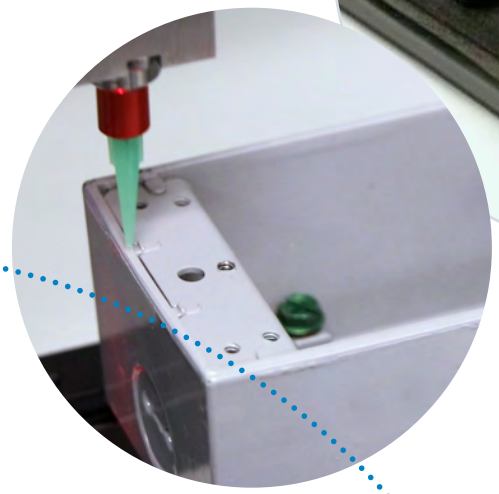


GASKETING PRODUCT SELECTOR GUIDE

DYMAX®

Only Dymax offers expert knowledge of light-cure technology, along with a full array of light-cure products. Dymax is committed to developing a true collaborative partnership — applying our extensive process knowledge to your specific application challenges.

We create custom solutions to ensure that chemistry and equipment work seamlessly together with maximum efficiency. Our application engineering team works side-by-side with our customers, providing assistance with formulation, testing, evaluation, and pre-production trials. We also offer an extensive inventory of curing equipment, manual and automated dispensing systems to help you achieve a more efficient, cost-effective manufacturing process.

About Our Products

Manufacturing is evolving at a faster rate than ever before. Today's complex designs, innovative materials, and increased focus on the environment can present manufacturers with many challenges. Whatever demands or challenges you face, Dymax is here to work with you and provide the solutions you need for a more efficient process and higher quality end product.

Light-curable form-in-place, cure-in-place gasket materials are used in automotive, mobile device, lighting, electrical device, HVAC, energy, and industrial hardware applications. They are designed for automated dispensing to support high-volume production and consistency in bead profile for single-wall, flat-surface, or channel configurations. The materials act as a barrier to prevent absorption or penetration of air, dust, noise, liquids, gaseous substances, or dirt for sound dampening, vibration dampening, moisture protection, chemical protection, and air sealing. The gaskets conform to complex and intricate channels, on both vertical and horizontal surfaces, with thixotropic formulations, and flow into channels with Newtonian formulations. This technology accommodates engineering changes without high tooling investment, helping to reduce costs, and turning problems like production throughput into non-issues.

Our Commitment to Greener, Safer Manufacturing

Dymax is committed to green manufacturing that reduces environmental impact, conserves energy, and provides greater worker safety. Over the last 40 years, our 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.

- Eco-friendly, one-component materials
- Materials without solvents and other materials of concern for improved worker and user safety
- Fast curing products and equipment designed for less energy consumption
- Dymax products conform to regulatory standards like RoHS and REACH

Gasket Products

Product Number	Key Properties	Applications	Appearance
GA-103	Excellent Heat, Water, and Chemical Resistance / Self-Leveling Liquid / Soft	Fuel Cells / Underwater Enclosures / High-Temperature Sealing	Clear Transparent
GA-108	Soft and Tacky / Good Adhesion to Nylon and Metals	Speak Assembly / Electrical Enclosures / Automotive Enclosures / Appliance Casings / Automotive Door Handles / HVAC Ductwork	Black Translucent
GA-112	Soft and Tack-Free / Excellent Tear Resistance / Moisture Resistant / Adhesion to Metals	Appliance Housings / Critical Electronic Assemblies and Devices / Electrical Conduit Boxes	Black Translucent
GA-120	Flexible / Soft and Tacky / Self-Leveling Viscosity / Greatest Deflection	Speaker Assembly / Sound Dampening / Automotive Enclosures	Clear Transparent
GA-140	Moisture and Chemical Resistant / Cures Soft and Tack Free / Low Outgassing / Adhesion to Plastics	Fuel Cells / Automotive Door Handles / Appliance Housings / Critical Electronic Assemblies and Devices	Clear Transparent
GA-142	Soft, Sticky and Flexible / Good Adhesion to Nylon, Plastics, and Metals	Speaker Assembly / Electrical Enclosures / Automotive Enclosures /Appliance Casings / Automotive Door Handles / HVAC Ductwork	Clear Translucent
GA-142-F	Blue Fluorescing / Soft, Sticky, and Flexible / Good Adhesion to Nylon, Plastics, and Metals	Speaker Assembly / Electrical Enclosures / Automotive Enclosures /Appliance Casings / Automotive Door Handles / HVAC Ductwork	Clear Translucent
GA-201	Tack Free After Proper Cure / Moisture and Chemical Resistant/ Adhesion to Plastics / UL 157 Certified	Sealing Plastic, Glass, and Metal Surfaces and Enclosures / Sealing Plated Surfaces	Opaque Gel

