



RELIOBOND 1500

Friction Bonding Adhesives

THE RUSCOE
COMPANY
Adhesives &
Sealants

Reliobond 1500 products are phenolic resin adhesives designed for bonding friction material to metal. These adhesives offer excellent bond strength across a wide range of temperatures. Cured Reliobond 1500 adhesives are resistant to oil, grease, transmission fluid, and brake cleaning fluid.

TYPICAL PROPERTIES: (NOT FOR SPECIFICATION PURPOSES)

	Reliobond 1501	Reliobond 1502	Reliobond 1503	Reliobond 1503NT ³
Solids	30-34%	32-36%	37-41%	37-41%
Viscosity¹ (Brookfield RVF)	2200-2600 cps (#4 @ 20 rpm)	2100-2700 cps (#4 @ 20 rpm)	1700-2300 cps (#4 @ 20 rpm)	1700-2300 cps (#5 @ 4 rpm)
Density (Weight per gallon)	7.62 #/gal	7.78 #/gal	8.11 #/gal	8.19 #/gal
Color	Amber/Tan	Amber/Tan	Amber/Tan	Amber/Tan
Shelf Life²	12 months	12 months	12 months	12 months

1. Viscosity at time of manufacture.

2. When stored at temperatures less than 80°F (27°C) in original unopened container. See "Storage" for details.

3. No toluene.

CHOOSING A PRODUCT:

Reliobond 1501 and Reliobond 1502 are economical, general purpose friction bonding adhesives. Reliobond 1503 provides the highest bond strength of any of these products. Reliobond 1503NT is a version of Reliobond 1503 that contains no toluene.

APPLICATION INSTRUCTIONS:

Surface Preparation:

All metal surfaces must be free of oils, dirt, and other contaminants. Typical cleaning processes include aqueous alkaline cleaners, solvent vapor cleaners, burning or baking contaminants off the surface. After cleaning, a surface preparation process like phosphating, grit blasting, or wheel abrading will enhance the adhesive bond. Reliobond 1500 adhesives will bond very well to a clean, bare metal surface, but preparing the surface with one of these methods will improve the consistency and overall strength of the bond.

Adhesive Application:

Reliobond 1500 products should be thoroughly mixed before application. Reliobond 1501, 1502 and 503 can be reduced to a desired viscosity/solids by using a 60:40 blend of toluene and ethanol. Reliobond 1503NT should be reduced with a 75:25 blend of ethyl acetate and ethanol. Any of these products can be reduced with methyl ethyl ketone or acetone in small quantities.

Reliobond 1500 adhesives can be applied to either the friction material or the metal surface of the assembly. Depending on the application, dry film thickness of the adhesive can range from 0.5-5 mils. Due to variations in friction material density, composition, part size and configuration, experimentation is required to determine the optimal adhesive film thickness.

Note: 1-3 mils of dry adhesive is a good starting point for most friction bonding applications.

Drying:

Reliobond 1500 must be fully dried before curing. Residual solvent in the adhesive can cause a weak, "spongy", "blown" bond. It is difficult to recommend exact drying parameters. Environmental conditions, coating thickness, and drying equipment type all significantly affect dry time. Here are some general guidelines for drying:

- Drying oven temperatures can range from 100°F-250°F. Do not exceed 250°F as higher temperatures can prematurely cure the adhesive or cause blistering of the adhesive film.
- Air flow in the drying oven is crucial to achieving fast dry times. More air flow will reduce dry time.
- Contact Ruscoe Technical Service for a test procedure to determine if your part is fully dried.

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Curing:

The phenolic resins in Reliobond 1500 generate water vapor during cure. This water vapor must be forced out of the adhesive using pressure during the cure cycle. Most bonding problems with this type of adhesive are related to inadequate or uneven pressure. At least 100 psi must be continuously and uniformly applied during the curing process to ensure a good bond.

Reliobond 1500 adhesive will cure in the temperature range of 300-450°F. Keep in mind that this is the temperature the adhesive must reach, not the oven setting. The adhesive will take longer to cure at lower temperatures, but will allow more time for water vapor to escape and for adhesive to flow and wet the metal surface. Curing at too high a temperature can cause the adhesive to gel quickly which will trap water vapor in the adhesive and cause a weak bond. Experimentation is required to determine the optimum cure cycle for each part design. A good starting point is to cure for 30 minutes at 400°F at 200 psi.

Cleaning:

Reliobond 1500 adhesives can be cleaned prior to cure using methyl ethyl ketone, acetone, n-butyl acetate, methyl acetate, or t-butyl acetate solvents. If the adhesive is fully cured the only practical methods of removal are abrasion, burning, heating above 600°F for many hours, or soaking in a highly caustic solution. Consult MSDS for instructions on spill clean up and disposal.

Storage:

Recommended storage temperature is 40°-60°F (4°-16°C). Storage at temperatures above 60°F will cause significant increase in viscosity and eventually loss of adhesive performance. Parts that have been pre-coated and dried can be bonded within 6 months if stored in a clean, dry area at temperatures below 85°F (30°C).

Legal: For your information

All statements, technical information and recommendations contained herein are based on tests believed to be reliable, but the accuracy or completeness is not guaranteed, and the following is made in lieu of all warranties expressed or implied.

Seller's and manufacturer's only obligation shall be to replace such quantity of the product proved to be defective. Neither seller nor manufacturer shall be liable for any injury, loss or damage, direct or consequential, arising out of the use of, or the inability to use the product. Before production, user shall determine the suitability of the product for their intended use and assumes all risk and liability in connection with and production.

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