



Industrial Adhesives

GLASS | PLASTIC | METAL

PRODUCT SELECTOR GUIDE

aerospace

automotive

energy

appliance

structural & decorative glass

The Dymax **EDGE**

About **DYMAX**



expertise

Products. Technology. Service.
Dymax provides the innovative
solutions you need to meet
your application challenges.

At Dymax, we're committed to providing our customers with the solutions they need for their specific application challenges. Inherent in the [Dymax Edge](#) approach is the commitment to view a customer's challenge differently by listening, focusing, and using an entire toolbox of resources and expertise to deliver the most efficient solution. This expertise isn't limited to the formulation of chemistry or the calibration of a machine. Rather, it's defined by a depth and breadth of knowledge that allows us to devise innovative solutions based on an optimal balance of material, chemistry, and equipment. The Dymax Edge is more than the combined resources of product, technology, and service. It's the fundamental belief that you best serve a customer when you look at the need from their perspective, not yours.

DYMAXEDGE®
LISTEN. ENVISION. DELIVER.

Dymax Corporation is an ISO 9001 registered leading manufacturer of light-curable adhesives, coatings, oligomers, light-curing equipment, and fluid dispense systems that work together to optimize assembly processes. Dymax products provide design, research, and manufacturing engineers value-added tools to dramatically improve manufacturing efficiency and lower costs.

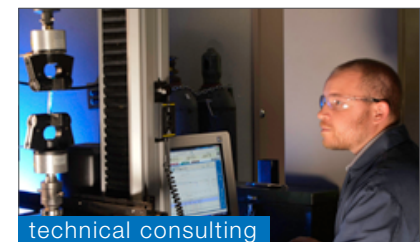
The company's first products, a patented line of structural adhesives that combined high bond strength with fast fixture speed, offered significant productivity improvement to manufacturers of electric motors and were widely used in OEM and manufacturing environments.

Dymax continued to create formulations that offered faster processing speeds for a large segment of the industrial market. This eventually led to the development of light-cure adhesive technology and the compatible fluid dispensing and light-curing systems needed to dispense and cure the products.

Today, Dymax light-curable materials cure in seconds upon exposure to UV/Visible light, form high-strength, environmentally resistant bonds to glass, metal, and plastic substrates, and are ideal for bonding dissimilar materials. Formulations with activators and secondary heat or moisture cure are also available. Dymax supplies these products to the automotive, aerospace, appliance, alternative energy, electronic, industrial, medical device, and optical industries worldwide.

Since pioneering light-cure technology over 30 years ago, Dymax has continued to develop innovative ways to co-optimize the assembly process with customer-centric solutions that meet today's application challenges. Dymax owns over 30 patents and has a worldwide network of technical experts who understand manufacturers' demands and assist them with adhesive selection, dispensing options, curing recommendations, component design, and process validation. The result of this collaboration is faster, more reliable processing, less energy consumption, and lower production costs.

The company's headquarters are located in Torrington, CT USA, with additional facilities in the USA, Germany, China, Hong Kong, Korea, and Singapore.



technical consulting

Click on the product numbers for more information.

