Multi-Cure® 9001-E-V3.1
Resilient, Clear Encapsulant

9001-E-V3.1 encapsulant is a performance upgrade of the flexible "instant curing" Dymax 9001 UV/Visible light-curable encapsulant, with improved moisture and thermal cycle resistance, and adhesion to various component substrates. Curing completely in as little as five seconds upon exposure to longwave UV and visible light, this material is environmentally resistant with good ionic and electrical properties. Multi-Cure® 9001-E-V3.1 encapsulant displays excellent adhesion to printed circuit boards and electronic components and is especially well suited for chip-on-board, chip-on-flex, and multi-chip modules. This product is in full compliance with the RoHS Directives 2002/95/EC and 2003/11/EC.

UNCURED PROPERTIES (not specifications)

Solvent Content	None, 100% Solids	
Isocyanate Content	None	
Chemical Class	Modified Urethane	
Appearance	Liquid	
Color	Colorless	
Solubility	Alcohols/Chlorinated Solvents/Ketones	
Viscosity (20 rpm)	4,500 cP (nominal)	ASTM D-2556

CURED PROPERTIES (not specifications)

PHYSICAL

Durometer Hardness	D45 (nominal)	ASTM D-2240
Elongation at Break	150%	ASTM D-638
Tensile at Break	750 psi	ASTM D-638
Modulus of Elasticity	2,500 psi	ASTM D-638
Water Absorption (24 h)	1.0%	ASTM D-570
Boiling Water Absorption (2 h)	2.6%	ASTM D-570
Thermal Limit	150°C	DSTM D-200*
Glass Transition, T_g	40°C	DSTM 256*
Coefficient of Thermal Expansion, α_1	95 x 10^{-6} in/in/°C	ASTM E-831
Coefficient of Thermal Expansion, α_2	180 x 10^{-6} in/in/°C	ASTM E-831
Linear Shrinkage	2%	ASTM D-2556

*DSTM Refers to Dymax Standard Test Method

Thermal Shear Stress (-55ºC to 125ºC) on:

Aluminum	16.4 psi
FR-4	16.9 psi
Gold	17.0 psi
Silicon	17.5 psi
Solder	16.0 psi

Ionic Purity:

Extractable Chloride	<10 ppm
Sodium	<10 ppm
Potassium	<10 ppm
Fluoride	<10 ppm

RELIABILITY

Thermal Shock (0.25 mil wire)	>2,000 cycles (-40°C to 125°C)
Humidity	>1,000 h, 85°C/85% RH

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ELECTRICAL		
Dielectric Strength	500 Volts/Mil	ASTM D-1304
Volume Resistivity	555 x 10^{12} ohm cm	ASTM D-1304
Surface Resistivity	6,300 x 10^{12} ohm	ASTM D-1304
Dissipation Factor, 1 MHz	0.046 (23°C)	ASTM D-1304
Dielectric Constant, 1 MHz	3.27 (23°C)	ASTM D-1304

HOW TO CURE WITH UV/VISIBLE LIGHT & IR:

I. Clear adhesive completely exposed to UV/Visible light:

Exposure Time	UV/Visible Lamp	Light Intensity	Distance	Spectral Output
30 sec	5000-EC	150 mW/cm^2	3 inches	300-500 nm

Multi-Cure® 9001-E-V3.1 encapsulant cures upon exposure to high-intensity UV/Visible light in wavelengths between 300-500 nm in 10-30 seconds. The speed of light cure depends on the thickness of the encapsulant layer and the intensity from the light source.

II. Heat cure shadowed areas following UV exposure:

Heat may be used as a secondary cure mechanism when some encapsulant is shielded from light. Light cure must be done prior to heat cure. Any of the following schedules may be used:

Minimum Adhesive Temperature	Time
110°C (225°F)	60 Minutes
120°C (250°F)	30 Minutes
150°C (300°F)	15 Minutes

DISPENSING AND HANDLING ADHESIVE

Avoid prolonged exposure to ambient fluorescing lighting. Failing to do so may cause the encapsulant to polymerize prematurely.

Multi-Cure® 9001-E-V3.1 encapsulant may be dispensed from a variety of automatic bench-top syringe applicators or other equipment. Skin contact should be avoided. Use barrier hand cream. Wear impervious gloves. Do not wear absorbent gloves. Uncured adhesive may be removed with hand soap and water. Avoid eye contact. Wipe excess adhesive with paper towels and remove residue with isopropanol.

STORAGE AND SHELF LIFE

Store material in a cool, dark place when not in use. Do not expose to UV light or sunlight. Material may polymerize upon prolonged exposure to ambient light. Replace lid immediately after use. This material has a 12-month shelf life from date of shipment, unless otherwise specified, when stored below 32˚C [90˚F] in the original, unopened container. This product does not support fungal or bacterial growth.

CAUTION

For industrial use only. Avoid breathing vapors. Avoid contact with eyes and clothing. In case of skin contact, immediately flush with water for at least 15 minutes; for eyes, get medical attention. Wash clothing before reuse. Keep out of reach of children. Do not take internally. If swallowed, vomiting should be induced at once and a physician called. For specific information, refer to the product's Material Safety Data Sheet before use.