TECHNICAL DATA SHEET

PLIOBOND® Industrial Adhesives

INFOTECH

ASHLAND CHEMICAL COMPANY SPECIALTY CHEMICALS & ADHESIVES DIVISION
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PLIOBOND® 20 GENERAL PURPOSE ADHESIVE

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GENERAL PURPOSE ADHESIVE

DESCRIPTION: PLIOBOND 20 adhesive is a general-purpose thermosetting adhesive which can be used to bond virtually all porous and nonporous substrates. When cured, PLIOBOND 20 adhesive provides tough, chip resistant bonds, which remain flexible over a wide range of temperatures. Substrates bonded with PLIOBOND 20 adhesive offer excellent resistance to mechanical shock, oxidization, fungi, mold, and bacteria. This adhesive offers excellent dielectric properties and has low water absorption. PLIOBOND 20 adhesive comes ready to use - no conditioner, accelerator or catalyst is required.

SUGGESTED USES: PLIOBOND 20 adhesive can be used as a sealant, primer, water repellent or coater for metal, wood, plastic, plastic film, ceramic, bone, ivory, glass, rubber, paper, leather, plaster, drywall, insulation, concrete, brick and stone. Other applications include:

- Assembling electric appliances and equipment.
- Doping electric motor armature coils.
- Anchoring nonskid material to floors.
- Waterproofing awnings, tarps, convertible tops and outdoor furniture.
- Protecting above-water surfaces on watercraft.

ALTERNATIVE PRODUCTS: PLIOBOND 30 adhesive and Pliobond 40 adhesive - high solids, high viscosity. PLIOBOND 1000 adhesive - low odor.

TYPICAL LIQUID PROPERTIES AT 77° F

Base	Synthetic Rubber
Color	Tan
Solids Weight, %	20
Solvent Formulation	Ketone
Viscosity, cps Brookfield RVT : Spindle No. 2 at 20 rpm	700
Specific Gravity	8.868
Pounds per Gallon	7.23
Flash Point, °F (SETA)	20

DOT Label Required: Flammable Liquid
CODE: 584004

* Typical Values: (Based on material tested in our laboratories but variably from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specification items.)

TYPICAL ADHESIVE PROPERTIES

Coverage	215-230 sq ft/gal/dry mil
Application Temperature °F	40° - 100°
Service Temperature °F	ASTM D-816-10 psi at 500 F for 1 hour

METHOD OF APPLICATION: PLIOBOND 20 adhesive can be applied by spraying, roll coating, knife coating or brushing.

HANDLING: PLIOBOND 20 adhesive contains ingredients which could be harmful if mishandled. Contact with skin and eyes should be avoided and necessary protective equipment and clothing should be worn.

Ashland Chemical Company maintains Material Safety Data Sheets on all of its products. Material Safety Data Sheets contain health and safety information for your development of appropriate product handling procedures to protect your employees and customers.

Our Material Safety Data Sheets should be read and understood by all of your supervisory personnel and employees before using Ashland Chemical products in your facilities.

RECOMMENDED STORAGE: When PLIOBOND 20 adhesive is store indoors, out of direct sunlight, and in the original, unopened container between 60°F and 80°F, the shelf life is six months. Always rotate stock.

GENERAL PROPERTIES OF PLIOBOND

Pliobond, a use-proved product, has many applications in the adhesive field. Pliobond will bond all sorts of surfaces. *Its strength is such that often the materials being bonded will break or tear before the glue-line fails.*

Pliobond forms a thin yet flexible bond which is effective over a wide temperature range. It resists water, weather, chemical attack and fungus, and may be used in contact with oil or gasoline without material, effect on the coating.

Pliobond is versatile adhesive. It may be employed by various means, depending upon conditions.

These are:

1. The wet bond method.
2. the solvent reactivation method.
3. The hot bond method.

The wet bond method is the simplest to use and is adaptable wherever there is sufficient porosity in one or both surfaces to allow solvent to escape, and where maximum bond strength is not necessary.

The solvent reactivation method may be used where there is some porosity in the surfaces being bonded and where a fairly high immediate bond is necessary.

The hot bond method is used where there is little or no porosity through which solvent can escape, or where the strongest immediate bond is required.

SURFACE PREPARATION

Surfaces to be bonded should be clean and dry. Metal, glass, ceramics and certain plastics can be cleaned with solvent or solvent vapor, or with suitable detergents. A solution of 6 oz. of Oakite to a gallon of water at a temperature of 150°F makes a good degreaser. Surfaces to be cleaned should be immersed in this solution for ten minutes then rinsed with hot water and dried in an oven.

Wood should be sanded to a smooth flat surface. Leather or rubber can be buffed. Rubber surfaces can be chlorinated quickly and easily for improved bond strength. The surface is first wiped with solvent to remove grease or wax and is then dipped for 2 minutes in Clorox or its equivalent. Whenever dipping is impossible or impractical, the Clorox may be applied with a brush. The rubber is then rinsed with water and allowed to dry

It is preferable to have surfaces warm before applying cement. This insures dryness, and also assists in solvent removal.

APPLICATION

PLIOBOND can be brushed, sprayed, spread or roller coated. It is available in two graces called PLIOBOND 20 and PLIOBOND 30, which are respectively 20% and 30% solids. PLIOBOND 20 is used in normal applications while PLIOBOND 30 is used where the porosity of one or both surfaces is such that penetration must be avoided. There is no difference in the cements other than in percent solids and in the resulting viscosity.

