9624

Conformal Coating for LEDs

APPLICATIONS

- Conformal Coating for LED Arrays
- Colorless Encapsulation of COB LEDs
- Instant Forming of Protective Lens for High-Intensity LEDs

FEATURES

- UV Light Cure
- Low Viscosity for Thin Coatings
- Solvent Free
- Isocyanate Free
- Low VOCs

Dymax 9624 is designed for rapid, room-temperature coating of LED arrays. Dymax materials contain no nonreactive solvents and cure upon exposure to light. Their ability to cure in seconds enables faster processing, greater output, and lower processing costs. When cured with Dymax light-curing spot lamps, focused-beam lamps, or flood lamps, they deliver optimum speed and performance for LED protection. Dymax lamps offer the ideal balance of UV and visible light for the fastest, deepest cures. This product is in full compliance with RoHS directives 2015/863/EU.

UNCURED PROPERTIES *

Property	Value	Test Method
Solvent Content	No Nonreactive Solvents	N/A
Chemical Class	Acrylated Urethane	N/A
Appearance	Colorless Transparent Liquid	N/A
Soluble in	Organic Solvents	N/A
Density, g/ml	1.08	ASTM D1875
Viscosity, cP	120 nominal	ASTM D1084
Shelf Life at Recommended Conditions from Date of Manufacture	12 months	N/A

CURED MECHANICAL PROPERTIES *

Property	Value	Test Method
Durometer Hardness	D75	ASTM D2240
Tensile at Break, MPa [psi]	9.7 [1,413]	ASTM D638
Elongation at Break, %	1.5	ASTM D638
Modulus of Elasticity, MPa [psi]	867 [125,742]	ASTM D638

OTHER CURED PROPERTIES *

Property	Value	Test Method
Boiling Water Absorption, % (2 hr)	4.8	ASTM D570
Water Absorption, % (25°C, 24 hr)	2.0	ASTM D570
Linear Shrinkage, %	1.0	ASTM D2566
Refractive Index (20°C)	1.51	ASTM D542
Glass Transition Tg, °C	87	ASTM D5418
CTEa1, mm/m/°C	91	ASTM E831
CTEa2, mm/m/°C	206	ASTM E831

ELECTRICAL PROPERTIES *

Property	Value	Test Method
Dielectric Constant (1 MHz)	7.36	ASTM D150
Dissipation Factor (1 MHz)	0.0933	ASTM D150
Dielectric Withstand Voltage (kV/mm)	29.4	ASTM D149
Surface Resistivity, ohm	1.25E+14	ASTM D257
Volume Resistivity, ohm-cm	4.57E+11	ASTM D257

* Not Specifications

N/A Not Applicable

‡ DSTM Refers to Dymax Standard Test Method

Technical Data Collected Feb 2021 Rev.09/16/2025

ADHESION	
Substrate	**Recommendation**
Leadframe	✔
Ceramic	✔
PCB	✔
Flex	✔
Silicon	✔

✔ Recommended o Limited Applications
st Requires Surface Treatment (e.g. plasma, corona treatment, etc.)

OPTICAL PROPERTIES *		
Property	**Value**	**Test Method**
Yellowness (b*) initial (5 mil thick)	1	DSTM 612‡
Yellowness (b*) after 140°C, 300 h (5 mil thick)	1	DSTM 612‡
Yellowness (b*) after 300 hr exposure to 2 mW/cm2 UV (5 mil thick)	1	DSTM 612‡

CURING GUIDELINES

UV-curing guidelines for 9624 at 0.003 in (0.076 mm)

Dymax Curing System (Intensity)	Cure Time
5000-EC (200 mW/cm^2)[B]	31 sec
BlueWave® 200 (10 W/cm^2)[B]	5 sec
UVCS Conveyor with Fusion F300S (2.5 W/cm^2)[C]	2.7 m/min [9 ft/min]

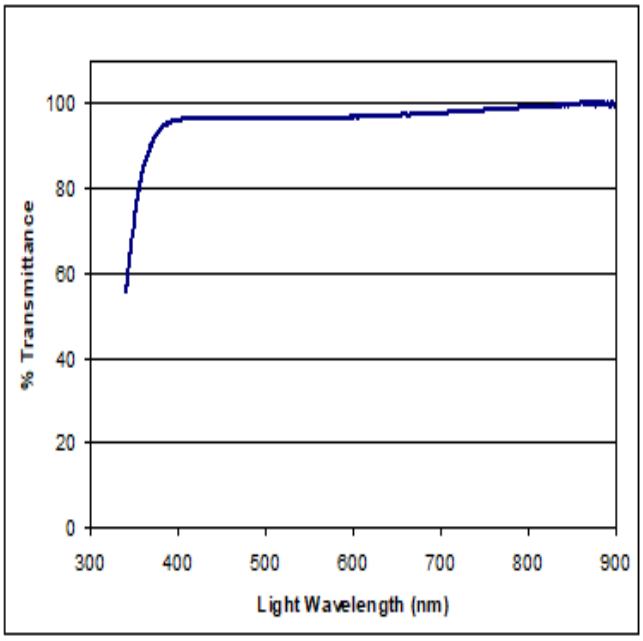
A Intensity was measured over the UVA range (320-395 nm) using a Dymax ACCU-CAL™ 50 Radiometer.B Intensity was measured over the UVA range (320-395 nm) using a Dymax ACCU-CAL™ 160 Radiometer.

