






# Electronics Assembly

UV Light-Curable Adhesives, Coatings,  
and Encapsulants for Electronic Assembly

# CONFORMAL COATINGS

## Reliable Board Protection in Seconds

Product Number*	Description	Viscosity (cP)	Durometer Hardness	Modulus of Elasticity MPa [psi]	Dielectric Strength (Volts/mil)	Approvals	Halogen-Free?
9481	<ul style="list-style-type: none"> <li>Room-temperature secondary moisture cure for shadowed areas</li> <li>Highest chemical and abrasion resistance</li> <li>Low viscosity for thin coatings</li> </ul>	125	D75	500 [73,000]	1,900 @ 2 mil	MIL-I-46058 listed IPC-CC-830 approved UL recognized	
984-LVUF	<ul style="list-style-type: none"> <li>Isocyanate free</li> <li>Rigid for high chemical and abrasion resistance</li> <li>Secondary heat cure for shadowed areas</li> </ul>	150	D80	410 [60,000]	1,800 @ 2 mil	MIL-I-46058 listed IPC-CC-830 approved UL recognized	
987	<ul style="list-style-type: none"> <li>Isocyanate free</li> <li>High chemical and abrasion resistance</li> <li>Secondary heat cure for shadowed areas</li> </ul>	150	D85	900 [130,000]	>1,500	MIL-I-46058 listed IPC-CC-830 approved	Pending
9-20351-UR	<ul style="list-style-type: none"> <li>Isocyanate free</li> <li>Easy one-pass coverage of high-profile leads and tall components without seeping into shadow areas</li> <li>Secondary heat cure for shadowed areas</li> </ul>	14,000	D45	24 [3,500]	-	-	
9-20557	<ul style="list-style-type: none"> <li>Isocyanate free</li> <li>Medium viscosity for wetting components</li> <li>Low modulus for thermal cycling performance</li> <li>Secondary heat cure for shadowed areas</li> </ul>	2,500	D60	240 [35,000]	1,200 @ 2 mil	MIL-I-46058C listed IPC-CC-830 approved UL recognized	
9-20557-LV	<ul style="list-style-type: none"> <li>Isocyanate free</li> <li>Low viscosity for thin coatings</li> <li>Low modulus for enhanced thermal cycling performance</li> <li>Secondary heat cure for shadowed areas</li> </ul>	800	D70	240 [35,000]	>1,500	MIL-I-46058C listed IPC-CC-830 approved	

\*Other grades are available for specific applications requiring physical properties different from standard products listed here.  
NOTE: Consult DYMAX Conformal Coating Validation Report for more detailed information on conformal coatings.



Black Coatings



Fluorescing Coatings



Clear Coatings

- Solvent free
- Tack-free UV cures in seconds
- Excellent environmental resistance
- Black grades available
- Adhesion to flex circuit substrates (FPC)
- Low stress under thermal cycling
- Rigid and flexible coatings available
- Electrically insulating

### Environmental Benefits of DYMAX Light-Curable Materials

DYMAX understands that safe ecologically friendly products benefit our customers, the environment, and us. We have created materials with attributes that lower products costs, life-cycle costs, and 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 < 1500 ppm total level of both combined. The current test method used for certification is BS EN 14582:2007.

# THERMAL INTERFACE ADHESIVES

## Efficient Thermal Transfer Between Heat Sinks and Electronics

Product Number	Description	Applications	Thermal Conductivity	Nominal Viscosity (cP)	Halogen-Free?
9-20801	<ul style="list-style-type: none"> <li>Light cure in seconds</li> <li>Secondary activator or heat cure for shadowed areas*</li> <li>Highly thixotropic for optimal placement</li> </ul>	<ul style="list-style-type: none"> <li>Mounting heat sinks on PCBs</li> <li>LED heat dissipation</li> </ul>	1.2 W/m <sup>2</sup> K	135,000	Pending

\*DYMAX 501-E is the recommended activator for shadowed areas



Bonding Heat Sinks

- Sets in seconds with light exposure
- Cure shadow areas with activator or heat
- High-strength bonds
- Low stress for mismatched CTE's
- Room-temperature storage and cure

