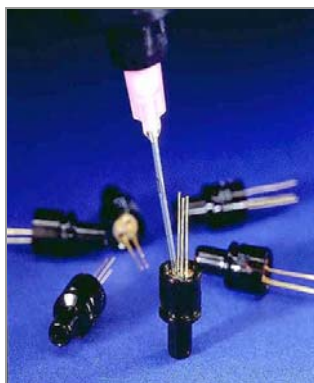
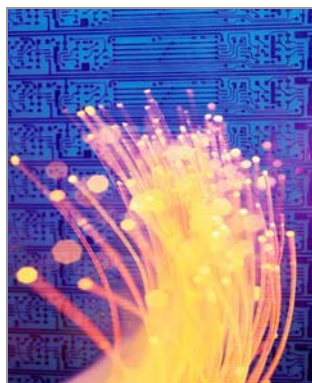


UV Light Curing Lens-Bonding and Fiber Optic Adhesives

DYMAX OP Series of high-strength, low-stress optical assembly adhesives cures in seconds upon exposure to UV/Visible light. DYMAX optical adhesives are single component, low outgassing, low shrinkage, and have a gap filling capability to 6.4 mm [0.25 in] or more. High performance fiber optic adhesives minimize movement of parts during cure and thermal



VCSEL Potting



Fiber Optic Bundling



Lens Curing



Lens Positioning

Features and Benefits

- Low to no movement during cure and thermal excursions (from -50°C to 200°C)
- Exceptionally low shrinkage to 0.1%
- Low to high glass transition points (T_g)
- A range of refractive indices from 1.40-1.58
- Low outgassing to 10^{-6} grams/gram
- Superior optical transmission
- Single component, no mixing required
- Gap filling to 6.4 mm [0.25 in] or more
- Environmentally resistant
- No VOCs
- Low odor

DYMAX offers a complete line of high-performance light-curable adhesives and light-curing equipment for optical applications for the industrial, commercial, medical, military, aerospace, and electro-optical markets. Over 30 years of experience in this industry has led to a superior product line of adhesives, applicators, and UV light-curing sources.

The First Adhesives Developed for High-Speed Fiber Optic Assembly

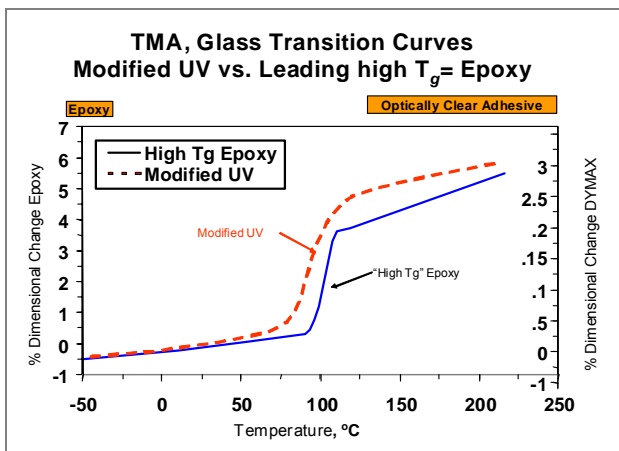
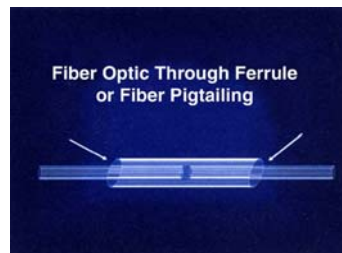
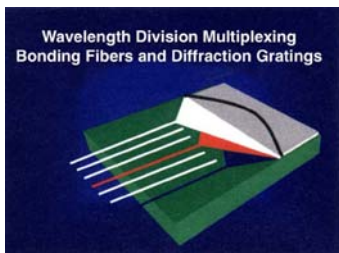
Easily automate production of products such as lenses, fiber optics, prisms, mirrors, and other assemblies. DYMAX OP Series UV light-curable fiber optic adhesives cure in seconds, have unlimited pot life, long shelf life, and are not frozen.