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 materials.

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.

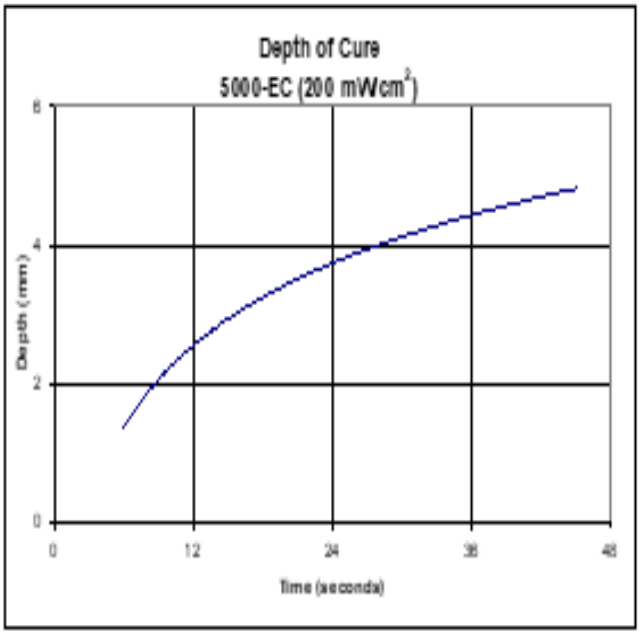
LIGHT TRANSMITTANCE

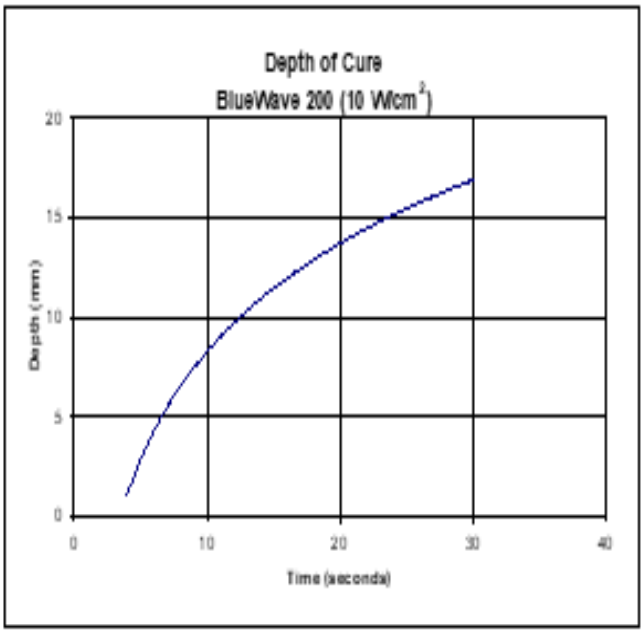
Measured at 0.03 mm [0.001 in] per DSTM-501



DEPTH OF CURE

The graphs below show the increase in depth of cure as a function of exposure time with two different lamps at different intensities. A 9.5 mm [0.37 in] diameter specimen was cured in a polypropylene mold and cooled to room temperature. It was then released from the mold and the cure depth was measured.





OPTIMIZING PERFORMANCE AND HANDLING

1. This product cures with exposure to UV and visible light. Exposure to ambient and artificial light should be kept to a minimum before curing. Dispensing components including needles and fluid lines should be 100% light blocking, not just UV blocking.
2. All surfaces in contact with the material should be clean and free from flux residue, grease, mold release, or other contaminants prior to dispensing the material.
3. Cure speed is dependent upon many variables, including lamp intensity, distance from the light source, required depth of cure, thickness, and percent light transmission of components between the material and light source.
4. Oxygen in the atmosphere may inhibit surface cure. Surfaces exposed to air may require high-intensity (>100 mW/cm^2) UV light to produce a dry surface cure. Flooding the curing area with an inert gas, such as nitrogen, can also reduce the effects of oxygen inhibition.
5. Parts should be allowed to cool after cure before testing and subjecting to any loads or electrical testing.
6. Light curing generally produces some heat. If necessary, cooling fans can be placed in the curing area to reduce the heating effect on components.
7. At the point of curing, an air exhaust system is recommended to dissipate any heat and vapors formed during the curing process.

DISPENSING SUPPORT

The Dymax Application Engineering team is ready to discuss your application requirements to provide the most appropriate dispensing and/or spraying solution. Visit our current dispensing equipment portfolio here or consult our global contact phone numbers and online chat feature (available in North America only) during normal business hours for instant support.

STORAGE AND SHELF LIFE

Store the material in a cool, dark place when not in use. Do not expose to light. This product may polymerize upon prolonged exposure to ambient and artificial light. Keep covered when not in use. This material shelf life noted on page 1 of this document, when stored between 10°C (50°F) and 32°C (90°F) in the original, unopened container.

CLEANUP

Uncured material may be removed from dispensing components and parts with organic solvents. Cured material will be impervious to many solvents and difficult to remove. Cleanup of cured material may require mechanical methods such as ultrasonic bath, water jet, vacuum tweezers, air knife and/or warming to aid in the removal.

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.

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