

LORD® 305 Epoxy Adhesive

Technical Data Sheet

LORD® 305 adhesive is a general purpose, medium viscosity, two-component epoxy adhesive system used for applications that require strong, durable, chemically and environmentally resistant bonds. This adhesive system provides excellent adhesion to prepared metals, fiberglass reinforced plastics (FRP), phenolic, wood, prepared rubber and other materials. It is also used to bond cured rubber to itself and rubber to metal, including gaskets, bushings, shock-absorbing devices and rubber rolls. LORD 305 adhesive can be either room temperature cured or heat cured for faster processing.

Features and Benefits:

Durable – provides load bearing properties equal to or greater than the materials being bonded.

Environmentally Recommended – contains no solvent, nonflammable and virtually odorless.

Environmentally Resistant – resists moisture, sunlight and weathering.

Temperature Resistant – performs at temperatures from -30°F to +250°F (-34°C to +121°C).

Chemically Resistant – resists dilute acids, alkalis, solvents, greases and oils.

Excellent Engineering Properties – provides low shrinkage, good creep properties and low water absorption

Application:

Surface Preparation – Remove soil, grease, oil, fingerprints, dust, mold release agents, rust and other contaminants from the surfaces to be bonded by solvent degreasing or alkaline cleaning.

On metal surfaces which are free of oxidation, use an isopropyl alcohol wipe. If necessary, use an abrasive material to remove tarnish. Always follow abrasion by a second cleaning to ensure removal of loose particles.

When bonding cured rubber, allow LORD 7701 adhesion enhancer/surface modifier to flash off before applying LORD 305 adhesive. Prime glass and ceramic surfaces with LORD AP-134 adhesion enhancer/surface modifier to promote adhesion.

Handle prepared surfaces carefully to avoid contamination. Assemble as soon as possible.

Mixing – Thoroughly mix the proper amount of resin and hardener until uniform in color and consistency. Be careful not to whip excessive air into the adhesive system. Handheld cartridges will automatically dispense the correct volumetric ratio of each component.

Heat buildup due to an exothermic reaction between the two components will shorten the working time of the adhesive. Mixing smaller quantities will minimize heat buildup. Do not use any adhesive that has begun to cure.

Typical Properties*

	305-1 Resin	305-2 Hardener
Appearance	Clear Amber Liquid	Blue Liquid
Viscosity, cP @ 77°F (25°C) Brookfield HBF Spindle 2, 10 rpm	10,000 - 18,000	20,000 - 45,000
Density lb/gal (kg/m ³)	9.4 - 10.0 (1126 - 1198)	7.75 - 8.35 (928 - 1001)
Flash Point (Closed Cup), °F (°C)	>200 (>93)	>200 (>93)

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

Applying – Apply the mixed adhesive to bond surfaces using automatic meter/mix/dispense equipment, handheld cartridges or any convenient tool such as a stiff brush, spatula or trowel. For general use, a film thickness of approximately 0.02 inch (0.51 mm) is recommended. To control bondline thickness, a small amount of solid glass beads can be added into the mixed adhesive.

Join the parts in such a way as to avoid entrapped air. Apply only enough pressure to ensure good wetting of the adhesive on both surfaces. Squeezing a little adhesive out at the edges is usually a sign of proper assembly. It is not necessary to clamp the assembly unless movement during adhesive cure is likely. Maximum adhesion will occur only with parts which mate well without the need for excessive clamping pressure during cure. Excessive clamping may squeeze too much adhesive from the bond area which can result in a poor bond.

Curing – LORD 305 adhesive will cure to full strength in 24-48 hours, provided that the adhesive, substrates and ambient temperature are 65°F (18°C) or higher.

Higher temperatures will provide faster cure times; however, the bondline temperature should not exceed 325°F (162°C). Elevated temperature cure produces the highest bond strengths and impact resistance. Firm recommendations of cure times and temperatures depend on material composition and heating methods.

Once the adhesive has cured, it can be filed, sanded, machined or otherwise handled in the same way as a light metal. Paint, lacquers, enamels and other coatings can be applied to cured adhesive.

