Ultra Light-Weld® 9671
Light-Curable LCP Adhesive

APPLICATIONS

- Microspeaker Membranes to Housings
- LCP Bonding

FEATURES

- UV/Visible Light Cure
- Red Color
- Highly Thixotropic
- Halogen-Free

BENEFITS

- Cures in Seconds
- Enhanced Visibility
- High Bead Profile for Enhanced Coverage
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Dymax Ultra Light-Weld® 9671 cures upon exposure to light and is designed for rapid bonding of liquid crystal polymer (LCP). Dymax Ultra Light-Weld 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 bonding LCP. 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	Pink Transparent Gel	N/A
Soluble in	Organic Solvents	N/A
Density, g/ml	1.03	ASTM D1875
Viscosity, cP (20 rpm)	45,000 (nominal)	ASTM D2556
Shelf Life @RT (22°C to 25°C) from Date of Manufacture	12 months	N/A

CURED MECHANICAL PROPERTIES *

Property	Value	Test Method
Durometer Hardness	D55	ASTM D2240
Tensile at Break, MPa [psi]	15.8 [2,100]	ASTM D638
Elongation at Break, %	200	ASTM D638
Modulus of Elasticity, MPa [psi]	179.2 [26,000]	ASTM D638
Glass Transition Tg, °C	71	ASTM D5418
CTEα_1, µm/m/°C	163	ASTM E831
CTEα_2, µm/m/°C	147	ASTM E831

OTHER CURED PROPERTIES *

Property	Value	Test Method
Refractive Index (20° C)	N/A	ASTM D542
Boiling Water Absorption, % (2 h)	6.0	ASTM D570
Water Absorption, % (25°C, 24 h)	5.7	ASTM D570
Linear Shrinkage, %	2.3	ASTM D2566

* Not Specifications
N/A Not Applicable

ELECTRICAL PROPERTIES *

Property	Value	Test Method
Dielectric Constant (1 MHz)	3.27	ASTM D150
Dissipation Factor (1 MHz)	0.046	ASTM D150
Dielectric Breakdown Voltage, kV/mm [V/mil]	500	ASTM D149
Volume Resistivity, ohm-cm	555	ASTM D257
Surface Resistivity, ohm	6,300	ASTM D257

ADHESION

Substrate	Recommendation
ABS acrylonitrile-butadiene-styrene	✓
EVA ethylene-vinyl acetate	o
LCP liquid crystal polymer	o
LDPE low-density polyethylene	o
PA polyamide	✓
PBT poly(butylene terephthalate)	o
PC polycarbonate	✓
PET poly(ethylene terephthalate)	o
PI polyimide	✓
PMMA poly(methyl methacrylate)	o
PU polyurethane	✓
PVC poly(vinyl chloride)	✓
GL glass	o
AL aluminum	o
CU Copper	o
SS stainless steel	o

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

Technical Data Collected PRIOR TO 2013 Rev. 09/13/2020 DCR# C20-0089 Issue Date Jul 2020 DC344 Rev G

CURING GUIDELINES

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]	<1 s
BlueWave® 200 (10 W/cm^2)[B]	.2 s
UVCS Conveyor with 5000-EC (200 mW/cm^2)[D]	7.9 m/min [26 ft/min]
UVCS Conveyor with Fusion F300S (2.5 W/cm^2)[D]	8.2 m/min [27 ft/min]

Fixture time is defined as the time to develop a shear strength of 0.1 N/mm^2 [10 psi] between glass slides. Actual cure time typically is 3-to-5 times fixture time.

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.

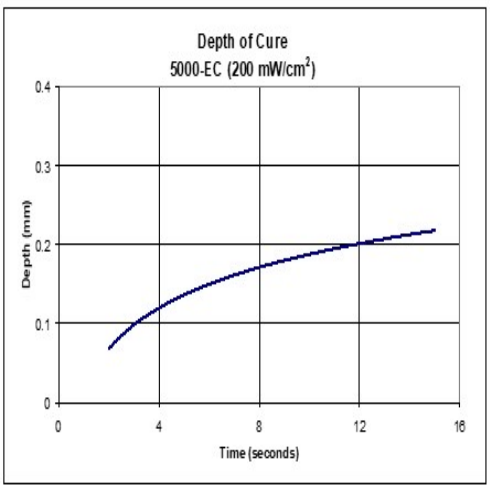
B Intensity was measured over the UVA range (320-395 nm) using a Dymax ACCU-CAL™ 50 Radiometer.

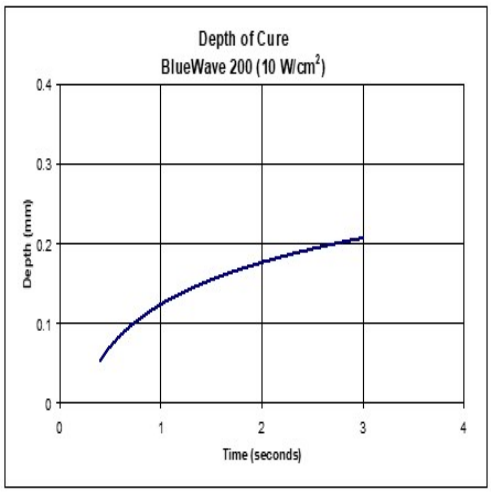
C Intensity was measured over the UVA/Visible range (350-450 nm) using a Dymax ACCU-CAL™ 50-LED Radiometer.

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™ 150 Radiometer.

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. 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.

DISPENSING THE MATERIAL

This material may be dispensed with a variety of manual and automatic applicators or other equipment as required. Questions relating to dispensing and curing systems for specific applications should be referred to Dymax Application Engineering.

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. 9671 may crystallize after exposure to cold temperatures. If crystallization occurs, the material should be heated to room temperature prior to use. Please contact Dymax Application Engineering if you need further assistance.

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 of 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.

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