



LIGHT-CURABLE MATERIALS FOR  
**AEROSPACE & DEFENSE**  
SYSTEMS



# Our Technology. **YOUR ADVANTAGE.**<sup>®</sup>



At Dymax, we combine our product offering with expert knowledge of light-cure technology. Where others only supply products, we are committed to developing a true collaborative partnership, bringing our unsurpassed expertise in light-cure technology and total process knowledge to our customers' specific application challenges. Because we understand the process as a whole, we can offer our customers a solution where chemistry and equipment work seamlessly together with maximum efficiency.

Our application engineering team works side-by-side with our customers, providing assistance with product and process design, equipment selection and integration, testing, evaluation, and pre-production trials throughout the life of the assembly process. Our laboratory is fully equipped to perform mechanical testing under a variety of environmental conditions including shear strength, adhesion strength between substrates, compression set, and humidity aging per ASTM standards. The lab also has a variety of curing equipment and manual and automated dispensing systems for evaluation.

Dymax assembly solutions provide manufacturers the tools to increase productivity, lower costs, increase safety, and achieve a more efficient manufacturing process. That's a competitive advantage they can't get anywhere else.

# About Dymax

# MATERIALS

Since pioneering light-cure technology over 35 years ago, Dymax has continued to set new standards with innovative ways to co-optimize the assembly or repair/maintenance process with customer-centric solutions that meet today's application challenges. As the aerospace and defense industries evolve with new technologies to achieve longer engine service life, improved sensor imaging, and more durable printed circuit boards, components are pushing the limits of technologies. Dymax formulations are developed to address the growing industry challenges and demands for new technologies.



## Environmental Benefits of Light-Curing Materials

Dymax understands that safe, ecologically friendly products benefit our customers, the environment, and us. We have created materials that minimize ecological impact. These attributes include:

- Solvent-free materials
- Halogen-free materials
- RoHS compliance
- REACH - no substance of very high concern (SVHC)
- Eco-friendly, one-component materials

Dymax halogen-free conformal coatings, encapsulants, and adhesives are documented by an independent laboratory to meet or exceed standards set forth in IEC 61249-2-21. This international directive defines halogen-free as <900 ppm for chlorine, <900 ppm for bromine and <1,500 ppm total level of both combined. The current test method used for certification is BS EN 14582:2007.

## REACH Compliance

Dymax endorses the outcome of the REACH program. We are pleased to report that we have registered all affected substances used at Dymax with the centralized database maintained by the European Chemical Agency (ECHA) in Helsinki.

Dymax preparations contain no substances of very high concern (SVHC) as reported on the ECHA candidate list evaluated, as indicated in our official letter on status of REACH.



# Light-Cure Solutions for

# **AEROSPACE & DEFENSE**



Dymax manufactures light-curable materials, fluid dispense systems, and light-curing equipment that work together to optimize assembly processes. Our integrated light-cure solutions take into consideration all elements of the assembly process to provide design, research, and manufacturing engineers with solutions where chemistry and equipment work seamlessly together to increase process efficiency, improve product quality, and lower assembly costs. Some benefits that may be realized when using Dymax light-cure solutions include:

## Minimized Risk/ Enhanced Quality

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- Formulations are matched to specific performance needs
- Materials and equipment are properly tested to ensure compatibility, reducing the chance for defects due to improper dispense or cure
- Materials that are absent of solvents, volatiles, and materials of concern help ensure worker safety and regulatory compliance

## Reduced Costs

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- Fast cures increase production rates and reduce labor costs
- Patented technologies like See-Cure and Ultra-Red® make in-line inspection easy with no extra costs
- Improved quality reduces defects and ultimately waste and disposal costs
- On-demand cure and instant QC testing eliminate the need for excess inventory

## Increased Efficiency

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- Co-optimized adhesives and equipment provide the fastest cures for shorter cycle times
- On-demand cures reduce work-in-progress
- Small process footprint frees up space to perform other tasks
- No racking or heating required, saving time and floor space

# SYSTEMS

## TYPES OF DYMAX LIGHT-CURABLE MATERIALS

### Adhesives

Dymax light-curable adhesives cure in seconds upon exposure to ultraviolet light and/or visible light, heat, or activator. The adhesives are solvent free and form high-strength, environmentally-resistant bonds to plastic, metal, and glass substrates. Because of their ability to bond to a wide variety of substrates, they excel at assembling dissimilar materials, something that cannot be done with traditional welding methods and other types of adhesives.

### Conformal Coatings

Dymax manufactures UV/Visible light-curing conformal coatings to protect printed circuit boards. The conformal coating is applied to electronic circuitry to act as protection against moisture, dust, chemicals, and temperature extremes that if uncoated (unprotected) could result in a complete failure of the electronic system. Dymax conformal coatings are available in IPC approved, MIL-I-46058C, and UL listed self-extinguishing grades.

### Encapsulants

Dymax encapsulants cure in seconds upon exposure to UV and/or visible light to provide tough, flexible protection for bare die, wire bonds, or integrated circuits (IC). The encapsulants' fast cure helps reduce processing and energy costs associated with alternative technologies. The materials are all one part, so no mixing is required and viscosity is consistent.

