

Ty-Ply[®] BN Adhesive

Description

LORD Ty-Ply[®] BN adhesive is a one-coat adhesive used to bond nitrile, polyacrylate, polyepichlorohydrin or millable polyurethane rubbers to metal or other rigid substrates during vulcanization of the rubber. It is composed of a mixture of dissolved polymers and dispersed fillers in an organic solvent.

Features and Benefits

Convenient – requires only a single coat for most applications, reducing labor, inventory and shipping costs.

Versatile – bonds a variety of nitrile rubber compounds; offers a wide formulation tolerance.

Chemically Resistant – provides excellent resistance to a wide variety of oils, fuels and solvents.

Application

Surface Preparation – Thoroughly clean metal surfaces prior to adhesive application. Remove protective oils, cutting oils and greases by solvent degreasing or alkaline cleaning. Remove rust, scale or oxide coatings by suitable chemical or mechanical cleaning methods.

- **Chemical Cleaning**
Chemical treatments are readily adapted to automated metal treatment and adhesive application lines. Chemical treatments are also used on metal parts that would be distorted by blast cleaning or where tight tolerances must be maintained. Phosphatizing is a commonly used chemical treatment for steel, while conversion coatings are commonly used for aluminum.
- **Mechanical Cleaning**
Grit blasting is the most widely used method of mechanical cleaning. However machining, grinding or wire brushing can be used. Use steel grit to blast clean steel, cast iron and other ferrous metals. Use aluminum oxide, sand or other nonferrous grit to blast clean stainless steel, aluminum, brass, zinc and other nonferrous metals.

Typical Properties*

Appearance	Black Liquid
Viscosity, seconds @ 25°C (77°F) Ford Cup #3	20-35
Density kg/m ³ (lb/gal)	922.7-970.6 (7.7-8.1)
Solids Content by Weight, %	35-39
Flash Point (Seta), °C (°F)	5 (42)
Solvent	Denatured Ethanol

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

LORD TECHNICAL DATA

Apply Ty-Ply BN adhesive to stainless steel, aluminum, brass, or other non-ferrous substrates within 30 minutes after cleaning. For ferrous substrates such as steel, a longer layover may be utilized if no rust is formed.

Mixing – Thoroughly stir Ty-Ply BN adhesive before use, and agitate sufficiently during use to keep dispersed solids uniformly suspended. Fit dip tanks and other holding tanks with a motor-driven agitator or recirculating system.

Ty-Ply BN adhesive is normally used full strength for brush application. For dip and spray applications, Ty-Ply BN adhesive may be diluted with methyl ethyl ketone (MEK), methyl isobutyl ketone (MIBK) or dry alcohols, if necessary.

Applying – Apply Ty-Ply BN adhesive by dip, spray or brush methods. Regardless of application method, dry film thickness of Ty-Ply BN adhesive should be 7.6-12.7 micron (0.3-0.5 mil).

Drying/Curing – Allow adhesive to air-dry for at least 30 minutes at room temperature or 10 minutes at 49°C (120°F) before bonding.

During transfer or injection molding, sweeping of the adhesive may occur. In those instances, bake the dried adhesive for 10-20 minutes at 121°C (250°F). Then, apply a second coat of adhesive to the cooled surface. Allow to dry, then follow normal bonding procedures.

Ty-Ply BN adhesive can be used to bond rubber by compression, transfer or injection molding procedures. Maximum adhesion is obtained when the rubber has completely cured. Ideal bonding conditions exist when both the adhesive and the rubber cure at the same time. To accomplish this, load the adhesive coated metal parts in the mold, and quickly fill the cavity with rubber.

During multiple-cavity loading, the prebaking begins with the first loaded metal parts. Keep mold loading cycles to a minimum to prevent adhesive and rubber from pre-curing. However, Ty-Ply BN adhesive will resist moderate prebaking times without affecting bond performance. Transfer or injection molds need properly designed runners and sprues, as well as adequate pressures. This prevents rubber pre-curing before the mold cavities are completely filled.

Cleanup – Clean areas with a rag as soon as possible using MEK.

Environmental Resistance of Bonded Parts

Environment

Gasoline
JP-5 Fluid
Skydrol 500
ASTM Oil #1
ASTM Oil #3
Turbo Oil #15
Sunoco ATF
Ref. Fuel B
Heat

Test Conditions

22 days @ Room Temperature
7 days @ Room Temperature
24 hours @ 149°C (300°F)
70 hours @ 149°C (300°F)
70 hours @ 149°C (300°F)
24 hours @ 149°C (300°F)
90 hours @ 149°C (300°F)
94 hours @ Room Temperature
30 minutes @ 121°C (250°F)

Bond Results

100% Rubber Failure
100% Rubber Failure
100% Rubber Failure
100% Rubber Failure
100% Rubber Failure
100% Rubber Failure
100% Rubber Failure
100% Rubber Failure
100% Rubber Failure

50 durometer NBR to zinc phosphatized, chromic acid sealed steel; cure 10 min @ 171°C (340°F)
ASTM D429-B, 0.32 cm (1/8") thick rubber section

LORD TECHNICAL DATA

Shelf Life/Storage

Shelf life is one year from date of shipment when stored at 21-27°C (70-80°F) in original, unopened container.

Cautionary Information

Before using this or any 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 technical data sheet 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.

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