



Chase Humiseal 1B31
Conformal Coating
Technical Datasheet Attached

Conformal coating protects the LED module from moisture and corrosion when water or water vapor enters the fixture, which it ALWAYS does.

This coating is “water resistant”, not “waterproof”. It is designed for applications where water will “sheet” off the LED module but eventually dry. It is not designed for purpose of continuous submersion in water while electrically activated.

Corrosive chemicals exist in nature such as salt, sulfur, chlorine, etc. The chemicals are attracted to and can consume the copper traces on the PCB and the silver contacts inside the LED SMD package.

This coating extends the life by up to 5 times which has been proven by accelerated testing in 50% liquid chlorine/water.

Additional benefits:

- Protects from chemical contamination such as salts on human hands when handled in assembly.
- Not affected by UV from the sun, won't yellow over time.
- Does not trap heat. Low cost silicones can cause junction temperatures to rise and reduce LED life.
- Does not cause chemical reactions with LED phosphor. This can change the LED CCT by up to 200% depending on the thickness of the chemical.
- Reduces lumens by less than 2%. Low cost silicones can reduce lumens by up to 40%

HumiSeal® 1B31 Acrylic Conformal Coating Technical Data Sheet

HumiSeal® 1B31 is a fast drying, single component, acrylic conformal coating that provides excellent moisture and environmental protection for printed circuit assemblies. HumiSeal® 1B31 demonstrates excellent flexibility, fluoresces under UV light for ease of inspection and is easily repaired. HumiSeal® 1B31 coating is MIL-I-46058C qualified, IPC-CC-830 and RoHS Directive 2002/95/EC compliant.

Properties of HumiSeal® 1B31

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| Density, per ASTM D1475 | 0.91 ± 0.02 g/cm ³ |
| Solids Content, % by weight per Fed-Std-141, Meth. 4044 | 35 ± 3 % |
| Viscosity, per Fed-Std-141, Meth. 4287 | 200 ± 15 centipoise |
| VOC | 592 grams/litre |
| Drying Time to Handle, per Fed-Std-141, Meth. 4061 | 10 minutes |
| Recommended Coating Thickness | 25 - 75 microns |
| Recommended Curing Conditions | 24 hrs @ RT or 30 min @ 76°C |
| Time Required to Reach Optimum Properties | 7 days |
| Recommended Thinner (dipping & brushing) | HumiSeal® Thinner 503 |
| Recommended Thinner (spraying) | HumiSeal® Thinner 521, 521EU |
| Recommended Stripper | HumiSeal® Stripper 1080, 1080EU |
| Shelf Life at Room Temperature, DOM | 24 months |
| Thermal Shock, 50 cycles per MIL-I-46058C | -65°C to 125°C |
| Coefficient of Thermal Expansion - TMA | 170 ppm/°C below T _g 340 ppm/°C above T _g |
| Glass Transition Temperature - DSC | 14°C |
| Modulus - DMA | 2000 MPa @ -40°C 1050 MPa @ 20°C 8.5 MPa @ 60°C |
| Flammability, per MIL-I-46058C | Self-Extinguishing |
| Dielectric Withstand Voltage, per MIL-I-46058C | >1500 volts |
| Dielectric Breakdown Voltage, per ASTM D149 | 7500 volts |
| Dielectric Constant, at 1MHz and 25°C per ASTM D150-98 | 2.5 |
| Dissipation Factor, at 1MHz and 25°C per ASTM D150-98 | 0.01 |
| Insulation Resistance, per MIL-I-46058C | 8.0 x 10 ¹⁴ ohms (800TΩ) |
| Moisture Insulation Resistance, per MIL-I-46058C | 6.0 x 10 ¹⁰ ohms (60GΩ) |
| Fungus Resistance, per ASTM G21 | Passes |

Application of HumiSeal® 1B31

Cleanliness of the substrate is of extreme importance for the successful application of a conformal coating. Surfaces must be free of moisture, dirt, wax, grease, flux residues and all other contaminants. Contamination under the coating could cause problems that may lead to assembly failures.

Dipping

Depending on the complexity, density and configuration of components on the assembly, it may be necessary to reduce the viscosity of HumiSeal® 1B31 with HumiSeal® Thinner 503 in order to obtain a uniform film. Once optimum viscosity is determined, a controlled rate of immersion and withdrawal (5-15 cm/min) will further ensure even deposition of the coating and ultimately a uniform film. During the application, evaporation of solvent causes an increase in viscosity that should be adjusted by adding small amounts of HumiSeal® Thinner 503. Viscosity in the dip tank should be checked regularly using a simple measuring device such as a Zahn or Ford viscosity cup.

HumiSeal[®] 1B31 Technical Data Sheet

Spraying

HumiSeal[®] 1B31 can be sprayed using conventional spraying equipment. Spraying should be done in an environment with adequate ventilation so that the vapour and mist are carried away from the operator. The addition of HumiSeal[®] Thinner 521 or 521EU is necessary to ensure a uniform spray pattern resulting in pinhole-free film. The amount of thinner and spray pressure will depend on the specific type of spray equipment used and operator technique. The recommended ratio of HumiSeal[®] 1B31 to HumiSeal[®] Thinner 521 or 521EU is 1:1 by volume; however the ratio may need to be adjusted to obtain a uniform coating.

Brushing

HumiSeal[®] 1B31 may be brushed with a small addition of HumiSeal[®] Thinner 503. Uniformity of the film depends on component density and operator's technique.

Storage

HumiSeal[®] 1B31 should be stored away from excessive heat or cold, in tightly closed containers. HumiSeal[®] products may be stored at temperatures of 0 to 35°C. Prior to use, allow the product to equilibrate for 24 hours at a room temperature of 18 to 32°C.

Caution

Application of HumiSeal[®] Conformal Coatings should be carried out in accordance with local and National Health and Safety regulations.

The solvents in HumiSeal[®] Conformal Coatings are flammable. Material should not be used in presence of open flame or sparks. Use only in well-ventilated areas to avoid inhalation of vapours or spray. Avoid contact with skin and eyes.

Consult MSDS/SDS prior to use.

Contact HumiSeal[®]

HumiSeal North America

201 Zeta Drive
Pittsburgh, PA 15238
USA
Tel: +1 412-828-1500
Toll Free (US only): 866-828-5470
sales@humiseal.com

HumiSeal Technical Center

295 University Avenue
Westwood, MA 02090
USA
Tel: +1 781-332-0734
Fax: +1 781-332-0703
techsupport@humiseal.com

HumiSeal Europe

505 Eskdale Road, IQ Winnersh
Berkshire RG41 5TU
UK
Tel: +44 (0)1189 442 333
Fax: +44 (0)1189 335 799
europesales@chasecorp.com

HumiSeal Europe Support

Tel: +44 (0)1189 442 333
Fax: +44 (0)1189 335 799
europetechsupport@chasecorp.com

HumiSeal S.A.R.L

4/6 Avenue Eiffel
78420 Carrieres-Sur-Seine
France
Tel: +33 (0) 1 30 09 86 86
Fax: +33 (0) 1 30 09 86 87
humiseal.sarl@chasecorp.com

HumiSeal Asian Support

Tel: 852-9451-6434
Fax: 852-2413-6289
asiatechsupport@humiseal.com

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