
# HumiSeal® 1A20
# Urethane Conformal Coating
# Technical Data Sheet

HumiSeal® 1A20 is a single component, chemically resistant, fast curing polyurethane conformal coating. HumiSeal® 1A20 fluoresces under UV light for ease of inspection.

HumiSeal® 1A20 coating meets the following requirements:

- MIL-I-4658C
- IPC-CC-830
- Reach and RoHS Directive EU 2015/863
- Recognised under UL File Number E105698
- Compliant to GB30981-2020

## Properties of HumiSeal® 1A20 Liquid Coating

| | |
|---|---|
| Density, per ASTM D1475 | 1.02 ± 0.02 g/cm$^3$ |
| Solids Content, % by weight per Fed-Std-141, Meth. 4044 | 50 ± 3 % |
| Viscosity, per Fed-Std-141, Meth. 4287 | 100 ± 30 centipoise |
| VOC | 511 grams/litre |
| Drying Time to Handle per Fed-Std-141, Meth. 4061 | 60 minutes |
| Recommended Thinner, if needed (dipping, brushing, spraying) | HumiSeal® Thinner 521, 521EU, 73 |
| Shelf Life at Room Temperature, DOM | 6 months |

## Properties of HumiSeal® 1A20 Cured Coating

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|---|---|
| Recommended Coating Thickness | 25 - 75 microns |
| Recommended Curing Conditions | 24 hrs @ RT or 3 hrs @ 76°C |
| Time Required to Reach Optimum Properties | 7 days |
| Recommended Stripper | HumiSeal® Stripper 1072 |
| Thermal Shock, per MIL-I-46058C | -65°C to 125°C |
| Coefficient of Thermal Expansion - TMA | 515 ppm/°C |
| Glass Transition Temperature - DSC | 71°C |
| Modulus - DMA | 89.6 MPa |
| Flammability, per UL94 | V-0 |
| Dielectric Withstand Voltage, per MIL-I-46058C | >1500 volts |
| Dielectric Constant, at 1MHz and 25°C per ASTM D150-98 | 3.5 |
| Dissipation Factor, at 1MHz and 25°C per ASTM D150-98 | 0.028 |
| Insulation Resistance, per MIL-I-46058C | 3.0 x $10^{14}$ ohms (300TΩ) |
| Moisture Insulation Resistance, per MIL-I-46058C | 4.8 x $10^{10}$ ohms (48GΩ) |
| Fungus Resistance, per ASTM G21 | Passes |
| Resistance to Chemicals | Excellent |

## Application of HumiSeal® 1A20

Conformal coatings can be successfully applied to substrates that have been cleaned prior to coating and also to substrates assembled with low residue, “no clean” assembly materials. Users should perform adequate testing to confirm compatibility between the conformal coating and their particular assembly materials, process conditions and cleanliness level. Please contact HumiSeal for additional information.

Although its formulation allows HumiSeal® 1A20 to be applied using a wide variety of methods, care should be taken to ensure that it is only applied in an environment where the ambient relative humidity is at 60% or less. Application of the coating when the RH is higher than 60% can cause acceleration of the cure reaction, resulting in bubbles in the dried film.

**Dipping**
Depending on the complexity, density and configuration of components on the assembly, it may be necessary to reduce the viscosity of HumiSeal® 1A20 with a suitable HumiSeal® Thinner in order to obtain a uniform film. HumiSeal® Technical Support should be contacted if any further advice on Thinner selection is required. 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 a suitable HumiSeal® Thinner e.g Thinner 521, 521EU or 73. Viscosity in the dip tank should be checked regularly, using a simple measuring device such as a Zahn or Ford viscosity cup.

**Spraying**
HumiSeal® 1A20 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 a suitable HumiSeal® Thinner is necessary to ensure a uniform spray pattern resulting in pinhole-free film. HumiSeal® Technical Support should be contacted if any further advice on Thinner selection is required. The amount of thinner and spray pressure will depend on the specific type of spray equipment used and operator technique.

**Brushing**
HumiSeal® 1A20 may be brushed with a small addition of a suitable HumiSeal® Thinner. Uniformity of the film depends on component density and operator's technique.

**Storage**
HumiSeal® products may be stored at temperatures of 0 to 35°C. HumiSeal® 1A20 should be stored away from sunlight and excessive heat, in tightly closed containers. If coatings are partially used, the container should be purged with dry nitrogen prior to resealing. 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® 1A20 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®

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