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ISO 9001 / AS9100 Certified

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TECHNICAL DATA & INFORMATION

UVISTAKE™ 7205LM-PMF
UV Curing, Low Outgassing, Urethane Staking Compound

PRODUCT DESCRIPTION

UVISTAKE 7205LM-PMF is 100% solids, thixotropic, one component, premixed frozen electrically insulating, urethane system designed for the attachment and staking of electrical/electronic components mounted on printed circuit boards. This system provides an excellent combination of flexibility and strength for demanding applications where toughness is required for the management of thermomechanical stresses.

UVISTAKE 7205LM-PMF will become tack free when exposed to the proper UV light radiation. The staking compound will fully post cure in exposed and shaded areas in 14 days at 25°C and 50% relative humidity, as an alternative, the post cure for the staking compound in both exposed and shaded areas may be accelerated with low to moderate heat.

KEY FEATURES AND BENEFITS

- Multicure mechanism for complete cure in shaded areas underneath components
- Good flexibility for reduced stress in the encapsulation of sensitive glass-bodied components
- Meets NASA condensable volatile requirements for high vacuum environments (when WVR is subtracted from TML and material post-cured to allow moisture to fully leave system)
- Highly reversion resistant for good physical stability under high heat and humidity environments
- Excellent adhesion to plastic/metal components and substrates.
- Packaged in syringes for convenient dispensing. Plungers available for hand operation or pneumatic-type syringes for automated dispensing.
- No TDI, no toxic solvents, no free acrylic acid for safety
- Complete companion UV product line available:
    - UVIKOTE 7503LM-PMF - low viscosity, sprayable version for circuit board coatings of ≤3 mils
    - UVIKOTE™7504LM-PMF - 100% solids for thicker applications like back-side solder joint encapsulation
    - UVIKOTE T-100 Thinner - non-photosensitive, non-aromatic
    - UVIKOTE S-100 Stripper - low viscosity removal of cured coating/adhesive for repair operations
    - UVIKOTE S-200 Stripper - thixotropic version for localized removal of cured coating/adhesive

HANDLING INFORMATION

Work Life, after thaw @ 25°C, 10 gm mass, hrs. > 8

Note:

1. To thaw remove syringe from freezer and allow to warm to room temperature. Do not place in oven or microwave to thaw - this will shorten work life. Typical time to thaw 10cc syringe is approximately 15 minutes.
2. Work life adversely affected by heat and humidity.
3. Syringes of UVISTAKE 7205LM-PMF are shipped in dry ice. Upon receipt, transfer frozen syringes to a storage freezer @-40°C or below.

CURE SCHEDULE

U.V. Cure with Conveyor Equipment

3-4 passes under 300 W/in Fusion UV, D-bulb lamp at rate of 2 feet per min. OR 2-3 passes under 300 W/in fusion UV, D-bulb @ rate of 1 foot per min. Bulb height above coating surface should be adjusted to expose the resin system to approximately ~17.5 joules/cm² of radiation per pass at 1 foot/minute and ~12 joules/cm² of radiation per pass at 2 feet/minute. The minimum total amount of joules that needs to be achieved to fully UV-cure this product is ≥36 joules.

U.V. Cure with Spot Cure Equipment

We recommend using an EFOS Novacure or equivalent equipment with similar power generating capabilities. This system is capable of generating the same amount of energy as in cure #1. In some applications, diffusers may be necessary to insure even energy distribution and complete cure. Customer should consult Aptek Laboratories and/or equipment supplier to optimize cure for individual applications.

Postcure

After curing as indicated in steps 1 or 2 above, the staking compound can be postcured as follows:

a) 14 days at 25°C and 50% relative humidity
OR
b) 4 hours at 100°C, or 6 hours at 85°C, or 12 hours at 65°C

Note: 1) The above cure schedules are conservative and should be used as guidelines only. User should determine proper cure schedule based on applications requirements and properties desired.

2) Cured material exposed to excess heat and long term aging may darken in color over time. Please note that this is a natural occurrence and no adverse effects to mechanical or electrical properties take place.

TYPICAL PROPERTIES

(not for specification purposes)

CHARACTERISTICS	7205LM-PMF	TEST METHOD
Color	pale yellow; translucent	Visual
Specific gravity	1.0	ASTM D-1475
Viscosity @ 25°C,cps	thixotropic paste	ASTM D-1824
Flash point, °C	>100°C	TCC
Shelf life @-40°C, or below, factory sealed containers, months	6	

CURED PHYSICAL PROPERTIES	7205LM-PMF	TEST METHOD
Hardness, Durometer A	62	ASTM D-2240
Initial Ultimate Hardness, Durometer A	72	
Glass transition temp., °C	-55	ASTM E831-86
Thermal coefficient of expansion, in/in/C°		
alpha 1	82 x 10^{-6}	
alpha 2,	222 x 10^{-6}	ASTM E831-86
Outgassing @ 10^{-6} Torr		
TML, %	0.80 - 2.50*	ASTM E-595
CVCM, %	0.03	ASTM E-595
Fungus resistance	Non-nutrient	ASTM G-21
Moisture absorption, wt. gain, % 24 hour soak @ 25°C in D.I. water	0.2	

* Note: The range for total mass loss is dependent upon completeness of cure and the amount of moisture involved during the cure. It has been determined that most of the mass lost is in the form of water and CO_2. Little if any polymer is lost during outgassing.

CURED ELECTRICAL PROPERTIES	7205LM-PMF	TEST METHOD
Volume resistivity, @25°C, ohm-cm	5.4 x 10^{14}	ASTM D-257
Dielectric constant, @1KH_z, @25°C	3.5	ASTM D-150
Dissipation factor @1KH_z, @25°C	0.03	ASTM D-150
Dielectric strength, 0.003" thick film, volts/mil	>1500	ASTM D-149
Insulation resistance, ohms	1.0 x 10^{13}	MIL-I-46058C

SAFETY AND FIRST AID

UVISTAKE 7205LM-PMF is 100% solids organic polyol isocyanate/acrylate resin blend usually packaged in syringes and is thus considered safe to use when handled properly. Store at -40°C or below and keep away from flame, sparks, or other sources of ignition. Use in well-ventilated area and avoid breathing vapors. In case of eye contact, flush with fresh clean water for at least 15 minutes; for skin contact, wash thoroughly with soap and water. If swallowed, drink at least one pint of water and call a physician. Refer to Material Safety Data Sheet for more details.

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