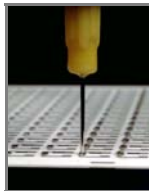
# CHIP ENCAPSULANTS and WIRE BONDERS

## For Superior Protection on Flexible and Rigid Platforms

Product Number	Description	Applications	Durometer Hardness	Viscosity (cP)	Elongation at Break (%)	Modulus of Elasticity MPa [psi]	Halogen-Free?
9001-E-v3.1	<ul style="list-style-type: none"> <li>UV/visible light cure for fastest processing</li> <li>Secondary heat cure for shadowed areas</li> <li>Multiple viscosities available for optimal flow and coverage</li> <li>Low modulus for wire bonding</li> </ul>	<ul style="list-style-type: none"> <li>Chip-on-board</li> <li>Chip-on-flex</li> <li>Chip-on-glass</li> <li>Wire bonding</li> <li>Bare-die encapsulation</li> </ul>	D45	4,500	150	17 [2,500]	
9001-E-v3.5				17,000			
9001-E-v3.7				50,000			
9008	<ul style="list-style-type: none"> <li>Flexible</li> <li>Highly moisture-resistant bonds to diverse surfaces such as polyimide, DAP, glass, epoxy board, metal, PET</li> <li>High adhesion, even at -40°C [-40°F]</li> </ul>	<ul style="list-style-type: none"> <li>Chip-on-flex encapsulation</li> <li>Flex circuit bonding and attachment to PCB and glass</li> </ul>	A85	4,500	300	-	Pending



Black Encapsulants



Chip Encapsulants



Flex Circuit Encapsulants

- 100% solvent free
- Instant UV/visible cures
- High ionic purity
- Tenacious adhesion to flex circuit substrates (polyimide and PET)
- Low stress under thermal cycling
- Electrically insulating
- Room-temperature storage
- Thermal shock and moisture resistance

# WIRE TACKING

## Photocurable Technology Offers Lower Costs and Increased Productivity

Product Number	Description	Nominal Viscosity (cP)	Durometer Hardness	Tensile @ Break MPa [psi]	Halogen-Free?
9-911 Rev A	<ul style="list-style-type: none"> <li>On-demand cure for optimal positioning</li> <li>Exposed areas cure in seconds for immediate strength</li> </ul>	40,000	D75	21 [3,000]	Pending




Wire Tacking

- Instant UV cure
- One part
- Solvent free
- Unlimited pot life
- Fluorescing additive for in-line quality control
- Excellent adhesion to solder masks and wires
- Thermal shock and moisture resistance

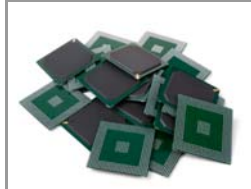
# RUGGEDIZATION

## Photocurable Technology Offers Lower Costs and Increased Productivity

Product Number	Description and Applications	Nominal Viscosity (cP)	Durometer Hardness	Tensile @ Break MPa [psi]	Cure Depth mm [in]	Halogen Free?
9422-SC	<ul style="list-style-type: none"> <li>Highly thixotropic for optimal placement and wetting of components</li> <li>See-Cure version for easy visual confirmation of full cure</li> </ul>	38,000	D50	16 [2,300]	6.5 [0.26]	



Ruggedizing





Leadless Component Ruggedization

- Fast dispense and cure
- Reduce stress on interconnects during push, pull, shock, drop, and vibration
- Pre- or post-reflow, room-temperature application
- Easy rework
- Simple visual inspection
- Engineered bead shape for wetting both board surface and component edge without seeping into shadowed area
- Improved bond strength for die and pry testing

# ACRYLATED URETHANE POTTING and SEALING


## For Shallow Potting in 10-30 Seconds or Less – Highest Adhesion to Substrates

Product Number	Description and Applications	Recommended Substrates	UV Cure* Speed (sec)/ Depth (mm [in])	Durometer Hardness	Viscosity (cP)	Halogen-Free?
921-T	<ul style="list-style-type: none"> <li>Connectors, thermal switches</li> <li>Tamperproofing</li> <li>Translucent bonds with high adhesion</li> </ul>	ABS, filled nylon, metal, glass	30/6.4 [0.25]	D-75	3,500	
921-VT					11,000	
921-Gel					25,000	
9001-E Series	<ul style="list-style-type: none"> <li>Sensors</li> <li>Flexible</li> <li>Excellent adhesion to engineering plastics</li> </ul>	ABS, PC, PVC, FR-4, metals	15/6.4 [0.25]	D-45	400 4,500 17,000 50,000	

\*UV cure speed depends on the intensity reaching the surface of the resin. Cure speed was measured at an intensity of 175 mW/cm<sup>2</sup>.

