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LORD® Structural Adhesives

SELECTOR GUIDE

LORD

LORD Corporation's Global Presence



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Industrial Assembly Structural Adhesive Solutions



At LORD, we are adhesive experts. We focus on solving customer assembly needs and provide the best in industry training programs, high level application know-how, superior products and efficient supply chain delivery.

LORD

Delivering solutions that improve products and processes for our customers is our number one priority at LORD.

With more than 40 years experience in developing and manufacturing structural adhesives, our extensive line of acrylic, epoxy and urethane adhesives improves appearance, strength and durability, while offering design flexibility and total cost savings. Compared to traditional fastening methods such as rivets, welds and tapes, LORD Structural Adhesives eliminate the costs associated with metal preparation and finishing operations and are formulated to improve manufacturing processes and final products for a variety of composite, metal and plastic assemblies. To support your processes,

HOW CAN A DESIGNER SWITCH TO AN ADHESIVE JOINT?

The key is embracing the conversion process. This includes understanding the chemistry behind adhesives, outlining a proper implementation plan and partnering with a reputable adhesive supplier.

CHEMISTRY

Acrylic-based adhesives are primarily used to bond metals. Acrylics are very aggressive, require minimum surface preparation and also work well on plastics, but should be tested for compatibility.

Urethane-based adhesives are a good choice for bonding plastics, composites, wood and foam. Urethanes have better bond performance to prepared metals, so they are generally used for metal bonding applications where the metal is primed, painted, powder-coated or e-coated.

Epoxy-based adhesives can be used on metals, plastics, composites, concrete, wood and foam. Epoxies are generally very strong and chemically resistant.

LORD adhesives are available in both convenience cartridge packaging and bulk packaging that includes gallons, pails, drums and totes for high volume applications.



OUTLINING A PLAN & PARTNERING

A firm commitment to following an implementation plan is vital for a successful project. First, determine the goals of the project and audit current joining processes to estimate potential savings that will help justify the switch to adhesive bonding. If the audit is promising, follow with substrate testing to confirm bond performance. Bond trials are the most effective method to demonstrate the ability of a proposed adhesives process.

Collaborating with you and working together we offer more than just products ... our dedicated engineers will work with you to analyze your assembly process, determine proper fixturing and joining designs, perform a cost model analysis to help quantify your return on investment, select the most appropriate adhesive product for your application and allocate proper meter/mix dispensing equipment ... Ask Us How.

**To learn more, contact us at
+1 877 ASK LORD (275 5673) or LORD.com**

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Selection Considerations

When selecting an adhesive, there are several important considerations at every application phase, including substrate type, surface preparation, temperature, application/cure time and other factors. Use the chart to the right to determine which LORD solution is best suited for your particular application.

Please note: These are general recommendations. For comprehensive product selection assistance, please visit LORD.com, contact the LORD Customer Support Center at +1 877 ASK LORD (275 5673) in United States and Canada, or email customer_support@lord.com.

SURFACE PREPARATION

Preparing Your Substrate

Prior to adhesive application remove soils, greases, oils, dust, mold release agents, rust and other contaminants from substrate surface with the use of a vapor-free solvent, such as MEK, acetone or IPA.

Plastics: Clean the surface with a dry rag or dampened solvent rag.

Metals: Prime, paint or grit blast, followed by a solvent wash for optimum bond performance.

Higher temperatures will decrease working, handling and cure times. Contact the LORD Customer Support Center for more details.

* Working time for mix-in-only; no-mix type has an indefinite open time

** Working time for two-component type only

*** Both mix and no-mix systems are available

**** Mix required for two-component systems only. Contact the LORD Customer Support Center at +1 877 ASK LORD (275 5673) for specific recommendations.

***** Service temperature resistance up to 300°F (148°C); Post bake/powder coating temperature resistance up to 400°F (204°C).

	ACRYLIC	URETHANE	EPOXY
PRE-APPLICATION PHASE			
ADHESIVE COMPONENTS	2	1 or 2	2
SUBSTRATE	Metals Thermoplastics Thermosets Composites	Thermoplastics Rubber Thermosets Composites Primed Metals	Prepared Metals Rubber Thermosets Composites Primed Metals
SURFACE PREPARATION Metals Thermosets Thermoplastics	No Yes No	Yes Yes No	Yes Yes Yes
PHYSICAL STATE	Med. Liquid to Paste	Med. Liquid to Paste	Med. Liquid to Paste
PACKAGING	1.47 oz - 55 gal	1.47 oz - 55 gal	1.47 oz - 55 gal
APPLICATION PHASE			
CURE TEMPERATURE	Room temp. or heat	Room temp. or heat	Room temp. or heat
WORKING TIME	1 - 30 min*	4 - 120 min**	5 - 180 min**
HANDLING TIME	2 - 60 min	0.5 - 24 hr	2 - 12 hr
SPEED CURE WITH	Mild heat/catalyst	Heat/catalyst	Heat
FLASH POINT °F(°C)	>50 to 200 (10-93)	>200 (93)	>200 (93)
HUMIDITY DEPENDENT	No	Yes, single-component	No
MIX REQUIRED	No***	Yes****	Yes
POST-APPLICATION PHASE			
SHEAR STRENGTH	Very High	High	Very High
PEEL STRENGTH	Medium	High	Medium
IMPACT STRENGTH	High	High	High
RESISTANCE TO: Moisture Chemicals UV Light	Very good Very good Excellent	Very good Very good Very good	Excellent Excellent Excellent
TEMPERATURE RANGE °F(°C)	-40°F To 300°F***** (-40°C To 148°C)	-40°F To 240°F (-40°C To 116°C)	-40°F To 400°F (-40°C To 204°C)

	BARE ALUMINUM OR STEEL, INCLUDING STAINLESS	GALVANIZED STEEL	PREFINISHED METALS	FRP/GRP/CF	SMC	RUBBER (1)	ENGINEERED PLASTICS (ACRYLIC, PC, ABS, PVC) (2)	WOOD	HDU (URETHANE FOAM)	CERAMIC/STONE (1)	THERMOPLASTICS (TPU, TPO, NYLON, TPE) (1)	GLASS (1)
BARE ALUMINUM OR STEEL, INCLUDING STAINLESS	8XX Maxlok 4XX 2XX	8XX Maxlok 4XX 2XX	8XX Maxlok 4XX 2XX	8XX Maxlok 6XX 4XX	8XX Maxlok 6XX 4XX	3XX	Maxlok 4XX 7XXX	7XXX 3XX	7XXX	7XXX 3XX	7XXX 3XX	8XX Maxlok 4XX 2XX
GALVANIZED STEEL	8XX Maxlok 4XX 2XX	8XX Maxlok 4XX 2XX	8XX Maxlok 4XX 2XX	8XX Maxlok 4XX	8XX Maxlok 4XX 7XXX	3XX	Maxlok 4XX 7XXX	7XXX	7XXX	7XXX 3XX	7XXX 3XX	8XX Maxlok 4XX 2XX
PREFINISHED METALS	8XX Maxlok 4XX	8XX Maxlok 4XX	8XX Maxlok 4XX 7XXX	8XX Maxlok 4XX	8XX Maxlok 4XX 7XXX	7XXX 3XX	7XXX	7XXX	7XXX	7XXX 3XX	7XXX 3XX	8XX Maxlok 4XX
FRP/GRP/CF	Maxlok 6XX 4XX	Maxlok 6XX 4XX	7XXX 3XX	Maxlok 6XX 4XX 7XXX	Maxlok 6XX 4XX 7XXX	7XXX 3XX	Maxlok 4XX 7XXX	7XXX 3XX	7XXX	7XXX 3XX	7XXX 3XX	8XX Maxlok 4XX
SMC	Maxlok 6XX 4XX	Maxlok 6XX 4XX	7XXX 3XX	Maxlok 6XX 4XX 7XXX	Maxlok 6XX 4XX 7XXX	7XXX 3XX	Maxlok 4XX 7XXX	7XXX 3XX	7XXX	7XXX 3XX	7XXX 3XX	8XX Maxlok 4XX
RUBBER (1)	7XXX 3XX	7XXX 3XX	7XXX 3XX	7XXX 3XX	7XXX 3XX	7XXX 3XX	7XXX 3XX	7XXX 3XX	7XXX	7XXX 3XX	7XXX 3XX	7XXX
ENGINEERED PLASTICS (ACRYLICS, PC, ABS, PVC) (2)	Maxlok 4XX 7XXX	Maxlok 4XX 7XXX	7XXX 3XX	Maxlok 4XX 7XXX	Maxlok 4XX 7XXX	7XXX 3XX	Maxlok 4XX 7XXX	7XXX 3XX	7XXX	7XXX 3XX	7XXX 3XX	7XXX
WOOD	7XXX 3XX	7XXX 3XX	7XXX 3XX	7XXX 3XX	7XXX 3XX	7XXX 3XX	7XXX 3XX	7XXX 3XX	7XXX	7XXX 3XX	7XXX 3XX	7XXX
HDU (URETHANE FOAM)	7XXX 3XX	7XXX 3XX	7XXX 3XX	7XXX 3XX	7XXX 3XX	7XXX 3XX	7XXX 3XX	7XXX 3XX	7XXX	7XXX 3XX	7XXX 3XX	7XXX
CERAMIC/STONE (1)	7XXX 3XX	7XXX 3XX	7XXX 3XX	7XXX 3XX	7XXX 3XX	7XXX 3XX	7XXX 3XX	7XXX 3XX	7XXX	7XXX 3XX	7XXX 3XX	7XXX
THERMOPLASTICS (TPU, TPO, NYLON, TPE) (1)	7XXX 3XX	7XXX 3XX	7XXX 3XX	7XXX 3XX	7XXX 3XX	7XXX 3XX	7XXX 3XX	7XXX 3XX	7XXX	7XXX 3XX	7XXX 3XX	7XXX
GLASS (1)	8XX Maxlok 4XX 7XXX	8XX Maxlok 4XX 7XXX	8XX Maxlok 4XX 7XXX	8XX Maxlok 4XX 7XXX	8XX Maxlok 4XX 7XXX	8XX Maxlok 4XX 7XXX	8XX Maxlok 4XX 7XXX	8XX Maxlok 4XX 7XXX	8XX Maxlok 4XX 7XXX	8XX Maxlok 4XX 7XXX	8XX Maxlok 4XX 7XXX	8XX Maxlok 4XX 7XXX

