

LORD Maxlok™ MX/T3, MX/T6 and MX/T18 Acrylic Adhesives

Description

LORD Maxlok™ MX/T3, MX/T6 and MX/T18 acrylic adhesives replace welding, brazing, riveting and other mechanical fastening methods especially over a wide range of temperature environments subject to high impact or high peel loads.

LORD Maxlok acrylic adhesives are available in a range of working times to accommodate a wide variety of process requirements.

Features and Benefits

Versatile – bonds a wide range of unprepared metals with minimal substrate preparation.

Temperature Resistant – performs at temperatures from -40 to +300°F (-40 to +149°C).

Environmentally Resistant – resists dilute acids, alkalis, solvents, greases, oils, moisture, salt spray and weathering; provides excellent resistance to indirect UV exposure.

UL Rated – Maxlok MX/T6 adhesive system is UL 746C certified.

Precise Bondline – allows precise control of adhesive bondline thickness due to its content of glass beads, 0.01" (0.025 cm) diameter.

Non-Sag – remains in position when applied on vertical or overhead surfaces, allowing for greater process flexibility.

Application

Surface Preparation – Remove grease, loose contamination or poorly adhering oxides from metal surfaces. Normal amounts of mill oils and drawing compounds usually do not present a problem in adhesion. Most plastics require a simple cleaning before bonding. Some may require abrading for optimum performance.

Mixing – Mix LORD Maxlok T3, T6 or T18 adhesive with the proper amount of LORD Maxlok MX accelerator. Handheld cartridges will automatically dispense the correct volumetric ratio of each component. Even color distribution visually indicates a thorough mix. Once mixed, the adhesive cures rapidly.

Typical Properties*

	MX Accelerator	T3 Adhesive	T6 Adhesive	T18 Adhesive
Appearance	Grey Paste	Off-white to Tan Paste	Off-white to Tan Paste	Off-white to Tan Paste
Viscosity, cP @ 77°F (25°C) Brookfield	170,000-320,000	70,000-120,000	80,000-180,000	80,000-180,000
Density				
lb/gal	11.5-12.1	8.3-8.7	8.4-8.9	8.4-8.9
(kg/m ³)	(1378-1450)	(995-1042)	(1007-1066)	(1007-1066)
Flash Point, °F (°C)	201 (94)	59 (15)	59 (15)	59 (15)

*Data is typical and not to be used for specification purposes.

LORD TECHNICAL DATA

Applying – Apply adhesive using handheld cartridges or automatic meter/mix/dispense equipment.

- Handheld Cartridges
 1. Load the cartridge into the applicator gun and remove the end caps.
 2. Level the plungers by expelling a small amount of adhesive to ensure both sides are level.
 3. Attach mixing tip and expel a mixer's length of adhesive.
 4. Apply adhesive to substrate and mate the parts within the working time of the adhesive. Clamp in position until adhesive reaches handling strength. Do not re-expose adhesive to air once parts are mated. Mated parts should be repositioned by sliding to achieve proper alignment.
- Meter/Mix/Dispense Equipment
Contact your LORD representative if assistance is needed using this equipment.

Curing – Complete cure requires 24 hours at room temperature. Mating surfaces must be held in contact during the entire curing process. Cure rate can be accelerated by applying modest heat [$<150^{\circ}\text{F}$ ($<66^{\circ}\text{C}$)]. Cured adhesive is colored to visually indicate a full cure; cure color depends on the accelerator used.

Cleanup – Clean equipment and tools prior to the adhesive cure with solvents such as isopropyl alcohol, acetone or methyl ethyl ketone (MEK). Once adhesive is cured, heat the adhesive to 400°F (204°C) or above to soften the adhesive. This allows the parts to be separated and the adhesive to be more easily removed.

Typical Properties* of Adhesive Mixed with Accelerator

	MX/T3	MX/T6	MX/T18
Mix Ratio by Volume, Accelerator to Adhesive	1:4	1:4	1:4
Solids Content, %	100	100	100
Working Time, min @ 77°F (25°C)	3-5	6-9	18-24
Time to Handling Strength, min @ 77°F (25°C) 50 psi Shear	6-8	20-24	48-72
Mixed Appearance	Grey Paste	Grey Paste	Grey Paste

*Data is typical and not to be used for specification purposes.

