

HumiSeal® UV40 Gel Technical Data Sheet

HumiSeal® UV40 Gel is a single component, high solids, UV curable gel. A secondary moisture cure mechanism will cure unexposed areas within 7 days at ambient conditions. The gel fluoresces under UV light to allow inspection. HumiSeal® UV40 Gel is in full compliance with the RoHS Directive 2011/65/EU.

Typical Properties of HumiSeal® UV40 Gel

Density	1.06 g/cm ³
Minimum Solids Content	95 %
Recommended Coating Thickness*	Up to 2.0 mm
Recommended UV Cure†	See curing section below
Shelf Life at Room Temperature, DOM	12 months
Dielectric Withstand Voltage, per MIL-I-46058C	>1500 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	4.7 x 10 ¹⁰ ohms (47GΩ)

*Thickness will vary based on application equipment and process. User is responsible for confirming suitability of product for intended application.

†Microwave UV cure ovens equipped with "H" style bulbs recommended

Application of HumiSeal® UV40 Gel

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.

Syringe Application

HumiSeal® UV40 Gel is intended for automated needle dispensing, but may also be applied manually.

Curing

HumiSeal® UV40 Gel is a highly cross linked coating. To achieve maximum cross linking density, the product must be exposed to the correct spectral output. Humiseal has modelled the performance of UV40 Gel using Arc and Microwave based UV curing equipment. The table below outlines the required dosage and irradiance values necessary to render HumiSeal® UV40 Gel tack free post UV exposure with both equipment types. Minimum figures should provide a tack free surface. The maximum recommendation represents highest tested values by Humiseal. The cure recommendations may change as curing technology evolves.

		Dose [^] J/cm ²			Irradiance [^] W/cm ²		
		UVA	UVB	UVC	UVA	UVB	UVC
Min	Arc System	1.5	1.5	0.40	0.50	0.50	0.10
Min	Microwave System	2.0	2.0	0.40	0.70	0.70	0.15
Max	Arc System	2.8	2.7	0.80	0.90	0.80	0.20
Max	Microwave System	3.0	3.0	0.60	1.15	1.15	0.24

[^]Values measured with a Powerpuck II UV radiometer

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Heat is also an important component with UV cure, and different systems produce different heat outputs. Higher heat levels allow UV cure at lower dose/irradiance levels. Consequently, Humiseal recommend that curing is discussed with HumiSeal[®] Technical staff to ensure the exact customer process being used will meet the coating cure requirements. After UV exposure and return to room temperature the coating should be tack free.

HumiSeal[®] UV40 Gel contains a reliable secondary moisture cure mechanism which will cure any shadow areas on the assembly within 7 days at ambient moisture.

HumiSeal[®] UV40 Gel was designed to be cured using a microwave UV oven equipped with an “H” style bulb. Arc systems can cure HumiSeal[®] UV40 Gel however care must be taken during the equipment selection process to ensure minimum dosage and irradiance values obtained will properly cure the coating. 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.

Clean Up

To clean uncured HumiSeal[®] UV40 Gel, non-alcohol based solvents should be used. HumiSeal[®] Thinner 600 is recommended.

Rework

HumiSeal[®] UV40 Gel is a highly cross linked UV cured material. The cured film has a high degree of environmental and chemical resistance and will be more difficult to remove than traditional coatings. Thermal displacement and mechanical abrasion are suitable options for rework of HumiSeal[®] UV40 Gel.

Storage

HumiSeal[®] UV40 Gel is photosensitive. The product should not be exposed to direct sunlight or full spectrum fluorescent lighting. HumiSeal[®] UV40 Gel should be stored at 0 to 35°C, away from excessive heat, in tightly closed opaque containers. Prior to use, allow the product to equilibrate for 24 hours at room temperature. HumiSeal[®] UV40 Gel is a moisture curing material and care should be taken to protect process vessels and partial containers from moisture. Partial containers must be purged with a dry, inert gas such as dry air, nitrogen or argon, before closure, otherwise premature polymerization by atmospheric moisture will occur.

Caution

Application of HumiSeal[®] UV40 Gel should be carried out in accordance with local and National Health and Safety regulations.

The solvents in HumiSeal[®] UV40 Gel 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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ONBoard Solutions

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

Australia / New Zealand
info@onboardsolutions.com
+61 2 9695 1030

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 India
J-154, M.I.D.C. Bhosari
Pune 411 026
Maharashtra
India
Tel: +91 20 66308098
indiatechsupport@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

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

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