7501-T-UR-SC

LED-Curable Resins for Sealing Plastics and Metals

APPLICATIONS

- Sealing Critical Automotive Components and Assemblies
- Sealing Critical Aerospace Components and Assemblies

FEATURES

- 385 or 405 nm LED Curable
- Fast Rate of Cure
- Brilliant Red Fluorescing
- Deeper Section Cure
- Blue to Colorless Upon Cure

RECOMMENDED SUBSTRATES

- Tin Plated Brass
- PC
- ABS
- PMMA
- PET Flex Circuit

Dymax 7501-T-UR-SC is designed to be cured with either 385 nm or 405 nm UV wavelength light sources for very fast bonding of multiple substrates typically used in sealing critical automotive components and assemblies. The blue color in Dymax See-Cure products disappears completely when the bond line is exposed to the proper amount and wavelength of energy. This product also fluoresces bright red under low-intensity black light (365 nm). The bright red color contrasts extremely well on many substrates like PC, PET flex circuits, and PVC; greatly assisting with visual inspection of the cured resin. Dymax protective resins 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, 7501-T-UR-SC delivers optimum speed and performance. 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	Blue Translucent/ Colorless	N/A
Soluble in	Organic Solvents	N/A
Density, g/ml	1.07	ASTM D1875
Viscosity, cP (20 rpm)	6,500 (nominal)	DSTM 502
Shelf Life @ RT (22°C to 25°C) from Date of Manufacture	8 months	N/A

CURED MECHANICAL PROPERTIES *

Property	Value	Test Method
CTEα_2, µm/m/°C	215	ASTM E831
Glass Transition Tg, °C	84	ASTM D5418
Durometer Hardness	D70	ASTM D2240
Tensile at Break, MPa [psi]	17.9 [2,600]	ASTM D638
Elongation at Break, %	125	ASTM D638
Modulus of Elasticity, Mpa [psi]	296 [43,000]	ASTM D638
CTEα_1, µm/m/°C	109	ASTM E831

* Not Specifications
N/A Not Applicable
‡ DSTM Refers to Dymax Standard Test Method

DISPENSE EQUIPMENT RECOMMENDATIONS *

Application	Manual	Semi-Automated	Fully Automated
Dots	SD-100	Model 400 Needle Valve	eco-PEN
Beads	SD-100	Model 400 Needle Valve	eco-PEN

CURING EQUIPMENT RECOMMENDATIONS *

Process Method	Spot Lamp	Flood Lamp	Conveyor
LED Curing/Wavelength	BlueWave® MX-150 (365, 385, or 405 nm)	BlueWave® AX-550 Flood Lamp (365, 385, or 405 nm)	
Broad Spectrum	BlueWave® 200	5000 ECE	Fusion Conveyor with F300 Lamp

ADHESION

Substrate	Recommendation
ABS acrylonitrile-butadiene-styrene	✔
PC polycarbonate	✔
PEI polyetherimide	✔
PCTG poly(cyclohexylene dimethylene terephthalate)glycol	✔
PET Flex circuit	✔
PMMA poly(methyl methacrylate)	✔
PVC poly(vinyl chloride)	✔
SAN styrene-acrylonitrile	✔
TPU thermoplastic polyurethane	✔
SS stainless steel	✔
PS polystyrene	✔
PSU polysulfone	✔
PU polyurethane	✔

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

Technical Data Collected 2013 Rev. 09/11/2020 DCR# C20-0071 Issue Date Jun 2020 DC288 Rev G

OTHER CURED PROPERTIES *		
Property	**Value**	**Test Method**
Appearance	Colorless	N/A
Boiling Water Absorption, % (2 hr)	4.3	ASTM D570
Water Absorption, % (25°C, 24 h)	2.6	ASTM D570
Linear Shrinkage, %	1.9	ASTM D2566

CURING GUIDELINES

The blue color of this Dymax See-Cure resin transitions to colorless when it is fully cured. Full cure is achieved when additional light exposure does not improve the cured properties. The chart below provides information on how long it takes to complete the transition from blue to colorless, using different light sources. Cure rate is dependent upon many variables including lamp intensity, distance from the light source, and required depth of cure. The times and belt speed for the transition listed below are based on lab results and are intended for reference only. Testing was performed using a 0.38 mm [0.015 in] coating thickness. Time/belt speed was determined by a complete, tack-free cure and transition from blue to colorless.