PLASTIC										
Product Number	Chemistry	Characteristics	Applications	Viscosity, cP (20 rpm) Nominal	Uncured Appearance	Durometer Hardness	Tensile @ Break, MPa [psi]	Elongation @ Break, %	Linear Shrinkage, %	Water Absorption, % (25°C, 24 h)
3013	UV/Visible	Blue fluorescing; resilient; general purpose; moisture resistant	Bond and joint sealing, plastic window bonding, appliance assembly, plastic assembly	150	Light Yellow	D70	18 [2,400]	70	0.9	1.6
3025	UV/Visible	Rapid bonding of multiple substrates; moisture resistant; adhesion to wide variety of glass, metals, and plastics	Plastic housing assembly, plastic window bonding, appliance assembly	300	Colorless	D65	17 [2,400]	70	0.5	2.1
3030	Visible/UV	LED curable; ultra-fast cure; clear; strong bonds to wide variety of plastics; fast, tack-free cure with BlueWave® LED Prime UVA	Plastic housing assembly, display assembly, appliance assembly	300	Colorless	D65	11 [1,600]	41	2.6	1.6
3031	Visible/UV	LED curable; high adhesion, clear plastic bonder; adhesion to wide variety of plastics; fast, tack-free cure with BlueWave® LED Prime UVA	Plastic housing assembly, display assembly, appliance assembly	125	Colorless	D65	10 [1,500]	47	2.7	2.0
3069	UV/Visible	Rapid laminating and bonding of flexible and rigid substrates; adhesion to wide variety of plastics	Flexible lamination, plastic housing assembly, appliance assembly, speaker assembly	450	Colorless	D55	17 [2,400]	175	2.1	1.6
3069-GEL	UV/Visible	LED curable; rapid laminating and bonding of flexible and rigid substrates; adhesion to wide variety of plastics	Flexible lamination, plastic housing assembly, appliance assembly, speaker assembly	25,000	Colorless	D55	17 [2,400]	175	2.1	1.6
3099	UV/Visible	Strong bonds to PMMA (acrylic), polycarbonate, glass, and other plastics	Display assembly, plastic housing assembly, appliance assembly	150	Light Yellow	D75	19 [2,800]	170	0.4	8.4
3113-UR	UV/Visible	Ultra-Red™ fluorescing; resilient; general purpose; moisture resistant; adhesion to a wide variety of substrates	Bond joint and sealing, plastic window bonding, appliance assembly, plastic assembly	150	Colorless	D70	18 [2,400]	70	0.9	1.6
3130-UR	Visible/UV	LED curable; Ultra-Red™ fluorescing; ultra-fast, clear plastic bonder; fast, tack-free cure with BlueWave® LED Prime UVA; moisture resistant	Appliance bonding and assembly, plastic housing applications, display applications	300	Colorless to Light Yellow	D70	19 [2,800]	30	1.1	1.6
3169-UR	UV/Visible	Ultra-Red™ fluorescing; flexible laminating and bonding; adhesion to a wide variety of plastics	Flexible lamination, plastic housing assembly, appliance assembly, speaker assembly	500	Colorless	D60	15 [2,200]	175	1.7	8.7
3220-SC	UV/Visible	Patented See-Cure technology; flexible; rapid bonding and laminating of plastics	Plastic housing assembly, plastics lamination, plastic window bonding, appliance assembly	450	Blue	D60	15 [2,200]	180	2.5	4.7
3220-GEL-SC	UV/Visible	Patented See-Cure technology; high viscosity; rapid bonding and laminating of plastics	Plastic housing assembly, plastics lamination, plastic window bonding, appliance assembly	38,000	Blue	D55	15 [2,200]	180	2.5	4.7
3221-SC	UV/Visible	Patented See-Cure technology; flexible; multi-substrate adhesion	Plastics assembly, plastics lamination, metal-to-plastic bonding, appliance assembly	300	Blue	D55	12 [1,700]	220	2.0	6.3
3225-T-SC	UV/Visible	Patented See-Cure technology; multi-substrate adhesion; rapid bonding and laminating	Plastics assembly, plastics lamination, metal-to-plastic bonding, appliance assembly	9,500	Blue	D65	17 [2,400]	150	0.8	24.0
3401	UV/Visible	UV- and LED-curable PC and ABS bonder with secondary moisture cure; blue fluorescing; shadow area performance; moisture and thermal resistance; jetting compatible	Plastic assemblies, appliance assemblies, bonding, sealing, or encapsulating PC or ABS components, automotive applications	150	Light Yellow	D70	30 [4,400]	13	0.2	NA
3-20796	UV/Visible	Flexible; medium viscosity for multiple applications; very fast curing; large depth of cure	Plastics assembly, potting	3,200	Colorless	D40	15 [2,200]	500	2.7	3.4
MR-290	Cyanoacrylate	Pacer Technology® instant adhesive; resists moisture and humidity while retaining tensile shear strength, impact strength, and heat resistance; up to .012" gap-filling capability; MIL-A-46050C, Type II, Class 2	Bonds rubber, magnets, speaker cones, electronics, and plastics	250 - 350	NA	NA	2,850**	5 - 10	NA	NA
DOME COATINGS										
4-20508	UV	Very clear; rigid and scratch resistant; high gloss; moderate dome profile; excellent adhesion to metal, glass, and plastics	Dome and decorative coating of name-plates, key chains, and pens	735	Colorless	D80	45 [6,600]	7	0.6	0.3
4-20564	UV	Very clear, rigid and scratch resistant; very high dome profile; suitable for indoor and some outdoor applications	Dome coating of polyester labels	6,000	Colorless	D80	44 [6,500]	13	0.4	0.7
4-20577	UV	Clear; soft; flexible; scratch resistant; springs back when dented; high dome profile; suitable for indoor and some outdoor applications	Dome coating of small and medium-sized polyester labels	1,500	Colorless	A70	2 [300]	36	1.3	1.3
4-20806	UV/Visible	Non-yellowing; fast curing; clear; low dome profile; flexible and rigid substrate applications; suitable for indoor and some outdoor applications	Dome coating of polycarbonate and PVC nametags	1,750	Colorless	A80	1.4 [205]	22	1.2	1.2