The solvent used in PLIOBOND is methyl ethyl ketone. This solvent can be used for thinning when necessary, or for cleaning PLIOBOND off work tools. If methyl ethyl ketone is unavailable, ethyl acetate can be used.

PLIOBOND should be stirred before using in order to insure uniform consistency. Apply an even coat to both surfaces after cleaning as directed. In the wet bond method allow PLIOBOND to reach a state of maximum tack, which will take three to five minutes, and then press together for from 15 minutes to overnight at the highest available uniform pressure – say 25 to 200 pounds per square inch. However only m1d pressures should be used when bonding rubber since distortion in the rubber may result in a weak bond.

In either the solvent reactivation method or the hot bond method thorough drying of both surfaces after application of PLIOBOND is necessary. This may be accomplished by using one of the following drying schedules:

1. 24 to 48 hours at room temperature.
2. 8 to 24 hours at 110° F.
3. 3 to 2 hours at 150° F.
4. 10 to 20 minutes at 200° F.
5. 5 to 10 minutes at 300° F.

In the solvent reactivation method, one or both of the cemented and dried surfaces should be wiped lightly with solvent or given a light spray coat of solvent. They are then immediately brought together under pressure as in the wet bond method.

In the hot bond method drying is accomplished as above. Pieces are then assembled and bonded in a hot press under maximum available time temperature and pressure within the following schedule:

Time : 5 to 25 minutes
Temperature : 225°F to 325°F
Pressure : 25 to 500 pounds per square inch

Heat or pressure to be used may depend upon the materials being bonded. The thickness or heat conductivity of the materials should also be considered, as it is only the temperature in the glue line which affects the bond strength. Assemblies may be discharged hot from the press.

Oven bonding, and adaptation of the hot bond method, can be accomplished under pressure of clamps with small assemblies according to one of the following schedules:

1. 1 to 2 hours at 220°F
2. 20 to 45 min. at 250°F
3. 15 to 30 min. at 300°F

It is generally feasible to leave assemblies in clamps after removal from the oven until cold.

PLIOBOND® INDUSTRIAL ADHESIVES
PROVEN PROFESSIONALLY . . .
EVERYDAY.

For seaming, splicing and bonding of gaskets, rubber matting, belts and hose to rubber, wood, metal, plastic, glass and fabrics.

PLIOBOND 20, 30 and 40 are all-purpose, thermosetting adhesives which can be used to bond virtually all porous substrates. ***When cured, PLIOBOND 20, 30 and 40 adhesives provide bonds that toughen with age.*** Constant flexing, pulsing or vibration over wide temperature extremes will not affect these cured bonds. Cured bonds offer excellent chemical and environmental resistance. Dielectric qualities of PLIOBOND 20, 30 and 40 adhesives make them ideal for a wide variety of electrical applications.

Since 1945 PLIOBOND 20, 30 and 40 have found uses as sealers, primers and water repellents, as well as for the seaming or bonding of gaskets rubber matting, belts and hoses, to wood, metal, plastic glass and fabric.

Two variations to the unique chemistry used in PLIOBOND 20, 30 and 40 adhesive are offered for specific applications.

- PLIOBOND 1000 adhesive is formulated for printed circuit boards. Elimination of sulfur from the formula makes corrosion of copper components non-existent.
- PLIOBOND HT-30 adhesive is thermocuring. Curing chemistry used in PLIOBOND HT-30 adhesive will not cure below a temperature of 300°F. It offers good shelf life at normal temperatures. Above 300°F, however, fast cures result which exhibit all the properties of PLIOBOND 20, 30 and 40 adhesives with the additional ability to resist elevated temperatures.

Effect of PLIOBOND 9000 Activator

PLIOBOND 9000 activator is a chemical additive which may be used to accelerate the cure rate of PLIOBOND 20, 30 and 40 adhesive. At a level of 32-50 grams per gallon of adhesive the pot life of the system is approximately 6-8 hours.

PLIOBOND 9000 activator is useful when effecting a chemical cure of PLIOBOND 20, 30 or 40 adhesive versus a heat type cure. This accelerated adhesive system can be used to pre-cure the adhesive before heat curing a bond. Parts may be bonded at room temperature and then heat cured after 24 hours with little to no pressure. PLIOBOND 9000 activator may also be used to achieve accelerated heat cures at lower temperatures for shorter cure times (exact reduced time and temperature depend upon part configuration).

PLIOBOND adhesives are produced by Ashland Chemical and are packaged and marketed by the W.J. Ruscoe Company, Akron, Ohio.

Other special formulations available from W.J. Ruscoe Company on special order include:

- Sprayable PLIOBOND adhesive.
- Colored versions which include green, red, blue or black.

The registered trademark of PLIOBOND adhesive which appears on all containers, packages and labels, is your assurance that you are using the all-purpose adhesive which meets all of the performance criteria of our manufacturing specifications and the data outlined in this technical bulletin.

PLIOBOND adhesives are manufactured under the most rigid statistical quality control procedures, which assure regular delivery of products meeting performance requirements of various military, government and other manufacturers specifications.

PLIOBOND® adhesive products meet the performance requirements of many military and various OEM specifications.

Contact W.J. Ruscoe Tech-Sales Office for assistance.

Federal stock numbers are available on request.