(1) LORD AP-134 Primer for glass/non-porous ceramic
LORD 7701 Surface Treatment for rubber
LORD 459X or 459T Primer for TPE, TPO

(2) Acrylic adhesives should not be used to attach large thermoplastic parts due to the differences in thermal expansion. Contact the LORD Customer Support Center.

Best to test for acceptable performance. These are only recommendations.

Adhesive Volume Estimating Tools

BEAD DIAMETER ESTIMATOR - INCHES (CM)

Required Bead Diameter: Use the table below to determine the required bead diameter from the dimensions of the adhesive joint.

BONDLINE WIDTH - in (cm)							
		0.25 (0.60)	0.50 (1.80)	1.00 (2.50)	2.00 (5.10)	4.00 (10.20)	8.00 (20.30)
BONDLINE THICKNESS - in (mm)	0.01 (0.25)	0.06 (0.14)	0.08 (0.20)	0.11 (0.29)	0.16 (0.41)	0.23 (0.57)	0.32 (0.81)
	0.02 (0.50)	0.08 (0.20)	0.11 (0.29)	0.16 (0.41)	0.23 (0.57)	0.32 (0.81)	0.45 (1.15)
	0.04 (1.00)	0.11 (0.29)	0.16 (0.41)	0.23 (0.57)	0.32 (0.81)	0.45 (1.15)	0.64 (1.62)
	0.08 (2.00)	0.16 (0.41)	0.23 (0.57)	0.32 (0.81)	0.45 (1.15)	0.64 (1.62)	0.90 (2.29)

BEAD LENGTH ESTIMATOR - FEET (M)

Linear Coverage: Use the table below to determine the length of adhesive bead that can be obtained from a cartridge of adhesives.

BEAD DIAMETER - in (cm)							
		0.125 (0.30)	0.188 (0.48)	0.250 (0.60)	0.313 (0.80)	0.375 (0.95)	0.500 (1.30)
CARTRIDGE VOLUME (mL)	40	17 (5.00)	7.4 (2.20)	4.1 (1.30)	2.7 (0.80)	1.8 (0.60)	1.0 (0.30)
	50	21 (6.30)	9.2 (2.80)	5.2 (1.60)	3.3 (1.00)	2.3 (0.70)	1.3 (0.40)
	200	83 (25.20)	37 (11.20)	21 (6.30)	13 (4.00)	9 (2.80)	5.2 (1.60)
	375	155 (47.20)	69 (21.00)	39 (11.80)	25 (7.60)	17 (5.20)	10 (3.10)
	400	166 (50.40)	74 (22.40)	41 (12.60)	27 (8.10)	18 (5.60)	10 (3.10)
	485	201 (61.10)	89 (27.20)	50 (15.30)	32 (9.80)	22 (6.80)	13 (3.80)
	600	249 (75.60)	111 (33.60)	62 (18.70)	40 (12.10)	28 (8.40)	16 (4.70)



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CHEMISTRIES



LORD® Acrylic Adhesives

LORD acrylic-based adhesives deliver world-class performance in bonding to bare metals, composites and a large number of thermoplastic materials. The combination of excellent cure kinetics at room temperature and minimal need for surface preparation make acrylic adhesives the ideal choice for both automated and manual assembly processes. Our acrylic adhesives offer outstanding toughness that delivers impact resistance, excellent low- and high-temperature performance, and long service life on top of high structural strength.

FEATURES

- 40+ years of trusted performance
- Room temperature cure
- High strength
- Long term durability
- Wide range of open times, fast strength build-up, short handling times
- Bond dissimilar substrates, thinner, lighter materials
- Resistant to diluted acids, alkalis, solvents, greases
- Excellent corrosion and UV resistance
- High temperature resistance, withstands e-coat and powder coat processes when bonds are supported stress-free
- Non-sag, suitable for vertical applications
- Available with glass beads for bondline thickness control

PRODUCT LINE

- Industrial adhesives and sealants for metal, composite and plastic
- OEM and tier metal bonding adhesives and sealants
- Two-component systems designed to support high volume and convenience dispensing
- Aftermarket and repair solutions available to support customer life cycle

SUBSTRATES

- Bare Metals
- Plastics
- Composites
- Prepared Metals
- Ceramics
- Carbon Fiber
- Glass



	PRODUCT	DESCRIPTION	ACCELERATOR	MIX RATIO by Volume	MIXED APPEARANCE	WORK TIME	HANDLING TIME	FULL CURE TIME	TYPICAL VISCOSITY (cP)
High Strength Metal Bonding	MAXLOK T3	Bonds prepared and unprepared metals, composites and plastics, high impact resistance, high peel strength, non-sag, resistance to indirect UV exposure, excellent environmental resistance, withstands e-coat and powder coat cycles if bonds are supported stress free	MX	4:1	Grey Paste	3-5 min	6-8 min	24 hr	70,000-120,000
	MAXLOK T6					6-9 min	20-24 min	24 hr	80,000-180,000
	MAXLOK T18					18-24 min	48-72 min	24 hr	80,000-180,000
Specialty Metal Bonding	850	Bonds prepared and unprepared metals and engineered plastics, toughened structural adhesive, high impact, peel and fatigue resistance, low temperature environments, 100% elongation, non-sag, withstands e-coat and powder coat cycles when bonds are supported stress free	25GB	10:1	Red Paste	6-10 min	18-24 min	2 hr***	100,000-500,000
	852					20-25 min	50-70 min	5 hr	100,000-500,000
	810 	Low Read-Through (LRT) adhesive for bonding metals and engineered plastics, ideal for glossy and flexible substrates, low exotherm, low shrinkage, withstands e-coat and powder coat cycles when bonds are supported stress free	20GB	2:1	Black Paste	8-12 min	20-25 min	24 hr	40,000-130,000
General Purpose Metal Bonding	403 	Bonds prepared and unprepared metals, engineered plastics and FRP, recommended for all types of metal assemblies, excellent cold impact and environmental resistance, withstands e-coat and powder coat cycles when bonds are supported stress free, UL 746C certified	17 19, 19GB 19 Black 19GB Red 19GB Grey	10:1 4:1 4:1 4:1 4:1	Tan Paste Black Paste Red Paste Grey Paste	2-4 min	4-6 min	24 hr*	100,000-300,000
	406 					6-10 min	12-17 min	24 hr	100,000-300,000
	410 					20-30 min	60-120 min	24 hr	100,000-300,000
	201 	Bonds prepared and unprepared metals, plastics and ceramics, self-leveling, flows into hard-to-reach places	4 17 19, 19GB 19 Black	No Mix 10:1 2:1 2:1	-- Tan Paste Tan Paste Grey Paste	5-8 min	12-16 min	24 hr	15,000-55,000
	202					1-2 min	2-4 min	24 hr	8,000-32,000
	204 	Bonds prepared and unprepared metals, plastics and ceramics, non-sag	4 17 19, 19GB	No Mix 10:1 2:1	-- Tan Paste Tan Paste Grey Paste	6-8 min	20-30 min	24 hr	100,000-300,000
	206	Bonds prepared and unprepared metals, plastics and ceramics	19, 19GB 19 Black	2:1 2:1	Tan Paste Grey Paste	12-14 min	45-60 min	24 hr	20,000-80,000
Composite and Cross Bonding	606	Bonds composites, cross bonds metals to plastics and composites, fast set, non-sag	6 6GB	10:1 10:1	Grey Paste	6-10 min	16-24 min	24 hr	100,000-300,000
	661	Bonds composites, cross bonds metals to plastics and composites, non-sag, excellent for long work time, large beads and gap filling applications	6 6GB	10:1 10:1	Grey Paste	11-19 min**	45-55 min**	24 hr**	125,000-350,000
	663					45-75 min**	130-160 min**	24 hr**	125,000-350,000
Plastic Bonding	506	Bonds wide variety of thermoplastics and thermoset plastics, fast handling time, durable, accommodates shock and sudden stress loading, resistance to indirect UV exposure	4 17 19	No Mix 10:1 2:1	Tan Gel	4-6 min	8-12 min	24 hr	20,000-70,000

* Reaches 90% of ultimate strength after 2 hours.

