

HumiSeal[®] UV20GEL

High Performance Staking and Vibration Protection UV Gel

Technical Data Sheet

HumiSeal[®]UV20GEL is a fast curing, non-sag thixotropic paste which cures to give a flexible urethane acrylate that bonds well to engineered plastics and metal-based substrates. In addition to the UV cure, this material has a secondary moisture cure mechanism to ensure cure in areas shadowed from UV light. HumiSeal[®]UV20GEL is designed for staking and vibration dampening applications, but doubles as a high-performance adhesive for general PCB bonding applications.

| Applications | Features | Substrates |
|-------------------------------|-------------------------------------|--|
| • PET/RPET Clamshell Bond | • RoHS & REACH Compliant | • Polycarbonate |
| • Plastic Bonding | • GB 33372-2020 Compliant | • PET/RPET |
| • Mechanical Shock Protection | • UV Fluorescing | • PVC |
| • Components Staking | • Fast UV Cure | • Various Metals |
| • Vibration Protection | • Sag Resistant / Thixotropic Paste | • PCB components |
| | • Shadow Area Cure | • Compatible with HumiSeal UV Curable Conformal Coatings |

Properties of HumiSeal[®] UV20GEL

Uncured Properties

| Property | Value |
|-------------------|---------------------------|
| Solvent Content | 100% Solids |
| Chemical Class | Acrylated Urethane |
| Appearance | Opaque White |
| Shelf Life, DOM | 6 months |
| Density, g/mL | 1.08 |
| Viscosity* | Non-sag Thixotropic Paste |
| Thixotropic Index | > 5.5 |

*Highly thixotropic material, will decrease in viscosity with increasing shear rate

Cured Properties**

| Property | Value |
|--|----------------------|
| Hardness, Shore A (Initial) | 10 |
| Hardness, Shore A (10 days post cure) | 60 |
| Tensile Strength, MPa [psi] | 4.8 [700] |
| Elongation, % | >400 |
| Moisture Resistance | Excellent |
| Surface Resistivity, Ohm | 1.4*10 ¹² |
| Volume Resistivity, Ohm*cm | 8.5*10 ¹³ |
| Dielectric Withstand Voltage (per MIL-I-46058C) | Pass @ 1500 V |
| Peak Operating Temperature, °C | -40 to 125 |
| Polycarbonate Lap Shear, psi | 200 |
| PVC Lap Shear, psi | 450 |
| Glass Transition Temperature (T _g) per TMA, °C | 31 |
| Comparative Tracking Index (CTI), 3 and 5 mm thick | 600 V |
| Flammability at 3mm*** | UL 94 H-B |

** Values are given as typical values

*** Flammability tested in-house with 3mm thick samples coated on FR4 substrate using conditions similar to UL94 flame chamber and passed based on flame propagation rate

Curing

HumiSeal® UV20GEL is a highly cross-linked material. In order to achieve maximum cross-link density and physical performance, the product must be exposed to the correct spectral output.

HumiSeal®UV20GEL can be cured using arc, microwave, or LED systems. Recommended minimum dosage is given below for an H-bulb and D-bulb arc system. An LED system with wavelength of 395 nm and power > 12W can cure UV20GEL. Because of the variations possible in curing equipment type and configuration, it is strongly recommended that you contact HumiSeal Technical Support to discuss your equipment and process in detail.

HumiSeal® UV20GEL contains a reliable secondary moisture cure mechanism which will cure any shadow areas on the assembly within 7-10 days at ambient moisture.

Table 1: UV Cure Recommendations

Recommendations Based on 5mm thickness

| | | Dose (J/cm ²) | | | Irradiance (W/cm ²) | | |
|-------------|--------------------|---------------------------|-----|------|---------------------------------|------|------|
| | | UVA | UVB | UVC | UVA | UVB | UVC |
| Min. | Arc System; H-bulb | 2.6 | 2.6 | 0.75 | 0.50 | 0.50 | 0.10 |
| Min. | Arc System; D-bulb | 8.3 | 3.4 | 0.80 | 1.50 | 0.50 | 0.10 |
| Min. | LED System; 395 nm | 2.0 (395 nm) | 0 | 0 | 0.18 (395 nm) | 0 | 0 |
| | | | | | | | |
| Max. | Arc System; H-bulb | 6.0 | 5.8 | 2.0 | 0.90 | 0.90 | 0.30 |
| Max. | Arc System; D-bulb | 15.0 | 7.0 | 2.0 | 2.50 | 1.00 | 0.30 |
| Max. | LED System; 395 nm | 10 | 0 | 0 | 0.50 | 0 | 0 |

Storage

HumiSeal® UV20GEL should be stored in a cool, dry, and dark location at a temperature between 1°C to 25°C. Material is sensitive to moisture, UV, and visible light. Consult SDS for safe handling recommendations.

Caution

Application of HumiSeal® UV20GEL should be carried out in accordance with local and National Health and Safety regulations. Use only in well-ventilated areas to avoid inhalation of vapors. Do not spray, atomize or vaporize material. Avoid contact with skin and eyes.

Consult SDS prior to use.

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