### Form-In-Place Gaskets / Gap Fill

Light-curable form in place gaskets replace tape, PSA die-cut gaskets, 2K epoxies, silicone rope, and RTV sealants. The gaskets conform to complex and intricate channels, on both vertical and horizontal surfaces, with thixotropic formulations, and flow into channels with Newtonian formulations. Form-in-place gasket materials act as a barrier to prevent absorption or penetration of air, dust, noise, liquids, gaseous substances, or dirt for sound dampening, vibration dampening, moisture protection, chemical protection, air sealing, and gap filling.

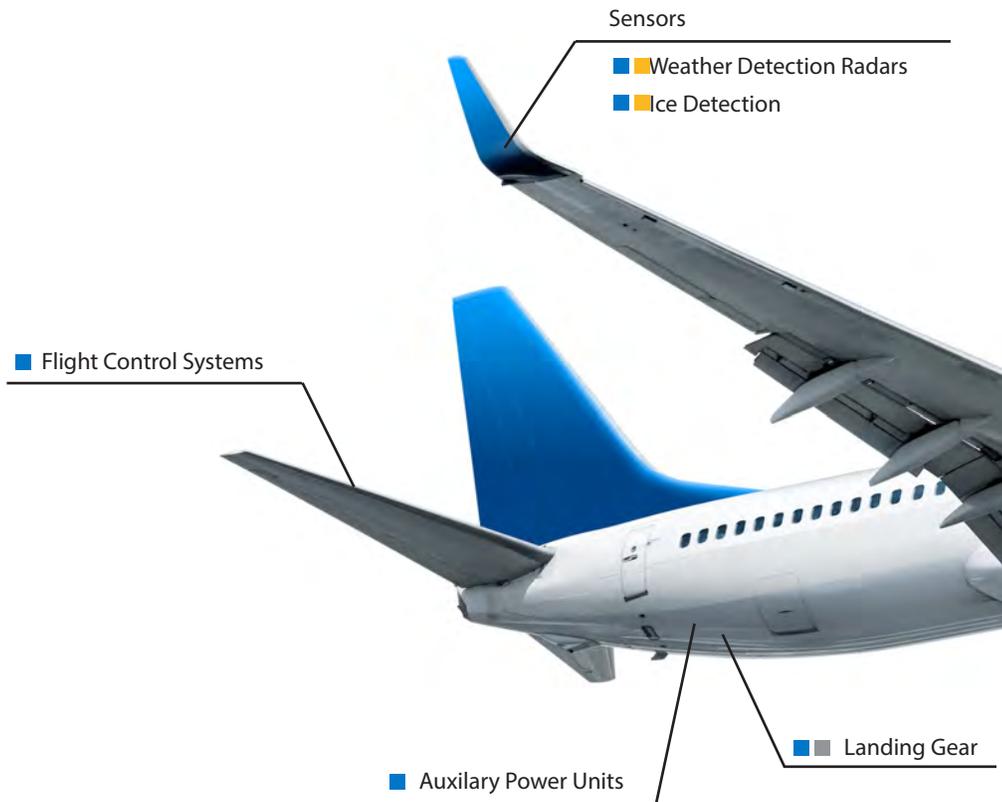
### Potting Materials

Dymax shallow potting materials cure tack free in seconds upon exposure to UV/Visible light. Each potting compound is engineered to bond different substrates, offering tenacious adhesion to plastics and metals. UV potting resins reduce waste from off-ratio mixing and are free from isocyanates and heavy metals. Processing in seconds eliminates fixtures, jigs, racks, and ovens to increase space and lower total inventory costs.

### SpeedMask® Maskants

SpeedMask® light-curable temporary maskants provide reliable protection of component surfaces and cavities, PCB connectors, and keep out areas during surface finishing and preparation operations for metal, glass, and some plastics, as well as conformal coating of PCBs. They cure in seconds upon exposure to UV/Visible light and replace traditional masking materials, such as tapes, lacquers, waxes, boots, and caps. SpeedMask resins are easily applied by syringe or through dipping, spraying, or screen-printing, and are available in peelable or burn-off grades that leave component surfaces residue-free.