Product Number	Nominal Viscosity, cP (20 rpm)	Durometer Hardness	Elongation at Break, %	Glass Transition, Tg °C	Compression Set, % (85°C, 22h)*	Linear Shrinkage, %	Cure Rate for 3.2 mm gasket (150-250 mW/cm²)	Jetting Compatible
GA-103	60,000	00-75	63	-37	14.9	0.8	10 s	Call Dymax
GA-108	45,000	00-70	220	-19	41.1	1.8	7 s	Yes
GA-112	40,000	A50	360	24	15.0	1.5	15 s	Yes
GA-120	1,000	00-50	110	-43	0.17	1.2	7 s	Call Dymax
GA-140	39,000	A35	167	13	14.9	2.0	10 s	Yes
GA-142	40,000	00-55	330	3.7	31.0	1.6	4 s	Call Dymax
GA-142-F	40,000	00-60	240	-5	34.0	0.3	10 s	Call Dymax
GA-201	65,000	A35	165	8	26.0	1.1	0.6 m/min[2]	Yes

* Compression set is expressed as a percentage of deflection per ASTM D395 Method at 25% deflection. To determine the percent recovery, subtract 1/4 of the value from 100%.

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

[1] At 53 mm [2.1 in] focal distance. Maximum speed of conveyor is 8.2 m/min [27 ft/min]. Intensity was measured over the UVA range (320-395 nm) using the Dymax ACCU-CAL™ 100 Radiometer.

[2] Minimum intensity 250 mW/cm².

Chemical Resistance

Product Number	% Change After Removal	Unused Motor Oil SAE 10W-30	Used Motor Oil High Mileage SAE 10W-30	Brake Fluid	Transmission Fluid	Diesel Fuel	Power Steering Fluid	Salt Water 5% NaCl	Isopropyl Alcohol 99%	Suntan Lotion SPF 50	Hand Lotion
GA-103	Immediately	27.92	10.7	0.97	15.87	63.16	11.09	-0.76	2.52	-0.03	2.84
	1 week	27.69	10.37	0.62	15.65	56.74	11.06	-1.46	-1.97	-1.02	1.78
GA-108	Immediately	-2.97	-2.24	33.53	-13.91	40.26	0.48	0.35	47.76	3.61	2.37
	1 week	-4.72	-3.93	32.64	-16.02	30.1	-0.35	-6.31	-29.73	-0.75	-2.19
GA-112	Immediately	0.47	1.7	37.14	1.03	20.24	0.04	0.62	21.05	3.44	2.08
	1 week	0.4	1.65	36.63	0.96	15.38	-0.01	-0.43	-3.14	2.03	0.42
GA-120	Immediately	4.75	4.88	27.49	5.95	52.41	3.26	1.28	not recommended	5.97	3.7
	1 week	4.74	4.7	25.85	5.88	46.25	3.13	0.01	not recommended	4.24	1.27
GA-140	Immediately	1.07	1.05	32.61	1.38	19.53	0.52	0.49	45.51	3.97	2.39
	1 week	1	0.98	31	1.5	15.17	0.46	-0.19	-0.81	3.03	1.03
GA-142	Immediately	3.9	4.32	34.86	5	50.03	2.6	1.29	57.91	6.41	3.4
	1 week	3.7	3.97	32.48	5.05	44	2.56	-0.13	-14.4	3.14	1.09
GA-201	Immediately	1.41	1.41	32	1.93	19.66	0.63	-0.09	45.63	5.64	2.58
	1 week	1.31	1.47	30.07	1.87	14.61	0.65	-0.79	-2.84	4.35	1.25

Notes:

Sample starting dimensions - 57.25 mm x 10.64 mm x 3.3 mm weighing 2.2 to 2.3 grams each

The samples were immersed in fluid for 72 hours at room temperature.

