



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

Dymax Multi-Cure[®] 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 RoHS directives 2015/863/EU.

UNCURED PROPERTIES *		
Property	Value	Test Method
Solvent Content	None, 100% Solids	N/A
Chemical Class	Modified Urethane	N/A
Appearance	Liquid	N/A
Color	Colorless	N/A
Soluble in	Organic Solvents	N/A
Viscosity, cP (20 rpm)	4,500 (nominal)	ASTM 2556
Shelf Life @RT (22°C to 25°C) from Date of Manufacture	18 months	N/A

CURED MECHANICAL PROPERTIES *		
Property	Value	Test Method
Durometer Hardness	D45	ASTM D2240
Tensile at Break, MPa [psi]	5 [750]	ASTM D638
Elongation at Break, %	150	ASTM D638
Modulus of Elasticity, MPa [psi]	17 [2500]	ASTM D638
Glass Transition T _g , °C	40	ASTM D5418
CTE _{α1} , μm/m/°C	95	ASTM E831
CTE _{α2} , μm/m/°C	180	ASTM E831

OTHER CURED PROPERTIES *		
Property	Value	Test Method
Boiling Water Absorption, % (2 h)	1.0	ASTM D570
Water Absorption, % (25°C, 24 h)	2.6	ASTM D570
Linear Shrinkage, %	2.0	DSTM 614‡

ELECTRICAL PROPERTIES *		
Property	Value	Test Method
Volume Resistivity, ohm-cm	555 x 10 ¹²	ASTM D257
Surface Resistivity, ohm	6,300 x 10 ¹²	ASTM D257
Dielectric Constant (1 MHz)	3.27	ASTM D150
Dissipation Factor (1 MHz)	0.046	ASTM D150
Dielectric Breakdown Voltage, V/mil	500	ASTM D149

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

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

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

* Not Specifications

N/A Not Applicable

‡ DSTM Refers to Dymax Standard Test Method





CURING GUIDELINES

Cure times based on 0.005" (127 um) thickness

Dymax Curing System (Intensity)	Fixture Time or Belt Speed ^A
5000-EC (150 mW/cm ²)	30 s

Full cure is best determined empirically by curing at different times and intensities, and measuring the corresponding change in cured properties such as tackiness, adhesion, hardness, etc. Full cure is defined as the point at which more light exposure no longer improves cured properties. Higher intensities or longer cures (up to 5x) generally will not degrade Dymax light-curable adhesives.

Dymax recommends that customers employ a safety factor by curing longer and/or at higher intensities than required for full cure. Although Dymax Application Engineering can provide technical support and assist with process development, each customer ultimately must determine and qualify the appropriate curing parameters required for their unique application.

SECONDARY HEAT CURE

Heat can be used as a secondary cure mechanism where the resin cannot be cured with light. The following heat-cure schedule may be used:

Temperature	Time*
110°C [230°F]	60 minutes
120°C [250°F]	30 minutes
150°C [300°F]	15 minutes

DISPENSING

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.

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 shelf life is noted on page 1 of this document, when stored between 10°C (50°F) and 32°C (90°F) in the original, unopened container. This product does not support fungal or bacterial growth.



GENERAL INFORMATION

This product is intended for industrial use only. Keep out of the reach of children. Avoid breathing vapors. Avoid contact with skin, eyes, and clothing. Wear impervious gloves. Repeated or continuous skin contact with uncured material may cause irritation. Remove material from skin with soap and water. Never use organic solvents to remove material from skin and eyes. For more information on the safe handling of this material, please refer to the Safety Data Sheet before use.

The data provided in this document are based on historical testing that Dymax performed under laboratory conditions as they existed at that time, and are for informational purposes only. The data are neither specifications nor guarantees of future performance in a particular application. Dymax does not guarantee that this product's properties are suitable for the user's intended purpose.

Numerous factors—including, without limitation, transport, storage, processing, the material with which the product is used, and the ultimate function or purpose for which the product was obtained—may affect the product's performance and/or may cause the product's actual behavior to deviate from its behavior in the laboratory. None of these factors are within Dymax's control. Conclusions about the behavior of the product under the user's particular conditions, and the product's suitability for a specific purpose, cannot be drawn from the information contained in this document.

It is the user's responsibility to determine (i) whether a product is suitable for the user's particular purpose or application and (ii) whether it is compatible with the user's intended manufacturing process, equipment, and methods. Under no circumstances will Dymax be liable for determining such suitability or compatibility. Before the user sells any item that incorporates Dymax's product, the user shall adequately and repetitively test the item in accordance with the user's procedures and protocols. Unless specifically agreed to in writing, Dymax will have no involvement in, and shall under no circumstances be liable for, such testing.

Dymax makes no warranties, whether express or implied, concerning the merchantability of this product or its fitness for a particular purpose. Nothing in this document should be interpreted as a warranty of any kind. Under no circumstances will Dymax be liable for any injury, loss, expense or incidental or consequential damage of any kind allegedly arising in connection with the user's handling, processing, or use of the product. It is the user's responsibility to adopt appropriate precautions and safeguards to protect persons and property from any risk arising from such handling, processing, or use.

The specific conditions of sale for this product are set forth in Dymax's Conditions of Sale which are available at <https://dymax.com/resources/sales-terms-conditions>. Nothing contained herein shall act as a representation that the product use or application is free from patents owned by Dymax or any others. Nothing contained herein shall act as a grant of license under any Dymax Corporation Patent.

Except as otherwise noted, all trademarks used herein are trademarks of Dymax. The "®" symbol denotes a trademark that is registered in the U.S. Patent and Trademark Office.

The contents of this document are subject to change. Unless specifically agreed to in writing, Dymax shall have no obligation to notify the user about any change to its content.

CONTACT DYMAYX

www.dymax.com

Americas

USA | +1.860.482.1010 | info@dymax.com

Europe

Germany | +49 611.962.7900 | info_de@dymax.com

Ireland | +353 21.237.3016 | info_ie@dymax.com

Asia

Singapore | +65.67522887 | info_ap@dymax.com

Shanghai | +86.21.37285759 | dymaxasia@dymax.com

Shenzhen | +86.755.83485759 | dymaxasia@dymax.com

Hong Kong | +852.2460.7038 | dymaxasia@dymax.com

Korea | +82.31.608.3434 | info_kr@dymax.com