** Given a 1-inch diameter bead @ 90°F (32°C).

*** Reaches 90% of ultimate strength after 1 hour.

Accelerators for Acrylic Adhesives

LORD Accelerators are curatives designed for use with LORD acrylic adhesives creating adhesive systems that will bond a variety of prepared or unprepared metals and plastics. Accelerators are available as Mix-In or No-Mix:

- Mix-In Accelerators create a system with specific cure time and properties. For specific product mix options, refer to the product Technical Data Sheet.
- No-Mix Accelerators allow for an indefinite open time for bonding. LORD Accelerator 4 can be used with LORD 200 series, 500 series and Maxlok T6 acrylic adhesives.

LORD® Urethane Adhesives



LORD urethane-based adhesives are an excellent choice for bonding to a wide variety of thermoplastics and composites, plus difficult to bond substrates such as fabric, foam and wood. They can also be used for metal bonding applications where the metal is primed or coated. Our urethane adhesives have low odor, can deliver fast or slow cure times and have the combination of high toughness, strength, and flexibility that makes these adhesives an ideal choice for joining both lightweight and structural assemblies.

FEATURES

- Multiple work times and cure speeds to meet application requirements
- High elongation
- No odor, environmentally recommended
- Specialty versions to meet application requirements:
 - » Resist sunlight (non-yellowing)
 - » Optically clear, translucent, bright white color options
 - » Formulas for precise, small beads and large beads
- Excellent adhesion on numerous composites without pre-abrasion (e.g., SMC)
- Excellent temperature resistance within their category

PRODUCT LINE

- Easy to use systems for industrial, OEM and tier bonding and sealing
- Single- and two-component systems for high volume and convenience dispensing
- Aftermarket and repair solutions available to support customer life cycle

SUBSTRATES

- Composites
- Plastics
- Coated Metals
- Foams
- Textiles
- Reinforced Thermoplastics
- Glass
- Rubber
- Ceramic/Stone
- Wood



	PRODUCT	DESCRIPTION	COMPONENT	MIX RATIO by Volume	MIXED APPEARANCE	WORK TIME*	HANDLING TIME*	FULL CURE TIME*	TYPICAL VISCOSITY (cP)
High Strength Structural Bonding	7800	Bonds composites, SMC, plastics and prepared metals, rapid strength development, excellent sag resistance and gap filling capability, low exotherm, high elongation, free of heavy metals, environmentally recommended	7800-A Resin 7800-C Curative 7800-D Curative	1:1	Black Paste	-- 2-4 min 5-7 min	-- 12 min 25 min	24 hr	8,000-25,000 33,000-60,000 33,000-60,000
	7542 	Structural bond to FRP, SMC and other plastics and prepared metals with minimal surface preparation, lower viscosity, suitable for gravity fed MMD, wide range of work times, non-sag paste, non-flammable, environment and chemical resistant, UL746C certified	7542-A Resin 7542-B Curative 7542-C Curative 7542-D Curative 7542-E Curative 7542-B Black Curative	1:1	Brown Paste Black Paste	-- 4-7 min 11-15 min 20-30 min 50-60 min 4-7 min	-- 1-2 hr 2 hr 3 hr 4 hr 1-2 hr	24 hr	1,500-4,500 7,000-14,000 4,000-14,000 5,000-14,000 5,000-18,000 7,000-14,000
	7545	Structural bond to FRP, SMC and other plastics and prepared metals with minimal surface preparation, non-sag, remains in position on vertical and overhead surfaces, Non-flammable, environmental and chemical resistant	7545-A Resin 7545-B Curative 7545-C Curative 7545-D Curative 7545-E Curative 7545-F Curative 7545-G Curative 7545-B Black Curative 7545-D Black Curative	1:1	Off-White Paste Black Paste	-- 3-5 min 6-8 min 11-18 min 22-38 min 45-65 min 1.5 min 4-7 min 11-18 min	-- 30 min 60 min 1-1.5 hr 2-3 hr 4-5 hr 10 min 30 min 1-1.5 hr	24 hr	25,000-70,000 230,000-650,000 230,000-650,000 230,000-650,000 230,000-650,000 230,000-650,000 230,000-650,000 230,000-650,000 230,000-650,000
Specialty Bonding and Sealing	7550	Non-structural bond to Lexan®, ABS, polycarbonate, other plastics and primed metals, Optically clear, self-leveling, flows into hard-to-reach spaces, excellent for bonding parts with tight tolerances, non-yellowing	7550-A Resin 7550-C Curative	1:1	Clear Liquid	3-5 min	1 hr	24-72 hr	1,800-4,000 6,000-12,500
	7555	Bonds and seals plastics and prepared metals, non-sag, paint and finish quickly, non-yellowing, UV and chemical resistant, formulated for auto/truck bond and seal and clean rooms	7555-A Resin 7555-C Curative 7555-E Curative	1:1	Bright White Paste	-- 3-5 min 45 min	-- 1 hr 5-6 hr	24 hr	40,00-160,000 130,000-230,000 130,000-230,000
	7556	Bonds to Lexan, ABS, polycarbonate, other plastics and primed metals, translucent, non-sag, environmental and chemical resistant	7556-A Resin 7556-B Curative 7556-C Curative	1:1	Translucent Paste	-- 3-5 min 4-6 min	-- 1 hr 1.5-2.3 hr	24 hr	40,000-160,000 95,000-300,000 80,000-300,000
	7100	High strength, high elongation formulated for cloth, paper, foams, rubbers and plastics, bonds plastics without crazing, attacking or lowering strength of plastics, self leveling, low viscosity, no VOC content, environmental and solvent resistant	7100-A Resin 7100-B Curative	1:2	Glossy Black Liquid	5-10 min	2-3 hr	24 hr	3,000-16,000 45,000-72,000
	7150		7150-A Resin 7150-B Curative	1:2	Glossy Grey Liquid	5-10 min	2-3 hr	24 hr	3,000-16,000 41,500-65,500
Single Component	7602	Single-component, formulated for excellent adhesion to various plastics, wood, fabrics, cured elastomers, and prepared metals including precoated steel	7602	--	Off-White Paste	10-20 min	24 hr	24-72 hr	50,000-250,000
	7610DTM	Single-component, direct-to-metal adhesive/sealant for plastic, wood, fabrics and metals, non-sag, resistant to indirect UV exposure, 15 month shelf life, can finish immediately before skinning over	7610DTM	--	White Paste	25-35 min	6-12 hr	1-5 days**	--
	7650	Single-component, formulated for open cell polyethylene foam, styrofoam, HD urethane foam, plastic, fabric, rubber and prepared metal, high-tack, low viscosity, good impact resistance, suitable for laminating	7650	--	Honey Liquid	15-30 min	24 hr	1-5 days	400-2,000

* Can be accelerated with heat.

** Temperature dependent.

LORD® Epoxy Adhesives



LORD epoxy-based adhesives adhere to the widest variety of materials, including bare metals, plastics, composites, concrete, wood, rubber, and foam. Our epoxy adhesives are best known for their high tensile strength and excellent chemical resistance, and they are the right choice when long-term exposure to high heat is required. LORD epoxy adhesives generally have long open times, and the curing process can be easily accelerated with heat to shorten handling times. Novel properties such as reduced bondline read-through can make LORD epoxy adhesives the ideal choice for some of the toughest structural bonding applications.

FEATURES

- High strength and high temperature performance
- Chemically resistant
- Bond a wide variety of substrates
- Low odor
- Cure can be accelerated with heat
- Cryogenic version available
- Adaptable to all process needs:
 - » Mix ratio options for flexibility and modulus
 - » Low viscosity, liquid formulations
 - » High viscosity, paste formulations

PRODUCT LINE

- High strength adhesives and sealants for industrial, OEM, tier and defense
- Single- and two-component systems for high volume and convenience dispensing
- Aftermarket and repair solutions available to support customer life cycle

SUBSTRATES

- Composites
- Plastics TPU/TPE
- Prepared Metals
- Bare Metals
- Rubber/EPDM
- Foams
- Ceramics/Stone
- Wood

