Manufacturer:
Dymax®

Product Name:
Dymax OP-67-LS Low Shrinkage Optical Adhesive, White Paste, UV Cure - 3ml Syringe

Manufacturer Part Number:
OP-67-LS-3ML

DYMAX

Low-Shrink™ OP-67-LS
Precision Positioning Optical Adhesive

APPLICATIONS
- Optic/Lens Alignment
- VCSEL Positioning
- Prism Placement

FEATURES
- UV/Visible Light Cure
- Complete Cure in Seconds
- Minimal Shrinkage During Cure
- Low CTE for Stability Through Thermal Excursions
- Low VOC

OTHER FEATURES
- Low Moisture Absorption
- Adhesion to Various Substrates Including Acrylic and Other Plastics
- Low Outgassing

Dymax Low-Shrink™ OP-67-LS cures upon exposure to light and is designed for rapid positioning of optical components. Low-Shrink™ is a patented technology designed to minimize movement of high-accuracy optical components during cure and throughout service life. Dymax Low-Shrink 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 optical assembly. Dymax lamps offer the optimum 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	White Paste	N/A
Soluble in	Organic Solvents	N/A
Density, g/ml	1.60 g/ml	ASTM D1875
Viscosity, cP (20 rpm)	135,000 (nominal)	ASTM D2556
Shelf Life at Recommended Conditions from Date of Manufacture	7 months	N/A

CURED MECHANICAL PROPERTIES *

Property	Value	Test Method
Durometer Hardness	D80	ASTM D2240
Tensile at Break, MPa [psi]	28 [4,000]	ASTM D638
Elongation at Break, %	6.5	ASTM D638
Modulus of Elasticity, MPa [psi]	570 [83,000]	ASTM D638
Glass Transition Tg, °C	86	ASTM D5418
CTEα1, µm/m/°C	74	ASTM E831
CTEα2, µm/m/°C	154	ASTM E831

OTHER CURED PROPERTIES *

Property	Value	Test Method
Boiling Water Absorption, % (2 h)	2.9	ASTM D570
Water Absorption, % (25°C, 24 h)	2.3	ASTM D570
Linear Shrinkage, %	0.08	ASTM D2566

ADHESION

Substrate	Recommendation
Ceramic	✔
Glass	✔
Metal	✔
Plastic	✔

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

* Not Specifications
N/A Not Applicable

Technical Data Collected PRIOR TO 2008 Rev:02/10/2023

Manufacturer:
Dymax®

Product Name:
Dymax OP-67-LS Low Shrinkage Optical Adhesive, White Paste, UV Cure - 3ml Syringe

Manufacturer Part Number:
OP-67-LS-3ML

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]	<1 s
5000-EC (200 mW/cm^2)[B]	<0.2 s
BlueWave® 200 (10 W/cm^2)[B]	<0.2 s
UVCS Conveyor with 5000-EC (200 mW/cm^2)[D]	8.2 m/min [27 ft/min]
UVCS Conveyor with Fusion F300S (2.5 W/cm^2)[D]	8.2 m/min [27 ft/min]

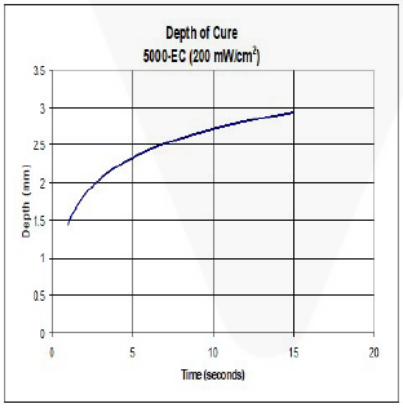
A Fixture times/belt speeds are typical for curing thin films through 100% UV and light-transmitting substrates. Light-obstructing substrates may require longer cure times.
B Intensity was measured over the UVA range (320-395 nm) using a Dymax ACCU-CAL™ 50 Radiometer.
D At 53 mm [2.1 in] focal distance. 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™ 160 Radiometer.

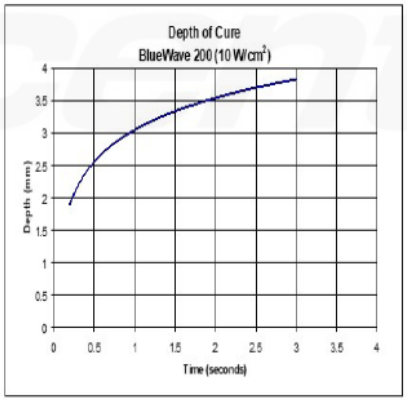
Full cure is best determined empirically by curing at different times and intensities, and measuring the corresponding change in cured properties such as tackiness, adhesion, hardness, etc. Full cure is defined as the point at which more light exposure no longer improves cured properties.

Dymax recommends that customers employ a safety factor by curing longer and/or at higher intensities than required for full cure.

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.





Manufacturer:
Dymax®

Product Name:
Dymax OP-67-LS Low Shrinkage Optical Adhesive, White Paste, UV Cure - 3ml Syringe

Manufacturer Part Number:
OP-67-LS-3ML

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. In rare cases, stress cracking may occur in assembled parts. Three options may be explored to eliminate this problem. One option is to heat anneal the parts to remove molded-in stresses. A second option is to open any gap between mating parts to reduce stress caused by an interference fit. The third option is to minimize the amount of time the liquid material remains in contact with the substrate(s) prior to curing.
7. Light curing generally produces some heat. If necessary, cooling fans can be placed in the curing area to reduce the heating effect on components.
8. At the point of curing, an air exhaust system is recommended to dissipate any heat and vapors formed during the curing process.

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.

Syringes and cartridges are best stored in a horizontal configuration to promote homogeneity of the contents.

CLEAN UP

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.

Manufacturer:
Dymax®

Product Name:
Dymax OP-67-LS Low Shrinkage Optical Adhesive, White Paste, UV Cure - 3ml Syringe

Manufacturer Part Number:
OP-67-LS-3ML

OPTICAL ADHESIVES
OP-67-LS Product Data Sheet

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 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.