

Ultra Light-Weld® OP-4-20632 Series High T_g Light Path Adhesives for Fiber Optical Assembly

INTRODUCTION

DYMAX OP-4-20632 Series high-performance optical adhesives cure upon exposure to UV/Visible light in seconds and are designed to increase productivity, lower assembly cost, and enhance worker safety. When cured with DYMAX light-curing spot lamps, focused-beam lamps, or flood lamps, they deliver optimum speed and performance for optical assembly. This product is in full compliance with the RoHS Directives 2002/95/EC and 2003/11EC.

DESCRIPTION

Ultra Light-Weld® OP-4-20632 Series are UV/Visible light-curable adhesives designed for durable bonding of fiber optic couplings. OP-4-20632 Series adhesives were designed for maximum resistance to yellowing and they maintain their dimensions when thermally cycled. OP-4-20632 Series have high bond strength to optical glass and most metals. Although the product fully cures in seconds upon UV or visible light exposure, heating the UV-cured product to 150°C for 1 hour will increase the T_g to 100°C and may further improve bond strength.

FEATURES:	<ul style="list-style-type: none"> • Low-Shrinkage UV Cure (<0.2%) with High Optical Clarity 300-1800 nm • High-Strength Bonds Resist Yellowing • High Glass-Transition Temperature (T_g) • Good Thermal Cycling with Minimal Degradation of Optics or Strength
APPLICATIONS:	<ul style="list-style-type: none"> • Fiber Optic Couplings and Prisms

TYPICAL UNCURED PROPERTIES (not specifications)

Solvent Content		None-100% Reactive Solids	
Composition		Acrylate	
Appearance	OP-4-20632	Optically Clear	
	OP-4-20632-GEL	Translucent Gel	
Solubility		Alcohols/Ketones/Chlorinated Solvents	
Flash Point		Over 93°C (>200°F)	
Refractive Index, n _D ²⁰		1.522	ASTM D-1218
Viscosity, (Brookfield, 25°C, 20 rpm)	OP-4-20632	500 cP	ASTM D-1084
	OP-4-20632-GEL	50,000 cP (thixotropic gel)	ASTM D-2556

TYPICAL CURED PROPERTIES (not specifications)

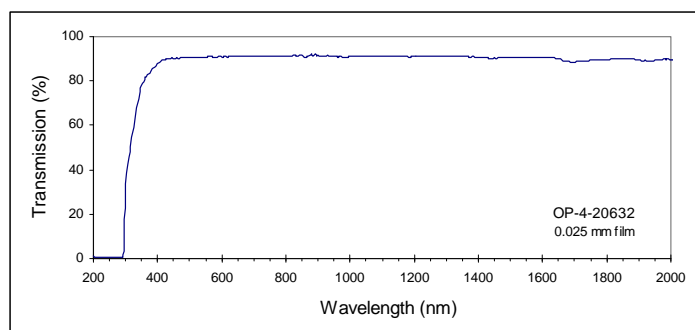
Linear Shrinkage, After UV Cure	0.2%	ASTM D-2566
Refractive Index, n _D ²⁰	1.554	ASTM D-1218
Glass Transition, T _g	100°C (UV cure and heat)	ASTM E-831
Glass Transition, T _g	50°C (UV cure without heat)	ASTM E-831
CTE α ₁ (below T _g)	45 x 10 ⁻⁶ in/in/°C	ASTM E-831
CTE α ₂ (above T _g)	110 x 10 ⁻⁶ in/in/°C	ASTM E-831
CTE (-50°C to 200°C)	91 x 10 ⁻⁶ in/in/°C	ASTM E-831
Durometer Hardness	D75	ASTM D-2240
Tensile at Break	8,900 psi	ASTM D-638
Modulus of Elasticity	800,000 psi	ASTM D-638
Elongation at Break	2%	ASTM D-638
Tensile Compression Shear, Glass-to-Glass	2,200 psi (exceeds glass strength)	DSTM D-250*
Thermal Range (Brittle/Degrades)	-55° to +200°C (-65 to 400°F)	DSTM D-200*
24 hr Water Absorption	1.0 %	ASTM D-570
2 hr Boiling Water Absorption	1.2%	ASTM D-570