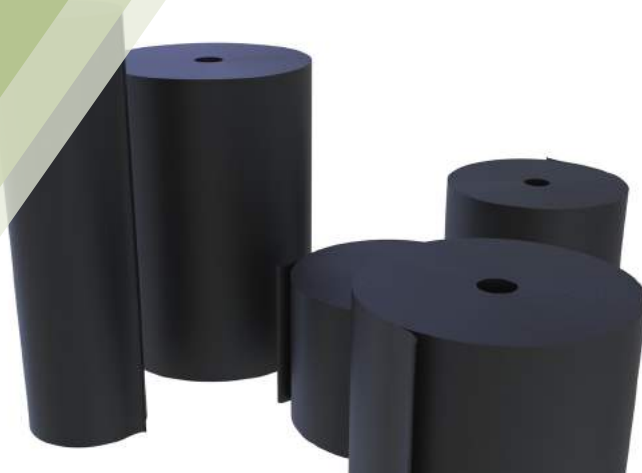


	PRODUCT	DESCRIPTION	COMPONENT	MIX RATIO by Volume	MIXED APPEARANCE	WORK TIME	HANDLING TIME*	FULL CURE TIME*	TYPICAL VISCOSITY (cP)	
High Strength Structural Bonding	310-A/ 310-B	High performance, thixotropic, formulated for primerless adhesion to composites and treated metals	310-A Resin	1:1	Grey Paste	0.5-1 hr	6-8 hr	24 hr	400,000-820,000	
			310-B Hardener						230,000-690,000	
	310-A/ 310-B BLACK		310-A Resin	1:1	Black Paste	0.5-1 hr	6-8 hr	24 hr	400,000-820,000	
			310-B Black Hardener						200,000-700,000	
	320/ 310-B	Toughened, high peel strength, high viscosity, formulated for bonding cured rubber treated with LORD 7701 adhesion enhancer/surface modifier	320 Resin	1:1	Grey Paste	0.5-1 hr	6-8 hr	24 hr	300,000-1MM	
			310-B Hardener						200,000-690,000	
	320/ 310-B BLACK		320 Resin	1:1	Black Paste	0.5-1 hr	6-8 hr	24 hr	300,000-1MM	
			310-B Black Hardener						200,000-700,000	
320/ 322	Toughened, durable, impact resis- tant, very high viscosity, excellent environmental resistance	320 Resin	1:1	Grey Paste	20-40 min	2-4 hr	24 hr	300,000-1MM		
		322 Hardener						450,000-2MM		
General Purpose Bonding	305-1/ 305-2	General purpose, self-leveling, high strength, durable, chemically resistant	305-1 Resin	1:1	Blue Liquid	1-2 hr	8-16 hr	24-48 hr	10,000-18,000	
			305-2 Hardener						20,000-45,000	
	305-1/ 307-2		305-1 Resin	1:1	Amber Liquid	1-2 hr	8-16 hr	24-48 hr*	10,000-18,000	
			307-2 Hardener						20,000-57,000	
Rapid Cure Bonding	360-A/ 360-B	Rapid cure at room temperature, minimal sag	360-A Resin	1:1	Tan Paste	2-4 min	5-10 min	24 hr	90,000-180,000	
			360-B Hardener						40,000-180,000	
	363-A/ 363-B	Fast set, low viscosity	363-A Resin	1:1	Amber Liquid	3-5 min	15-30 min	4-6 hr	7,000-16,000	
			363-B Hardener						8,000-20,000	
Specialty Bonding	304-1/ 304-2	General purpose, high viscosity, gap filling, non-sag	304-1 Resin	1:1.3	Grey Paste	1-2 hr	8-16 hr	24-48 hr	40,000-400,000	
			304-2 Hardener						20,000-100,000	
	306-1/ 306-2	General purpose, gap filling, non-sag, meets MIL-A-24456 for damping tiles to steel	306-1 Resin	1:1.3	Grey Paste	1-2 hr	8-16 hr**	24-48 hr	40,000-400,000	
			306-2 Hardener						20,000-100,000	
	309-1D/ 309-2D	High performance, thixotropic, gap filling, non-sag, precise bondline control with glass bead option	309-1D Resin	0.635:1	Blue Paste	1.5-2 hr	8-16 hr	24 hr	300,000-1.1MM	
			309-2D Hardener						300,000-1MM	
			309-1D GB/ 309-2D	309-1D GB Resin	0.635:1	Blue Paste	1.5-2 hr	8-16 hr	24 hr	300,000-1.1MM
				309-2D Hardener						300,000-1MM
	312-A/ 312-B	Epoxy with high elongation, low viscosity, flowable for potting and thin film encapsulation	312-A Resin	1.75:1	Yellow Liquid	1.5-2.5 hr	8-16 hr	24-48 hr	650-1,950	
			312-B Hardener						750-2,500	
	3170-A/ 3170-B	High strength for cryogenic temperatures, minimal outgassing	3170-A Resin	1:1	Lt. Amber Paste	2 hr	24 hr	4 days	30,000-70,000	
			3170-B Hardener						90,000-170,000	

* Can be accelerated with heat.

** Temperature dependent.

Adhesion Enhancers/ Surface Modifiers



LORD adhesion enhancers/surface modifiers are versatile and are used in conjunction with a broad range of LORD adhesives to provide enhanced adhesion to a variety of substrates. Easy application methods include spraying, wiping, dipping or flooding. Our adhesion enhancers/surface modifiers are environmentally resistant and require no mixing.

PRODUCT	DESCRIPTION	APPEARANCE	SOLVENTS	SOLIDS CONTENT BY WEIGHT (%)	TYPICAL VISCOSITY
AP-134	Single-component; low viscosity; reactive polymer primer; recommended for e-coated metals, glass, ceramic tile, concrete and some plastics	Clear Straw Yellow Liquid	Toluene, n-Butanol, Ethanol	4.8-6.2	0-8 cSt
459X	Single-component primer in xylene solvent; diluted for direct application; recommended for elastomers such as natural rubber, thermoplastic elastomers (TPE), polyolefins (TPO) and EPDM	Amber Liquid	Xylene	2.7-4.1	10 cP
459T	Single-component primer in toluene solvent; diluted for direct application; recommended for elastomers such as natural rubber, thermoplastic elastomers (TPE), polyolefins (TPO) and EPDM	Straw Yellow Liquid	Toluene	4.0-5.25	1-15 cP
7701	Single-component; solvent-based surface treatment for various vulcanized, thermoplastic polymeric materials; recommended for elastomers such as natural rubber, thermoplastic elastomers (TPE), polyolefins (TPO) and EPDM	Clear to Cloudy Liquid	Ethyl Acetate	2.0-3.5	10 cP
7713	Single-component; room temperature curing primer; for adhesive bonding of glass reinforced polyester substrates	Purple Liquid	Trichloroethylene, Methylene Chloride	11.9-14.45	20 cP

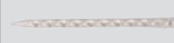
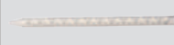


A high-angle, close-up shot of a curved conveyor belt system. The belt is composed of numerous black, cylindrical rollers arranged in a semi-circular arc. Several light brown cardboard boxes are positioned on the belt, appearing to be in motion. The background is a plain, light-colored surface, possibly a concrete floor or wall. The overall lighting is soft and even.

CONVENIENCE PACKAGING

LORD-Pak™ Systems

LORD structural adhesives are available in a convenient variety of sizes and dispensing systems.

LORD-Pak Systems	Brand	Cartidge Size(s)	Mix Ratio	Part Number	Gun	Mix Tip # Pkg of 12	Mix Tip # Pkg of 144	Mix Tip Size	Mix Tip			
Side by Side Cartridges are two-part adhesive systems in a wide range of cartridge sizes.   	LORD or Maxlok	50 mL	1:1 2:1 4:1 10:1	3001112 Manual		3004476	3009534	0.25"x6"x21 Elements				
			1:1/2:1 3009588 4:1 3004479 10:1 3004477		3001171	--	0.21"x4.5"x24 Elements					
			LORD or Signlok	225 mL 300 mL	2:1 1:1		3001120 Manual		3001173	3001195	0.34"x8"x24 Elements	
					3001129 Pneumatic		3001218	--	0.42"x6.8"x24 Elements			
	LORD or Maxlok	375 mL 450 mL 600 mL	1:1 2:1 4:1 10:1	3004857 Manual		3004657	--	0.375"x9"x24 Elements				
					3001173	3001195	0.34"x5.8"x24 Elements					
			1:1 2:1 4:1	3004856 Pneumatic		3001175	--	0.5"x11.5"x24 Elements				
	LORD	200 mL 400 mL	1:1 2:1 4:1 10:1	3018302 Manual		3024324	--	0.375"x9"x24 Elements				
		200 mL	1:1 2:1	3004273 Manual		3025382	3025383	0.4"x7.1"x24 Elements				
		400 mL	1:1 2:1	3004277 Manual		3004657	--	0.375"x9"x24 Elements				
		400 mL	10:1	3004276 Manual		3001178	--	0.375"x11"x24 Elements				
		200 mL	1:1 2:1	3004274 Pneumatic		3001173	3001195	0.34"x8"x24 Elements				
		400 mL	1:1 2:1	3027081 Pneumatic		3012582	--	0.375"x10"x24 Elements				
		400 mL 485 mL	10:1	3004279 Pneumatic								

LORD-Pak Systems	Brand	Cartidge Size(s)	Mix Ratio	Part Number	Gun	Mix Tip # Pkg of 12	Mix Tip # Pkg of 144	Mix Tip Size	Mix Tip
Coaxial cartridges are two-part adhesive systems in larger cartridges for bigger jobs. 	LORD	CX	4:1	3004487 Manual		3001179	--	.375"x9.5"x24 Elements	
		CX	10:1	3004483 Manual					
		CX	1:1 2:1 4:1 10:1	3001128 Pneumatic					
1/10th Gallon Cartridges fit in a standard caulk gun and are either one-part or No-Mix adhesive systems. 	LORD	1/10th Gallon	LORD 7610DTM Cartridge	3023577 Pneumatic		3015312	--	Nozzle	

