



Multi-Cure[®] 9-911-REV-B Light-Cure, Wire-Tacking Adhesive

APPLICATIONS

- Wire Tacking
- Bonding Jumper Wires
- PCB Repair

FEATURES

- UV/Visible Light Cure
- Secondary Heat Cure
- High Viscosity for Optimal Coverage of Wires
- One Part, No Mixing Required
- Faster UV Fixture Time
- Solvent Resistant

OTHER FEATURES

- Blue Fluorescing
- High Bond Strength to Circuit Board Components
- Compatible with Dymax Conformal Coatings

Dymax Multi-Cure[®] 9-911-REV-B cures upon exposure to light and is designed for rapid tacking of repair wires on printed circuit boards. Dymax 9-911-REV-B is a Multi-Cure material specially formulated to cure with heat in applications where shadow areas exist. Dymax Multi-Cure 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 wire tacking. 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 | Clear Translucent Gel | N/A |
| Soluble in | Organic Solvents | N/A |
| Density, g/ml | 1.07 | ASTM D1875 |
| Viscosity, cP (20 rpm) | 25,000 (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] | 24 [3,500] | ASTM D638 |
| Elongation at Break, % | 30 | ASTM D638 |
| Modulus of Elasticity, MPa [psi] | 552 [80,000] | ASTM D638 |

OTHER CURED PROPERTIES *

| Property | Value | Test Method |
|-----------------------------------|-------|-------------|
| Boiling Water Absorption, % (2 h) | 3.6 | ASTM D570 |
| Water Absorption, % (25°C, 24 h) | 1.3 | ASTM D570 |
| Linear Shrinkage, % | 0.7 | ASTM D2566 |

ELECTRICAL PROPERTIES *

| Property | Value | Test Method |
|------------------------------------|------------------------|-------------|
| Dielectric Constant, 1 MHz | 4.10 | ASTM D1304 |
| Dissipation Factor, 1 MHz | 0.06 | ASTM D1304 |
| Dielectric Strength, kV/mm [V/mil] | [1,600] | ASTM D1304 |
| Volume Resistivity, ohm-cm | 80 x 10 ¹² | ASTM D1304 |
| Surface Resistivity, ohm-cm | 230 x 10 ¹² | ASTM D1304 |

ADHESION

| Substrate | Recommendation |
|------------|----------------|
| Lead Frame | ✓ |
| Ceramic | ○ |
| PCB | ✓ |
| Flex | - |
| Silicon | ○ |

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

* Not Specifications
 N/A Not Applicable

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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 sec |
| 5000-EC (200 mW/cm ²) ^B | 1 sec |
| BlueWave® 200 (10 W/cm ²) ^B | 1.4 sec |
| UVCS Conveyor with 5000-EC (200 mW/cm ²) ^C | 7.6 m/min [25 ft/min] |
| UVCS Conveyor with Fusion F300S (2.5 W/cm ²) ^C | 8.5 m/min [28 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.

C 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.

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 cure times (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 Applications 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

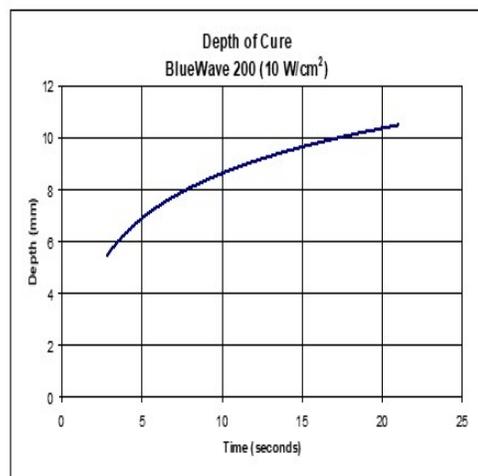
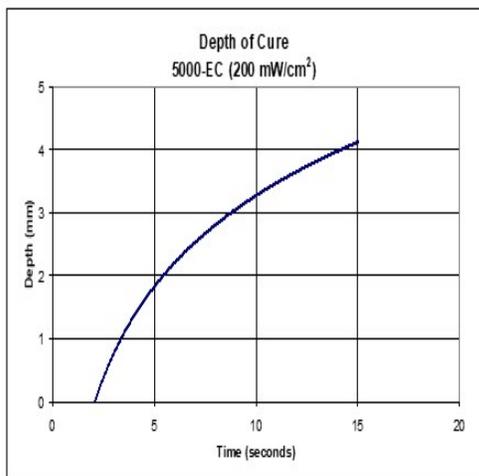
Heat can be used as a secondary cure mechanism where the adhesive cannot be cured with light. Light curing must be done prior to heat cure. The following heat-cure schedule may be used:

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

*Note: Actual heat-cure time may vary due to part configuration, volume of adhesive applied, and oven efficiency.

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 ($>100 \text{ mW/cm}^2$) 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.

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.

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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ELECTRONIC CIRCUIT BOARD MATERIALS
9-911-REV-B Product Data Sheet

CONTACT DYMAX

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

Shenzhen | +86.755.83485759 | dymaxasia@dymax.com

Hong Kong | +852.2460.7038 | dymaxasia@dymax.com

Korea | +82.31.608.3434 | info_kr@dymax.com