HumiSeal® 1R32A-2 Pre-Blended Products
Acrylic Conformal Coatings
Technical Data Sheet

HumiSeal® 1R32A-2 is a fast drying, single component acrylic coating, formulated for improved adhesion to typical substrates, whilst providing excellent moisture and environmental protection for printed circuit assemblies. After complete cure, the properties of HumiSeal® 1R32A-2 Pre-Blends and HumiSeal® 1R32A-2 are comparable.

HumiSeal® 1R32A-2 coating has the following advantages:

- Improved adhesion to typical substrates
- Protection against moisture and dirt
- Easy application with automated systems
- Low moisture vapor permeability
- Low odour in use
- Fluoresces under UV for ease of inspection and is easily repaired.
- Easy removal using HumiSeal Strippers
- Range of Pre-blends available for different application methods without further dilution

HumiSeal® 1R32A-2 coating meets the following requirements:

- Compliant to REACH and RoHS Directive EU 2015/863
- Compliant to IPC-CC-830
- Compliant to China Standard GB30981-2020
- Recognized under UL File Number E105698
- Contains no substances in REACH candidate list of Substances of Very High Concern (SVHC) for authorization.

Typical Properties of HumiSeal® 1R32A-2 Pre-blend Products as Liquid Coating

Product	Viscosity (CPS)	Solids Content (%)	Density (g/cm^3)	VOC (g/L)	Shelf Life (DOM, Months)
1R32A-2	220 ± 30	29 ± 3	0.91 ± 0.02	646.1	24
1R32A-2 PB 65	65 ± 5	21 ± 1.5	0.93 ± 0.02	734.7	24
1R32A-2 PB 53	53 ± 5	19 ± 1	0.93 ± 0.02	753.3	24
1R32A-2/505 PB90	90 ± 5	25 ± 2	0.90 ± 0.02	675.0	12
1R32A-2/505 PB65	65 ± 5	24 ± 2	0.89 ± 0.02	676.4	12
1R32A-2/505 PB40	40 ± 5	21 ± 1	0.88 ± 0.02	695.2	12
1R32A-2/600 PB80	80 ± 5	23 ± 2	0.93 ± 0.02	716.1	12
1R32A-2/600 PB40	40 ± 5	18 ± 2	0.94 ± 0.02	770.8	12
1R32A-2/600 PB23	23 ± 5	14.5 ± 2.5	0.94 ± 0.02	803.7	12
1R32A-2/673S PB150	130 ± 20	27 ± 2	0.92 ± 0.02	671.6	12
1R32A-2/673S PB65	65 ± 5	24 ± 1.5	0.91 ± 0.02	691.6	12
1R32A-2/73 PB40	40 ± 5	19.5 ± 2	0.90 ± 0.02	724.5	12

Typical Properties of HumiSeal® 1R32A-2 Pre-blend Products as Liquid Coating

Drying Time to Handle per ASTM D1640	10 minutes
Recommended Thinner* (dipping & brushing)	HumiSeal® Thinner 503, 505, 73
Recommended Thinner* (spraying)	HumiSeal® Thinner 521, 521EU, 600

Typical Properties of HumiSeal® 1R32A-2 and its Pre-blend Products as Cured Coating

Recommended Coating Thickness	25 - 75 microns
Recommended Curing Conditions	24 hrs @ RT or 2 hrs @ 76°C
Time Required to Reach Optimum Properties	7 days
Recommended Stripper	HumiSeal® Stripper 1080, 1080EU
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 UL 94	V-0
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	2.5
Dissipation Factor, at 1MHz and 25°C, per ASTM D150	0.01
Insulation Resistance, per MIL-I-46058C	8.0×10^{14} ohms (800TΩ)
Moisture Insulation Resistance, per MIL-I-46058C	6.0×10^{10} ohms (60GΩ)
Fungus Resistance, per ASTM G21	Passes

* Other Coating to Thinner combinations may be successful. Please refer to the HumiSeal Coating to Thinner Compatibility Matrix for guidance on compatibility for dipping, brushing, spraying and cleaning.

Application of HumiSeal® 1R32A-2 Pre-blended Products

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” 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.

HumiSeal® 1R32A-2 Pre-Blends are specifically diluted to a viscosity for immediate use. No additional dilution is required. Customers should establish which Pre-Blend is suitable for their equipment and application method before commercial use. HumiSeal® Technical Support should be contacted if any further advice on Pre-Blends and equipment is required.

Dipping

A controlled rate of immersion and withdrawal (5-15 cm/min) will help to provide an 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 in the dip tank by adding small amounts of a recommended HumiSeal® Thinner*. The viscosity in the dip tank should be checked regularly using a simple measuring device such as a Zahn or Ford viscosity cup.

Spraying

HumiSeal® 1R32A-2 Pre-blend Products are available which 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 specific pre-blend and spray pressure will depend on the specific type of spray equipment used and operator technique.

Brushing
HumiSeal® 1R32A-2 Pre-blend Products are available which may be brushed onto surfaces. Uniformity of the film depends on the specific pre-blend chosen and the operator's technique.

Storage
HumiSeal® 1R32A-2 and Pre-Blends 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 SDS prior to use.

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