[Want to learn more?](#)

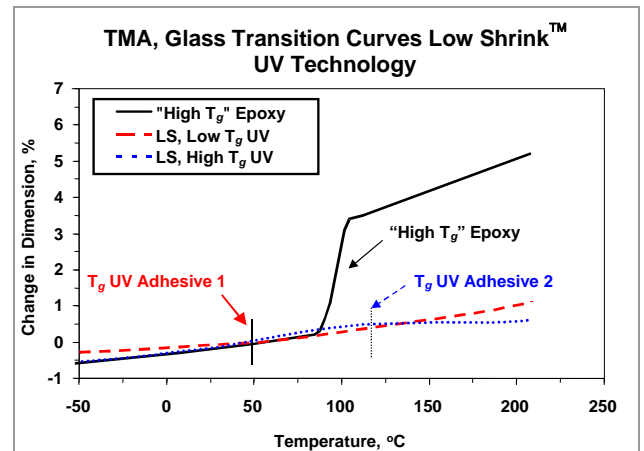
Visit www.dymax.com to register to download the white paper "*Advances in Light-Curing Adhesives*"

Product Selector Guide

Products	Description	Linear Shrinkage	Refractive Index (cured)	Viscosity (cP)	Durometer Hardness	Adhesion			
						D=Rigid A=Elastic OO=Soft	Ceramic	Glass	Metal
OP-24-Rev. B (501-E)	Clear; Multi-Cure® (UV/light/heat/activator); tack and bond with UV, heat, or activator where light won't reach; lens mounting	3.7%	1.502	800	D80		✓	✓	✓
OP-29	Clear; UV light cure; doublet bonding; lens mounting; fiber optic splicing	2.8%	1.504	2,500	D60		✓	✓	✓
OP-29-Gel	Clear; UV light cure; doublet bonding; lens mounting; fiber optic splicing	2.8%	1.504	110,000	D60		✓	✓	✓
OP-67-LS	White/opaque; UV/Visible light cure; low shrinkage; low outgassing for alignment stability; doublet bonding	<0.1%	N/A	135,000	D80	✓	✓	✓	✓
OP-4-20632	Clear; tenacious adhesion to glass and metal; low shrink on cure; T _g increases with heat exposure; moisture resistant; resists yellowing	<0.2%	1.554	500	D75	✓			✓



High T_g's of new UV's compared to those of epoxy



Minimal movement with temperature change means improved durability

Product Selector Guide

Products	T _g Glass Transition Temperature °C (By TMA)	Outgassing ASTM E595-77 85°C at 5x10 ⁻⁶ torr for 24 Hours TWL ¹ /CVCM ²	Tensile Bar Strength ASTM D638			Bond Strength Compressive Shear		
			Tensile (psi [MPa])	Modulus of Elasticity (psi [MPa])	Elongation	Glass to Glass (psi [MPa])	Steel to Glass (psi [MPa])	Steel to Steel (psi [MPa])
OP-24-Rev. B (501-E)	79 ^{uh} 92 ^u	5.2% /<0.04%	5,200 [36]	320,000 [2,206]	35%	4,000 [28]	5,000 [34]	2,900 [20]
OP-29	64 ^{uh} 67 ^u	3.66% />0.25%	5,000 [34]	35,000 [241]	120%	2,300 [16]	1,700 [12]	N/A
OP-29-Gel	56 ^{uh} 58 ^u	3.66% />0.25%	4,700 [32]	35,000 [241]	120%	2,300 [16]	1,700 [12]	N/A
OP-67-LS	86 ^{uh} 125 ^u	nm	4,000 [28]	83,000 [570]	6.5%	nm	nm	N/A
OP-4-20632	78 ^{uh} 87 ^u	nm	8,900 [61]	800,000 [5,500]	2%	2,200 [15]	525 [3.6]	N/A

