

## Ultra Light-Weld® 3130-UR LED-Curable Plastic Bonder

### APPLICATIONS

- Appliance Bonding and Assembly Applications
- Plastic Housing Applications
- Display Applications

### FEATURES & BENEFITS

- Visible/UV Light Cure
- Strong Bonds to a Wide Variety of Plastics
- Fast and TackFree Cure with BlueWave® LED Prime UVA
- Moisture Resistant
- Ultra-Red® Fluorescing

### RECOMMENDED SUBSTRATES

- ABS
- CAP
- PC
- PVC
- SAN

Dymax Ultra Light-Weld® 3130-UR is designed for rapid bonding of a wide variety of plastic substrates for appliance, automotive, and industrial assembly applications. It's formulated for on-demand cure with Dymax BlueWave® LED Prime UVA and fluoresces bright red under low-intensity "black" light (365 nm). The bright red fluorescence contrasts extremely well on plastics that naturally fluoresce blue in color (like PVC), and assists with visual inspection of the bond-line area. Dymax 3130-UR 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 plastic assembly. 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 to Light Yellow	N/A
Soluble in	Organic Solvents	N/A
Density, g/ml	1.04	ASTM D1875
Viscosity, cP (20 rpm)	250 (nominal)	ASTM D1084

#### OTHER CURED PROPERTIES \*

Property	Value	Test Method
Refractive Index (20°C)	1.50	ASTM D542
Boiling Water Absorption, % (2 h)	3.8	ASTM D570
Water Absorption, % (25°C, 24 h)	1.6	ASTM D570
Linear Shrinkage, %	1.1	ASTM D2566
Glass Transition, Tg, °C	68	DSTM 256†

#### CURED MECHANICAL PROPERTIES \*

Property	Value	Test Method
Durometer Hardness	D65	ASTM D2240
Tensile at Break, MPa [psi]	19 [2,800]	ASTM D638
Elongation at Break, %	30	ASTM D638
Modulus of Elasticity, MPa [psi]	158 [23,000]	ASTM D638
Tensile Compression Shear, MPa [psi]		
Glass-to-Glass	6.4 [940]	DSTM D250‡
Glass-to-Stainless Steel	7.5 [1,100]	DSTM D251‡
PC-to-PC	23.4 [3,400]	DSTM 255‡

#### ADHESION

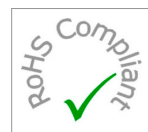
Substrate	Recommendation
ABS acrylonitrile-butadiene-styrene	✓
CAP cellulose acetate propionate	✓
PC polycarbonate	✓
PVC poly(vinyl chloride)	✓
SAN styrene-acrylonitrile	✓

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

\* Not Specifications

N/A Not Applicable

‡ DSTM Refers to Dymax Standard Test Method



**CURING GUIDELINES**

Fixture time is defined as the time to develop a shear strength of 0.1 N/mm<sup>2</sup> [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 <sup>A</sup>
2000-EC (50 mW/cm <sup>2</sup> ) <sup>B</sup>	1 s
5000-EC (200 mW/cm <sup>2</sup> ) <sup>B</sup>	1 s
BlueWave <sup>®</sup> 200 (10 W/cm <sup>2</sup> ) <sup>B</sup>	0.2 s
UVCS Conveyor with one 5000-EC (200 mW/cm <sup>2</sup> ) <sup>C</sup>	7.8 m/min [>26ft/min]
UVCS Conveyor with Fusion F300S (2.5 W/cm <sup>2</sup> ) <sup>C</sup>	7.8 m/min [>27ft/min]

- A** Fixture times/belt speeds are typical for curing thin films through 100% light-transmitting substrates. Light-obstructing substrates 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™ 100 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

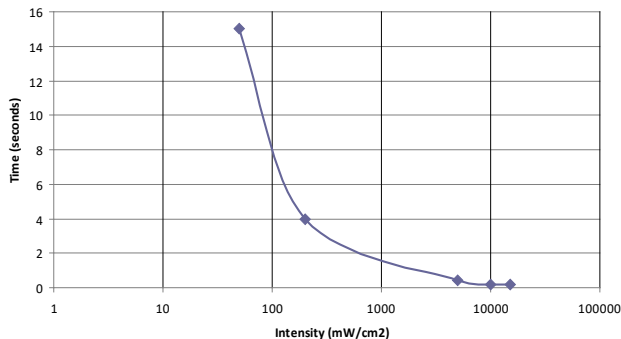
Dymax recommends that customers employ a safety factor by curing longer and/or at higher intensities than required for full cure. Although Dymax Application Engineering can provide technical support and assist with process development, each customer ultimately must determine and qualify the appropriate curing parameters required for their unique application.