Convenience Packaging

LORD Acrylic Adhesives

PRODUCT	ACCELERATOR	PART NUMBER	SIZE	RATIO	LORD-Pak MANUAL DISPENSING GUN	LORD-Pak PNEUMATIC DISPENSING GUN	MIXING TIP (12)	MIXING TIP (144)	PLUNGER
LORD ACRYLIC ADHESIVES									
MAXLOK T3	MX	3022875	50 mL	4:1	3001112	--	3004476	3009534	3004479
	MX	3019950	375 mL	4:1	3004857	3004856	3001173	3001195	--
MAXLOK T6	MX	3019632	50 mL	4:1	3001112	--	3004476	3009534	3004479
	MX	3019621	375 mL	4:1	3004857	3004856	3001173	3001195	--
MAXLOK T18	MX	3021934	50 mL	4:1	3001112	--	3004476	3009534	3004479
	MX	3019922	375 mL	4:1	3004857	3004856	3001173	3001195	--
201	17	3020986	CX	10:1	3004483	3001128	3001179	--	--
	19	3020987	50 mL	2:1	3001112	--	3004476	3009534	3009588*
	19	3020500	225 mL	2:1	3001120	3001149	3004657	--	--
204	17	3021048	200 mL	10:1	3018302	--	3012582	--	--
	19	3020990	50 mL	2:1	3001112	--	3004476	3009534	3009588*
	19	3020550	200 mL	2:1	3004273	3004274	3001178	--	--
	19	3020512	450 mL	2:1	3004857	3004856	3004657	--	--
206	19	3020991	50 mL	2:1	3001112	--	3004476	3009534	3009588*
	19	3020989	450 mL	2:1	3004857	3004856	3004657	--	--
403	19	3021003	50 mL	4:1	3001112	--	3004476	3009534	3004479
	19	3021004	CX	4:1	3004487	3001128	3001179	--	--
	19 BLACK	3021005	375 mL	4:1	3004857	3004856	3004657	--	--
	19GB	3020502	375 mL	4:1	3004857	3004856	3004657	--	--
	19GB RED	3021064	375 mL	4:1	3004857	3004856	3004657	--	--
	19GB GREY	3020497	375 mL	4:1	3004857	3004856	3004657	--	--
406	17	3021009	CX	10:1	3004483	3001128	3001179	--	--
	17	3021010	200 mL	10:1	3018302	--	3012582	--	--
	19	3021011	CX	4:1	3004487	3001128	3001179	--	--
	19	3021024	50 mL	4:1	3001112	--	3004476	3009534	3004479
	19	3020514	375 mL	4:1	3004857	3004856	3004657	--	--
	19 BLACK	3020489	375 mL	4:1	3004857	3004856	3004657	--	--
	19GB	3020490	375 mL	4:1	3004857	3004856	3004657	--	--
	19GB	3021025	50 mL	4:1	3001112	--	3004476	3009534	3004479
	19GB RED	3021063	50 mL	4:1	3001112	--	3004476	3009534	3004479

* LORD-Pak 50mL Dispensing gun #3001112 ships with a 1:1/2:1 plunger. Plunger part number is listed for replacement purposes on 1:1/2:1 products. A separate plunger will need to be purchased for 4:1 or 10:1 ratio products.

PRODUCT	ACCELERATOR	PART NUMBER	SIZE	RATIO	LORD-Pak MANUAL DISPENSING GUN	LORD-Pak PNEUMATIC DISPENSING GUN	MIXING TIP (12)	MIXING TIP (144)	PLUNGER
406	19GB RED	3020470	375 mL	4:1	3004857	3004856	3004657	--	--
	19GB GREY	3021067	50 mL	4:1	3001112	--	3004476	3009534	3004479
	19GB GREY	3020503	375 mL	4:1	3004857	3004856	3004657	--	--
410	19	3021027	CX	4:1	3004487	3001128	3001179	--	--
	19GB	3020491	375 mL	4:1	3004857	3004856	3004657	--	--
	19GB GREY	3020504	375 mL	4:1	3004857	3004856	3004657	--	--
	19GB RED	3020471	375 mL	4:1	3004857	3004856	3004657	--	--
506	17	3021028	CX	10:1	3004483	3001128	3001179	--	--
	19	3021029	50 mL	2:1	3001112	--	3004476	3009534	3009588*
606	6GB	3023348	50 mL	10:1	3001112	--	3004476	3009534	3004477
	6GB	3021620	400 mL	10:1	3004276	3004279	3012582	--	--
661	6GB	3021785	400 mL	10:1	3004276	3004279	3012582	--	--
663	6	3021719	400 mL	10:1	3004276	3004279	3012582	--	--
810	20GB	3024152	50 mL	2:1	3001112	--	3004476	3009534	3009588*
	20GB	3024093	200 mL	2:1	3004273	3004274	3024324	--	--
	20GB	3024154	400 mL	2:1	3004277	3027081	3024324	--	--
850	25GB	3025913	50 mL	10:1	3001112	--	3001171	--	3004477
	25GB	3025352	200 mL	10:1	3004276	--	3025382	3025383	--
	25GB	3025353	400 mL	10:1	3004276	3004279	3025382	3025383	--
852	25GB	3025362	200 mL	10:1	3004276	--	3025382	3025383	--
	25GB	23025363	400 mL	10:1	3004276	3004279	3025382	3025383	--

* LORD-Pak 50mL Dispensing gun #3001112 ships with a 1:1/2:1 plunger. Plunger part number is listed for replacement purposes on 1:1/2:1 products. A separate plunger will need to be purchased for 4:1 or 10:1 ratio products.

Convenience Packaging

LORD Urethane Adhesives

PRODUCT	COMPONENTS	PART NUMBER	SIZE	RATIO	LORD-Pak MANUAL DISPENSING GUN	LORD-Pak PNEUMATIC DISPENSING GUN	MIXING TIP (12)	MIXING TIP (144)	PLUNGER
LORD URETHANE ADHESIVES									
7100	7100-A/B	3012640	50 mL	1:2	3001112	--	3004476	3009534	3009588*
	7100-A/B	3013630	200 mL	1:2	3004273	3004274	3001178	--	--
7150	7150-A/B	3012639	50 mL	1:2	3001112	--	3004476	3009534	3009588*
	7150-A/B	3013629	200 mL	1:2	3004273	3004274	3001178	--	--
7542	7542-A/B	3003884	50 mL	1:1	3001112	--	3004476	3009534	3009588*
	7542-A/B	3003883	200 mL	1:1	3004273	3004274	3001178	--	--
	7542-A/B	3003882	600 mL	1:1	3004857	3004856	3001175	--	--
	7542-A/B Black	3025496	200 mL	1:1	3004273	3004274	3001178	--	--
	7542-A/C	3024058	200 mL	1:1	3004273	3004274	3001178	--	--
	7542-A/D	3003886	200 mL	1:1	3004273	3004274	3001178	--	--
	7542-A/D	3003887	600 mL	1:1	3004857	3004856	3001175	--	--
	7542-A/E	3003889	200 mL	1:1	3004273	3004274	3001178	--	--
7545	7545-A/B	3003923	50 mL	1:1	3001112	--	3004476	3009534	3009588*
	7545-A/B	3003922	200 mL	1:1	3004273	3004274	3001178	--	--
	7545-A/B Black	3023630	200 mL	1:1	3004273	3004274	3001178	--	--
	7545-A/B Black	3018244	400 mL	1:1	3004277	3027081	3001178	--	--
	7545-A/B Black	3023817	600 mL	1:1	3004857	3004856	3001175	--	--
	7545-A/B Black	3026832	50 mL	1:1	3001112	--	3004476	3009534	3009588*
	7545-A/C	3003924	50 mL	1:1	3001112	--	3004476	3009534	3009588*
	7545-A/C	3003915	200 mL	1:1	3004273	3004274	3001178	--	3009588*
	7545-A/C	3023147	300 mL	1:1	3001120	3001129	3001175	--	--
	7545-A/C	3003916	600 mL	1:1	3004857	3004856	3001175	--	--
	7545-A/D	3003925	200 mL	1:1	3004273	3004274	3001178	--	--
	7545-A/D Black	3024008	600 mL	1:1	3004857	3004856	3001175	--	--
	7545-A/E	3003927	50 mL	1:1	3001112	--	3004476	3009534	3009588*
	7545-A/E	3003917	200 mL	1:1	3004273	3004274	3001178	--	--
	7545-A/F	3003929	50 mL	1:1	3001112	--	3004476	3009534	3009588*
	7545-A/F	3003930	600 mL	1:1	3004857	3004856	3001175	--	--
	7545-A/G	3008743	50 mL	1:1	3001112	--	3004476	3009534	3009588*
	7545-A/G	3023022	300 mL	1:1	3001120	3001129	3001175	--	--
7550	7550-A/C	3003953	50 mL	1:1	3001112	--	3004476	3009534	3009588*
7555	7555-A/C	3003960	50 mL	1:1	3001112	--	3004476	3009534	3009588*
	7555-A/C	3003961	400 mL	1:1	3004277	--	3001178	--	--
	7555 A/E	3024769	400 mL	1:1	3004277	--	3001178	--	--

* LORD-Pak 50mL Dispensing gun #3001112 ships with a 1:1/2:1 plunger. Plunger part number is listed for replacement purposes on 1:1/2:1 products. A separate plunger will need to be purchased for 4:1 or 10:1 ratio products.