- Immediately – Wiped clean and weight measured. Results = % of weight change after immersion.
- 1 Week – Wiped clean, left at room temperature for 1 week, and weight measured.
- Results = % of weight change after immersion.

The IP Rating System

The Ingress Protection (IP) Rating System is an industry standard for testing a finished component based on specific solid and liquid parameters. Ingress protection testing is utilized to establish if a product's exterior case or enclosure will protect the internal working parts or component from solid or liquid ingress. IP ratings are called out in the test standard known as IEC (International Electrotechnical Commission) 60529.

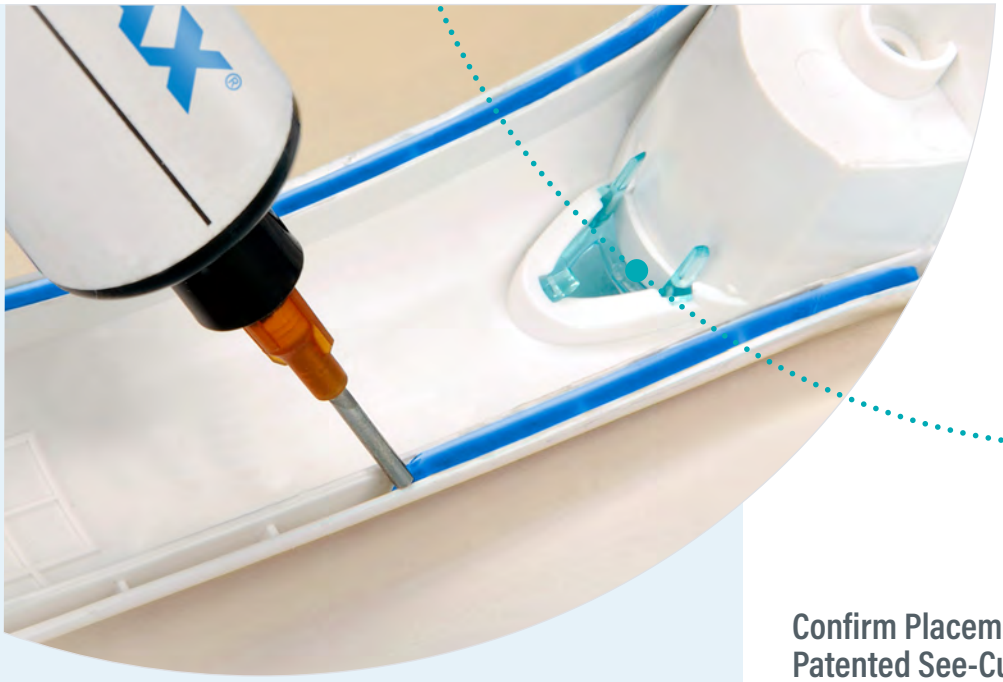
The IP rating is widely used for all types of enclosures including electrical enclosures, electronic enclosures, and protective cases for smart phones. Many customers have to meet this test and identify this as a requirement for the gasket. Dymax gaskets will not be rated but will be part of an end-item which is rated. The gaskets, along with the construction/configuration of the enclosure, can positively influence test results based upon their sealing capabilities. The product selector guide on pages 2-3 and the corresponding product TDS will guide the end-user to the applicable gasket for their application.

The IP Rating table below defines the protection against solid foreign objects with the first digit e.g. IP6_ (protection against dust) and protection against liquids in the second digit e.g. IP_5 (protected against water jets).