**TACK-FREE TIME**

Tack-Free surface cure is the point where the surface is not able to smear.

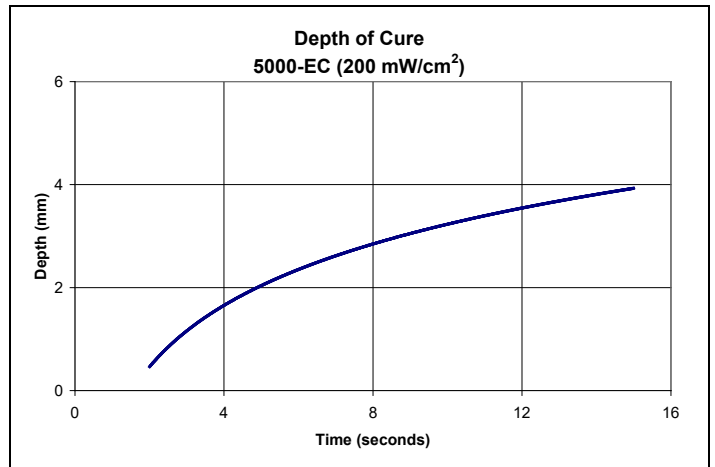
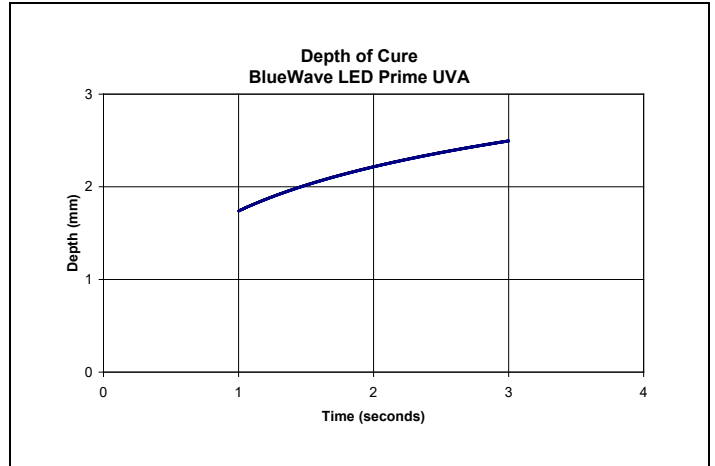
Dymax Curing System (Intensity)	Tack-Free Time
2000-EC (50 mW/cm <sup>2</sup> ) <sup>B</sup>	15 sec
5000-EC (200 mW/cm <sup>2</sup> ) <sup>B</sup>	4 sec
BlueWave <sup>®</sup> LED Prime UVA (10 W/cm <sup>2</sup> ) <sup>C</sup>	0.2 sec
BlueWave <sup>®</sup> 75 (5.0 W/cm <sup>2</sup> ) <sup>B</sup>	0.4 sec
BlueWave <sup>®</sup> 200 (10 W/cm <sup>2</sup> ) <sup>B</sup>	0.2 sec

**Tack-Free Time**



**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 bond surfaces should be clean and free from grease, mold release, or other contaminants prior to dispensing the adhesive.
3. Cure speed is dependent upon many variables, including lamp intensity, distance from the light source, required depth of cure, bond gap, and percent light transmission of the substrate.
4. Oxygen in the atmosphere may inhibit surface cure. Surfaces exposed to air may require high-intensity (>100 mW/cm<sup>2</sup>) UV light to produce a dry surface cure. Flooding the bond 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.
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 the gap between mating parts to reduce stress caused by an interference fit. The third option is to minimize the amount of time the liquid adhesive 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 ADHESIVE**

This material may be dispensed with a variety of manual, semi-automated, and fully automated fluid delivery systems. Small area applications including beads and small dots can be achieved using hand-held Dymax dispensing systems like our SD-100 syringe dispenser and our Model 400 needle valve systems. The value system can be used in a manual, semi-automated or fully automated application. Dymax has several other dispensing systems that may be suitable for use with our adhesive materials. Questions relating to and defining the best fluid delivery system and curing equipment for specific applications should be discussed with the Dymax Application Engineering Team.

**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. Clean up of cured material may require mechanical methods of removal.

**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 has a 12-month shelf life from date of manufacture, unless otherwise specified, when stored between 10°C (50°F) and 35°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.

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