

# LORD® MAXLOK™ MX/T3S, MX/T6S AND MX/T18S ACRYLIC ADHESIVES

## Technical Data Sheet

LORD® Maxlok™ MX/T3S, MX/T6S and MX/T18S 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°F to +300°F (-40°C to +149°C).

Note: Based on test results, LORD Maxlok MX/T6S adhesive system exhibits post bake/powder coating temperature resistance up to 400°F (204°C) for 90 minutes. Customer specific substrates should always be evaluated for specific application performance.

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

**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 T3S, T6S or T18S 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.

**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 material 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 Parker Lord representative if assistance is needed using this equipment.

### Typical Properties\*

	MX Accelerator	T3S Adhesive	T6S Adhesive	T18S 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	100,000 - 500,000	70,000 - 200,000	70,000 - 200,000	70,000 - 200,000
Density lb/gal (kg/m³)	11.45 - 12.15 (1372 - 1456)	8.25 - 8.75 (989 - 1048)	8.4 - 8.9 (1007 - 1066)	8.4 - 8.9 (1007 - 1066)
Flash Point, °F (°C)	201 (94)	59 (15)	53 (11)	59 (15)

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

**Curing:** Complete cure requires 24 hours at room temperature. Mating surfaces must be held in contact during the entire curing process. Cured adhesive is colored to visually indicate a full cure; cure color depends on the accelerator used.

Cure rate can be accelerated by applying modest heat [ $<150^{\circ}\text{F}$  ( $<66^{\circ}\text{C}$ )]. Customer should evaluate adhesive strength and quality through a functional trial of their intended application process. Consult with Parker Lord application engineer for recommended maximum temperature dependent on chosen adhesive cure speed.

**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  $400^{\circ}\text{F}$  ( $204^{\circ}\text{C}$ ) or above to soften the adhesive. This allows the parts to be separated and the adhesive to be more easily removed.

## Shelf Life/Storage

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

LORD Maxlok MX/T3S, MX/T6S and MX/T18S acrylic adhesives are flammable. Do not store or use near heat, sparks or open flame.

## Cautionary Information

Before using this or any Parker 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.

## Typical Properties\* of Adhesive Mixed with Recommended Accelerator

	MX/T3S	MX/T6S	MX/T18S
Mix Ratio by Volume, Adhesive to Accelerator	1:4	1:4	1:4
Solids Content, %	100	100	100
Working Time, minutes @ $77^{\circ}\text{F}$ ( $25^{\circ}\text{C}$ )	3 - 5	6 - 9	18 - 24
Time to Handling Strength, minutes @ $77^{\circ}\text{F}$ ( $25^{\circ}\text{C}$ ) 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/T6S 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 ( $T_g$ ), $^{\circ}\text{F}$ ( $^{\circ}\text{C}$ )	194 (90)

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

## Plastic/Composite Bond Performance\*\* – LORD Maxlok MX/T6S Adhesive

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

Failure Mode Definition	Abbreviation
Fiber Tear	FT
Stock Break	SB

\*\*Bond performance data was obtained using LORD Maxlok MX/T6S adhesive. Please contact Parker LORD regarding the use and/or performance of using other adhesive/accelerator combinations.

## Metal Bond Performance\*\* – LORD Maxlok MX/T6S Adhesive

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

Substrate	Surface Treatment
Aluminum, 0.032" thick 6061T6S	Dry Rag Wipe
Hot Dipped Galvanized Steel (HDG), 0.032" thick	Dry Rag Wipe
Electrogalvanized Steel (EZG), 0.032" thick	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	1:4 by Volume
T-Peel (ASTM D1876 modified)	1.0"x3.0"	0.010"	24 hr @ RT	1:4 by Volume

Failure Mode Definition	Abbreviation
Adhesive Failure	A
Cohesive Failure	C

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