# CURE-POINT™ UV SILICONE POTTING and SEALING

## For Deep or Shadowed Potting Applications (Combines Thermal Performance of Silicone with Processing Benefits of UV)

Product Number	Description and Applications	Durometer Hardness	Cure Speed* (sec)	Viscosity (cP)	Temperature Range (°C [°F])	Halogen-Free?
9440-A/B	<ul style="list-style-type: none"> <li>Potting electronic components</li> <li>Rapid cure</li> <li>Firm, dielectric gel</li> </ul>	00-40	30	1,000	-40 [-40] – 200 [400]	

\*UV cure speed depends on the intensity reaching the surface of the resin. Cure speed was measured at an intensity of 175 mW/cm<sup>2</sup>. Gel time will vary depending on exposure time.



Cable Potting

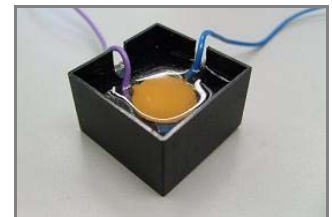


Deep Layer Potting



Chip Potting

- Full UV/visible cure in seconds
- Solvent free
- High adhesion to substrates
- Flexible and rigid products available



Sensor Potting

# REMOVABLE MASKS

Product Number	Description and Applications	Cure Depth (mm [in])	Durometer Hardness	Cure Mechanism	Cure Speed* (sec)	Viscosity (cP)
9-20479-B	<ul style="list-style-type: none"> <li>Peelable</li> <li>Wave-solder resistant</li> <li>Blue</li> <li>Excellent viscosity for machine dispensing</li> </ul>	6.4 [0.25]	A65	UV/visible light	10	75,000 140,000
9-318-F	<ul style="list-style-type: none"> <li>Peelable</li> <li>Fluoresces for easy inspection</li> <li>Very fast curing</li> </ul>	6.4 [0.25]	A75	UV/visible light	<4	50,000

\*Cure speed depends on the intensity and distance from the light source. Cure speed was measured at an intensity of 175 mW/cm<sup>2</sup>.



Fluorescing Mask



Removable Mask



Peelable Mask

- 100% solids
- UV/visible cure in seconds
- No ionic contamination
- Fluorescing and blue grades
- One part

# LED AND LCD ENCAPSULATING

## Bonding, Potting and Sealing in Seconds

Product Number	Description	Applications	Linear Shrinkage (%)	Nominal Viscosity (cP)	Halogen-Free?
LIGHT CAP® 9622	<ul style="list-style-type: none"> <li>UV/visible light cure in seconds</li> <li>No mixing required</li> <li>Heat resistant to 100°C</li> <li>Resistant to long-term UV exposure</li> <li>High light transmittance</li> <li>Durometer between silicone and epoxy</li> </ul>	<ul style="list-style-type: none"> <li>Instant casting of LEDs</li> <li>Rapid forming of protective optical lens</li> </ul>	0.8	12,000	–

# DISPLAY OPTICAL BONDING and LAMINATING

Product Number	Description	Applications	Linear Shrinkage (%)	Nominal Viscosity (cP)	Halogen-Free?
9-20737	<ul style="list-style-type: none"> <li>High viscosity for filling gap without flowing into shadowed areas</li> <li>Adhesion to various frame substrates</li> </ul>	Sealing frame to display surface	TBD	11,000	–
9641-LV	<ul style="list-style-type: none"> <li>Optimized cure speed and modulus for low stress bond</li> <li>Enhanced resistance to yellowing from heat or UV exposure</li> <li>Optically clear</li> </ul>	Optical bonding of touch screens and protective cover windows	4%	1,200	–



LCD Laminating Plastics with 9641-LV



Touch Screen or Cover Window Optical Bonding

- One component, no mixing required
- Flexible
- Resistant to yellowing
- Fast cure
- Bonds various substrates
- High optical clarity

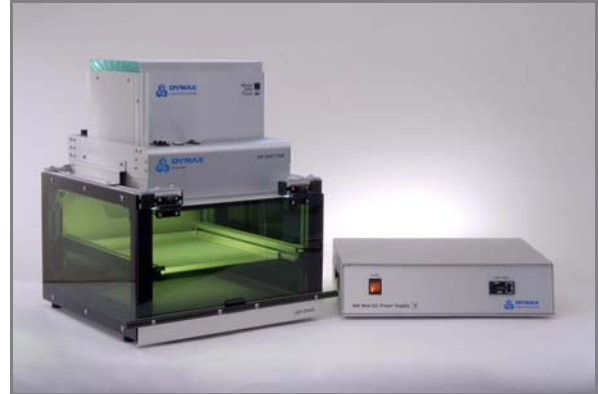
# Flood Chambers and Conveyor Curing Systems for Electronic and Photonic Applications

