SpeedMask® 729
Plating and Harsh-Chemical Maskant

APPLICATIONS
- Acid Stripping
- Plating
- Harsh-Chemical Processing

FEATURES
- UV Light Cure
- Resists Acids
- High Adhesion
- Hard/Durable
- Spray or Dip

RECOMMENDED SURFACES
- Nickel Alloys
- High-Temperature Alloys

SpeedMask® 729 UV light-curable masking resin is formulated to provide excellent surface and cavity protection of turbine components during acid stripping, high-temperature plating processes, and other harsh chemical operations. This 100% organic resin cures quickly with proper UV energy exposure and is easily removed by incineration at minimum of 650°C [1200°F] leaving a residue free surface with minimal ash from combustion of the maskant. 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	Clear Translucent Gel	N/A
Soluble in	Organic Solvents	N/A
Density, g/ml	0.96	ASTM D1875
Viscosity, cP (20 rpm)	20,000 (nominal)	ASTM D2556
Shelf Life @ RT (22°C to 25°C) from Date of Manufacture	12 months	N/A

CURED MECHANICAL PROPERTIES *

Property	Value	Test Method
Durometer Hardness	D75	ASTM D2240
Tensile at Break, MPa [psi]	19.3 [3,200]	ASTM D638
Elongation at Break, %	19	ASTM D638
Modulus of Elasticity, MPa [psi]	289 [42,000]	ASTM D638
Glass Transition (Primary)Tg, °C	116 °C	ASTM D5418

OTHER CURED PROPERTIES *

Property	Value	Test Method
Boiling Water Absorption, % (2 hr)	1.7	ASTM D570
Water Absorption, % (25°C, 24 hr)	0.4	ASTM D570
Linear Shrinkage, %	0.4	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

Technical Data Collected PRIOR TO 2008 Rev. 09/18/2020 DCR# C20-0070 Issue Date Jun 2020 DC276 Rev G

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]	45 s
5000-EC (200 mW/cm^2)[A]	30 s
BlueWave® 200 (10 W/cm^2)[A]	15 s
PortaRay 400 (400 mW/cm^2)[A]	30 s
UVCS Conveyor with Fusion F300S (2.5 W/cm^2)[B]	2.1 m/min [7 ft/min]

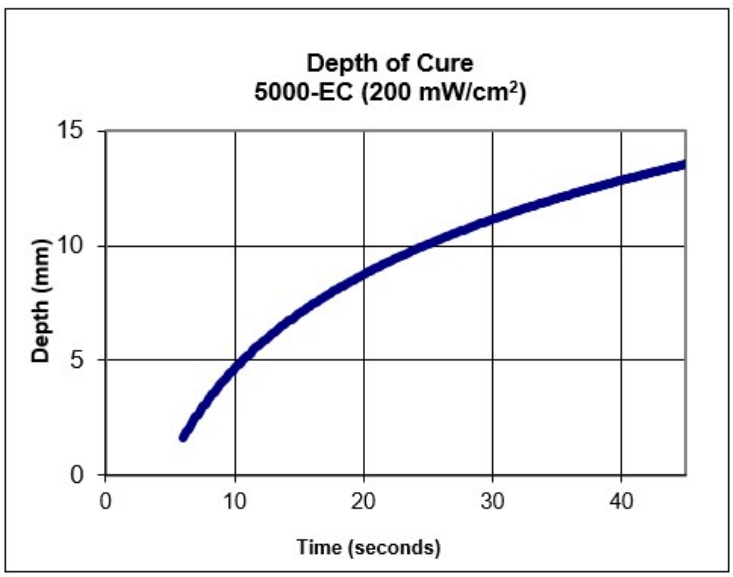
A Intensity was measured over the UVA range (320-395 nm) using a Dymax ACCU-CAL™ 50 Radiometer.
B At 53 mm [2.1 in] focal distance. Maximum speed of conveyor is 8.2 m/min [27 ft/min]. Intensity was measured over the UVA range (320-395 nm) using a Dymax ACCU-CAL™ 160 Radiometer.

Full cure is best determined empirically by curing at different times and intensities, 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 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 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/cm^2) 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' 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 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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