# Typical APPLICATIONS



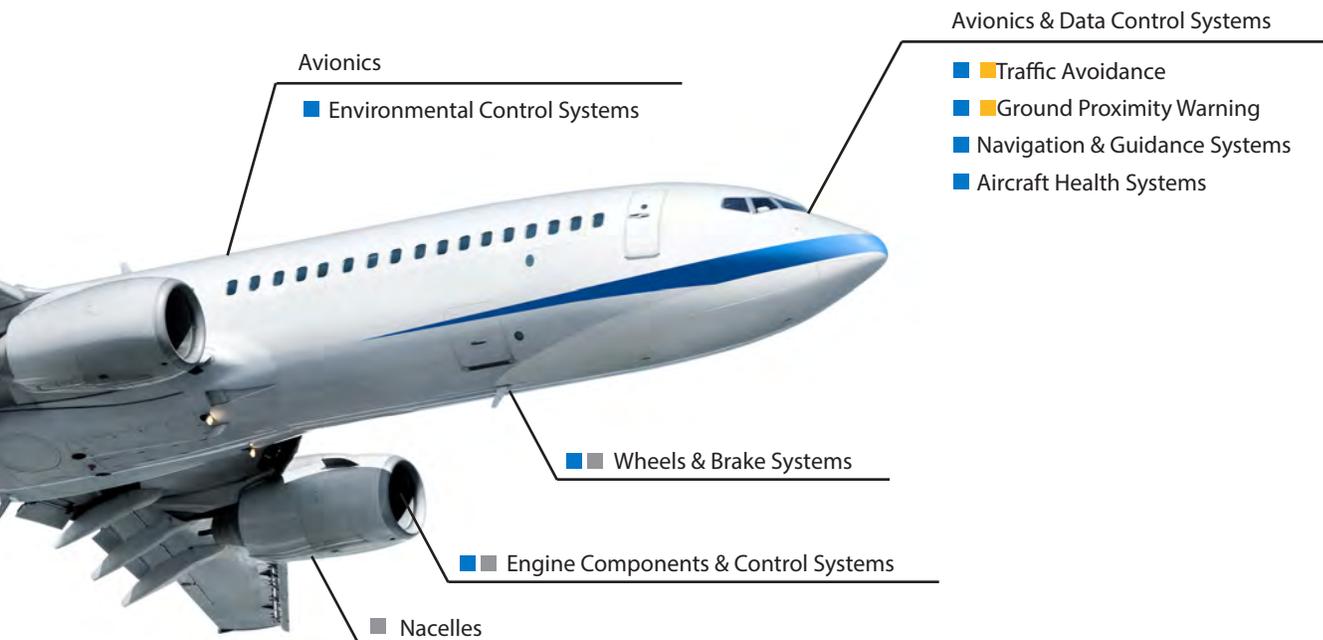
**PRINTED CIRCUIT BOARD ASSEMBLY**

- Wire Tacking
- Thermal Interface Material
- Staking
- Encapsulation
- Ruggedization/Cornerbond
- Glob Top Encapsulant
- Peelable Mask
- Conformal Coating
- Cure-in-Place Gasket
- Strain Relief
- Reinforcement
- Encapsulation
- Masking

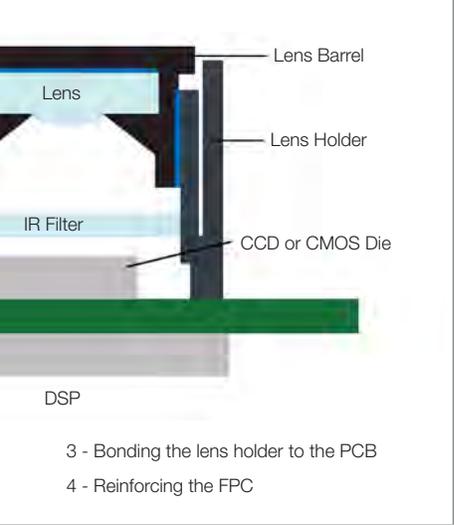
Additional Applications – Inductors & Transformers - Magnet Bonding

**SENSOR CAMERA**

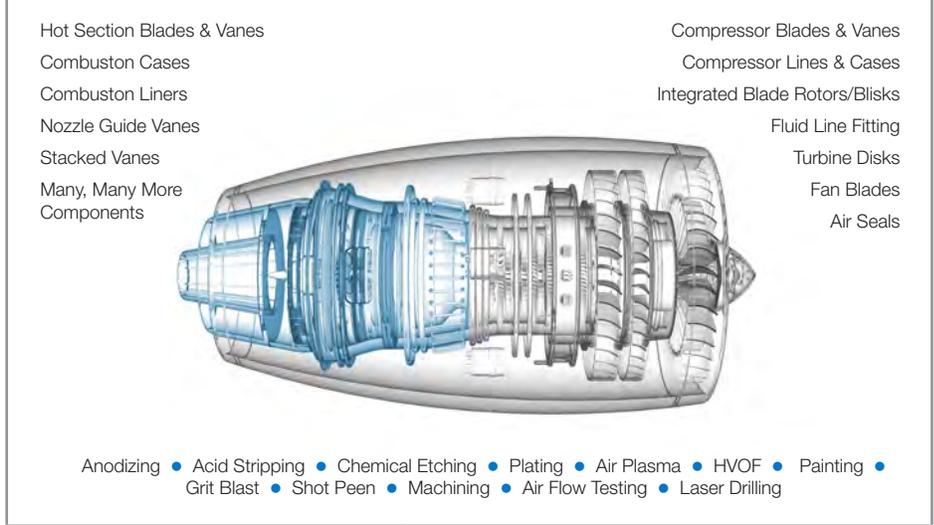
- 1 - Bonding the camera lens
- 2 - Fixturing the camera lens barrel to the lens holder
- 3 - Rigid PCB
- 4 - Flexible PCB



**MODULE ASSEMBLY**



**SURFACE PROTECTION FOR ENGINE COMPONENTS**



# Light-Cure Materials for **AVIONICS**

Dymax light-curable materials are designed to address the growing industry challenges and demands in the aerospace avionics sector. Our light-cure solutions help manufacturers improve imaging sensors used for ground proximity, aircraft health management, surveillance, and missile guidance systems and even protect printed circuit board assemblies from the harsher conditions they must withstand. IPC approved, MIL-I-46058C, and UL listed self-extinguishing grades are available. Most products are available in multiple viscosity grades, so the material flow may be tailored to the individual application.