Typical Cured Properties – LORD Maxlok MX/T6 Adhesive

Tensile Strength at Break, psi (MPa)	2800 (19.3)
Elongation, % ASTM D638	>10
Young's Modulus, psi (MPa)	108,778 (750)
Glass Transition Temperature, $^{\circ}\text{F}$ ($^{\circ}\text{C}$)	194 (90)

LORD TECHNICAL DATA

Metal Bond Performance** – LORD Maxlok MX/T6 Adhesive

Substrates	Aluminum to Aluminum	HDG to HDG	EZG to EZG
Lap Shear @ Room Temperature, psi (MPa) Failure Mode	2760 (19) C	2410 (16.6) C	2190 (15.1) C
Lap Shear @ Hot Strength [180°F (82°C)], psi (MPa) Failure Mode	1030 (7.1) C	1150 (7.9) C	1000 (6.9) C
Lap Shear after 1400 hours Salt Spray Exposure, psi (MPa) Test after 24 hours Failure Mode	2140 (14.8) C	1760 (12.1) C	1430 (9.9) C
Lap Shear @ -40°F (-40°C), psi (MPa) Failure Mode	3150 (21.7) C/A	2400 (16.5) C/A	2550 (17.6) C
T-Peel, pli (N/mm) Failure Mode	41 (7.2) C	53 (9.3) C	54 (9.5) C

Substrate

Aluminum, 0.032" thick 6061T6
Electrogalvanized Steel (EZG), 0.032" thick
Hot Dipped Galvanized Steel (HDG), 0.032" thick

Surface Treatment

Dry Rag Wipe
Dry Rag Wipe
Dry Rag Wipe

Bonded Parameters	Bond Area	Film Thickness	Cure	Mix Ratio
Metal Lap Shears (ASTM D1002)	1.0"x0.5"	0.010"	24 hr @ RT	4:1 by Volume
T-Peel (ASTM D1876 modified)	1.0"x3.0"	0.010"	72 hr @ RT	4:1 by Volume

Failure Mode Definition

Adhesive Failure
Cohesive Failure

Abbreviation

A
C

Plastic/Composite Bond Performance** – LORD Maxlok MX/T6 Adhesive

Substrates	ABS to ABS	FRP to FRP
Lap Shear @ Room Temperature, psi (MPa) Failure Mode	520 (3.6) SB	1280 (8.8) FT
Lap Shear after 1400 hours Salt Spray Exposure, psi (MPa) Test after 24 hours Failure Mode	460 (3.2) SB	520 (3.6) FT
Lap Shear @ -40°F (-40°C), psi (MPa) Failure Mode	920 (6.3) SB	869 (5.99) FT

Failure Mode Definition

Fiber Tear
Stock Break

Abbreviation

FT
SB

**Bond performance data was obtained using LORD Maxlok MX/T6 adhesive. Please contact LORD Corporation regarding the use and/or performance of using other adhesive/accelerator combinations (+1 877 ASK LORD).

LORD TECHNICAL DATA

Shelf Life/Storage

Shelf life of each component is six months when stored below 80°F (27°C) in original, unopened container. Storage temperatures of 40-50°F (4-10°C) are recommended. If stored cold, allow product to return to room temperature before using. Protect from exposure to direct sunlight.

LORD Maxlok MX/T3, MX/T6 and MX/T18 acrylic adhesives are flammable. Do not store or use near heat, sparks or open flame.

Cautionary Information

Before using this or 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.

Values stated in this technical data sheet 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.

Information provided herein is based upon tests believed to be reliable. In as much as LORD Corporation has no control over the manner in which others may use this information, it does not guarantee the results to be obtained. In addition, LORD Corporation does not guarantee the performance of the product or the results obtained from the use of the product or this information where the product has been repackaged by any third party, including but not limited to any product end-user. Nor does the company make any express or implied warranty of merchantability or fitness for a particular purpose concerning the effects or results of such use.

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