Product Information

Techspray UR-101 UV Conformal Coating

Introduction

Techspray UR-101 is a single component, high solids, UV curable, acrylated polyurethane conformal coating that possesses excellent chemical resistance, surface hardness, flexibility and moisture resistance. The material is tack-free after exposure to UV light. A secondary moisture cure mechanism will cure unexposed areas of the coating within 2-3 days at ambient conditions. The coating fluoresces under UV light to allow for coating inspection and can be applied by selective coating equipment. Techspray UR-101 conformal coating is recognized under UL File Number E76307.

Features / Benefits:

- UV curable
- Moisture cure
- Excellent adhesion
- Fast curing
- Non-ozone depleting
- Meets requirements IPC-CC-830
- UL certification, the number is E76307

Typical Properties of Techspray UR-101

Density	1.12±0.05g/cm3	
Minimum Solids Content	96 %	
Viscosity	110±20 centipoise	
Recommended Coating Thickness	40-125 microns	
Recommended UV Cure	See curing section	
Shelf Life at Room Temperature	below 6 months	
Recommended Stripper	Techspray 61211	
Thermal Shock, 50 cycles per MIL-I-46058C	-65°C to 125°C	
Glass Transition Temperature - DSC	57°C	
Coefficient of Thermal Expansion - TMA	93ppm/°C	Below Tg
	187ppm/°C	Above Tg
Modulos DMA	10410MPa	-40ºC
	4580MPa	25ºC
	56MPa	80ºC
Flammability, per UL-94	V-0	
Dielectric Withstand Voltage, per MIL-I-46058C Dielectric	>1500 volts	
Constant, at 1MHz and 25°C per ASTM D150-98 Dielectric	2.9	
Constant, at 10GHz and 22°C per ASTM D2520 Dissipation	4.2	
Factor, at 1MHz and 25°C per ASTM D150-98 Insulation	0.01	
Resistance, per MIL-I-46058C	$9.1x10^{14}$ ohms	
Moisture Insulation Resistance, per MIL-I-46058C Fungus	6.2×10^{10}ohms	
Resistance, per ASTM G21	Pass	
Resistance to Chemicals	Excellent	

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Application of Techspray® UR-101

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 Techspray® for additional information.

Spraying

Techspray® UR-101 can be applied via standard selective coating equipment or by conventional hand spray equipment. The source air used for spraying must be dry (a dry inert gas is highly recommended) to prevent premature curing of the secondary cure mechanism. The spraying should be done with adequate ventilation so that the vapor and mist are carried away from the operator.

Brushing

Techspray® UR-101 may be applied by brush for rework or touch up only. Brush must be cleaned with solvent promptly after use.

Curing

Techspray® UR-101 is a highly cross linked coating. In order to achieve maximum cross linking density, the product must be exposed to the correct spectral output. Techspray has modelled the performance of Techspray® UR-101 using Arc and Microwave based UV curing equipment. The table below outlines the required dosage and irradiance values necessary to render Techspray® UR-101 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 Techspray. The cure recommendations may change as curing technology develops.

		Dose J/cm2*			Irradiance W/cm2*		
		UVA	UVB	UVC	UVA	UVB	UVC
Min	Arc System	1.5	1.5	0.30	0.60	0.60	0.10
Min	Microwave System	2.0	2.0	0.30	0.70	0.70	0.10
Max	Arc System	3.0	2.9	0.70	1.00	0.90	0.30
Max	Microwave System	3.0	3.0	0.50	1.10	1.10	0.30

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, Techspray recommend that curing is discussed with Techspray® 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. Techspray® UR-101 contains a reliable secondary moisture cure mechanism which will cure any shadow areas on the assembly within 7 days at ambient moisture.
Techspray® UR-101 was designed to be cured using a microwave UV oven equipped with an “H” style bulb. Arc systems can cure Techspray® UR-101 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 Techspray technical support to discuss your equipment and process in detail.

Clean Up

To flush equipment and clean uncured Techspray® UR-101, non-alcohol based solvents should be used. Techspray® 61211 is recommended.

Rework

Techspray® UR-101 is a highly cross linked UV cured coating. The cured film has a high degree of environmental and chemical resistance and will be more difficult to remove than traditional conformal coatings. Thermal displacement, mechanical abrasion and, where available, Techspray® 61211 are suitable options for rework of Techspray® UR-101.

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Storage

Techspray® UR-101 is photosensitive. The product should not be exposed to direct sunlight or full spectrum fluorescent lighting. Techspray® UR-101 should be stored away from excessive heat, in tightly closed opaque containers at 0 to 25°C to ensure maximum shelf life is achieved. Prior to use, allow the product to equilibrate for 24 hours at room temperature. Techspray® UR-101 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 Techspray® Conformal Coatings should be carried out in accordance with local and National Health and Safety regulations.

Packaging and Availability

UR-101	1L
UR-101	5L

Environmental Policy

Techspray® is committed to developing products to ensure a safer and cleaner environment. We will continue to meet and sustain the regulations of all federal, state and local government agencies.

Resources

Techspray® products are supported by a global sales, technical and customer services resources.

For additional technical information on this product call the technical sales department at 86 512- 82060808-508, email：chinasales@itwsms.com

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