Product Data Sheet

Ray-bond™ R81005

Liquid Adhesive

PRODUCT DESCRIPTION

Ray-bond™ R81005 liquid adhesive is a solvent-based one-component pressure-bonding adhesive designed for bonding the following:

- Friction material to metal
- Friction material to friction material
- Friction material to insulating material
- Rubber to metal
- Plastics to metal
- Metal to metal

R81005 can be used for drum brakes, disc brakes, clutches, and other friction products. The superiority of bonding over riveting of friction materials has been widely recognized. R81005 is specifically designed for spreader or spray application. Other special grades of adhesives are available that may be applied by a variety of methods, including knife spreading, extruding, roller coating, brushing, spraying, etc.

Resilience and ability to withstand shock add to the advantages of R81005 liquid adhesive. Good contact between mating surfaces is required for best results. Some irregularities in surface contact may be overcome by building up thicker films, e.g 0.010" (0.254 mm). However, in such cases, another grade is recommended, such as Ray-bond™ R81007 or R81008 liquid adhesives where cement films up to 0.010" to 0.015" (0.254 mm - 0.381 mm) may be more easily built up.

Bonds made with R81005 are useful over a wide temperature range. No loss of strength has been observed in tests conducted as low as -67°F (-55°C) and only partial loss at temperatures as high as 400°F (204°C). This type of adhesive is not recommended for assemblies or structural applications whose bond line temperatures might exceed 400°F (204°C) for prolonged periods during use. The solids content and viscosity are suitable for filming the adhesive onto release paper. The filmed product can then be used as a dry film adhesive.

METHOD OF APPLICATION

Brush, knife spreading, roll coating, or sprayer

Ray-bond™ R81005 Liquid Adhesive (cont.)

TYPICAL PROPERTIES

Solids (2 hours @ 105°C, 220°F)	27% to 31%
Wt/Gal	8.2 lbs. approximately
Viscosity (25°C), (Bkfld. #2 spindle @ 10 RPM)	3500 - 4500 cps
Flow Value	130% minimum
Solvent for dilution	Methyl Ethyl Ketone or Mono Chloro Benzene
Chemical resistance	Resistant to oils, brake fluid, water
Disc shear strength	(Procedure SAE J840)
73°F (23°C)	1750 psi minimum (12.1 mPa)
400°F (204°C) (1 hour)	600 psi minimum (2.8 mPa)
Cold Strength	No loss of strength at -67°F (-55°C)
Flash point (closed cup)	37°F (3°C)
Storage life, 40°F - 60°F (4 - 16°C)	90 days maximum
Storage life, 60°F - 80°F (15-27°C)	45 days maximum

CURE

Complete cures will be obtained with any of the following bond line temperatures and time:

350°F for 15 minutes; 370°F for 10 minutes; 400°F for 5 minutes

177°C for 15 minutes; 188°C for 10 minutes; 204°C for 5 minutes

The above temperatures and times are for hot press or batch oven cures. Shorter cures are possible at higher temperatures. Setting the cure, however, requires considerable experience and should be arranged under the guidance of the factory representative. Constant pressure ***is*** mandatory throughout the cure cycle. The pressure should be sufficient to bring the surfaces into intimate contact. The normal working range is 100 -250 psi (0.69 – 1.7 mPa).

INSTRUCTIONS

1. Surfaces to be bonded must be free of rust, dirt, grease, previous plating's or any foreign matter. For metallic members this may be accomplished by roughening to develop "tooth" by shot blasting or chemical etching. Non-metallic surfaces may be wiped with a clean rag saturated with an. oil-free solvent such as acetone.
2. Apply the adhesive to both surfaces to be bonded. A sufficient amount should be applied to completely fill all voids and leave a 0.002" (0.051 mm) coating when dry, over the entire area. if so desired, the adhesive may be applied to one surface. In this ease, the amount to be applied is double that for coating both surfaces; it must be enough to fill the voids of both surfaces plus an additional dry film 0.004" (0.102 mm) thick.
3. Allow to dry at room temperature until free of solvent. An overnight dryout is normally sufficient.
4. Assemble the parts using suitable fixtures to prevent movement during cure. Cure at recommended temperature and time.

Ray-bond™ R81005 Liquid Adhesive (cont.)

NOTE

When bonding Teflon™, peel strength is dependent upon thickness of Teflon™, adhesive used and etched porosity. Because of Teflon™'s high rate of thermal expansion is suggested that a control test be made with the same lot of Teflon™ to be processed in order to become familiar with the adhesive, Teflon™, and technique, and to determine if the finished product meets all requirements. When bonding Teflon™ with R81005, a uniform coat of adhesive should be applied so that the pressure can be kept to a minimum of 25 psi (0.172 mPa). Uneven adhesive films require high pressure to obtain a good plastic flow necessary for 100% contact. Should wrinkling be noted on the control test, a rerun is advised, cooling under pressure.

STORAGE

When refrigerated upon receipt and stored at 40°F - 60°F (4°C - 16°C) in liquid form, R81005 will meet the adhesion requirements after 90 days. Shelf-life at 60°F - 80°F (15°C - 27°C) is 45 days. Lower temperatures cause increased viscosity of a temporary nature. It may be necessary to add solvent to adjust the viscosity of the aged material. Parts once coated and stored for one (1) year at 85°F (29°C) maximum exhibit good bonds. Rotate stock on a "first in – first out" basis.

FREIGHT CLASSIFICATION

Rubber cement, red label, UN1133

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