Ultra Light-Weld® GA-103
Light-Curable, FIP, Soft Heat, Moisture- and Chemical-Resistant Gasket

APPLICATIONS
- **Fuel Cells**
- **Underwater Enclosures**
- **High-Temperature Sealing**

FEATURES
- **UV/Visible Light Cure**
- **Excellent Water Resistance**
- **Excellent Acid/Base Resistance**
- **Self-Leveling Liquid**
- **High/Low-Temperature Resistant**
- **Cures in Seconds**
- **Silicone Free**
- **Low Compression Set**

SURFACES
- **Plastics**
- **Electroplated Plastics**
- **Metals**

DYMAX Ultra Light-Weld® Form-In-Place (FIP) and Cure-In-Place Gasketing Resin GA-103 is formulated for fuel cells, underwater enclosures, and high-temperature sealing applications which require low compression set. GA-103 has good adhesion to plastic, electroplated plastics, and metal surfaces while providing superior heat, water, and chemical resistance. The resins can be dispensed in intricate and complex configurations with the added benefit of curing in-line which allows for increased production speed and reduced inventories. DYMAX Ultra Light-Weld® GA-103 resins contain no nonreactive solvents and cure upon exposure to light. Their ability to cure in seconds enables faster processing, greater output, and lower assembly costs. When cured with DYMAX light-curing spot lamps, focused-beam lamps, or flood lamps, they deliver optimum speed and performance for maximum efficiency. DYMAX lamps offer the optimum balance of UV and visible light for the fastest, deepest cures. This product is in full compliance with the RoHS Directives 2002/95/EC and 2003/11EC.

TYPICAL UNCURED PROPERTIES *

Property	Value	Test Method
Solvent Content	No Nonreactive Solvents	N/A
Chemical Class	Acrylated Urethane	N/A
Appearance	Clear Transparent Gel	N/A
Solubility	Organic Solvents	N/A
Density, g/ml	0.93	ASTM D1875
Viscosity, cP (20 rpm)	60,000 (nominal)	ASTM D2556

OTHER CURED PROPERTIES *

Property	Value	Test Method
Linear Shrinkage, %	0.8	ASTM D2566
Boiling Water Absorption, % (2 h)	0.5	ASTM D570
Water Absorption, % (25˚C, 24 h)	0.2	ASTM D570

CURED MECHANICAL PROPERTIES *

Property	Value	Test Method
Durometer Hardness	00-75	ASTM D2240
Tensile at Break, MPa [psi]	0.9 [130]	ASTM D638
Elongation at Break, %	63	ASTM D638
Modulus of Elasticity, MPa [psi]	0.2 [35]	ASTM D638
Glass Transition Temperature, ˚C	-37	DSTM 256
Compression Set, % (85˚C, 22 h)**	14.9	ASTM D395

* Not Specifications

N/A Not Applicable

** Compression set is expressed as percentage of deflection per ASTM D395 Method B at 25% deflection. To determine percent recovery, subtract ¼ of the value from 100%. For example, the recovery is 98.8% with a 5% compression set.

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) 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 - 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 - 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

FORM-IN-PLACE GASKETING RESINS

GA-103 Product Data Sheet

CURING GUIDELINES

Cure rate is dependent upon many variables, including lamp intensity, distance from the light source, and required depth of cure. The cure time listed below is based upon lab tests and is intended for reference only. Cure time is defined as the time to achieve a full cure of a 3.2 mm [0.13 in] thick gasket.

Recommended Minimum Cure Intensity	Cure Time
150 mW/cm^2 [A]	10 s

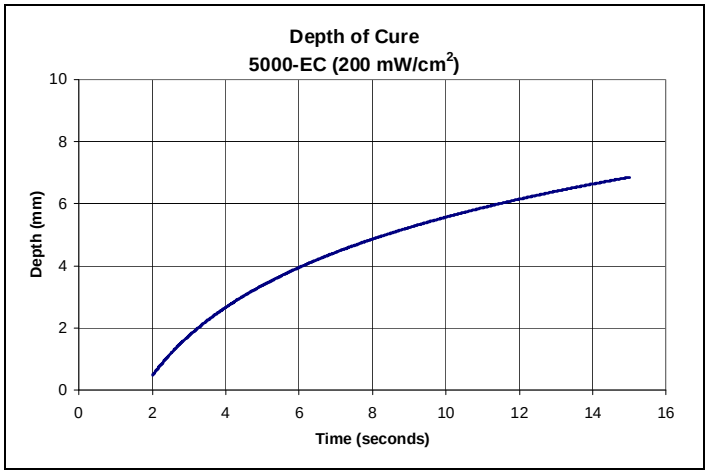
[A] *Intensity was measured over the UVA range (320-395 nm) using a DYMAX ACCU-CAL™ 50 Radiometer.*

Full cure is best determined empirically by curing at different times and intensities, and measuring the corresponding change in cured properties. Full cure is defined as the point at which more light exposure no longer improves cured properties. Higher intensities or longer cures (up to 5x) will generally not degrade DYMAX light-curable resins.

DYMAX recommends that customers employ a safety factor by curing longer and/or at higher intensities than required for full cure. Although DYMAX Applications 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 in contact with the resin should be clean and free from grease, mold release, or other contaminants prior to dispensing the gasketing 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 affects 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.

PERFORMANCE AFTER TEMPERATURE EXPOSURE

DYMAX light-curable materials typically have a lower thermal limit of 54˚C [-65˚F] and an upper limit of 150˚C [300˚F]. Many DYMAX products can withstand temperatures outside of this range for short periods of time. Please contact DYMAX Applications Engineering if you need further assistance.

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) 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 - 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 - 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

FORM-IN-PLACE GASKETING RESINS

GA-103 Product Data Sheet

DISPENSING THE GASKETING RESIN

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.

STORAGE AND SHELF LIFE

Store the material in a cool, dark place when not in use. Do not expose to visible or UV light. This product may polymerize upon prolonged exposure to ambient and artificial light. Keep covered when not in use. 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.

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. Clean up of cured material may require mechanical methods of removal.

GENERAL INFORMATION

This product is intended for industrial use only. Keep out of 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 Material Safety Data Sheet before use.

RECOMMENDED DYMAX LITERATURE

LIT010A	Guide to Selecting and Using UV Light-Curing Systems
LIT077	Chemical Safety
LIT133	UV Light-Curing System Safety Considerations
LIT159	ACCU-CAL™ 50 Radiometer
LIT203	UV Curing Form-In-Place Gasket Selector Guide
LIT206	Flood and Focused-Beam UV Light-Curing Systems
LIT218	BlueWave® 200 UV Light-Curing Spot Lamp

Literature is available at www.dymax.com or by calling any DYMAX location.

Technical Data Collection Prior to 2008 Rev. 12/09/2010

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) 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 - 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 - 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