

## MS-460H / 462H Silicone Conformal Coating

### Description

A transparent, soft, flexible coating which offers excellent moisture resistance, good dielectric properties, and excellent light transmission capabilities for solar applications. It has good weatherability and resistance to U.V. light and dirt pick-up. It is also solderable for easy repair. Contains Dowsil™ 1-2577 silicone resin. 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. For applications that require a higher concentration of the resin for a tougher, abrasion resistant coating, ShieldSys™ 462S is recommended. Benefits include:

- One-part moisture cure
- Reworkable and room temperature cure
- Excellent adhesion and flexibility
- Fluoresces under UV light
- No cracking or crazing with vibration

### Preparation/Application/Cure Schedule

Performance of MS-460H and MS-462H and its cured film is dependent on process controls used in 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.

### Preparation and Room Conditions:

1. MS-460H and MS-462H must be applied at room temperature.
2. It should not be applied where relative humidity is below 30%. Ideal room conditions are the following: 50-60% humidity and 70°F-80°F.

### Application

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

### MS-460H Aerosol Application

1. Hold can 6-8 inches away from the assembly and apply a medium-light coating. Coating must be applied wet and allow to dry on the surface of the assembly.

2. Allow coating to dry for 60 minutes at room temperature.
3. Apply 1-2 additional medium wet coats with 60 minutes between each coat.
4. A total cured film thickness of 2+/- 1ml is recommended. Fluorescent when viewed with ultraviolet light.
5. Once spraying is complete, immediately invert can and purge the valve and actuator. This will prevent clogging and premature valve failure.

### MS-462H Bulk Application

Application methods: Spray, brush dip. All handling and application equipment coming into contact with MS-462H must be clean, oil-free and most importantly moisture free.

Note: For Spray Application: If using a compressed air-based spray equipment, then proper filtration of the source air supply should be in place. Failure to have contaminates, oil and moisture free air can affect product performance and final film properties. When using spray equipment, application of a wet-film is critical to achieve the proper thin-film coating that achieve the desire performance. Adjust your spray equipment and spray distance so an even uniform, wet coating is applied. Once spraying is complete, immediately purge and solvent flush the spray equipment. This will prevent clogging and premature equipment blockage.

1. MS-462H should be applied at room temperature.
2. MS-462H is a ready-to-use product. Do not dilute or modify the product prior to use.
3. Coats should be applied wet and allowed to dry on the surface for 60 minutes.
4. Apply 1-2 additional medium wet coats with 60 minutes between each coat.
5. A total cured film thickness of 2+/- 1ml is recommended. Fluorescent when viewed with ultraviolet light.

## Cure Schedule

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 is 30 minutes at 168°F/75°C or 15 minutes at 302°F/150°C.
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. **Room Temperature/Air Cure:** Allow board to air dry for 30-45 minutes or until tack-free.
5. A typical cure schedule is 60 minutes at room temperature.
6. Allow 72 hours at a minimum at 73.4°F/23°C and 50% humidity. Higher temperature and relative humidity will accelerate rate of cure.

## Removal:

Silicone Conformal Coating can be removed with MS-114D or MS-115 Conformal Coating Strippers

## Coverage

MS-460H (Aerosol) will cover approximately 3.8 sq. ft. at a 2 mil thickness per 14 oz. aerosol can. MS-462H (bulk liquid) is available in quart and gallon size containers for dip, brush and/or spray applications. It will cover approximately 62 sq. ft./gallon when applied at a 2 mil thickness.

## Cured Electrical Properties

Dielectric Strength (volts/mil)	400
Dielectric Constant @ 10 <sup>5</sup> Hz	2.74
Dissipation Factor @ 10 <sup>5</sup> Hz	<0.0002
Volume Resistivity (ohm*cm)	5 x 10 <sup>13</sup>

## 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 <sup>-4</sup>
Thermal Conductivity cal/sec/cm <sup>2</sup> /cm/C	2.9 x 10 <sup>-4</sup>
Water Absorption 100 hrs. @ 77°F/25°C 100 hrs. @ 221°F/105°C & 98%RH	0.11% 0.33%

## VOC Content

MS-460H: 467 g/l  
MS-462H: 584 g/l

Miller-Stephenson offers urethane, acrylic and silicone conformal coatings available in aerosol and bulk liquid.

## Safety Data Sheets (SDS) are available upon request.

DowSil™ is a trademark of The Dow Chemical Company.

**LIMITATION OF LIABILITY AND REMEDIES:** Manufacturer warrants that, at the time of shipment 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 one year after the date of shipment 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.**

1512-90