°C	2.74
Dissipation Factor, 10 ⁵ Hz @ 25°C	<0.0002
Volume Resistivity (ohm-cm)	5.0 x 10 ¹³

Cured Physical Properties:

Operating Temperature	49°F/-45°C to 392°F/200°C
UL Flammability Classification	94 V-0
Tensile Strength (psi) @ 77°F/25°C	240
Elongation (%) @ 77°F/25°C	74
Durometer Hardness, Shore A, Points	80
Coefficient of Thermal Expansion in./in./ °C	2.1 x 10 ⁻⁴
Thermal Conductivity cal/sec/cm2/cm/C	2.9 x 10 ⁻⁴
Water Absorption 100 hrs. @ 77°F/25°C	0.11%
Fluorescent	Under ultraviolet light.

VOC Content of ShieldSys™ 462S: 333.0 g/l

Disclaimer: The manufacturer shall not be liable for any injury, loss or damage, direct or consequential, arising out of the use or inability to use this product. User shall determine the suitability of the product for his intended use and user assumes all risk and liability in connection therewith.

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