GA-103

Light-Curable FIP 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 ® GA-103 is a Form-in-Place (FIP) and Cure-in-Place (CIP) gasketing resin formulated for fuel cells, underwater enclosures, and high-temperature sealing applications that require low compression set. GA-103 has good adhesion to plastic, electroplated plastic, and metal surfaces while providing superior heat, water, and chemical resistance. It can be dispensed in intricate and complex configurations with the added benefit of curing in-line, allowing for increased production speed and reduced inventories. Dymax materials 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 ideal balance of UV and visible light for the fastest, deepest cures. This product is in full compliance with RoHS directives 2015/863/EU.

TYPICAL UNCURED PROPERTIES *

Property	Value	Test Method
Soluble in	Organic Solvents	N/A
Solvent Content	No Nonreactive Solvents	N/A
Chemical Class	Acrylated Urethane	N/A
Appearance	Colorless 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
Shelf Life at Recommended Conditions from Date of Manufacture	18 months	N/A

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 Tg, °C	-37	ASTM D5418
Compression Set, % (85°C, 22 hr)**	14.9	ASTM D395

Chemical Resistance - % of Initial Weight	Weight Immediately After Exposure	Weight 1 Week After Exposure
Motor Oil SAE 10W-30	139%	138%
Brake Fluid	101%	101%
Transmission Fluid	101%	101%
Diesel Fuel	125%	118%
Power Steering Fluid	100%	100%
Salt Water 5% NaCl	101%	100%
Isopropyl Alcohol 99%	127%	97%
Suntan Lotion SPF 50	104%	102%
Hand Lotion	102%	100%

Note:
The samples were immersed in fluid for 72 hours at room temperature.
Immediately - wiped clean and weight measured.
1 week - Wiped clean, left at room temperature for 1 week and then weight measured.

DISPENSE EQUIPMENT RECOMMENDATIONS *

Application	Manual	Semi-Automated	Fully Automated
Beads	SD-100	Model 400 Needle Valve	Eco-PEN

CURING EQUIPMENT RECOMMENDATIONS *

Process Method	Spot Lamp	Flood Lamp	Conveyor
Broad Spectrum	BlueWave® 200	5000-ECE	UVCS Conveyor with Fusion F300 Lamp

* 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.

Technical Data Collected PRIOR TO 2008 Rev. 02/10/2023

OTHER CURED PROPERTIES *		
Property	**Value**	**Test Method**
Linear Shrinkage, %	0.8	ASTM D2566
Boiling Water Absorption, % (2 hr)	0.5	ASTM D570
Water Absorption, % (25°C, 24 h)	0.2	ASTM D570

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^{2A}	10 s

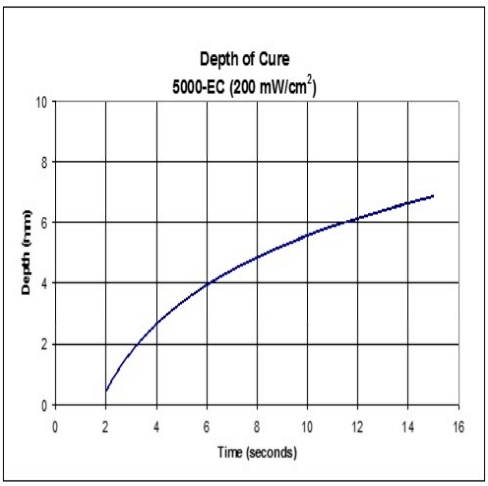
A Intensity was measured over the UVA range (320-395 nm) using a Dymax ACCU-CAL™ 50 Radiometer.

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 may 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 Application 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.
7. Cure speed is dependent upon many variables, including lamp intensity, distance from the light source, required depth of cure, bond gap, and percent light transmission of the substrate.

DISPENSING SUPPORT

The Dymax Application Engineering team is ready to discuss your application requirements to provide the most appropriate dispensing and/or spraying solution. Visit our current dispensing equipment portfolio here or consult our global contact phone numbers and online chat feature (available in North America only) during normal business hours for instant support.

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 shelf life is noted on page 1 of this document, 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. Cleanup of cured material may require mechanical methods of removal.

GENERAL INFORMATION

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

The data provided in this document are based on historical testing that Dymax performed under laboratory conditions as they existed at that time and are for informational purposes only. The data are neither specifications nor guarantees of future performance in a particular application. Dymax does not guarantee that this product's properties are suitable for the user's intended purpose.

Numerous factors—including, without limitation, transport, storage, processing, the material with which the product is used, and the ultimate function or purpose for which the product was obtained—may affect the product's performance and/or may cause the product's actual behavior to deviate from its behavior in the laboratory. None of these factors are within Dymax's control. Conclusions about the behavior of the product under the user's particular conditions, and the product's suitability for a specific purpose, cannot be drawn from the information contained in this document.

It is the user's responsibility to determine (i) whether a product is suitable for the user's particular purpose or application and (ii) whether it is compatible with the user's intended manufacturing process, equipment, and methods. Under no circumstances will Dymax be liable for determining such suitability or compatibility. Before the user sells any item that incorporates Dymax's product, the user shall adequately and repetitively test the item in accordance with the user's procedures and protocols. Unless specifically agreed to in writing, Dymax will have no involvement in, and shall under no circumstances be liable for, such testing.

Dymax makes no warranties, whether express or implied, concerning the merchantability of this product or its fitness for a particular purpose. Nothing in this document should be interpreted as a warranty of any kind. Under no circumstances will Dymax be liable for any injury, loss, expense or incidental or consequential damage of any kind allegedly arising in connection with the user's handling, processing, or use of the product. It is the user's responsibility to adopt appropriate precautions and safeguards to protect persons and property from any risk arising from such handling, processing, or use.

The specific conditions of sale for this product are set forth in Dymax's General Terms & Conditions of Sale. Nothing contained herein shall act as a representation that the product use or application is free from patents owned by Dymax or any others. Nothing contained herein shall act as a grant of license under any Dymax Corporation Patent.

Except as otherwise noted, all trademarks used herein are trademarks of Dymax. The "®" symbol denotes a trademark that is registered in the U.S. Patent and Trademark Office.

The contents of this document are subject to change. Unless specifically agreed to in writing, Dymax shall have no obligation to notify the user about any change to its content.

DYMAX®

CONTACT DYMAX

www.dymax.com

Americas
USA | +1.860.482.1010 | info@dymax.com

Europe
Germany | +49 611.962.7900 | info_de@dymax.com
Ireland | +353 21.237.3016 | info_ie@dymax.com

Asia
Singapore | +65.67522887 | info_ap@dymax.com
Shenzhen | +86.755.83485759 | info@hanarey.com
Hong Kong | +852.2460.7038 | dymaxasia@dymax.com
Korea | +82.31.608.3434 | info_kr@dymax.com