^{uh}=UV plus heat (75 minutes @ 110°C) cure ^u = UV only cure nm = not measured



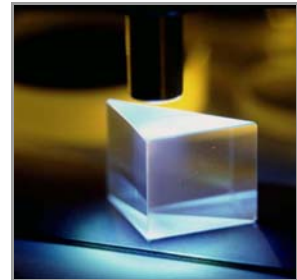
Diode Curing



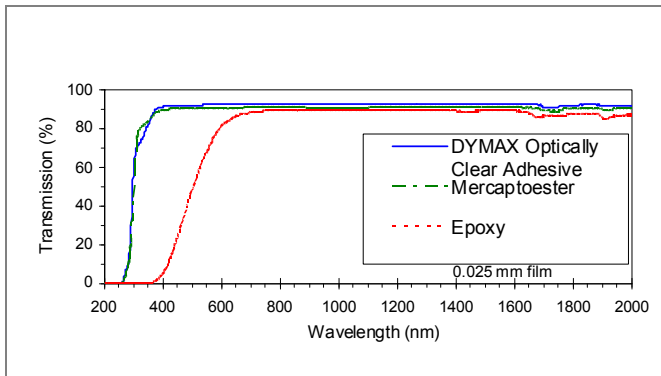
Lens Bonding



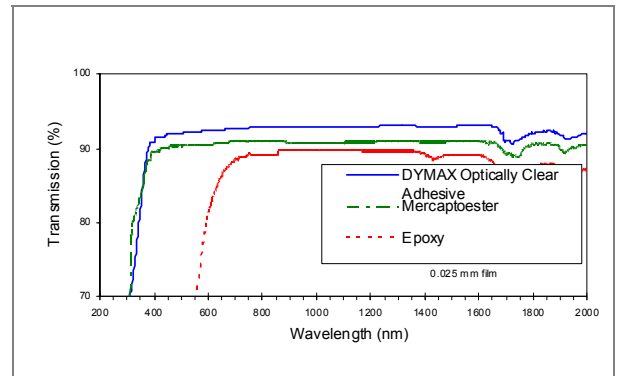
Lens Laminating



Prism Curing



DYMAX OP series adhesives show superior optical transmission



Transmission curves from graph on left expanded from 70% level and higher

UV Light-Curing Systems for Optical Adhesives

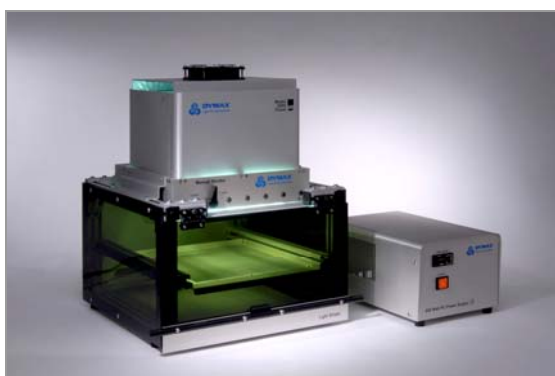
Tired of short storage and shelf life, of mixing two components, and waiting for adhesives to thaw? DYMAX UV light-curing adhesives and systems cure completely in seconds. **Make automation easier!**



DYMAX BlueWave® 200 UV-Curing Spot Lamp with patented intensity adjustment feature provides high-intensity UV/Visible light in a concentrated area. Ideal for integration with automated equipment and multiple-output lightguides. **CE Marked.**



DYMAX BlueWave® 75 UV-Curing Spot Lamp Shown with single lightguide features a patented intensity adjustment feature and an auto-switching power supply to neutralize the effects of variations in line voltage. **CE Marked.**



DYMAX 2000 UV Curing Flood Lamp System Shown with Light Shield protective enclosure and manual shutter. Ideal for single component or batch curing processes requiring moderate intensity and a 20 cm x 20 cm cure area. **CE Marked**



DYMAX 5000 UV Curing Flood Lamp System Shown with Light Shield protective enclosure and ZIP™ shutter. Ideal for single component or batch curing processes requiring moderate intensity and a 12.7 cm x 12.7 cm cure area. **CE Marked**

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