*DSTM Refers to DYMAX Standard Test Method



CURE DATA

Lamp	DYMAX® 2000-EC	DYMAX® 5000-EC	DYMAX® Bond Box	DYMAX® BlueWave® 50	ADAC™ 50
Light Type Lamp Type	UV/Visible 8" x 8" Flood	UV/Visible 5" x 5" Flood	UV/Visible 8" Rotating stage	UV/Visible 3/16" Spot	UV/Visible 3/16" Spot
Maximum Lamp Intensity @ 365 nm Intensity @ time of test @ 365 nm	50 mW/cm ² 20 mW/cm ²	300 mW/cm ² 150 mW/cm ²	150 mW/cm ² 50 mW/cm ²	4,000 mW/cm ² 2,500 mW/cm ²	4,000 mW/cm ² 2,500 mW/cm ²
Adhesive Absorption Range (nm) Equipment Output Range (nm)	300-400 300-500	300-400 300-500	300-400 300-500	300-400 300-500	300-400 300-500
Typical Cure Speed (Seconds) Fixture Between Glass Slides Tack-Free Surface Cure 1/16-Inch Bead	 1 1 3	 1 1 3	 1 1 3	 1 1 3	 1 1 3


STORAGE & SHELF LIFE

Store material in a cool, dark place when not in use. Do not expose to UV light or sunlight. Material may polymerize upon prolonged exposure to ambient light. This material has a minimum 12-month shelf life from date of shipment, unless otherwise specified, when stored between 10°C [50°F] and 32°C [90°F] in the original, unopened container.

DISPENSING & HANDLING ADHESIVE

This material may be dispensed with a variety of manual and automatic applicators or other equipment as required. Questions relating to dispensing and curing systems for specific applications should be referred to DYMAX Applications Engineering.

SAFETY

Wear impervious gloves and/or barrier cream. Repeated or continuous skin contact with liquid adhesive will cause irritation and should be avoided. Do not wear absorbent gloves. Remove adhesive from skin with soap and water. Never use solvents to remove adhesive from skin or eyes.

CAUTION

For industrial use only. Avoid breathing vapors. Avoid contact with eyes and clothing. In case of contact, immediately flush with water for at least 15 minutes; for eyes, get medical attention. Wash clothing before reuse. Keep out of reach of children. Do not take internally. If swallowed, vomiting should be induced at once and a physician called. For specific information, refer to the Material Safety Data Sheet before use.

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DYMAX Corporation - 318 Industrial Lane - Torrington, CT 06790 - Phone: 860.482.1010 - Fax: 860.496.0608 - E-mail: info@dymax.com - 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 - www.dymax.de

DYMAX UV Adhesives & Equipment (Shenzhen) Co., Ltd - Unit 807, Talfook Building, No. 9 Shihua Road, Futian Free Trade Zone, Shenzhen, China 518038 - Phone: +86.755.83485759 - Fax: +86.755.83485760 - E-mail: dymaxasia@dymax.com - www.dymax.com.cn

DYMAX Asia (HK) - Room 1103, 11/F., Metro Centre, Phase I, 32 Lam Hing St., Kowloon Bay, Hong Kong - Phone: +852.2460.7038 - Fax: +852.2460.7017 - E-mail: dymaxasia@dymax.com - www.dymax.com.cn

DYMAX Korea LLC - #903, CCMM B/D, 12 Yeoido-Dong, Youngdungpo-Gu, Seoul, Korea, 150-869 - Phone: 82.2.784.3434 - Fax: 82.2.784.5775 - E-mail: info@dymax.kr - www.dymax.co.kr