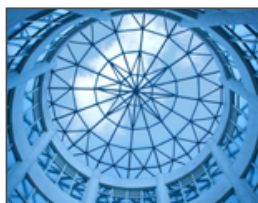
** Steel

Glass & Metal Products

SELECTOR GUIDE

Click on the product numbers for more information.

GLASS										
Product Number	Chemistry	Characteristics	Applications	Viscosity, cP (20 rpm) Nominal	Uncured Appearance	Durometer Hardness	Tensile @ Break, MPa [psi]	Elongation @ Break, %	Linear Shrinkage, %	Water Absorption, % (25°C, 24 h)
425	UV	Optically clear structural adhesive for glass assembly; exceptional tensile strength and vibration, impact, and moisture resistance	Glass stemware bonding, fountain assembly, furniture assembly, bonding glass to metal	4,000	Colorless	D80	43 [6,200]	7.3	1.90	0.7
429	UV	LED curable; optically clear structural adhesive for large areas; high impact; resistant to yellowing and thermal shock	Glass-to-metal bonding, potting critical components, large-area bonding	2,500	Colorless to Light Yellow	D60	21.6 [3,140]	120	0.79	1.1
431	UV/Visible	LED curable; high-temperature and moisture-resistant glass-to-metal bond; low shrinkage	Glass-to-glass assembly , glass-to-metal assembly, appliance and lighting sub-assemblies, furniture	500	Colorless	D70	27 [3,900]	61	0.78	1.5
4-20418	UV/Visible	Low-stress plastic and glass bonder; rapid bonding and laminating to glass, metal, and many plastics	Glass, plastic, and metal bonding and laminating	450	Colorless	D60	11.4 [1,650]	130	Pending	4.1
METAL + GLASS										
6-621	UV/Visible, Heat, Activator	LED curable; adhesive for phenolic and filled plastics, glass, and metal; hard, clear bonds	Metal-to-glass bonding, coil winding, potting	800	Colorless	D80	22 [3,200]	37	0.40	1.7
6-625-SV01-REV-A	UV/Visible, Heat, Activator	LED curable; clear bonds; flexible; bonds withstand strains caused by coefficients of expansion	Glass fixtures and furniture, automotive latches, potting	10,000	Colorless	D50	23 [3,400]	26	0.79	2.7
846-GEL	Activator	Low-volatility, high-strength structural adhesive; bonds dissimilar substrates; tough durable bonds; good thermal shock characteristics; use with 501-E or 535-A activators	Metal frame bonding, metal-to-stone assembly, loudspeaker hardware assembly, D.C. motor assembly, magnet bonding	Thixotropic Gel	Translucent Straw	NA	19 [2,800]	NA	NA	NA
RX-50	Cyanoacrylate	Pacer Technology® non-surface sensitive instant adhesive; cures in 5-20 seconds; general purpose; MIL-A-46050C, Type II, Class 1	Bond porous, acidic, contaminated, or hard-to-bond surfaces, such as certain plastics and plated metals	30 - 70	NA	M58 (Rockwell)	4,173*	<2	NA	NA
8-20626	Heat/Induction	One-component structural epoxy resin; high temperature resistance; large gap cure	For use on metal surfaces, glass, ceramics, thermoset plastics, and filled Nylon	110,000	Black Paste	D85	55 [8,000]	2	0.79	NA
ACTIVATORS										
501-E	NA	Activator for fast, reliable structural bonding; fixtures in 10-20 seconds; no solvent flash-off time; no VOCs and ODCs	Use with Dymax 600 and 800 series adhesives for increasing bond strength to metal, ceramic, and glass	30-40	Yellow to Amber	NA	NA	NA	NA	NA
535-A	NA	Activator; environmentally safe; fast, reliable structural bonding; excellent degreasing and wetting properties; long pre-applied open times available	Use with Dymax 600 and 800 series adhesives for increasing bond strength to metal, glass, and thermoset plastics	7.5	Amber to Brown	NA	NA	NA	NA	NA