Product Number*	UV/Visible	LED	Moisture	Heat	Activator	Description
<b>MASKANTS</b>						
<b>9-318-F</b>	●					Medium adhesion for peeling; blue fluorescing for black light inspection; silicone free
<b>9-7001</b>	●					Visible pink color in uncured state; resistant to solvent-based conformal coatings and primers; compatible with gold and copper pins; lower shrinkage; silicone free
<b>9-20479-B-REV-A</b>	●					Blue color for easy visual inspection; compatible with gold and copper pins; silicone free
<b>CONFORMAL COATINGS</b>						
<b>9-20557</b>	●			●		Low modulus for thermal cycling performance; medium viscosity, designed to enhance wetting of leads; suitable for most types of spray equipment; blue fluorescing; approvals: MIL-I-46058C, UL 94V-1, UL 746, IPC-CC-830-B
<b>984-LVUF</b>	●			●		Flexible for enhanced thermal shock performance; blue fluorescing; good adhesion to a variety of metal, ceramic, and glass-filled epoxy surfaces; approvals: MIL-I-46058C, UL 94V-0, IPC-CC-830-B, UL 746C
<b>9451</b>	●			●		True black coating ideal for covering sensitive information; optimized for single pass coating but can be coated in multiple passes if needed; approvals: UL 94V-0
<b>9481-E</b>	●		●			High chemical and abrasion resistance; low viscosity for thin coatings; bright blue fluorescing for easy coverage inspection; approvals: MIL-I-46058C, UL 746-E, IPC-CC-830B, UL 94V-0
<b>9482</b>	●		●			Bright blue fluorescing for easy coverage inspection; superior re-workability; excellent chemical and thermal shock resistance; approvals: MIL-I-46058C, UL 746-E, IPC-CC-830B, UL 94V-0
<b>ENCAPSULANTS</b>						
<b>7501-T-UR-SC</b>		●				Formulated with Encompass® technology; optimized for 385 or 405 nm LED curing; deeper section cure
<b>9-20558-REV-A</b>	●			●		Flexible, thixotropic material; bonds well to FPCs; approvals: UL 94V-0
<b>9001-E-V3.1</b>	●					Clear encapsulant with improved moisture and thermal cycle resistance; good ionic and electrical properties
<b>9008</b>	●					Flexible encapsulant with excellent moisture resistance; ideal for COF applications; remains flexible to -40C
<b>9037-F</b>	●			●		Flexible with excellent moisture and thermal resistance; blue fluorescing for easy inspection
<b>9101</b>	●		●			Flexible encapsulant with great moisture and thermal resistance
<b>9102</b>	●		●			Flexible encapsulant with great moisture and thermal resistance
<b>9103</b>	●		●			Flexible encapsulant with great moisture and thermal resistance



Nominal Viscosity, cP	Durometer Hardness	Elongation at Break, %	Modulus of Elasticity, MPa [psi]	Tensile at Break, MPa [psi]	Linear Shrinkage, %
50,000	A55	130	2.0 [310]	3.0 [440]	1.9
40,000	A70	180	1.9 [275]	3.8 [650]	1.9
115,000	A75	140	4.13 [600]	3.37 [490]	1.5
2,300	D60	150	37.9 [5,500]	10 [1,500]	1.1
160	D85	4	724 [105,100]	55.8 [8100]	0.1
6,000	—	4.4	717 [104,000]	42.7 [6,200]	-
125	D75	60	150 [21,800]	11 [1,600]	1.6
1,100	D70	26	275 [40,000]	15.8 [2,300]	2.0
6,500	D70	125	296 [43,000]	17.9 [2,600]	1.9
20,000	D50	160	2.3 [340]	6.2 [900]	1.8
4,500	D45	150	[2,500]	[750]	2.0
4,500	D35	270	45 [6,500]	10 [1,500]	1.2
45,000	D35	110	6.2 [900]	5.8 [850]	2.2
7,000	D30-D50	38	17.5 [2,550]	5.06 [735]	2.0
17,000	D30-D50	34	18.4 [2,670]	4.8 [703]	2.0
25,000	D30-D50	36	17.6 [2,560]	4.9 [718]	2.0

Product Number*	UV/Visible	LED	Moisture	Heat	Activator	Description
<b>POTTING</b>						
6-621-VT	•			•	•	Forms hard, clear bonds to a variety of substrates including metal, glass, ceramic, and phemolic and filled plastics; red fluorescing version available 6-621-VT-RF
9-20557	•			•		Low modulus for thermal cycling performance; medium viscosity, designed to enhance wetting of leads; suitable for most types of spray equipment; blue fluorescing; approvals: MIL-I-46058C, UL 94V-1, UL 746, IPC-CC-830-B
9-20558-REV-A	•			•		Flexible, thixotropic material; bonds well to FPCs; approvals: UL 94V-0
9008	•					Flexible material with excellent moisture resistance; ideal for COF applications; remains flexible to -40C
9037-F	•			•		Flexible with excellent moisture and thermal resistance; blue fluorescing for easy inspection
<b>WIRE TACKING</b>						
9-911-REV-B	•			•		High viscosity for optimal coverage of wires; solvent resistant* blue fluorescing; high bond strength to circuit board components; compatible with Dymax conformal coatings
921-GEL	•			•		High tensile strength with excellent bonds to a wide variety of substrates including metal, glass, ceramic, and many thermoset plastics; clear
921-T	•			•		High tensile strength with excellent bonds to a wide variety of substrates including metal, glass, ceramic, and many thermoset plastics; clear
921-VT	•			•		High tensile strength with excellent bonds to a wide variety of substrates including metal, glass, ceramic, and many thermoset plastics; clear
<b>CAMERA MODULE ADHESIVE</b>						
3094-GEL-REV-A	•					Fast curing; low shrinkage and stress; designed to bond to a variety of plastics
3094-T-REV-A	•					Fast curing; low shrinkage and stress; designed to bond to a variety of plastics
9801	•			•		Moisture and thermal cycle resistant; excellent bonds to LCP, PCB, PPS, and FPC
<b>RUGGEDIZING</b>						
9309-SC	•					Formulated with See-Cure color-change technology; high viscosity; highly thixotropic; reduces stress on components; great adhesion to various PCB substrates
<b>GAP FILL - FIP GASKETS</b>						
GA-103	•					Excellent water and acid/base resistance; self-leveling; silicone free; low compression set; high/low temperature resistant good adhesion to plastic, electroplated plastic, and metal surfaces
GA-112	•					Excellent tear resistance; cures soft and tack free; low outgassing; moisture resistant; silicone free; Excellent adhesion to metals
<b>STRUCTURAL ADHESIVES - MAGNET BONDING</b>						
535-A-REV-A						Activator for Dymax 800-series structural adhesives; fixtures in seconds; recommended for metals, ferrite, ceramic, glass, and thermoset plastics
846-GEL					•	Activator cured with 535-A-REV-A; exhibits good thermal shock and excellent adhesion to a wide variety of plated surfaces; excellent bonds to a wide variety of metal surfaces, glass, ceramic, filled nylon, thermoset plastics, and epoxy board
848-GEL					•	Activator cured with 535-A-REV-A; 100% solvent free; non-flammable