Typical Properties* of Resin Mixed with Hardener

Mix Ratio, Resin to Hardener	
General Purpose, -30°F to 250°F (-34°C to 121°C) Mixed Stress Joint Design	
by Volume	1:1
by Weight	1.2:1
High Temperature, 50°F to 250°F (10°C to 121°C) Shear Stress Joint Design	
by Volume	2:1
by Weight	2.4:1
Low Temperature, -40°F to 100°F (-40°C to 38°C) Peel Stress Joint Design	
by Volume	1:2
by Weight	1:1.7
Solids Content, %	100
Working Time, hours @ 75°F (24°C) 54 g mass	1-2
Time to Handling Strength, hours	8-16
Mixed Appearance	Blue Liquid
Cured Appearance	Translucent Blue

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

Typical Cured Properties*

Tensile Strength at Break, psi (MPa) ASTM D638	3350 (23.1)
Elongation, % ASTM D638	9.9
Young's Modulus, psi (MPa) ASTM D638	283,694 (1956)
Glass Transition Temperature (T _g), °F (°C) ASTM E1640-99, by DMA	141 (61)

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

Bond Performance*

Substrates	Cold Rolled Steel to Cold Rolled Steel Lap Shear psi (MPa)	Aluminum to Aluminum Lap Shear psi (MPa)	SMC to SMC Lap Shear psi (MPa)	Natural Rubber to Cold Rolled Steel 45° Peel pli (N/mm)	SBR to SBR T-Peel pli (N/mm)
Test @ Room Temperature	2240 (15.4)	1890 (13.0)	820 (5.6)	37 (6.5)	84 (14.7)
Failure Mode	A	36C/A	FT	58R/A	R
Test @ Hot Strength, 180°F (82°C)	1100 (7.6)	1040 (7.2)	490 (3.4)	24 (4.2)	—
Failure Mode	A	A	13FT/A	44R/A	
Test after 7 days Water Immersion @ 130°F (54°C) Test after 24 hours	2630 (18.1)	1840 (12.7)	600 (4.1)	33 (5.8)	83 (14.5)
Failure Mode	A	A	FT	13R/A	SB
Test after 14 days Salt Spray Exposure Test Immediately	2500 (17.2)	1790 (12.3)	610 (4.2)	—	110 (19.3)
Failure Mode	A	A	100FT		83R/SB
Test after 14 days @ 100°F (38°C), 100% RH Test Immediately	2740 (18.9)	2010 (13.8)	660 (4.5)	41 (7.2)	94 (16.5)
Failure Mode	A	A	FT	50R/A	83R/SB
Test @ -30°F (-34°C)	2490 (17.1)	1600 (11.0)	720 (5.0)	60 (10.5)	78 (13.6)
Failure Mode	A	A	FT	85R/A	R

Substrate

Surface Treatment

Cold Rolled Steel and Aluminum	MEK Wipe, Grit Blast, MEK Wipe
Sheet Molded Compound (SMC)	320-grit Sandpaper, Dry Rag Wipe
Styrene Butadiene Rubber (SBR)	Primed with LORD 7701 Surface Treatment
Natural Rubber	Primed with LORD 7701 Surface Treatment

Bonded Parameters	Bond Area	Film Thickness	Cure	Mix Ratio
Metal Lap Shears	1.0" x 0.5"	0.010"	72 hr @ RT	1:1 by Volume
SMC Lap Shears	1.0" x 1.0"	0.030"	72 hr @ RT	1:1 by Volume
T-Peels	1.0" x 3.0"	0.020"	72 hr @ RT	1:1 by Volume
45° Peels	1.0" x 1.0"	0.020"	72 hr @ RT	1:1 by Volume

Failure Mode Definition

Abbreviation

Adhesive Failure	A
Cohesive Failure	C
Fiber Tear	FT
Rubber Failure	R
Stock Break	SB

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

Cleanup – Clean excess adhesive on the bonded assembly, as well as the equipment, prior to the adhesive cure with hot water and detergent or an organic solvent such as ketones. Once adhesive has cured, heat the adhesive to 400°F (204°C) or above to soften the cured adhesive. This allows the parts to be separated and the adhesive to be more easily removed. Some success may be achieved with commercial epoxy strippers.

Shelf Life/Storage:

Shelf life is two years from date of manufacture when stored at 60-80°F (16-27°C) in original, unopened container.

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.

Values stated in this document 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 Parker Lord has no control over the manner in which others may use this information, it does not guarantee the results to be obtained. In addition, Parker Lord 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.

WARNING — USER RESPONSIBILITY. FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from Parker-Hannifin Corporation, its subsidiaries and authorized distributors provide product or system options for further investigation by users having technical expertise.

The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application, follow applicable industry standards, and follow the information concerning the product in the current product catalog and in any other materials provided from Parker or its subsidiaries or authorized distributors.

To the extent that Parker or its subsidiaries or authorized distributors provide component or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the components or systems.

©2024 Parker Hannifin - All Rights Reserved

Information and specifications subject to change without notice and without liability therefor. Trademarks used herein are the property of their respective owners.

OD DS3369 06/24 Rev.7



Parker Lord
Engineered Materials Group

111 LORD Drive
Cary, NC 27511-7923
USA

phone +1 877 275 5673

www.Parker.com/APS