*Steel/steel ASTM-D-1002

Plastic, Glass & Metal Products

SUBSTRATES

Click on the product numbers for more information.

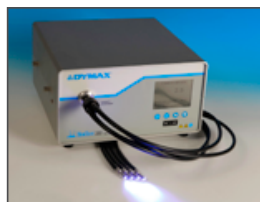
	ABS	CAP	COPE	EP	HDPE/ LDPE	PA	PC	PCTG	PEBA	PET	PETG	PI	PMMA	PP	PS	PSU	PU	PVC	SB	SAN	TPU	AL	Brass	Ceramic	Copper	Cold Rolled Steel	FR-4	Glass	SS
PLASTIC																													
3013	•	•	•				•			○		•	•		•		•	•		○	•								•
3025	•		•			•	•			•	•	○	•		•		•	•										•	•
3030	•	•				•	•					•			•		•	•		•	•								
3031	•	•				•	•								•		•	•		•	•					•			
3069	•		•				•		•	•	•		○		•		•	•											
3069-GEL	•		•				•		•	•	•		○		•		•	•											
3099	•						•	•			•		•		○	•	○	•	•									•	
3113-UR	•						•			○		•	•	ST	•		•	•		○	•								•
3130-UR	•	•					•								•		•	•		•	•								
3169-UR	•			•			•		•	•	•		○		•		•	•		•	•								
3220-SC	•					○	•		•	•			○				•	•											
3220-GEL-SC	•					○	•		•	•			○				•	•											
3221-SC	•						•			•			•				•	•											○
3225-T-SC	•	•					•	•			•		•		○	•	•	•		•	•	•	○	○				○	○
3401	•						•	•				•	•				•	•		•	•		•				•	•	
3-20796	•			•			•		○	•		•	•		•		•	•				•		•			•	•	•
MR-290	•				ST	•	•						•				•	•				•	•	•	•	•	•	•	•
DOME COATINGS*																													
4-20508	•						•						•									•				•		•	•
4-20564	•						•						•									•				•		•	•
4-20577	•						•						•									•				•		•	•
4-20806	•						•						•									•				•		•	•

	AL	Brass	Ceramic	Copper	Cold Rolled Steel	FR-4	Glass	SS	ABS	CAP	EP	HDPE/ LDPE	PA	PC	PCTG	PEBA	PEEK	PEI	PET	PETG	Phenolic Plastic	PI	PMMA	PP	PPO	PS	PU	PVC	SAN	TPU	
GLASS																															
425	●	●	●	●	●	●	●	●	●	●		ST					●						●	ST				●			
429	○				○		●	○	●					○									○						●		
431	●	●	●	●		●	●	●	●	●			●	●	●	●	●		●	●		●						●	●	●	
4-20418	●	●			●		●		●	●		ST	●	●	●	●	●	●	●	●		●	●	ST	●	●		●	●	●	●
METAL + GLASS																															
6-621	●		●	●	●		●	●	●		●		●	○				○	○		●	○					○	○			
6-625-SV01-REV-A	●		●	●	○		●	●	●		●		●						○		●	○									
846-GEL	●	●		●	●	●	●	●	●			ST												ST							
RX-50	●	●		●	●	●	●	●	●			ST	●	●														●			
8-20626	●	●	●	●	●	●	●	●	●															ST							