Dymax Curing System (Intensity)	Cure Time or Belt Speed
5000-EC (200 mW/cm^2)[A]	10 s
PortaRay 400 (400 mW/cm^2)[A]	10 s
UVCS Conveyor with Fusion F300S (2.5 W/cm^2)[C]	1.2 m/min [4 ft/min]
BlueWave® MX-150 PrimeCure (385 nm) (15w/cm^2)[C]	2 s
BlueWave® MX-150 Redicure (365 nm) (15 w/cm^2)	0.8 s
Blue Wave® MX-150 Visicure (405nm) (15 w/cm^2)	20 s

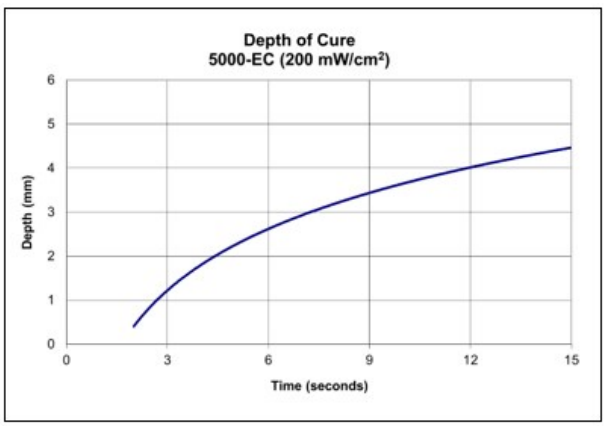
A Intensity was measured over the UVA range (320-395 nm) using a Dymax ACCU-CAL™ 50 Radiometer.
B Intensity was measured over the light range of 350-450 nm using a Dymax ACCU-CAL™ 50-LED Radiometer.
C At 53 mm [2.1 in] focal distance. Maximum speed of conveyor is 8.2 m/min [27 ft/min]. Intensity was measured over the UVA range (320-395 nm) using a 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 and the color fully transitions. Higher intensities or longer cure times may degrade Dymax light-curable masks.

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 must ultimately determine and qualify the appropriate curing parameters required for their unique application.

DEPTH OF COLOR TRANSITION

The graph below shows the increase in depth-of-cure transition as a function of exposure time. A 9.5 mm [0.37 in] diameter specimen was cured in a polypropylene mold and cooled at room temperature. It was then released from the mold and the color transition 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 to be masked should be clean and free from grease, mold release, or other contaminants prior to dispensing the resin.
3. Oxygen in the atmosphere may inhibit surface cure. Surfaces exposed to air may require higher intensity UV to produce a tack-free cure. Flooding the masked area with an inert gas, such as nitrogen, can also reduce the effects of oxygen inhibition.
4. Cured part should be allowed to cool after cure and before testing.
5. Light curing generally produces some heat. If necessary, cooling fans can be placed in the curing area to reduce the heating effect on components.
6. At the point of curing, an air exhaust system is recommended to dissipate any heat and vapors formed during the curing process.
7. 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.

DISPENSING THE RESIN

This material may be dispensed with a variety of manual, semi-automated, and fully automated fluid delivery systems. Dymax's SG family of regular, high-flow, and super-flow spray guns can be utilized for spraying larger surface areas. The fluid delivery systems are supported with various size cartridge containers and ram pumps for larger volume applications. 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. Dymax has several other dispensing systems that may be suitable for use with our masking 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.

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 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.

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.

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