OP-60

Precision Positioning Optical Adhesive

APPLICATIONS

- Optical Alignment Where Minimal or No Movement is Required

FEATURES

- High-Strength Positioning Adhesive
- Low Outgassing
- Low Shrinkage
- Low Moisture Absorption
- Opaque
- Heat-Cycle Stable
- Non-Movement During Cure or Thermal Excursions
- Complete Cure in Seconds

RECOMMENDED SUBSTRATES

- Glass
- Metal
- Ceramic
- FR-4
- Polycarbonate

Dymax OP-60 is a low-shrinkage, low-outgassing, low-CTE adhesive designed for the precise positioning of lenses, prisms, and other optical components. OP-60 cures by exposure to ultraviolet and/or visible cure light. Dymax high-performance optical adhesives cure upon exposure to UV or visible light in seconds. Because of their solvent-free and rapid-cure features, they increase productivity, lower assembly cost and enhance worker safety. When cured with Dymax spot, beam, or flood lamps, they deliver optimum speed and performance for a variety of optical applications. 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
Appearance	Light Yellow Paste	N/A
Viscosity, cP	150,000 (nominal)	ASTM D2556
Chemical Class	Acrylated Urethane	N/A
Soluble in	Organic Solvents	N/A
Density, g/ml	1.59	ASTM D1875
Shelf Life at Recommended Conditions from Date of Manufacture	18 months	N/A

ELECTRICAL PROPERTIES

Property	Value	Test Method
Dielectric Constant, 1 MHz	4.6	ASTM D150
Dissipation Factor, 1 MHz	0.02	ASTM D150
Volume Resistivity, ohm-cm	7.64 x 10E13	ASTM D257
Dielectric Strength, V/mil	600	ASTM D149

CURED MECHANICAL PROPERTIES

Property	Value	Test Method
Linear Shrinkage During Cure, %	0.8	ASTM D2566
Durometer Hardness	D80	ASTM D2240
Elongation at Break, %	2.4	ASTM D638
Tensile at Break, MPa [psi]	33.8 [4900]	ASTM D638
Modulus of Elasticity, MPa [psi]	1,006 [146,000]	ASTM D638
Water Absorption (24h), %	2.8	ASTM D570
CTEa1, mm/m/°C	67	ASTM D696
CTEa2, mm/m/°C	88	ASTM D696
Glass Transition Tg, °C	114	ASTM D5418
Total Weight Loss (TWL), %	1.66	ASTM E595
Volatile Condensable Material (CVCM), %	0.10	ASTM E595

* Not Specifications

N/A Not Applicable

Technical Data Collected PRIOR TO 2003 Rev.12/17/2025

CURING GUIDELINES

Fixture time is defined as the time to develop a shear strength of 0.1 N/mm2 [10 psi] between glass slides. Actual cure time typically is 3-to-5 times fixture time.

Dymax Curing System (Intensity)	Fixture Time or Belt Speed [A]
2000-EC (50 mW/cm^2)[B]	2 s
5000-EC (200 mW/cm^2)[B]	1 s
BlueWave® 200 (10 W/cm^2)[B]	1 s
UVCS Conveyor with Fusion F300S (2.5 W/cm^2)[D]	7.9 m/min [26 ft/min]

A Fixture times/belt speeds are typical for curing thin films through 100% UV and light-transmitting substrates. Light-obstructing substrates may require longer cure times.

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

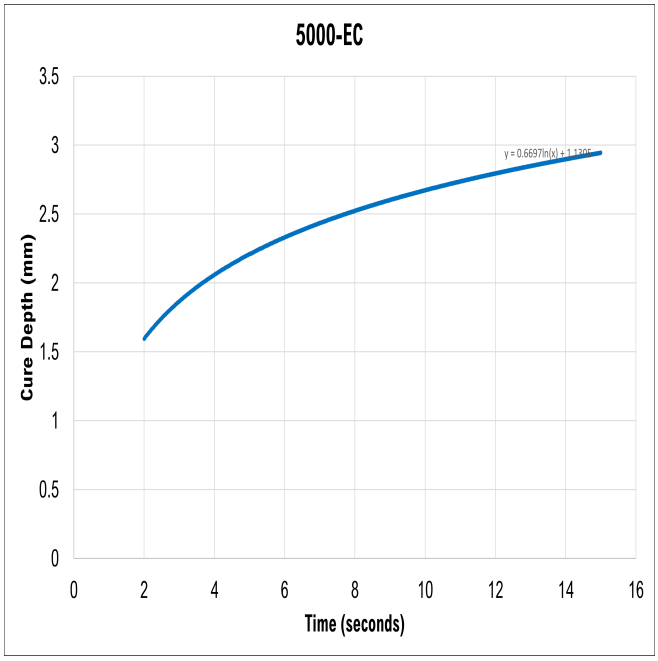
D At 53 mm [2.1 in] focal distance. Maximum speed of conveyor is 8.2 m/min [27 ft/min]. Intensity was measured over the UVA range (320-395 nm) using the Dymax ACCU-CAL™ 6Radiometer.

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.

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 must ultimately determine and qualify the appropriate curing parameters required for their unique application.

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.



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 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 noted on page 1 of this document, when stored between 10°C (50°F) and 32°C (90°F) in the original, unopened container.

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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