Nominal Viscosity, cP	Durometer Hardness	Elongation at Break, %	Modulus of Elasticity, MPa [psi]	Tensile at Break, MPa [psi]	Linear Shrinkage, %
14,000	D80	20	730 [106,000]	28 [4,000]	0.4
2,300	D60	150	37.9 [5,500]	10 [1,500]	1.1
20,000	D50	160	2.3 [340]	6.2 [900]	1.8
4,500	D35	270	45 [6,500]	10 [1,500]	1.2
45,000	D35	110	6.2 [900]	5.8 [850]	2.2
25,000	D80	30	552 [80,000]	24 [3,500]	0.7
25,000	D75	35	2,206 [320,000]	35.9 [5,200]	3.0
3,500	D75	35	2,206 [320,000]	35.9 [5,200]	3.0
11,000	D75	35	2,206 [320,000]	35.9 [5,200]	3.0
30,000	D67	200	179 [26,000]	12.4 [1,800]	0.5
11,750	D65	184	698 [101,300]	14 [2,000]	0.7
40,000	D90	2	1,600 [230,600]	45 [6,600]	0.01
45,000	D57	140	163 [23,800]	22 [3,200]	1.2
60,000	00-75	63	0.2 [35]	0.9 [130]	0.8
40,000	A50	360	1.3 [190]	4.5 [660]	0.5
-	N/A	N/A	N/A	N/A	N/A
Thixotropic Gel	N/A	N/A	N/A	N/A	N/A
45,000	N/A	N/A	N/A	N/A	N/A

# Surface Treatment Protection for OEM & MRO PROCESSES

Aerospace engine components are being designed for longer engine service life, pushing the limits of existing technology. Dymax light-curable materials address the growing challenges and demands for new technologies for applications in the MRO and OEM sectors of the aerospace and defense industry. SpeedMask® light-curable maskants replace tape, wax, lacquers, and fixtures and offer reliable protection against most surface treatment processing environments. The tenacious adhesion of SpeedMask® UV/Visible maskants seal and protect machined, ground, or polished surfaces and are solvent free, allowing your manufacturing process to go green by eliminating solvent lacquers. SpeedMask® temporary maskants are removed by incineration during heat-treat or heat-tint operations, or by peeling.

Product Name	UV	UV/Visible	Characteristics	Nominal Viscosity, cP	Uncured Appearance	Durometer Hardness	Elongation at Break, %	Modulus of Elasticity, MPa [psi]
<b>SPEEDMASK® MASKANTS FOR TEMPORARY PROTECTION</b>								
706	•		High adhesion; excellent surface and cavity protection; hard/durable; chemical resistance	43,000	Colorless Gel	D75	6.2	830 [120,000]
707	•		Prevents beam impingement; secondary heat cure for shadowed areas; reduces spatter; hard/durable	500	Colorless Gel	D70	71	270 [39,000]
718		•	High adhesion; resists flame spray processes; excellent surface and cavity protection during APS and HVOF	50,000	White Paste	D80	3.4	1,056 [153,278]
724		•	Good surface protection; fast curing; easy peel off	70,000	Colorless Gel	D40	200	2.7 [390]
726-SC		•	Transitions from blue to pink upon sufficient exposure to light energy; excellent surface protection; easy peel off after heat exposure; spray or dip	45,000	Blue Gel	D40	160	3.9 [560]
728-G		•	High adhesion; excellent surface protection to aggressive chemical processes; easy removal after hot-water soak; sprayable	25,000	Green/Blue Gel	D55	230	83 [12,000]
728-G-LV		•	High adhesion; excellent surface protection to aggressive chemical processes; spray or dip	2,500	Green/Blue Gel	D50	260	293 [42,500]
730-BT		•	Excellent chemical resistance including acids (Nitric, Sulfuric, and Hydrochloric); trimmable after cure; spray or dip	22,000	Blue	D35	300	3.4 [500]
731-REV-A		•	Excellent surface protection; sprayable; easy peel after hot-water soak; high adhesion	18,000	Bright Yellow Gel	D50	500	86 [12,600]
734-BT		•	Excellent surface protection and chemical resistance; moderate adhesion; spray or dip; trimmable after cure	24,000	Blue Gel	D25	220	5.5 [800]
740-BT		•	Low-medium adhesion; compatible with MEK-based and heat-cure paint	45,000	Blue Gel	A65	203	2.42 [350]
750-SC		•	Turns purple to pink after sufficient exposure to UV/Visible light; sprayable; high adhesion	30,000	Translucent Purple Gel	A85	140	4.4 [640]
7701		•	For metal finishing; flexible after heat exposure; low-medium adhesion; spray or dip	45,000	Colorless Gel	D30	225	7.6 [1,100]
<b>LIGHT-CURABLE COATING FOR PERMANENT PROTECTION</b>								
7502	•		High adhesion; reliable surface protection against environmental conditions, i.e. salt or moisture; spray or dip	20,000	Colorless Gel	D70	30	240 [35,000]



