



SpeedMask® 7701

Moderate-Adhesion Surface Treatment and Protection Mask

APPLICATIONS

- Plating
- Anodizing
- Powder Coating
- Part Handling
- Grit Blasting
- Shot Peening

FEATURES

- UV/Visible Light Cure
- Excellent Surface Protection
- Fast Curing
- Easy Peel-Off
- Flexible after Heat Exposure
- Spray or Dip

RECOMMENDED SURFACES

- Nickel Alloys
- Steel
- Stainless Steel
- Aluminum
- Titanium
- Cobalt
- Glass

SpeedMask® 7701 is formulated to provide excellent surface protection during many plating, decorative etching and anodizing, blasting, and powder-coating processes. SpeedMask® 7701 also has the ability to remain flexible at higher temperature processes up to 204°C [400°F]. This resin cures quickly and is easily removed after processing. The removal of the cured maskant can be aided with the use of a hand tool (plastic, anti-static or metal), heat aided to localize area, an ultrasonic bath, dry ice blast or embrittlement, water jet blast, incineration, when applicable or automated grippers. Please reach out to Dymax Application Engineering for details on these removal options. When properly cured, 7701 leaves no residue on non-porous surfaces. SpeedMask® 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, they deliver optimum speed and performance for many masking applications. 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 Gel	N/A
Soluble in	Organic Solvents	N/A
Density, g/ml	1.15	ASTM D1875
Viscosity, cP (20 rpm)	45,000 (nominal)	DSTM 502
Shelf Life @ RT (22°C to 25°C) from Date of Manufacture	7 months	N/A

CURED MECHANICAL PROPERTIES *

Property	Value	Test Method
Durometer Hardness	D30	ASTM D2240
Tensile at Break, MPa [psi]	5.9 [860]	ASTM D638
Elongation at Break, %	225	ASTM D638
Modulus of Elasticity, MPa [psi]	7.6 [1,100]	ASTM D638
Glass Transition Tg, °C	33	ASTM D5418

OTHER CURED PROPERTIES *

Property	Value	Test Method
Boiling Water Absorption, % (2 hr)	11.9	ASTM D570
Water Absorption, % (25°C, 24 hr)	9.7	ASTM D570
Linear Shrinkage, %	1.0	ASTM D2566

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
Large Area	SG-150-RH	SG-150-RH	eco-SPRAY

CURING EQUIPMENT RECOMMENDATIONS *

Process Method	Spot Lamp	Flood Lamp	Conveyor
Broad Spectrum	BlueWave® 200	5000-ECE or PortaRay 400	UVCS Conveyor with Fusion F300S

* Not Specifications

N/A Not Applicable

‡ DSTM Refers to Dymax Standard Test Method



CURING GUIDELINES

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.

Dymax Curing System (Intensity)	Cure time or Belt Speed
5000-EC (200 mW/cm ²) ^A	1 sec
BlueWave® 200 (10 W/cm ²) ^A	0.4 s
PortaRay 400 (400 mW/cm ²) ^A	1 s
UVCS Conveyor with Fusion F300S (2.5 W/cm ²) ^C	8 m/min [27 ft/min]

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

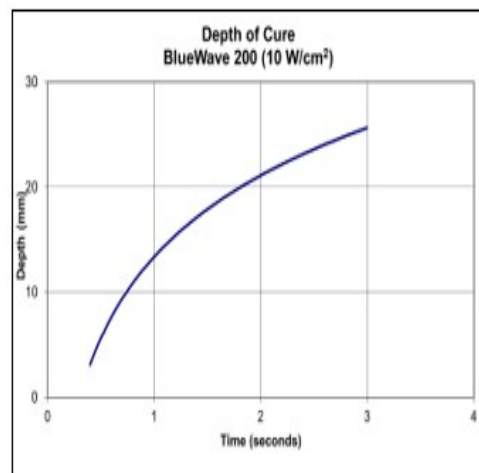
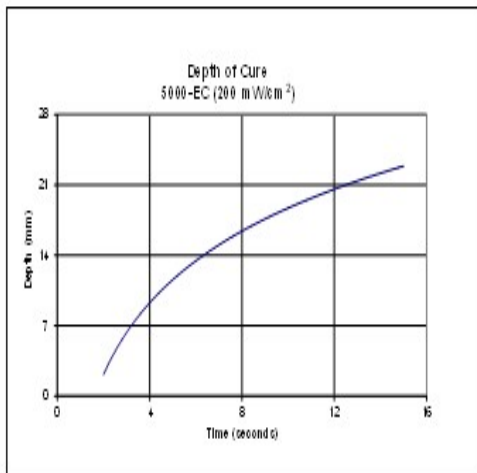
^B At 53 mm [2.1 in] focal distance. Maximum speed of conveyor is 8.2 m/min [27 ft/min]. Intensity was measured over the UVA range (320-395 nm) using a Dymax ACCU-CAL™ 160 Radiometer.

Full cure is best determined empirically by curing at different times and intensities. Full cure can also be determined by measuring cured properties such as tackiness, adhesion, hardness, etc. Higher intensities or longer cures may degrade Dymax light-curable masks.

Dymax recommends that customers employ a safety factor by curing longer and/or at higher intensities and/or temperatures 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 CURE

The graph below shows the increase in depth of cure as a function of exposure time. 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 to be masked should be clean and free from grease, mold release, or other contaminants prior to dispensing the mask.
3. Oxygen in the atmosphere may inhibit surface cure. Surfaces exposed to air may require higher intensity UV (>100 mW/cm²) to produce a tack-free cure. Flooding the bond area with an inert gas, such as nitrogen, can also reduce the effects of oxygen inhibition.
4. Part should be allowed to cool after cure 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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