Dispensing & Curing EQUIPMENT

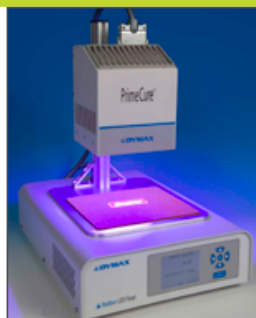
Dymax designs, manufactures, and sells a range of light-curing spot lamps, flood lamps, conveyor systems, and dispensing equipment, as well as radiometers and other equipment accessories. These systems work with Dymax light-curable adhesives to gain process efficiencies by targeting rapid surface curing, 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.

CURING



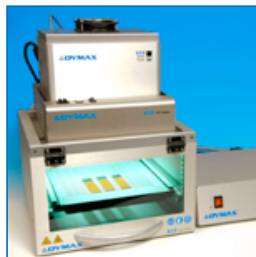
UV-Curing Spot Lamps

[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.



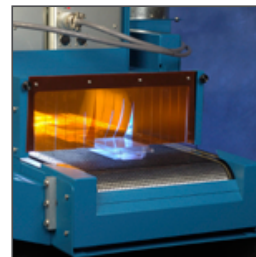
Light-Emitting Diode (LED) Curing Equipment – Spot and Flood Lamps

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/cm² 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 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/cm², [Dymax flood lamps](#) are capable of curing most UV light-curable adhesives, sealants, and coatings, tack free in 30 seconds or less.



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 (short-wave UV), or visible bulbs. Conveyor systems are available with 365, 385, and 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.

DISPENSING



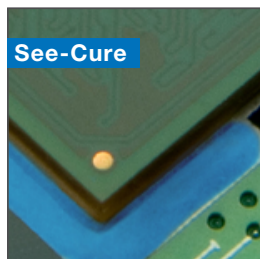
Dispensing Systems

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.

SPOT LAMPS | FLOOD LAMPS | CONVEYOR SYSTEMS | DISPENSERS

Innovative TECHNOLOGIES

Types of APPLICATIONS



Patented See-Cure Technology

Dymax adhesives formulated with patented See-Cure technology answer the two most asked questions in an adhesive bonding application: Have I dispensed a sufficient amount of adhesive onto my substrate? Has the adhesive cured completely? Uncured [See-Cure adhesives](#) are bright blue in color. This makes them easy to see after dispensing onto the substrate. During the light-curing process, the blue color transitions to colorless, indicating that sufficient energy was received by the adhesive to complete the curing process. This visual cure indicator may initially be used to qualify a process and then to ensure that the process remains within the qualified parameters.



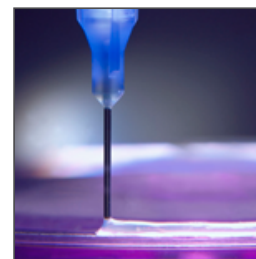
Ultra-Red™ Fluorescing Technology

Patented Ultra-Red™ fluorescing technology enhances adhesive bond-line inspection processes and product authentication. Adhesives formulated with [Ultra-Red technology](#) remain clear until exposed to low-intensity UV light, at which point they fluoresce bright red. This feature is particularly helpful when bonding plastics that naturally fluoresce blue, such as PVC and PET. Ultra-Red technology also produces a unique spectral output that manufacturers can use for product authentication.



LED Light-Curing Technology

Dymax manufactures a variety of [LED light-curable adhesives](#) and compatible LED UV and visible curing lamps. LED-curable adhesives range from fast to ultra-fast cure speeds to accommodate specific industrial, medical device, and electronic assembly needs. Dymax BlueWave® LED curing systems offer significant advantages over conventional lamp-curing systems including cooler curing temperatures, lower intensity degradation over time, more consistent cure results, lower energy consumption, and reduced costs.



Dymax is a leading manufacturer of both light-curable materials and light-curing equipment.

This focus on light-curing technology, coupled with the synergy produced by designing both the materials and equipment, uniquely positions Dymax as the technical leader in light-curing technology. Dymax provides solutions across a range of markets.



