

# 201

## Acrylic Adhesive for Metals and Plastics

### Description

Lord® 201 acrylic adhesive bonds a wide variety of prepared or unprepared metals and plastics. Lord 201 adhesive replaces welding, riveting and other mechanical fastening methods.

### Features and Benefits

**Bonds Unprepared Metal** - requires little or no substrate preparation.

**Fast Cure** - cures quickly at room temperature.

**Good Flow** - bonds irregular shapes and hard to reach substrates.

**Environmental and Chemical Resistance** - thermosetting; resists dilute acids, alkalis, solvents, greases, oils, moisture, and weathering. Performs at temperatures from -40°C to 149°C (-40°F to 300°F). Excellent UV exposure resistance.

**Versatile** - bonds many different substrates. Can be used with both Mix-In and No-Mix accelerators. Insensitive to minor deviations from correct mix ratio.

**Table 1: Typical Properties of Lord 201 Acrylic Adhesive\***

	Lord 201	Accelerator 4	Accelerator 17	Accelerator 19
Appearance	Off-white liquid	Slightly hazy to clear amber liquid	Off-white to slightly yellow liquid	Off-white paste
Viscosity, cP Brookfield at 25°C (77°F)	15-55,000 (Spindle 5 at 20 rpm HBT)	10 (Spindle 1 at 30 rpm LVT)	10,000 - 100,000 (Spindle 4 at 12 rpm LVT)	150,000 - 450,000 (T-bar C @ 10 rpm)
Density kg/m <sup>3</sup> lb/gal	1061-1043 8.5 - 8.7	1222-1246 10.2 - 10.4	1162-1210 9.7 - 10.1	1426-1546 11.9 - 12.9
Solvents	None	Methylene chloride/ MIBK/Trichloroethylene	None	None
Flash Point (Closed Cup)	18°C (66°F)	>93°C (>200°F)	>93°C (>200°F)	>93°C (>200°F)
Working Time of Mix System at 24°C (75°F)	5 - 8 Minutes	—	—	—
Handleable Bonds at 24°C (75°F)	12 - 16 Minutes	—	—	—
90 Percent of Ultimate Strength	2 Hours	—	—	—
Full Properties	24 Hours	—	—	—
Mix Ratio by Volume	10 Parts	No-Mix	1 Part	5 Parts
Shelf Life from date of shipment, 24°C (75°F), unopened container	6 Months	6 Months	6 Months	6 Months

\*Above properties data are typical and not to be used for specification purposes. For specification data, contact our Customer Service Department.

## Surface Preparation

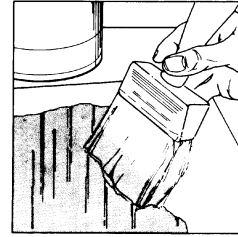
Metals should be free of grease, loose contamination or poorly adhering oxides. Normal amounts of mill oils and drawing compounds usually do not present problems in adhesion. Some engineering plastics should be cleaned, primed or abraded for optimum performance, but this must be determined for each material.

## Mixing

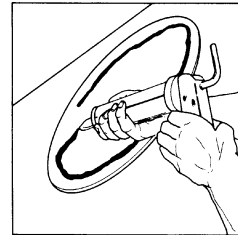
**No-Mix System** — Application may be made by spraying, rolling, or brushing Lord Accelerator 4 onto one or both substrates. Optimum bond line thickness is 127-254 microns (5-10 mils). If the bond line is under 25 mils thick, application to one substrate is usually sufficient. For bond lines of 635 - 1270 microns (25-50 mils), both substrates should be coated. Acrylic adhesive may be applied as soon as the accelerator is dry, one to three minutes at 24°C (75°F) or up to several weeks thereafter. Parts stored after coating should be kept in a clean, dry area without exposure to ultraviolet light or temperatures in excess of 24°C (75°F).

Refer to Procedure I illustrations for easy-to-follow application instructions using the No-Mix system.

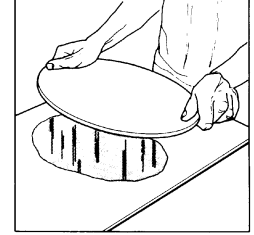
## Procedure I — No-Mix System



1. Apply accelerator.



2. Apply acrylic adhesive.



3. Assemble components.

## Performance Data

**Table 2: Typical Lap Shear Bond Values at Room Temperature Lord 201/Accelerator 17**

Substrate	psi	Failure
Cold Rolled Steel		
SAE 1010	4500	AM/C
Commercial Quality 1010	3200	AM/C
Drawing Quality Aluminum Killed 1008	3600	AM/C
Stainless Steel		
302	4000	AM/C
Galvanized Steel	1300	AM/C
Aluminum		
6061-T6	4600	AM/C
2014-T3	2500	AM/C
5052-0	2000	AM/C
Copper	3500	AM/C
Brass SAE 72	2600	AM/C
Titanium	3200	AM/C
Magnesium	2000	AM/C
SMC (Polyester)	800	SB
ABS	900	SB
Plexiglas®	900	SB
Noryl®	800	SB
Polycarbonate	1500	SB

### NOTES:

Metal 1/2" overlap, plastics 1" overlap

10 mil glue line thickness

24 hour layover before testing

ASTM D1002

Metals were MEK wiped;

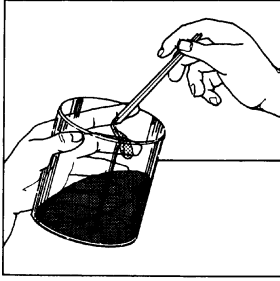
Plastics were wiped with isopropyl alcohol.