Removal Options	Chemical Processes				Coatings			Media Finishing			Manufacturing Aids			
	Anodizing	Plating	Acid Stripping	Chemical Etching	Air Plasma Spray	HVOF	Painting & Powder Coatings	Grit Blasting	Shot Peening	Vibratory Finishing	Machining	Buffing/Polishing	Airflow Testing	Laser Drilling
Incineration			•		•						•			
Incineration														•
Incineration					•	• (limited)								
Incineration							•	•	•				•	
Peelable		•		• (decorative etching)	•		•	•	•					
Peelable or Incineration		•	•				•	•	•	•	•	•		
Peelable or Incineration		•	•				•	•	•	•	•	•		
Incineration	•	•		•			•	•						
Peelable or Incineration									•					
Peelable or Incineration	•	•	•	•	•	• (limited)	•	•	•			•		
Peelable or Incineration							•							
Peelable or Incineration	•	•			•	• (limited)	•	•						
Peelable	•	•					•	•	•					
N/A														

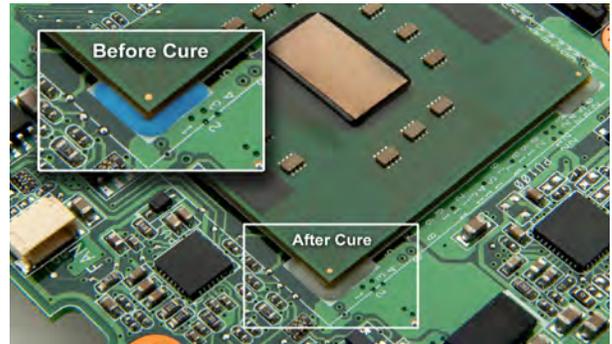
# Innovative **TECHNOLOGIES**

Through the years, Dymax's dedication to innovation has resulted in over 30 oligomer, adhesive, and equipment patents. Today, these innovative products and technical solutions offer design and manufacturing engineers the means to dramatically improve manufacturing efficiency and lower total processing costs. They turn problems like cure confirmation, shadow areas, and hard inspection into non issues.



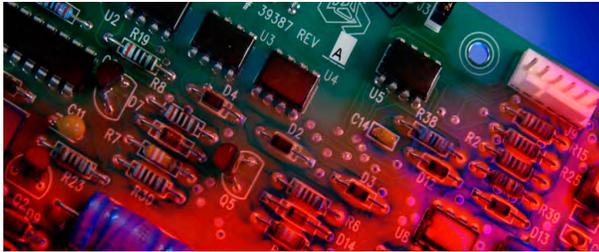
## LED Light-Curing Technology

Dymax manufactures a variety of LED light-curable materials and compatible LED UV and visible curing lamps. LED-curable adhesives range from fast to ultra-fast cure speeds to accommodate specific industrial, medical device, and electronic assembly needs. Dymax BlueWave® LED curing systems offer significant advantages over conventional lamp-curing systems including cooler curing temperatures, lower intensity degradation over time, more consistent cure results, lower energy consumption, and reduced costs.



## Patented See-Cure Technology

Dymax adhesives formulated with patented See-Cure technology answer the two most asked questions in an adhesive bonding application: Have I dispensed a sufficient amount of adhesive onto my substrate? Has the adhesive cured completely? Uncured See-Cure adhesives are bright blue in color. This makes them easy to see after dispensing onto the substrate. During the light-curing process, the blue color transitions to colorless, indicating that sufficient energy was received by the adhesive to complete the curing process. This visual cure indicator may initially be used to qualify a process and then to ensure that the process remains within the qualified parameters.



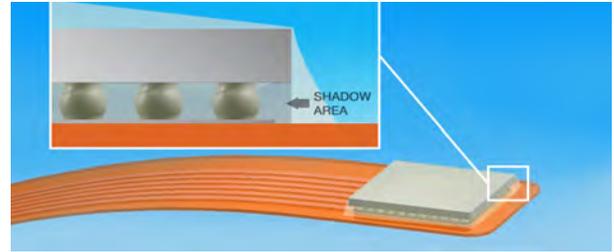
### Ultra-Red® Fluorescing Technology

Patented Ultra-Red® fluorescing technology enhances adhesive bond-line inspection processes and product authentication. Adhesives formulated with Ultra-Red technology remain clear until exposed to low-intensity UV light, at which point they fluoresce bright red. This feature is particularly helpful when bonding plastics that naturally fluoresce blue, such as PVC and PET. Since Ultra-Red technology produces a unique spectral signature, manufacturers can also use it for product authentication.