PRODUCT	COMPONENTS	PART NUMBER	SIZE	RATIO	LORD-Pak MANUAL DISPENSING GUN	LORD-Pak PNEUMATIC DISPENSING GUN	MIXING TIP (12)	MIXING TIP (144)	PLUNGER
7556	7556-A/B	3003962	50 mL	1:1	3001112	--	3004476	3009534	3009588*
	7556-A/C	3022520	200 mL	1:1	3004273	3004274	3001178	--	--
	7556-A/C	3018335	400 mL	1:1	3004277	--	3001178	--	--
7602	--	3003971	1/10 gal	--	--	3023577	Nozzle: 3015312	--	--
7610 DTM	--	3025226	1/10 gal	--	--	3023577	Nozzle: 3015312	(cartridge includes 1 nozzle)	
7800	7800-A/C	3027332	50 mL	1:1	3001112	--	3004476	3009534	3009588*
	7800-A/C	3027334	200 mL	1:1	3004273	3004274	3001173	3001195	--
	7800-A/C	3027336	400 mL	1:1	3004277	--	3001173	3001195	--
	7800-A/D	3027333	50 mL	1:1	3001112	--	3004476	3009534	3009588*
	7800-A/D	3027335	200 mL	1:1	3004273	3004274	3001173	3001195	--
	7800-A/D	3027337	400 mL	1:1	3004277	--	3001173	3001195	--

* LORD-Pak 50mL Dispensing gun #3001112 ships with a 1:1/2:1 plunger. Plunger part number is listed for replacement purposes on 1:1/2:1 products. A separate plunger will need to be purchased for 4:1 or 10:1 ratio products.

Convenience Packaging

LORD Epoxy Adhesives

PRODUCT	COMPONENTS	PART NUMBER	SIZE	RATIO	LORD-Pak MANUAL DISPENSING GUN	LORD-Pak PNEUMATIC DISPENSING GUN	MIXING TIP (12)	MIXING TIP (144)	PLUNGER
LORD EPOXY ADHESIVES									
305	305-1/305-2	3003559	50 mL	1:1	3001112	--	3004476	3009534	3009588*
	305-1/305-2	3003558	200 mL	1:1	3004273	3004274	3004657	--	--
310	310-A/310-B	3003578	50 mL	1:1	3001112	--	3004476	3009534	3009588*
	310-A/310-B	3020264	300 mL	1:1	3001120	3001129	3001218	--	--
	310-A/310-B BLACK	3003581	600 mL	1:1	3004857	3004856	3001175	--	--
320/ 310-B BLACK	320/ 310-B BLACK	3003630	50 mL	1:1	3001112	--	3004476	3009534	3009588*
	320/ 310-B BLACK	3016092	200 mL	1:1	3004273	3004274	3001178	--	--
320/ 322	320/322	3003632	50 mL	1:1	3001112	--	3004476	3009534	3009588*
	320/322	3003631	200 mL	1:1	3004273	3004274	3004657	--	--
360	360-A/360-B	3003643	50 mL	1:1	3001112	--	3004476	3009534	3009588*
363	363-A/363-B	3003647	50 mL	1:1	3001112	--	3004476	3009534	3009588*
3170	3170-A/3170-B	3003619	200 mL	1:1	3004273	200 (3004274)	3001178	--	--

* LORD-Pak 50mL Dispensing gun #3001112 ships with a 1:1/2:1 plunger. Plunger part number is listed for replacement purposes on 1:1/2:1 products. A separate plunger will need to be purchased for 4:1 or 10:1 ratio products.



Temperature

Best practices are to use adhesive at room temperature. Typical room temperature cure conditions for adhesives is 65°F-85°F (18°C-29°C). LORD adhesives can be difficult to dispense if the adhesive is stored in a cool area.

Apply LORD adhesives above freezing temperatures. Adhesives in general, cure slower at a cooler temperature, however the end adhesive properties will be like being cured at room temperature. A general rule of thumb is that for every 18°F (or 10°C) drop in temperature the open/cure time will double. An adhesive which normally cures within 24 hours with a 15-minute open time will take approximately 48 hours to cure and have a 30-minute open time when dispensed at 57°F (13°C).

Heat will also affect the cure cycle having the opposite effect than cooler temperatures. For every 18°F (or 10°C) increase in temperature, the open/cure time will be cut in half. Heat will offer some slight advantage in getting higher bond strength.

In general, cure temperatures should not exceed 150°F (65°C) for acrylics, 250°F (121°C) for urethane adhesives and 350°F (176°C) for epoxies.

Shelf Life

All LORD adhesives have a shelf life which is the amount of time a properly stored and applied product will last and perform per the published properties of the material. Please refer to the Use by Date on the container or refer to the technical data sheet for the shelf life of each adhesive.

Human and Animal Contact

LORD adhesives are not recommended for assemblies that have direct human or animal contact.

Dispensing Equipment

LORD authorized distributors can assist with dispensing equipment such as plungers, applicators, and mixers. Contact 877-ASK-LORD or visit www.lord.com for further assistance.

Checklist for Troubleshooting Structural Adhesives

LORD Structural Adhesives follow specific cure cycles that depend on environmental conditions and application guidelines. Check the following conditions if the adhesive appears soft with no change in color after 24 hours:

- Check the Use by Date on the label to ensure the adhesive is within shelf life.
- Check the storage temperature - exposure to extreme temperatures can degrade the adhesive over time.
- Check that the mix ratio is correct by levelling the plungers and dispensing a small amount of material prior to placing the mix tip on cartridge. Purge the mixer of at least 2-4 inches of material prior to beginning the bonding process.

Bonding Bare Metal

When bonding bare metals together, use the acrylic adhesives LORD Maxlok, 800, 400 and 200 series acrylic adhesives. These adhesives are formulated to bond metal and will act as a barrier between them to protect against

galvanic corrosion. Only areas of the metal surfaces bonded with the adhesive will be protected from galvanic corrosion.

Compared to traditional fastening methods such as rivets, welds and tapes, LORD Structural Adhesives eliminate the costs associated with metal preparation and finishing operations. LORD adhesives provide greater strength across the bondline of the assembly, environmental protection, and an aesthetically pleasing appearance. Visit www.lord.com for test comparison information.

Surface Tack

LORD acrylic adhesives can exhibit a tacky surface. LORD acrylic adhesives cure from the bottom to the top where the air can compete with the cure process causing surface tack. This is normal for acrylic adhesives and the tacky surface can be removed with alcohol or other organic solvent after full cure. Surface tack is only on the surface, bonded joints are fully cured.

Powder Coating

LORD, Maxlok, 800 and 400 series acrylic adhesives have excellent heat resistance characteristics up to 400°F (204°C), thus reducing the concern of possible degradation of the cured adhesive during the high heat associated with the powder coating process. (LORD heat resistance data available, 400°F [204°C] up to 90 minutes.)

LORD acrylic adhesives will not degrade at the higher temperatures associated with powder coating, however the hot tear strengths will be very low causing the assembly to possibly sag and slide apart

especially if the assemblies are heavy. The lower strength values make it essential that the assembly is properly fixtured or placed to avoid slippage of the bonded pieces.

Spot welds or other type of mechanical fixturing are frequently used in the industry to aid in holding the assembly in place. The area to be bonded can also be masked off prior to powder coating with bonding done after the process.

The integrity of the bond will remain unchanged after powder coating, and greater strength is often seen after exposure to heat once the assembly(s) has been returned to ambient temperature.

Contact 877-ASK-LORD or visit www.lord.com for additional strength charts and graphs.

How to Avoid Bondline Read-Through

Read-through is a condition where you can see the footprint of the adhesive through the material. This is caused by shrinkage that results in a pull on the bonded materials. Read-through can occur on surfaces that are high gloss, high polish or have a mirrored finish. Thin gauge metals less than 0.030 inches are more susceptible to read-through.

LORD 810/20GB Low Read-Through (LRT) acrylic adhesive is a flexible adhesive system specifically designed for bonding metals, such as aluminum, galvanized steel and CRS, and engineered plastics, such as PC-ABS and ASA. LORD 810/20GB adhesive delivers fast cure speed and strong bonding with minimal bondline read-through (BLRT).

Bonding to Glass

LORD adhesives can bond to bare glass with LORD AP-134 Adhesion Enhancer/ Surface Modifier. Prime nonporous, smooth, non-metallic substrates such as glass, porcelain, and marble with LORD AP-134. Bond the primed materials to the other substrate using a LORD Acrylic, Urethane or Epoxy adhesive.

Bonding to Chromate Conversion

Chromate conversion used to coat metals for corrosion resistance has been found to interfere with the

adhesion of some adhesive systems. LORD 200 series acrylic adhesives perform satisfactorily on aluminum with chromate conversion. Testing is recommended.

Cross-Bonding Dissimilar Materials

When bonding larger assemblies involving dissimilar materials, such as aluminum or steel to polycarbonate or acrylic, differences may exist in the expansion coefficients of metal and plastic. Adhesives and design need to accommodate the varying rate of thermal expansion.

LORD urethane adhesives can provide flexibility and prevent stress fractures and/or bond failure of the plastic materials. Best practices are to prime the bare metals, scuff the plastic, and bond with a LORD urethane structural adhesive if your testing shows the need for more flexibility.

LORD acrylic adhesives are rigid when cured, provide exceptional structural strength and are particularly formulated for assemblies with a bare metal substrate.

Bonding to Neoprene and Natural Rubbers

Bonding to neoprene and natural rubbers can be difficult. Prime elastomers with LORD 7701 Adhesion Enhancer/Surface Modifier. Metal surfaces should be sand blasted or ground to a white finish. LORD epoxy adhesives such as LORD 305, 310, or 320/322 are good choices.

