

SPEEDMASK® 723-GEL Plating and Harsh Chemical Processing Peelable Mask

APPLICATIONS

- Plating
- Anodizing
- Chemical Etching/Milling
- Acid Stripping

FEATURES

- UV/Visible Light Curing
- Excellent Surface Protection
- Excellent Chemical Resistance
- Fast Curing
- Easy Peel-Off
- High-Viscosity Thixotropic Gel
- Moderate Adhesion

RECOMMENDED SURFACES

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

SPEEDMASK® 723-GEL UV/Visible curable masking resin is formulated to provide excellent surface protection during many plating and anodizing processes, and various processes involving strong chemicals and acids. It is resistant to most strong acid and alkali solutions. This 100% organic resin cures quickly and is easily removed after processing. When properly cured, 723-GEL 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 | 0.97 | ASTM D1875 |
| Viscosity, cP (20 rpm) | 50,000 nominal | ASTM D2556 |

OTHER CURED PROPERTIES *

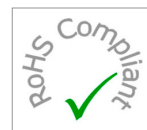
| Property | Value | Test Method |
|------------------------------------|-------|-------------|
| Boiling Water Absorption, % (2 hr) | 0.2 | ASTM D570 |
| Water Absorption, % (25°C, 24 hr) | 0.3 | ASTM D570 |
| Linear Shrinkage, % | 1.6 | ASTM D2566 |

CURED MECHANICAL PROPERTIES *

| Property | Value | Test Method |
|----------------------------------|-----------|-------------|
| Durometer Hardness | A75 | ASTM D2240 |
| Tensile at Break, MPa [psi] | 3.2 [460] | ASTM D638 |
| Elongation at Break, % | 90 | ASTM D638 |
| Modulus of Elasticity, MPa [psi] | 2.3 [340] | ASTM D638 |

* Not Specifications

N/A Not Applicable



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CURING GUIDELINES

Cure speed is dependent upon many variables, including lamp intensity, distance from the light source, and required depth of cure. The cure times 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/Speed was determined by a complete, tack-free cure.

| Dymax Curing System (Intensity) | Cure Time or Belt Speed |
|---|---------------------------|
| 2000-EC (50 mW/cm ²) ^A | N/A |
| 5000-EC (200 mW/cm ²) ^A | 45 sec |
| BlueWave® 200 (10 W/cm ²) ^A | 11 sec |
| Porta Ray 400 (400 mW/cm ²) ^A | 30 sec |
| UVCS Conveyor with Fusion F300S (2.5 W/cm ²) ^B | 0.3 m/min [1.0 ft/min] |

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

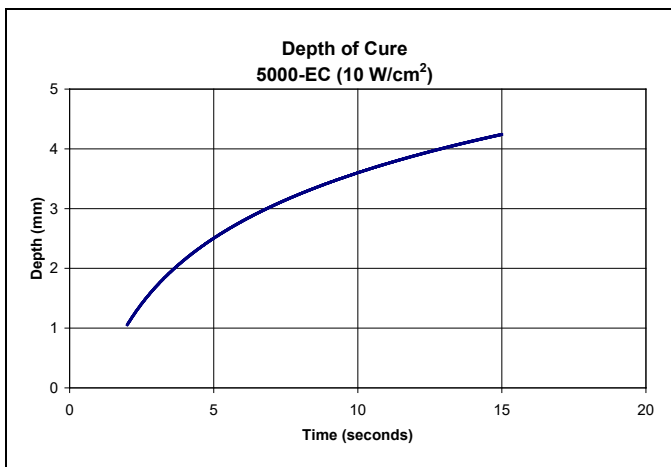
B At 53 mm [2.1 in] focal distance. Maximum speed of conveyor is 8.2 m/min [27 ft/min]. Intensity was measured over the UVA range (320-395 nm) using a Dymax ACCU-CAL™ 100 Radiometer.

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. Higher intensities or longer cure 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 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 resin.
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.

DISPENSING THE RESIN

This material may be dispensed with a variety of manual, semi-automated and fully automated fluid delivery systems. Dymax' 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 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.

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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