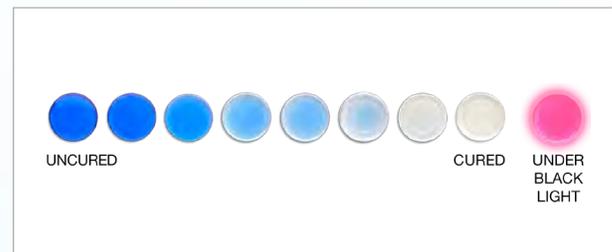
### Multi-Cure® Light/Heat-Cure Technology

Multi-Cure® adhesives combine the high-speed cure of UV or UV/Visible light with secondary cure mechanisms that enhance polymerization. Secondary cure mechanisms, which include thermal (heat) cure or activator cure, are useful when light can only reach a portion of the bond line, or when tacking a part prior to thermal cure to allow easier handling and transport during the manufacturing process.



### Dual-Cure Light/Moisture-Cure Technology

Dual-Cure coatings are formulated to ensure complete cure in applications where shadow areas on high-density circuit boards are a concern. Previously, areas shadowed from light were managed by selective coating – eliminating the need to cure in shadow areas – or a secondary heat-cure process. Shadowed areas cure over time with moisture, eliminating the need for that second process step or concerns of component life degradation due to temperature exposure.

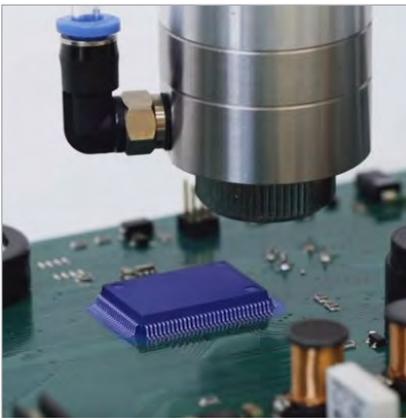


### Encompass® Technology

Materials formulated with Encompass® technology incorporate Dymax exclusive See-Cure color change and Ultra-Red® fluorescing technologies into one light-curable product. As a result, manufacturers gain efficiencies from rapid on-demand curing with easy cure confirmation and post-cure bond-line inspection.

# Dispensing **EQUIPMENT**

Dymax has developed high-quality, field-proven dispense systems to fit many types of adhesive and fluid dispensing applications. These systems include various automated and manual dispensing valves, spray valves and guns, controllers, material reservoirs, and related components for seamless integration into assembly processes. The systems provide accurate, consistent dispense for a range of low- to high-viscosity fluids. Dispensing systems with adjustable suck-back control and dispensing valves that offer contaminate-free dispensing are available.



## **SD-100 Digital Syringe Dispenser**

This dispensing system is ideal for use as an operator work station and can also be integrated into an automated process if needed. It provides an accurate way to dispense low-to-high viscosity materials from a syringe. The system is easy to set up and operate.

## **eco-PEN450 Dosing System**

The eco-PEN 450 is ideally suited for dispensing very precise volumes of low- to medium-viscosity materials. It offers maximum volumetric precision for both dot and bead applications, making it an excellent choice for masking components on PCB boards or other small-area applications.



## **eco-SPRAY Precision Micro-spray System**

This micro-spray system is excellent for a wide range of applications and for use with a variety of low- to high-viscosity spray media. Users can achieve a variety of spray volumes, from dot to endless spraying.

## **SG-200 Super-Flow Spray Gun System**

Dymax SG-200 super-flow spray gun systems are designed for masking and coating applications where a significantly higher flow rate is required. The systems are ideal for dispensing fluids with viscosities up to 80,000 cP. If you are manually masking a large area, this is a great option.



## **Model 400 Hand-Held Needle Valve System**

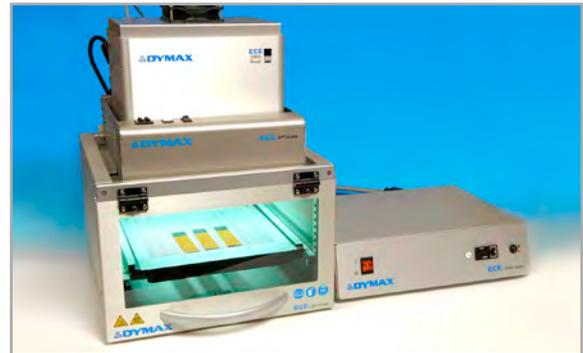
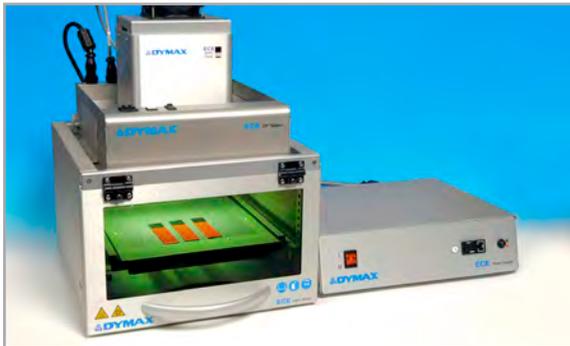
The Model 400 needle valve is designed for dispensing very precise dots or fine beads of low- to medium-viscosity materials. The valve is hand-held but is compact and lightweight, making it easy and comfortable to handle.