Protection Against Solid Objects - 1st Digit Description Definition	Protection Against Liquids - 2nd Digit Description Definition
0 Non-protected. No special protection.	0 Non-protected. No special protection.
1 Protected against solid objects greater than 50 mm. A large surface of the body such as the hand (no protection against deliberate access). Solid objects exceeding 50 mm diameter.	1 Protected against dripping water. Dripping water (vertically falling drops).
2 Protected against solid objects greater than 12 mm. Fingers or other objects not exceeding 80 mm in length. Solid objects exceeding 12 mm diameter.	2 Protected against dripping water when tilted up to 15º. Vertically dripping water shall have no harmful effect.
3 Protected against solid objects greater than 2.5 mm. Tools, wires, etc., of diameter or thickness greater than 2.5 mm. Solid objects exceeding 2.5 mm diameter.	3 Protected against spraying water. Water falling as spray at an angle up to 60º from the vertical shall have no harmful effect.
4 Protected against solid objects greater than 1.0 mm. Wires or strips of thickness greater than 1.0 mm. Solid objects exceeding 1.0 mm.	4 Protected against splashing water. Water splashed against the enclosure from any direction shall have no harmful effect when the enclosure is tilted at any angle up to 15º from its normal position.
5 Protected against dust. Ingress of dust is not totally prevented but dust does not enter in sufficient quantity to interfere with satisfactory operation of the equipment.	5 Protected against water jets. Water projected from a nozzle against the enclosure from any direction shall have no harmful effect.
6 Dust-tight. No ingress of dust.	6 Protected against heavy seas. Water from heavy seas or water projected in powerful jets shall not enter the enclosure in harmful quantities.
	7 Protected against the effects of immersion. Ingress of water in a harmful quantity shall not be possible when the enclosure is immersed in water under defined conditions of pressure and time.
	8 Protected against submersion. The equipment is suitable for continuous submersion in water under conditions, which shall be specified by the manufacturer.

The test means and main test conditions for the tests for protection against water (2nd number) are defined as follows:

- Test means – A water jet hose nozzle with a nozzle diameter of 6.3 mm is positioned 2.5 m to 3 m from the enclosure being tested
- Water flow rate – 12.5 l/min ±5%
- Duration of test – 1 min/m2 but at least 3 min.
- Test conditions – Test will be performed spraying the enclosure from every practicable angle



Innovative Technologies

As an innovator in the adhesive and coating industries, Dymax strives to create new technologies that help manufacturers increase process efficiency, productivity, and throughput while decreasing costs and inventory. Through the years, our dedication to innovation has resulted in over 30 oligomer, adhesive, and equipment patents and numerous awards for our innovative technologies and service.

Our R&D experts are always striving to create new technologies that will help manufacturers improve their processes. Our current portfolio of technologies provide a variety of benefits including easier bond line inspection and cure confirmation for better quality control, faster cures for quicker processing, and curing in shadowed areas to eliminate concerns about uncured material.

Confirm Placement & Cure - Patented See-Cure Technology

Dymax gaskets formulated with See-Cure technology have built-in cure validation that makes it easy for operators or simple automated inspection equipment to confirm cure without investing in additional specialized equipment. These materials are are bright blue in their uncured state, making them highly visible when dispensed onto substrates. Workers can easily confirm the gasket placement and quantity with just their eyes.

After the gasket is exposed to light, the color transitions from blue to colorless. This cure indicator ensures the adhesive is completely cured, providing a critical safety feature for manufacturing processes.

Speed up Production with Faster Cures - LED Light-Curing Technology

Dymax offers specially formulated LED light-curable materials that are optimized to work seamlessly with Dymax LED light-curing systems. The products range from fast to ultra-fast cure speeds in order to accommodate specific assembly needs. LED-curing equipment is available in a number of different styles including spot lamps, flood lamps, and conveyors to accommodate various process requirements.

Enhance Bond-Line Inspection - Ultra-Red® Technology

Products formulated with Ultra-Red® remain colorless until exposed to low-intensity UV light (360-380 nm), at which point they fluoresce bright red. This is ideal when bonding plastics like PVC and PET that naturally fluoresce blue. Ultra-Red® fluorescence does not absorb the same wavelengths as those used to cure the adhesive, resulting in faster, deeper cures when compared to blue fluorescing products.