Painting Structural Adhesives

LORD Structural Adhesives are safe to paint after removing squeeze out and full cure. Refer to the technical data sheet for full cure time. After full cure, solvent wipe to remove surface tack and dust prior to painting. Testing is recommended.

Storing LORD Acrylic Adhesives

Store LORD acrylic adhesives at temperatures under 80°F (27°C). For maximum shelf life, LORD acrylic adhesives can be refrigerated at temperatures of 40°F-50°F (4°C-10°C). Do not freeze. Do not store on top of shelves or mezzanines. Protect from exposure to direct sunlight. If stored at these

cooler temperatures, return the product to room temperature before using. To ensure maximum shelf life, stage only enough adhesive needed for the day's production.

Storing LORD Urethane Adhesives

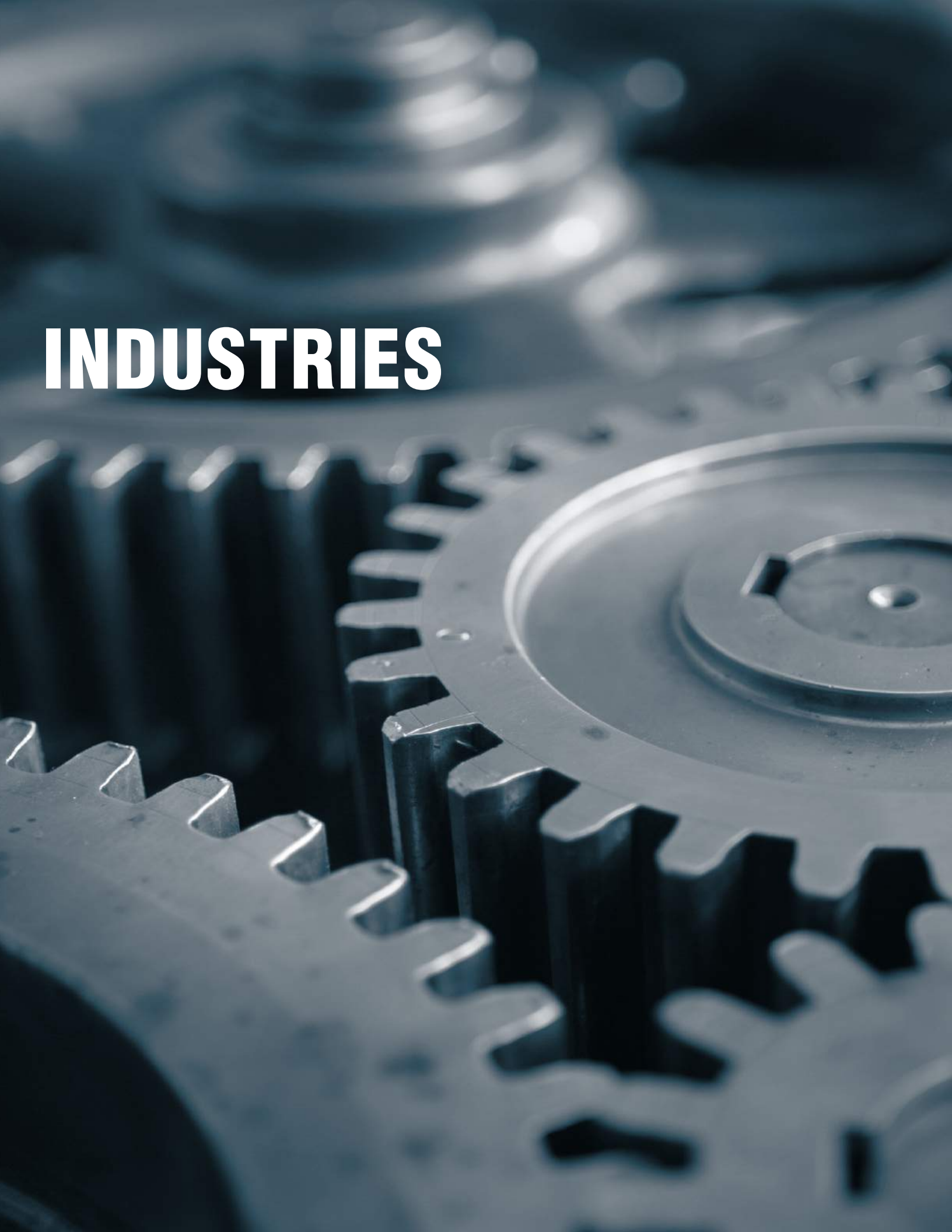
LORD urethane adhesives are moisture sensitive. Cartridges should be left in their Mylar bag with the desiccant until ready for use. Protect partial cartridges from moisture exposure by leaving the nozzle in place to act as a seal after each use. Store LORD Urethane Adhesives between 65°F-85°F (18°C-30°C). Single-component LORD urethane adhesives should be stored between 60°F-80°F (16°C-27°C). The single-component materials will react when exposed to moisture and air. For maximum shelf life after opening bulk containers, replace the lid or cap as quickly as possible and purge with nitrogen.

Storing LORD Epoxy Adhesives

Store LORD epoxy adhesives in the original containers between 40°F-80°F (4°C-27°C). If stored at cooler temperatures, return the product to room temperature before using. Full physical properties of epoxy adhesives only develop if the product is dispensed at 65°F (18°C) or above. Epoxy adhesives may be heated to ease dispensing from a cartridge (maximum 150°F (66°C)) as the addition of heat will shorten the work time of the product.

Storing Adhesion Enhancers/ Surface Modifiers

Store LORD Adhesion Enhancers/ Surface Modifiers should in their original containers. When transferring to another container, only transfer the amount needed for the application. Do not return unused material to the original container as this will cause contamination. LORD 7701 cannot be stored in metal containers or be used with metal acid brushes as this will cause the material to precipitate white particles. Keep all LORD adhesion enhancers/surface modifiers, except LORD 459T or 459X, in a cool, dark and dry area. LORD AP-134 can gel if exposed to moisture and should be capped with nitrogen.



INDUSTRIES

MANUFACTURING, FABRICATING, PRODUCT FINISHING & PRODUCT ASSEMBLY

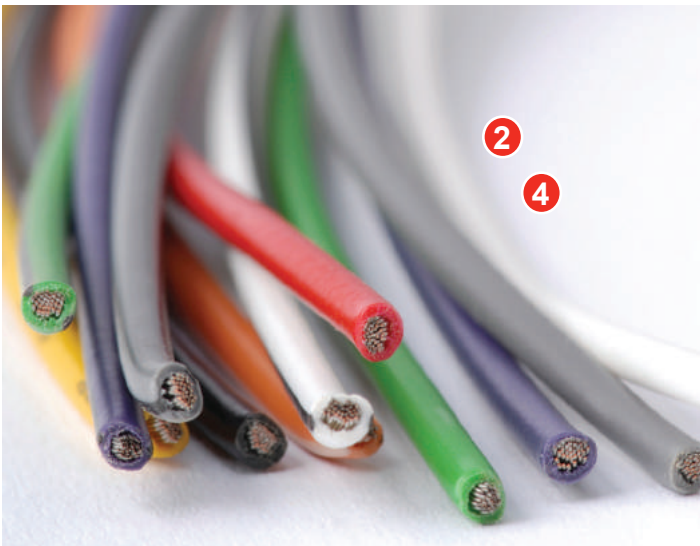
With more than 40 years of proven experience in the industrial assembly market, LORD has created adhesive and sealing solutions with unique product chemistries to bond and seal a variety of substrates with multiple cure speeds in order to adapt to your specific manufacturing environment. Our adhesives also offer easy field application for repair and refurbishment onsite.

Benefits of LORD Adhesives for Industrial Manufacturing

- Increased productivity
- Reduced stress points
- Bond and seal in one step
- Environmentally resistant
- High strength, durability and UV protection
- Adaptable product line to fit various manufacturing processes

Featured Applications

- 1 Metal Bonding
- 2 Plastic Bonding
- 3 Composite Bonding
- 4 Specialty Materials and Cross Bonding



RECREATIONAL & MARINE VEHICLES

ATV, MOTOR HOMES, BOAT & JET SKI

Ideal applications are aluminum and galvanized front panel, roof, sidewall and door panel bonding. LORD adhesives improve aesthetics, strength and eliminate leak points, making it easier to apply logos and advertisements while reducing aftermarket service due to improved product quality.

Benefits of LORD Adhesives for Recreational Vehicle Manufacturers

- Ability to bond dissimilar substrates
- High performance, two-component sealants
- High adhesion, durability leads to long service life
- Increased output through reduced cycle times vs. traditional welding and joining methods
- Reduced maintenance requirements due to less leaks



Featured Applications

- 1 Composite-to-Composite Bonding**
- 2 Cross Bonding**
- 3 Metal Bonding**
- 4 Seam Sealing**
- 5 Glass Bonding**



HEAVY-DUTY TRUCK & TRAILER

For more than 50 years, we have provided high-value product solutions and application expertise within the Heavy-Duty Truck industry. Our structural adhesives offer a myriad of benefits including improved strength and durability, enhanced exterior aesthetics and reduced cost compared to mechanical fastening methods. Our material solutions are employed in all aspects of manufacture from design, to the assembly line and into repair and serve as industry benchmarks for quality, value and durability.

