



APTEK LABORATORIES, INC.

ISO 9001 / AS9100 Certified

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TECHNICAL DATA & INFORMATION

Preliminary

UVIKOTE™ 7504LM-A/B

UV Curing, Low Modulus, Low Outgassing, Urethane Conformal Encapsulant/Coating

PRODUCT DESCRIPTION

UVIKOTE 75 04LM-A/B is 100% solids, medium viscosity, two component, electrically insulating, transparent, urethane coating designed for the encapsulation and protection of electrical/electronic components mounted on printed circuit boards. This system provides an excellent combination of flexibility and low modulus for demanding applications where the management of thermomechanical stresses is required.

UVIKOTE 7504LM-A/B coating will become tack free when exposed to the proper UV light radiation. The coating will fully post cure in both the exposed and shaded areas in 14 days at 25°C and 50% relative humidity. As an alternative, the post cure for the coating in both exposed and shaded areas may be accelerated with low to moderate heat.

KEY FEATURES AND BENEFITS

- Qualified to Mil-I-46058C and IPC-C-830B
- Multicure mechanism for complete cure in shaded areas underneath components.
- Excellent flexibility and low modulus for reduced stress in the encapsulation of sensitive components (e.g. glass-bodied diodes)
- Meets NASA condensable volatile requirements for high vacuum environments
- Highly reversion resistant for good physical stability under high heat and humidity environments
- Low Tg (-65°C) for excellent low temperature cycling, storage and performance
- Excellent adhesion plastic/metal components and substrates. Adheres well to itself for multicoat and repair applications
- Available in pre-mixed frozen 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
 - UVISTAKE™7205LM-PMF - thixotropic, non-flow adhesive for wire tacking and component staking
 - UVIKOTE T-100 Thinner - non-photosensitive, non-aromatic

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- 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

Mix ratio, parts by weight: 100 (7504LM-A) / 140 (7504LM-B)

Work Life @ 25°C, 25 gm mass, hrs. > 6

Note: Work life adversely affected by heat and humidity.

MIXING

Weigh 100 parts of UVIKOTE 7504LM Part A into a clean dry glass, metal, or plastic container and then add 140 parts of UVIKOTE 7504LM Part B. Machine mix on slow speed or hand stir with glass or metal stirrer until complete and thorough blending is achieved. Care should be taken to avoid any source of moisture contamination or air entrapment during mix.

Notes: For best results vacuum mixture until break to remove any unwanted air bubbles or moisture from system.

CURE SCHEDULE

U.V. Cure with Conveyor Equipment

2 passes under 300 W/in Fusion UV, D-bulb lamp at rate of 1 foot per min. Bulb height above coating surface should be adjusted to expose the coating to approximately ~7.5 joules/cm² of radiation per pass.

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

TYPICAL PROPERTIES
(not for specification purposes)

<u>CHARACTERISTICS</u>	<u>7504LM-A</u>	<u>7504LM-B</u>	<u>TEST METHOD</u>
Color	Yellow	Amber	Visual
Specific gravity	0.97	0.91	ASTM D-1475
Viscosity @ 25°C,cps	34,000	1,100	ASTM D-1824
Flash point, °C	>100°C	>100°C	TCC
Shelf life @ 25°C, months factory sealed containers	3*	3*	

*Shelf life study in progress

<u>CURED PHYSICAL PROPERTIES</u>	<u>7504LM-A/B</u>	<u>TEST METHOD</u>
Hardness, Durometer A	60	ASTM D-2240
Glass transition temp., °C	-65	ASTM E831-86
Thermal coefficient of expansion, in/in/°C		
alpha 1	82×10^{-6}	ASTM E831-86
alpha 2	222×10^{-6}	
Outgassing @ 10^{-6} Torr		
TML, %	0.80	ASTM E-595
CVCM, %	0.05	ASTM E-595
Young's modulus, psi,		
@55°C	450	
@25°C	700	
@-40°C	9500	
Evidence of haze	None	ASTM E-595
Fungus resistance	Non-nutrient	ASTM G-21

<u>CURED ELECTRICAL PROPERTIES</u>	<u>7504LM-A/B</u>	<u>TEST METHOD</u>
Volume resistivity, @25°C, ohm-cm	4.0×10^{14}	ASTM D-257
Dielectric constant, @ 1 KHz, @25°C	3.2	ASTM D-150
Dissipation factor @1KHz, @25°C	0.03	ASTM D-150
Dielectric strength, 0.100" thick film, volts/mil	>450	ASTM D-149

SAFETY AND FIRST AID

UVIKOTE 75 04LM-A is an unfilled organic isocyanate/acrylate resin blend and is considered safe to use when handled properly. Use in well-ventilated area and avoid breathing vapors. In case of eye contact, flush with 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 Data Safety Sheet for more details.

UVIKOTE 7504LM-B is an unfilled polyol/acrylate resin blend that is safe to handle when used properly. It is judged to be low in toxicity and to be rated as a slight skin irritant. Avoid contact with skin and eyes and use in a 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 physician. Refer to Material Safety Data Sheet for more details.

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