The Ultra-Red® fluorescing compound is patented and exclusive to Dymax. When measured, this compound produces a unique energy peak that cannot be reproduced by other fluorescing compounds. This offers manufacturers the ability to assemble or mark their products so they can be positively identified.

Enhance Bond-Line Inspection - Blue Fluorescing Technology

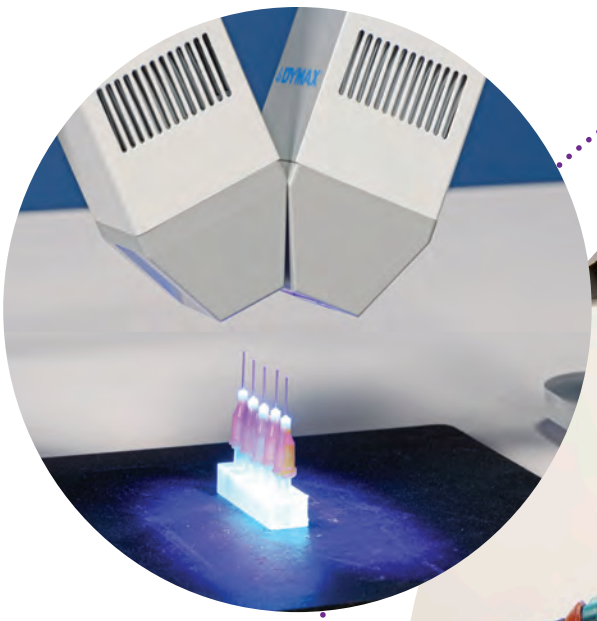
In addition to Ultra-Red® fluorescing materials, Dymax also manufacturers products that fluoresce blue under low-intensity "black" light (365 nm). The fluorescing characteristic of these materials is ideal for in-line inspection, allowing bondlines to be inspected easily.

Enhance Bond-Line Inspection & Confirm Cure - Encompass® Technology

Dymax products formulated with Encompass® technology incorporate Dymax exclusive Ultra-Red® fluorescing and See-Cure color-change technologies into one light-curable product. As a result, manufacturers gain efficiencies from rapid on-demand curing with easy cure confirmation and post-cure bond-line inspection.

Cure in Shadows - Dual-Cure Light/Moisture Cure Technology

Dual-cure coatings are formulated to ensure complete cure in applications where shadowed areas on high-density circuit boards are a concern. Areas shadowed from light are typically managed by selective coating or a secondary heat-cure process. Instead, Dual-cure coatings ensure shadowed areas cure over time with moisture, eliminating the need for a second process step and concerns of component life degradation due to temperature exposure.

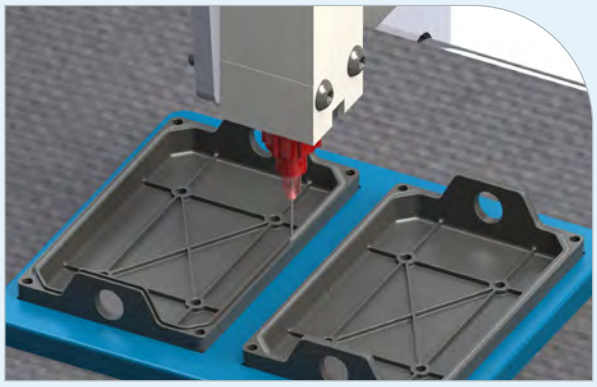


Dispensing & Curing Equipment

Dymax designs, manufactures, and sells a range of light-curing spot lamps, flood lamps, conveyor systems, and dispensing equipment, as well as radiometers and other equipment accessories. These systems work with Dymax light-curable adhesives provide process efficiencies by targeting rapid surface curing, depth of cure, and speed of cure, all while delivering light in a quick and economical way. Dymax equipment is ideal for industrial bonding, coating, encapsulating, potting, and sealing applications. Manufacturers can easily integrate these curing systems into existing assembly lines or use them as stand-alone, bench-top curing systems. CE marked equipment is available.