SB—Stock Break

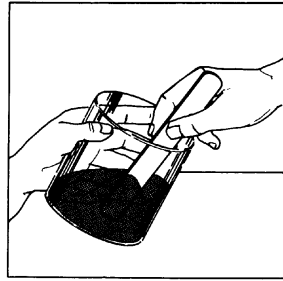
AM/C—Acrylic Adhesive to Metal/Cohesive

Plexiglas is a registered trademark of Rohm & Haas Co., Philadelphia, Pa.  
Noryl is a registered trademark of General Electric, Co., Selkirk, New York.

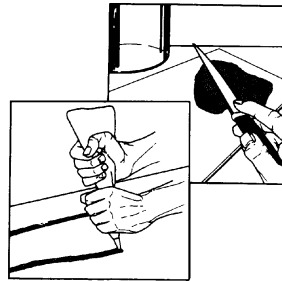
## Procedure II — Mix-In System



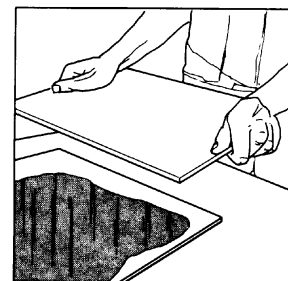
1. Pour accelerator into container containing acrylic adhesive.



2. Mix accelerator and acrylic adhesive.



3. Apply accelerator-acrylic adhesive mixture.



4. Assemble components.

**Mix-In System** — Mix Lord 201 resin with the proper amount of Mix-In accelerator. Working time of the mixed system is approximately five to eight minutes at 24°C (75°F). A handleable bond will develop in 12 to 16 minutes.

Procedure II illustrates instructions for using the Mix-In system.

**Dispense Equipment** — Contact your Lord representative for recommended No-Mix and Mix-In dispense equipment. When using such equipment, all wetted parts must be made of stainless steel, and all hoses should be steel braided Teflon.

**Cure** — Adhesive cure will begin on contact with the accelerator. Parts should be fixtured as soon as possible after adhesive application, and in less than five minutes.

**Table 3: Typical 1000 Hour Environmental Resistance of Lord 201/Accelerator 17**

Environment	Initial (psi)	Final (psi)	Percent Retention
<b>A. (52°C/125°F) Condensing Humidity</b>			
Commercial Quality 1010 CRS	3000	3010	101
Drawing Quality AK 1008 CRS	3200	3300	105
6061-T6 Aluminum	4500	3510	77
<b>B. 5 Percent Salt Spray (35°C/95°F)</b>			
SAE 1010 CRS	5440	4200	78
5052-0 Aluminum	1770	1440	82
6061-T6 Aluminum	4600	2960	65
<b>C. Water Immersion (24°C/75°F)</b>			
SAE 1010 CRS	5530	6150	111
5152 Aluminum	2420	1930	80
6061-T6 Aluminum	3980	2760	69
<b>D. 5 Percent Salt-Solution Immersion (24°C/75°F)</b>			
SAE 1010 CRS	5530	5520	100
5182 Aluminum	2420	2060	83
6061-T6 Aluminum	3980	3120	78
<b>E. Gasoline Immersion (24°C/75°F)</b>			
SAE 1010 CRS	5530	6130	111
5182 Aluminum	2420	2300	95
6061-T6 Aluminum	3980	3590	90

**NOTES:**

Parts allowed 24 hour layover prior to environmental exposure.  
 Bonds were made and tested according to ASTM D1002-77 using 0.063 inch metal stock except for the 5182 Aluminum which was 0.040 inch thick. Substrates were wiped with solvent.  
 A 0.010 inch thick glue line was used. All tests were run for 1000 hours.  
 Assemblies were not stressed during exposure to the aggressive environments.  
 Performance data are typical and not to be used for specification purposes.

**Table 4: Typical Impact Strength of Lord 201/Accelerator 4**

Temperature	Ft. lbs/sq. in.	kJ/sq. meter
-40°C (-40°F)	5.7	12.0
-20°C (-4°F)	7.6	16.0
0°C (32°F)	8.6	18.1
20°C (68°F)	9.5	20.0
40°C (104°F)	9.5	20.0
60°C (140°F)	9.4	19.7
80°C (176°F)	9.3	19.5
100°C (212°F)	9.0	18.9

**NOTES:**Substrate tested 1018 cold rolled steel.  
Test Method ASTM D950Bond line thickness 10 mils (0.25 mm)  
Typical Values—not run as a standard test.**Table 5: Typical Effect of Heat Aging on Lord 201 Bonded Assemblies**

	1 wk. at R.T. Tested at R.T.	1 wk. at 121°C (250°F) Tested at R.T.	30 days at 121°C (250°F) Tested at R.T.
Nonprepared SAE 1010 CRS	5600 psi	6700 psi	4800 psi
Grit Blasted SAE 1010 CRS	6500 psi	6400 psi	6700 psi

**NOTES:**

Test Method ASTM D1002

Typical Values—not run as a standard test.

**Table 6: Typical Shear Strength of Lord 201/Accelerator No 4 vs Temperature**

	Tested at Room Temperature	Tested at 93°C (200°F)	Tested at 149°C (300°F)
Nonprepared SAE1010 CRS	5500 psi	3600 psi	700 psi
Grit Blasted SAE 1010 CRS	6700 psi	4000 psi	800 psi

NOTE: Typical Values—not run as a standard test.

**Storage**

Ship and store Lord acrylic adhesives at temperatures below 27°C (80°F). Temperatures greater than 32°C (90°F) shorten the stability of Lord adhesive and accelerators. For maximum shelf life, store at 4°C-10°C (40°F - 50°F).

**Cautionary Information**

Before using this or any Lord product, refer to the Material Safety Data Sheet (MSDS) 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 bulletin 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 Service Department.

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