Technical Datasheet

Ashland Specialty Ingredients

PLIOBOND™ 5001 Pressure Sensitive Adhesive

Description

PLIOBOND 5001 pressure sensitive adhesive is a permanent adhesive with clarity and strength properties that make it ideal for pressure sensitive tape, label stock and adhesive-backed foam. It has shown excellent adhesion to paper, polyurethane foam, polyethylene foam, foil, and polyester film.

PLIOBOND 5001 pressure sensitive adhesive demonstrates high tack, minimum cold flow, good aging characteristics, high peel strength, and especially, high shear strength. In test evaluations in film applications, PLIOBOND 5001 pressure sensitive adhesive samples were subjected to 1,500 gram loads, in contrast to the usual 500 gram load, on a ½ inch overlap and aged at room temperature. The results show that PLIOBOND 5001 pressure sensitive adhesive withstands extreme load conditions for long periods of time (see Table 2).

Pliobond 5001 versus Acrylic Adhesives

When compared to several acrylic adhesives, PLIOBOND 5001 pressure sensitive adhesive shows superior shear and peel adhesion, with and without aging. It is far superior to acrylic adhesives in initial shear and peel adhesion tests (see Table 3). After aging, it still exhibits higher peel values than the acrylics.

The testing showed one week's aging caused a sharp increase in the shear value of the acrylic adhesives. This increase is due to the adhesive cross-linking during aging. The acrylics, however, were not cross-linked during the drying cycle and may require a much higher temperature to initiate this reaction in a short drying cycle.

Aging has no effect on PLIOBOND 5001 pressure sensitive adhesive other than causing a slight increase in peel adhesion. Peel values of the acrylics changed very little during aging. After two weeks, their peel values were virtually unchanged, although shear was further increased.

PLIOBOND 5001 pressure sensitive adhesive also demonstrates better tack properties than the acrylics tested. Rolling ball tack tests run on aged samples clearly indicate that the tack of acrylic pressure sensitive adhesives does not compare with that of PLIOBOND 5001 pressure sensitive adhesive. Thus, PLIOBOND 5001 pressure sensitive adhesive is easier to handle and more likely to make a satisfactory bond. With the exception of polyvinyl chloride substrates, PLIOBOND 5001 pressure sensitive adhesive was shown to be superior to the acrylic adhesives for pressure sensitive applications.

Suggested Uses

PLIOBOND 5001 adhesive can be used as a pressure sensitive adhesive for paper, foams, and films.

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Table 1 - Typical Physical Properties at 77° F*

Base	Synthetic Rubber Resin Blend
Color	Transparent Amber
Solids by Weight, %	43 +/0 3
Viscosity, cps Brookfield RVT Spindle No. 3 at 10 rpm	3750 +/- 1750
Specific Gravity	0.7755
Pounds per Gallon	6.4595
Flash Point, ° F (TCC)	Less than zero
Estimated Coverage	500 - 550 sq ft/gal/dry mil

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

Method of Application

Apply PLIOBOND 5001 adhesive in a 1-2 mil thickness. PLIOBOND 5001 adhesive can be dried at room temperature or forced dried in a range of 100°F to 200°F for three to five minutes. When the PLIOBOND 5001 adhesive is dry, the adhesive film will remain tacky and can be bonded as desired.

Table 2 - Typical Adhesion Properties on Dried Film

Test*	Pressure Sensitive Adhesive
Peel Strength	62 - 64 oz/in width
Aged Peel Strength	78 - 80 oz/in width
Shear Strength (1,500 grams test)	1 month (no movement)
Aged Shear Strength (1,500 grams test)	8 days to failure

Test Methods used for Evaluation*

Peel Strength	180° Peel test using ASTM D-903-49
Shear Adhesion	PSTC-7 using 1/2
Aged Shear Test	Sample aged at 158° F

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Test*	PLIOBOND 5001 Pressure Sensitive Adhesive	Acrylic A	Acrylic B	Acrylic C
Shear Strength (1000 grams)	Removed after 17 days	106 min	117 min	24 min
Aged Shear Strength				
1 week at 158° F	Removed after 11 days	84 hrs	Removed after 11 days	15 hrs
2 weeks at 158° F	Removed after 9 days	115 hrs	Removed after 9 days	54 hrs
3 weeks at Room Temperature	No movement	40 min	206 min	109 min
Peel Strength, lbs/in Fresh	4.4	2.7	3.0	2.2
1 week at 158° F	4.6 - 4.9	2.8	2.5	1.9
2 weeks at 158° F	4.6 - 4.9	2.8	2.5	2.1
3 weeks at Room Temperature	4.3 - 4.6	3.0	3.3	2.5
Tack Aged 2 weeks at 158° F	2 in	Off Scale	Off Scale	6 3/4 in.

Recommended Storage

When PLIOBOND 5001 pressure sensitive adhesive is stored indoors, out of direct sunlight, and in the original, unopened container between 60ºF and 80ºF, the shelf life is six months. Always rotate stock.

DOT Label Required

Extremely Flammable Liquid, UN 1133

Storage and Shelf Life

When PLIOBOND 5001 EPDM bonding adhesive is stored indoors, out of direct sunlight, and in the original, unopened container between 60°F and 80°F, the shelf life is 6 months. Always rotate stock.

NOTE: PLIOBOND 5001 bonding adhesive should not be stored below 40°F (5°C).Once frozen, PLIOBOND 5001 bonding adhesive will not return to its original state.

DOT Label Requirements

Non-Regulated

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Handling and Safety

HANDLING: PLIOBOND 5001 pressure sensitive adhesive contains ingredients that could be harmful if mishandled. Contact with skin and eyes should be avoided and the recommended personal protective equipment be should be worn.

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

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

Notice

All information presented herein is believed to be accurate and reliable, and is solely for the user's consideration, investigation and verification. The information is not to be taken as an express or implied representation or warranty for which Ashland assumes legal responsibility. Any warranties, including warranties of merchantability, fitness for use or non-infringement of intellectual property rights of third parties, are herewith expressly excluded.

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Ashland requests that the user reads, understands and complies with the information contained herein and the current Material Safety Data Sheet.

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