Dispensing Systems

Dymax has developed high-quality, field-proven dispense systems to fit many types of adhesive and fluid dispensing applications. These systems include various automated and manual dispensing valves, spray valves and guns, and related components for seamless integration into assembly processes. The systems provide accurate, consistent dispense for a range of low- to high-viscosity fluids. Dispensing systems with adjustable suck-back control to facilitate clean, crisp shutoff and dispensing valves that offer contaminate-free dispensing are available. Dymax partners with some of the world's leading dispensing manufacturers to provide solutions for applications that require high-speed automated dispensing equipment.



UV-Curing Spot Lamps

Spot-curing systems emit very high- intensity UV/Visible light and are ideal for quickly curing small areas (5 mm diameter) – typically within a 0.5 - 5 second cure time. They use high-pressure mercury vapor bulbs that produce light energy in the 300 to 450 nm range and can be equipped with single- or multi-pole lightguides or rod lenses for a variety of curing options.

UV-Curing Flood Lamps

UV light-curing flood-lamp systems are ideal for area curing of large parts or simultaneously curing many small parts. They use moderate- to high-intensity multi-spectrum UV/Visible light for curing areas larger than 12.7 mm in diameter. With intensities ranging from 75-225 mW/cm^2, Dymax flood lamps are capable of curing most UV light-curable adhesives, sealants, and coatings, tack free in 30 seconds or less.

Light-Emitting Diode (LED) Curing Equipment

LED spot and flood lamps generate UV and visible curing light using an array of surface-mounted LEDs instead of traditional metal halide or mercury bulbs. These lamps emit over 15,000 mW/cm^2 of UV light (centered at 385 nm) and offer cooler cures compared to traditional bulb-style lamp systems. They emit light over a narrow spectrum at a discreet wavelength and extend maintenance intervals due to the longevity of the LED array. There are no bulbs to change and no warm-up; just cool cures and constant intensity for thousands of hours.