# Light-Curing SYSTEMS

Dymax designs and manufactures a wide range of curing equipment including spot lamps, flood lamps, and conveyor systems, as well as radiometers and other accessories. Dymax systems are optimized to work with light-curable adhesives to gain process efficiencies by targeting rapid surface curing, depth of cure, and speed of cure, all while delivering light in a rapid and economical way. CE marked equipment is available.

## FLOOD LAMPS

Static flood-lamp systems are suited for area curing or for curing multiple assemblies. Dymax offers UV models which use moderate-to high-intensity, multi-spectrum UV/Visible light and LED models that use light-emitting diodes for fast curing. Dymax flood lamps can be easily integrated into existing manufacturing processes by mounting the lamps above high-speed assembly lines to achieve rapid cures. Shutter assemblies, mounting stands, and shields are available to create a custom curing system.



### EC OR ECE 5000 FLOOD LAMP SYSTEMS

- Most popular and versatile
- Great for curing larger parts
- 5" x 5" curing area with 225 mW/cm<sup>2</sup> initial intensity

### EC or ECE 2000 Flood Lamp Systems

- Flood lamp with the largest cure area (8" x 8")
- Ideal for LED and masking applications
- 105 mW/cm<sup>2</sup> initial intensity

## RADIOMETERS

Measurement of the lamp intensity and dosage is critical to the successful implementation of light-curing technology. Dymax radiometers allow operators to monitor and document a light-curing process.



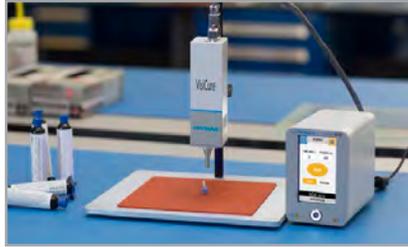
## SPOT LAMPS

Spot lamps provide a variety of methods to deliver light to a very precise location. They can be used manually by an operator or incorporated into a high-speed automated assembly line. Dymax offers multi-spectrum light-emitting lamps which use high-pressure mercury vapor bulbs, as well as light-emitting diode spot lamps, which use an array of surface-mounted LEDs instead of traditional metal halide or mercury bulbs.



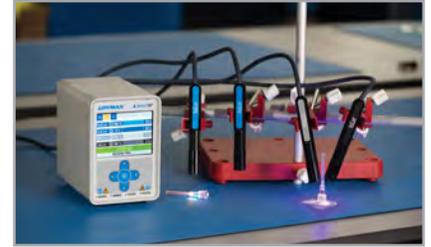
### BlueWave® 200

- UV curing with adjustable intensity
- Ideal for fast processing of small curing areas
- Suited for manual or automated processes



### BlueWave® MX-150

- Emitter design for set up flexibility and consistent intensity
- LED curing emitters in 365, 385, and 405 nm
- PLC interface that can be easily incorporated into automated systems



### BlueWave® QX4®

- One controller controls up to four LED heads
- LED heads are available in 365, 385, and 405 nm wavelengths
- PLC interface that can be easily incorporated into automated systems

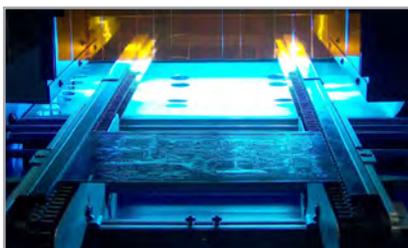
## CONVEYOR SYSTEMS

Conveyor systems consist of a moving belt that passes through a curing tunnel with multi-spectrum lamps mounted above or on each side for rapid curing of parts. These conveyor systems are designed to offer consistent, fast, and safe curing. They can be outfitted with standard metal halide (longwave UV), mercury (shortwave UV), visible bulbs, or LED flood arrays. Consistent line speed, lamp height, and intensity provide a consistent light-curing process for high throughput.



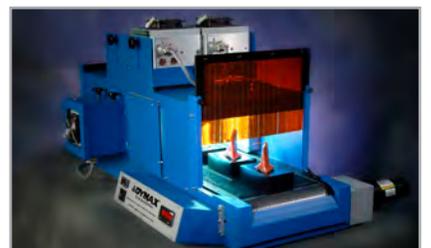
### WIDECURE® Conveyor System

- 24" curing width for processing larger parts
- Line speeds from 4-30 feet per minute, adjustable in 0.1 fpm increments



### Edge-Carry Conveyor System

- Items move through the conveyor on a chain rail instead of a traditional mesh belt
- Ideal for curing low profile parts such as PCBs
- Chain rail is adjustable, accommodating part widths up to 12"



### UVCS Conveyor Systems

- Left, right, and top curing capability with 6"- or 12"-width cure area
- Available in a wide range of configurations with UV broad-spectrum or LED flood lamps

# Systems **INTEGRATION**



Dymax has the expertise to help customers with aerospace system integration projects. We have 35 years of experience in the masking and surface treatment of parts and assemblies for the aerospace industry, including turbine masking and post-process finishing applications. Our system integration team can assist companies with the design and implementation of automatic and robotic dispensing and curing systems into their manufacturing processes.

In response to demands for dynamic parts handling and automation, we partner with industry professionals to deliver complete system solutions to customers. Our expert system integrators work directly with Mil-Spec precision metal handling and robotics companies, as well as finishing partners to solve complex assembly processes. Past integration projects include a turbine lead-edge machining and masking cell, fin blade mask and peel unit, and turbine hole detection and fill systems.

With patented processes and continuing IP development in the handling and treatment of turbines, coatings, and metal finishing, Dymax can design and deliver added value to aerospace manufacturers.

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