ADHESIVES

Application Use	Bonding glass, plastic, metal, and ceramic
Industries	Appliance, aerospace, automotive, alternative energy, medical
Chemistries	Light-curable adhesives, Multi-Cure® adhesives, activator-cured acrylics, 2-part epoxies

COATINGS

Application Use	Protective conformal coatings for electronics; decorative coatings, optically clear hard coatings
Industries	Automotive, appliance, electronics
Chemistries	Light-curable adhesives, Multi-Cure® adhesives

POTTING COMPOUNDS

Application Use	Component protection
Industries	Appliance, aerospace, automotive, alternative energy, electronic devices
Chemistries	Light-curable adhesives, Multi-Cure® adhesives, moisture-cure adhesives, 2-part epoxies

MASKING MATERIALS

Application Use	Protection during surface treatment and manufacturing processes
Industries	Aerospace, automotive, orthopaedic implants, electronic devices
Chemistries	Light-curable resins, Multi-Cure® resins

GASKETS

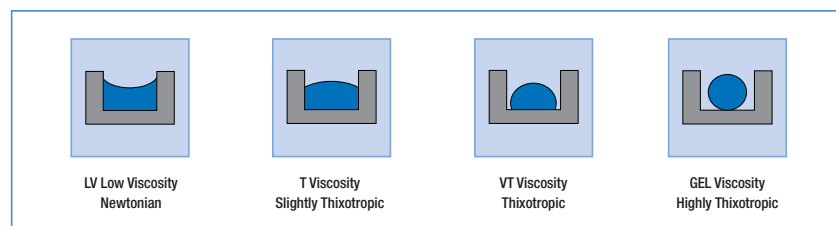
Application Use	Moisture barrier, vibration resistance, noise reduction
Industries	Appliance, automotive, aerospace, fuel cell, alternative energy, electronic devices
Chemistries	Light-curable resins



BONDING | COATING | ENCAPSULATING | POTTING | SEALING

REFERENCE Tables

The following tables provide additional information about the Dymax adhesives in this guide.



VISCOSITY

When choosing a viscosity, consideration should be given to how the adhesive must flow (or not flow) on the part after the adhesive is applied. Part geometry, process design, and assembly speed and method should all be considered when selecting viscosity. Viscosity is a material's resistance to flow. Low-viscosity adhesives flow more readily than high-viscosity adhesives. Thixotropic gels flow very slowly and are recommended when adhesive flow on a part after dispensing must be minimal.

Dymax adhesives are available in a variety of viscosities. The identifiers appear as suffixes on product names as follows:

VLV = Very Low Viscosity
 LV = Low Viscosity
 T = Thick
 VT = Very Thick
 GEL = Gel

Standard viscosity products do not have a suffix.

Typical Centipoise (cP/mPas)	Typical Reference Liquids at 20°C
1	Water
10	Kerosene
110	SAE 10 Oil
200	Maple Syrup
440	SAE 30 Oil
1,100	Castor Oil
3,000	Honey
10,000	Molasses
18,000	Chocolate Syrup
65,000	Vaseline
100,000	Sour Cream
200,000	Peanut Butter
1,500,000	Shortening

JOINT DESIGN

Adhesive should be chosen according to the needs of the application and joint design.

Avoid butt joints: cleavage or asymmetric-type forces can result in part failure 	Suggested alternatives: (recommended bond gaps: 0.002" - 0.006" [0.05 - 0.15 mm])
Avoid corner butt joints: cleavage-type forces can result in part failure 	Suggested alternatives: (recommended bond gaps: 0.002" - 0.006" [0.05 - 0.15 mm])

DOTS Volume of a dot is ½ the volume of a sphere V = .2618D³						
	.	•	•	•	•	•
Volume (µL)	0.1	0.5	1.0	5.0	10.0	25.0
Volume (mL)	0.0001	0.0005	0.001	0.005	0.010	0.025
Diameter (mm)	0.73	1.24	1.56	2.67	3.37	4.57
Diameter (in)	0.029	0.049	0.061	0.103	0.133	0.180



SG008 2/1/2015