UV-Curing Conveyors

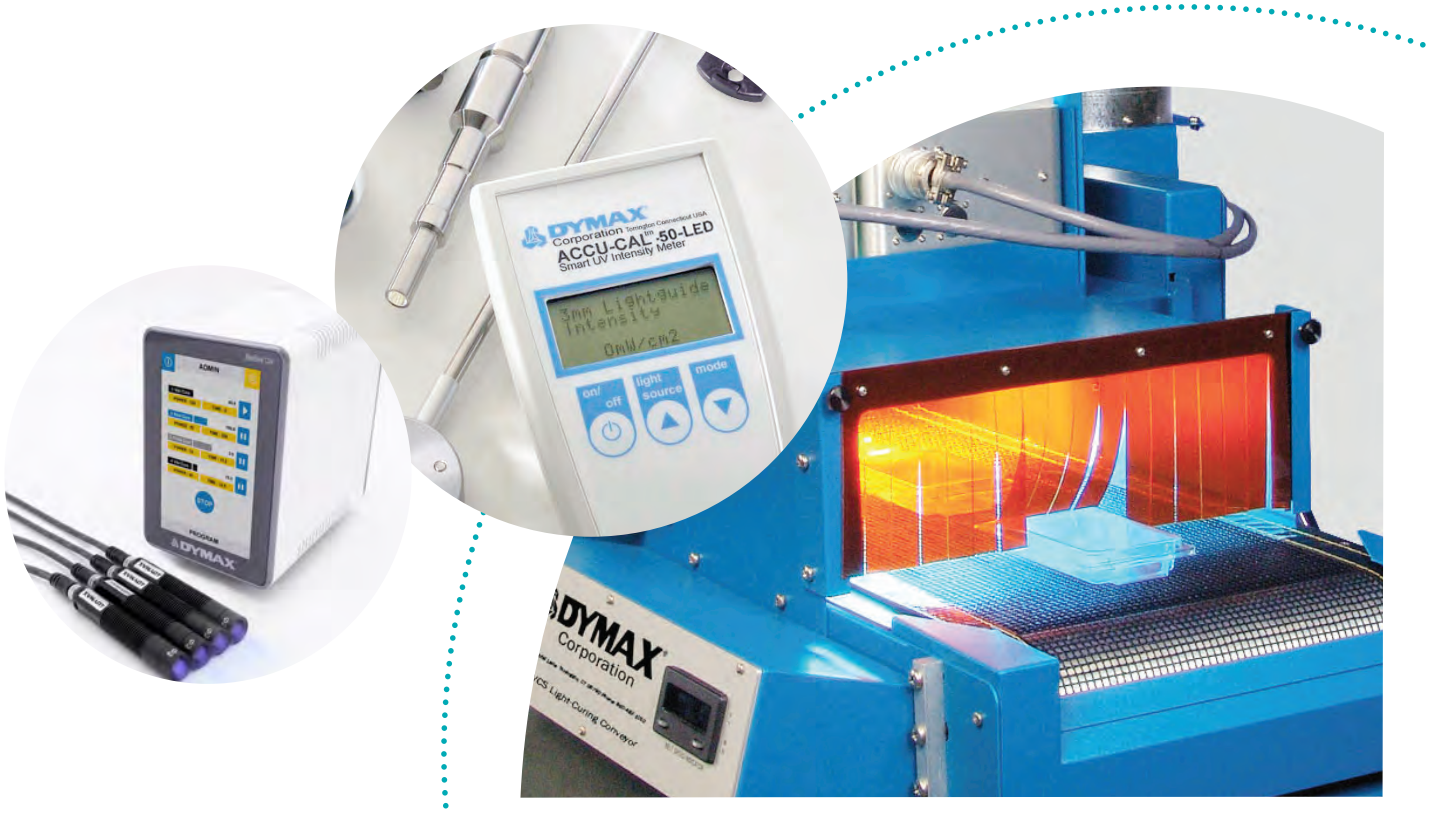
Light-curing conveyor systems consist of a moving belt that passes through a curing tunnel with multi-spectrum flood or focused-beam curing lamps mounted from above or on each side. Dymax conveyor systems, ideal for curing large parts, offer consistent line speed (1 - 27.5 fpm), adjustable lamp height and belt width, and high intensity for fast, safe curing of adhesives, coatings, potting materials, and gaskets. They can be outfitted with standard metal halide (longwave UV), mercury (shortwave UV), or visible bulbs. Conveyor systems are also available with 365, 385, or 405 nm LED flood arrays.

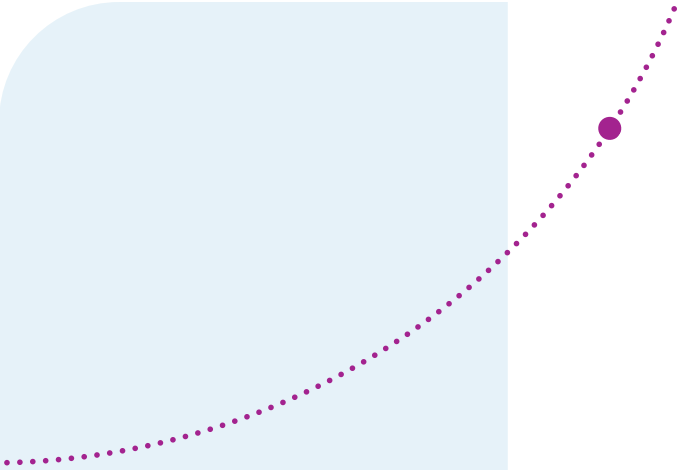
Radiometers

A radiometer is a device that measures the intensity and/or dose associated with light of specified wavelengths. UV light is, by definition, not visible and so a radiometer is required to determine UV intensity. Dymax radiometers measure intensity and dose of UV spot lamps, flood lamps, and conveyors in the UVA (320-395 nm) range. Measuring light intensity and/or dose is useful for maintaining a controlled, "worker friendly" light-curing process and measuring the transmission of light through the substrate.

Accessories

A variety of accessories is available for use with Dymax light-curing equipment including single- and multi-pole light-guides for spot-curing lamps, as well as shields, stands, and shutters for mounting or modifying flood-curing lamps.





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