Successful UV processing demands that the curing equipment be matched to the resin to optimize both performance and cost savings. DYMAX manufactures UV resins and UV curing equipment and specializes in the optimization of UV curing processes. Our technical specialists are ready to help you optimize your process, and maximize your profit and product performance. For resin and equipment selection assistance please, contact DYMAX Applications Engineering.



**DYMAX 5000 Flood Lamp Systems**  
*Most Popular and Versatile*

Ideal for potting, sealing, and encapsulating applications



**DYMAX 2000 Flood Lamp Systems**  
*Largest Cure Area*

Ideal for LED and masking applications



**DYMAX UVCS Series UV Curing  
Conveyor Systems with 5000-EC Lamps**

Ideal for conformal coating applications



**DYMAX Heavy-Duty UV Curing  
WIDECURE™ Conveyor Systems**

Ideal for curing adhesives, coatings, and inks

# UV Light Curing Spot Lamps for Electronic and Photonic Applications



**DYMAX BlueWave® 200 UV Curing Spot Lamp**  
Ideal for fastest processing of small curing areas



**DYMAX BlueWave® LED Prime UVA**  
Visible Spot Light Curing System  
Ideal for cool spot curing coatings



Liquid lightguides come in an assortment of sizes and split wand configurations.



**ACCU-CAL 50™ Radiometer**  
Ideal for process monitoring.



Reduced environmental impact and energy conservation are core pillars of the DYMAX mission. Over the last 30 years, DYMAX light-curable materials and curing equipment have become the industry standard for fast, environmentally conscious assembly. DYMAX products are readily replacing technologies that contain hazardous ingredients, produce waste, or require higher amounts of energy to process. DYMAX understands that safe ecologically friendly products benefit our customers, the environment, and us. We have created materials with attributes that lower product costs, life-cycle costs, and ecological impact.

DYMAX Eco underlines the DYMAX commitment to the environment. Information for Environmental Health and Safety officers, government officials, and engineers to assist in making informed decisions when comparing assembly processes is available by visiting [www.dymax.com/eco](http://www.dymax.com/eco).

**For further assistance with adhesive and equipment selection, contact your DYMAX Applications Engineer.**



In the U.S. Call: 877.396.2963

In North and South America Call: +1.860.482.1010

In Europe Call: +49 (0) 69 / 7165-3568

In Asia Call: +86.755.83485759

[www.dymax.com](http://www.dymax.com)

[www.dymax.de](http://www.dymax.de)

[www.dymax.com.cn](http://www.dymax.com.cn)

**DYMAX Corporation** - 318 Industrial Lane - Torrington, CT 06790 - Phone: 860.482.1010 - Fax: 860.496.0608 - E-mail: [info@dymax.com](mailto:info@dymax.com) - [www.dymax.com](http://www.dymax.com)

**DYMAX Europe GmbH** - Trakehner Strasse 3 - D-60487 Frankfurt am Main - Germany - Phone: +49 (0) 69 / 7165-3568 - Fax: +49 (0) 69 / 7165-3830 - E-mail: [dymaxinfo@dymax.de](mailto:dymaxinfo@dymax.de) - [www.dymax.de](http://www.dymax.de)

**DYMAX UV Adhesives & Equipment (Shenzhen) Ltd** - Unit 807, Talfook Building, No. 9 Shi Hua Road, Futian Free Trade Zone, Shenzhen, China 518038 - Phone: +86.755.83485759 - Fax: +86.755.83485760 - E-mail: [dymaxasia@dymax.com](mailto:dymaxasia@dymax.com) - [www.dymax.com.cn](http://www.dymax.com.cn)

**DYMAX Asia (HK)** - Unit 1006, 10/F., Carnarvon Plaza, No. 20, Carnarvon Road, T.S.T., Kowloon, Hong Kong - Phone: +852.2460.7038 - Fax: +852.2460.7017 - E-mail: [dymaxasia@dymax.com](mailto:dymaxasia@dymax.com) - [www.dymax.com.cn](http://www.dymax.com.cn)

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