Benefits of LORD Adhesives for Heavy-Duty Truck and Trailer Manufacturers

- Increased productivity
- Reduced stress points
- High strength, excellent adhesion
- Environmentally resistant and UV protection
- Environmentally recommended
- Easy application
- Reworkability
- Vibration damping and proven durability

Featured Applications

- 1 Composite Bonding
- 2 Door Bonding
- 3 Cab Bonding
- 4 Body Seam Sealing
- 5 Side Panel Bonding
- 6 Front Panel Bonding
- 7 Roof Panel Bonding



BUS & RAIL

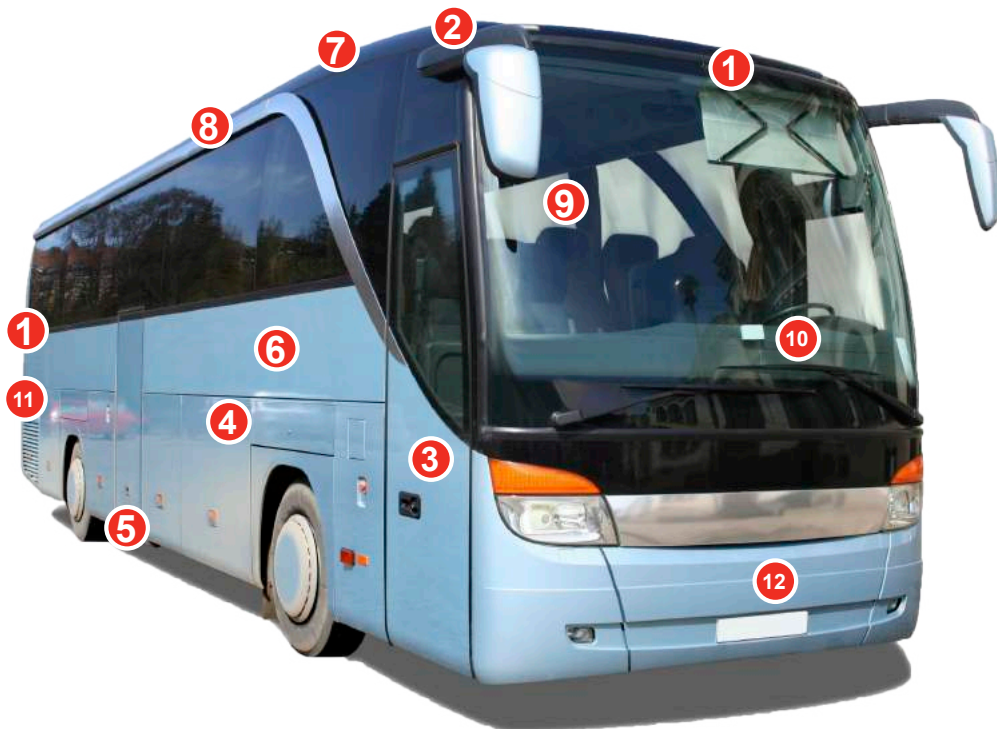
LORD structural adhesives can be used on engine compartment doors, air conditioning and air intake components, dashboards, front bumpers, grills and other internal parts as well as carriage and frame components. These adhesives help reduce stress points, leaks and cycle times, while improving aesthetics and dimensional accuracy for design freedom.

Benefits of LORD Adhesives for Bus Manufacturers

- Ability to bond dissimilar substrates
- Weight reduction
- Increased output through reduced cycle times
- Improved aesthetics
- Reduction of stress points
- Improved fatigue life

Featured Applications

- 1 Front & Rear Shell Bonding
- 2 Roof Bonding
- 3 Door Panel Bonding
- 4 Side Panel Bonding
- 5 Luggage Door
- 6 Side Glass Bonding
- 7 Roof Hatch
- 8 Air Conditioning Cover
- 9 Interior Parts
- 10 Front Dash and Panel Components
- 11 Rear Engine Cover
- 12 Front Bumper and Grill



SPECIALTY VEHICLES

AMBULANCE & WORK TRUCK

With applications including aluminum, steel or galvanized roof, panel, door, tailgate, sidewall, corner cap and post bonding, the possibilities for LORD adhesive applications are endless for specialty vehicles.

Benefits of LORD Adhesives for Specialty Vehicle Manufacturers

- Improved aesthetics
- Weight reductions
- Eliminate water leaks through rivet elimination with bond and seal technologies
- Reduction of stress points
- Improved output through reduced cycle times
- Improved durability
- Ability to bond to dissimilar metals

Featured Applications

- 1 Sidewall Bonding
- 2 Roof Bonding
- 3 Panel Bonding
- 4 Bonded HVAC Units
- 5 Door Closures



VEHICLE ACCESSORIES

CAR & TRUCK ACCESSORIES

Our adhesives and sealants allow manufacturers to bond and seal in one step which improves cost, performance and warranty compared to welding and other traditional fastening methods. In addition, LORD adhesives and sealants help reduce production floor bottlenecks and improve throughput to enhance profitability. Our materials are designed to bond to a wide range of metals, plastics, composites and foams while maintaining high durability in demanding and extreme environments.

Benefits of LORD Adhesives for Vehicle Accessories

- Structural assembly and sealing in one step
- Cross bonding
- Improved aesthetics
- Supports innovative design – bond parts with complex geometries
- Improves strength and durability

Featured Applications

- 1 Cross Bonding
- 2 Panel to Frame
- 3 Metal Bonding
- 4 Composite Bonding
- 5 Running Boards



HEAVY-DUTY EQUIPMENT

OFF-HIGHWAY, CONSTRUCTION, AGRICULTURE & MINING

We provide value to our off-highway customers by collaborating closely with them on design, process engineering and product performance.

LORD customers replace and supplement welds with structural adhesives and mechanical fasteners to bond metal to metal or cross bond various materials including composites and thermoplastics. Bonding clips and brackets improves cycle time. Since Roll Over Protection Structures (ROPS) cannot be cut or welded, bonding components to ROPS cabs during in-plant or dealer installed options maintains structural integrity.

Benefits of LORD Adhesives for Heavy-Duty Equipment

- Increased productivity
- Reduced operating costs
- Increased uptime
- Bond and seal in one step
- Environmental and corrosion resistance
- High strength, durability and UV protection
- Adaptable product line to fit various manufacturing processes

Featured Applications

- 1 Hood Bonding
- 2 Roof Bonding
- 3 Door Assembly
- 4 Seam Sealing
- 5 Component Bonding



CONSTRUCTION

DOOR, WINDOW & CLADDING

LORD adhesives present a stronger, faster-curing alternative to adhesives typically used in the window and door industry. They help to improve wind load resistance/design pressure for severe weather doors and sidelights. Typical bonding applications include corner key joints, perimeter bond frames, internal reinforcements, astragals, "dowel" joints and cladding.

Benefits of LORD Adhesives for Specialty Construction Manufacturers

- Ability to bond dissimilar substrates
- 20+ years of proven frame bonding experience
- High performance, two-component sealants
- Increased output through reduced cycle times
- Improved aesthetics with low bondline read-through technology
- High adhesion and durability leading to increased structural rigidity

Featured Applications

- 1 Window Mount Bonding and Sealant Applications
- 2 Panel to Frame Bonding
- 3 Sealant Applications
- 4 Panel Construction Bonding



ARCHITECTURAL SIGNS

ARCHITECTURAL ASSEMBLY & SIGNS

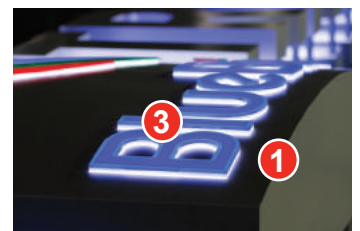
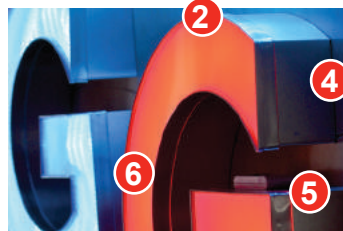
LORD structural adhesives offer versatile, convenient and durable adhesive solutions for sign assembly.

Benefits of LORD Adhesives for Architectural Signs

- 40+ years of trusted, proven performance
- Improved appearance
- High strength and long term durability
- Excellent environmental and corrosion resistance
- Job sized packaging
- Cross bonding dissimilar materials
- UL Certified product options

Featured Applications

- 1 Metal Frames, Sign Cabinets
- 2 Channel Letters
- 3 ACM Panels, Sign Face
- 4 Fasteners
- 5 Sealing
- 6 Plastic Bonding



Cautionary Information

Before using any LORD product, refer to the Safety Data Sheet (SDS) and label for safe use and handling instructions.

For industrial/commercial use only. Must be applied by trained personnel only. Not to be used in household applications. Not for consumer use.



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Values stated herein represent typical values as not all tests are run on each lot of material produced. For formalized product specifications for specific product end uses, contact the Customer Support Center.

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LORD provides valuable expertise in adhesives and coatings, vibration and motion control, and magnetically responsive technologies. Our people work in collaboration with our customers to help them increase the value of their products. Innovative and responsive in an ever-changing marketplace, we are focused on providing solutions for our customers worldwide..

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