Multi-Cure® 6-630-T
Glass-to-Metal Bonding Adhesive with Secondary Heat Cure

APPLICATIONS
- Glass Fixtures and Furniture
- Automotive Latches
- Potting
- Structural Glass Assemblies
- Consumer Packaging

FEATURES
- UV/Visible Light Cure
- Secondary Heat Cure
- High-Temperature Resistant
- Moisture Resistant
- High Adhesion to Glass and Metal
- Activator Cure
- Clear Bonds
- Flexible

RECOMMENDED SUBSTRATES
- Metals
- Glass
- Plastics

Dymax Multi-Cure® 6-630-T cures upon exposure to light and is designed for rapid assembly of parts made of metal, glass, ceramic, phenolic, filled polyamide, and other materials. Dymax 6-630-T 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. 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 industrial product 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	Colorless Translucent Liquid	N/A
Soluble in	Organic Solvents	N/A
Density, g/ml	1.07	ASTM D1875
Viscosity, cP	6,000	DSTM 502‡
Shelf Life at Recommended Conditions from Date of Manufacture	12 months	N/A

CURED MECHANICAL PROPERTIES *

Property	Value	Test Method
Durometer Hardness	D70	ASTM D2240
Tensile at Break, MPa [psi]	28.2 [4,100]	ASTM D638
Elongation at Break, %	130	ASTM D638
Modulus of Elasticity, MPa [psi]	413 [60,000]	ASTM D638

OTHER CURED PROPERTIES *

Property	Value	Test Method
Refractive Index (20°C)	1.50	ASTM D542
Boiling Water Absorption, % (2 h)	3.4	ASTM D570
Water Absorption, % (25°C, 24 h)	1.5	ASTM D570
Linear Shrinkage, %	0.5	ASTM D2566
Glass Transition Tg, ˚C	100	ASTM D5418
CTEα1, µm/m/˚C	108	ASTM E831
CTEα2, µm/m/˚C	202	ASTM E831

TYPICAL PERFORMANCE OF CURED MATERIAL *

Property	Value	Test Method
Glass-to-Stainless Steel Compression, MPa [psi]	20.0 [2,900]	DSTM 251‡
Glass-to-Glass Compression, MPa [psi]	25.5 [3,700]	DSTM 250‡

ADHESION

Substrate	Recommendation
ABS acrylonitrile-butadiene-styrene	✓
PEEK polyetheretherketone	✓
PEI polyetherimide	✓
PSU polysulfone	✓
PVC poly(vinyl chloride)	✓
AL aluminum	✓
SS stainless steel	✓
GL glass	✓

✓ Recommended o Limited Applications

st Requires Surface Treatment (e.g. plasma, corona treatment, etc.)

* Not Specifications

N/A Not Applicable

‡ DSTM Refers to Dymax Standard Test Method

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CURING GUIDELINES

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.

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]	1.5 s
BlueWave® 200 (10 W/cm^2)[B]	1 s
BlueWave® MX-150 PrimeCure® 385 nm (10 W/cm²)[C]	3.6 s
UVCS Conveyor with one 5000-EC (200 mW/cm^2)[D]	6.1 m/min [20 ft/min]
UVCS Conveyor with Fusion F300S (2.5 W/cm^2)[D]	7.6 m/min [25 ft/min]

A Curing through light-blocking substrates may require longer cure times if they obstruct wavelengths used for light curing (320-400 nm for UV light curing, 320-450 nm for UV/Visible light curing). These fixture times/belt speeds are typical for curing thin films through 100% light-transmitting substrates.
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 (250-450 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™ 160 Radiometer.

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.

ACTIVATOR CURE

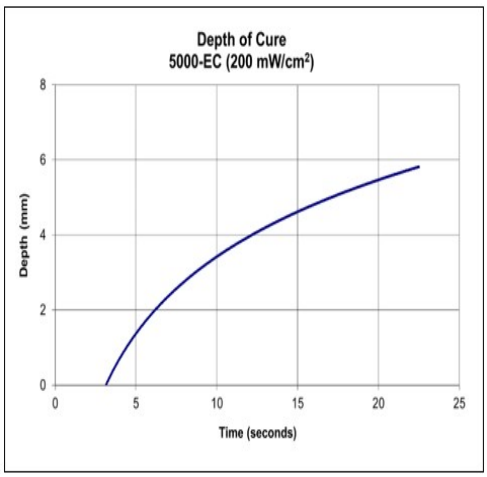
Shadowed areas can be cured with activator. Activator is placed on one surface and the adhesive on the mating surface. Curing takes place at room temperature when the parts are mated. Activator requires closely mated parts (up to 0.5 mm [0.02 in] gap). Closely mated parts fixture (achieve handling strength) in less than a minute. See Dymax Technical Bulletin “Guidelines for Activator Curing” for complete instructions for all activators.

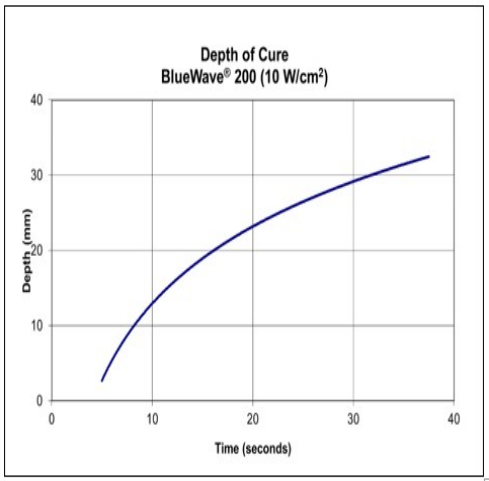
Full cure is best determined empirically by curing at different times and intensities, and measuring the corresponding change in cured properties such as tackiness, adhesion, hardness, etc. Full cure is defined as the point at which more UV exposure no longer improves cured properties.

Dymax recommends that customers employ a safety factor by curing longer, at higher intensity, and/or at higher temperature 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.

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. These depths are only due to light cure.





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^2) 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 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 is 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 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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