



APTEK LABORATORIES, INC.

ISO 9001/ AS9100 Certified

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TECHNICAL DATA & INFORMATION

DIS-A-PASTE® 2006-A/B

Thermally conductive urethane adhesive

PRODUCT DESCRIPTION

DIS-A-PASTE 2006-A/B is a two component, mineral filled, electrically insulating soft urethane paste adhesive. It is designed to bond many dissimilar substrates and dissipate device generated heat.

DIS-A-PASTE 2006-A/B is a 100% solids, solvent free system that will not form voids during cure or outgas after being fully cured. **DIS-A-PASTE 2006-A/B** is a higher adhesive strength version of DIS-A-PASTE 2000-A/B.

DIS-A-PASTE 2006-A/B is a non-TDI based urethane system which has outstanding reversion resistance and physical stability when subjected to high heat and humidity environments. As a urethane, this system displays higher ionic purity than epoxy systems minimizing the chance of corrosion around sensitive components and circuitry.

KEY FEATURES AND BENEFITS

- Low modulus/high elongation for minimum stress to sensitive components and ceramic substrates
- Low Tg for excellent low temperature cycling and performance
- Excellent substrate adhesion; superior to silicones
- Exceeds NASA outgassing requirements for high vacuum environments
- Bonds DAT-A-THERM™ 1000 film to devices and substrates without loss of thermal conductivity
- Available in green; designated as APTEK 2006-A40/B
- Available in green with 10 mil bondline spacer beads; designated as APTEK 2006-40/.010-A/B

HANDLING INFORMATION

Mix ratio, parts by weight: 100 (2006-A) / 5.5 (2006-B)
Work life, @ 25°C, 25 gm mass, mins. 40

Handling Notes:

1. Check for filler settlement in Part A with clean, dry, metal spatula. If necessary, remix slowly by hand until uniform. Store at 15-25°C; ≤50% RH.
2. Prior to use, examine Part B bottle for crystallization or formation of an insoluble white precipitate which is a solid dimer of the liquid Part B. The precipitate is not harmful; however, follow the instructions listed below for best results.

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DO NOT SHAKE BOTTLE

- Place unopened Part B bottles into an air circulating oven at 45-60°C until clear amber to slightly hazy liquid is evident (white precipitate layer may also be present).
- Carefully remove bottles from oven without disturbing contents. If liquid contains gelled material - DO NOT USE! To use Part B, decant clear liquid out of bottle without disturbing the precipitate. Excess Part B has been packaged to insure sufficient supply of liquid.
- Use entire bottle of Part B for each application if possible. Unused portion must be blanketed with dry nitrogen or argon and resealed to avoid moisture contamination.
- Store at 25-35°C; ≤50% RH

MIXING

Weigh 100 parts of DIS-A-PASTE 2006 Part A into a clean, dry, glass, metal, or plastic container and then add 5.5 parts of DIS-A-PASTE 2006 Part B. Machine mix on slow speed or hand stir with glass or metal stirrer until complete and thorough blending is achieved. Care should be taken to avoid any source of moisture contamination or air entrapment during mix.

Notes:

1. For best results and a void free bond line, vacuum mixture at less than 10 mm Hg for 5-10 minutes after break.
2. As typical with urethane systems, a relaxation/stabilization period of 1-3 days at room temperature after heat cure is recommended before testing or service.

CURE SCHEDULE

12 hours @ 80°C
OR
6 hours @ 100°C

TYPICAL PROPERTIES

(values not to be used for specification purposes)

| <u>CHARACTERISTICS</u> | <u>2006-A</u> | <u>2006-B</u> | <u>TEST METHOD</u> |
|--|------------------------------------|----------------------|---------------------------|
| Color | off white | clear yellow | Visual |
| Specific Gravity | 2.07±.05 | 1.24±.05 | ASTM D-1475 |
| Viscosity @25°C, cps | 115,000 | 45 | ASTM D-1824 |
| Flash point, °C | >200 | >150 | ASTM D-92 |
| Shelf life @ 25°C, months factory sealed containers | 6 | 6 | |
| <u>CURED PHYSICAL PROPERTIES</u> | <u>DIS-A-PASTE 2006-A/B</u> | | <u>TEST METHOD</u> |
| Hardness, Durometer A, ½" casting | 83 | | ASTM D-2240 |
| Lap shear, Al to Al, @25°C, psi, bondline thickness @ 5 mil | 850 | | ASTM D-1002 |
| bondline thickness @ 10 mil | 725 | | |

| | | |
|---|---|--------------------|
| Glass transition temp., °C | -60 | ASTM E-831 |
| Thermal coefficient of expansion, in/in/°C | alpha 1 alpha 2 | ASTM E-831 |
| | 31 x 10 ⁻⁶ 147 x 10 ⁻⁶ | |
| Thermal conductivity, W/mK | 0.74 | COMPARATIVE METHOD |
| Outgassing @ 10 ⁻⁶ Torr | | |
| TML, % | 0.15 | ASTM E-595 |
| CVCM, % | 0.004 | |
| Evidence of haze | none | ASTM E-595 |

CURED ELECTRICAL PROPERTIES**DIS-A-PASTE 2006-A/B****TEST METHOD**

| | | |
|---|------------------------|------------|
| Volume resistivity @ 25°C, ohm-cm | 7.0 x 10 ¹⁴ | ASTM D-257 |
| Dissipation factor (D) @25°C, KHz | 0.03 | ASTM D-150 |
| Dielectric constant (K) @ 25°C, 1 KHz | 5.8 | ASTM D-150 |
| Dielectric strength, 0.125" thick, Volts/mil | 340 | ASTM D-149 |

SAFETY AND FIRST AID

DIS-A-PASTE 2006-A is a mineral filled polyol resin that is safe to handle when used properly. It is judged to be low in toxicity and to be rated as a slight skin irritant. Avoid contact with skin and eyes and use in a well-ventilated area and avoid breathing vapors. In case of eye contact, flush with fresh clean water for at least 15 minutes; for skin contact, wash thoroughly with soap and water. If swallowed, drink at least one pint of water and call a physician. Refer to Material Safety Data Sheet for more details.

DIS-A-PASTE 2006-B is an organic isocyanate which may cause severe eye and skin irritation with direct contact. Inhalation of vapors may result in breathlessness, severe coughing, chest discomfort, and irritation of mucous membranes. Avoid skin and eye contact and use in a well-ventilated, hooded area. In case of eye contact, flush profusely with fresh clean water and contact a physician. For skin contact, wash thoroughly with soap and water. If inhaled, move subject to fresh air and provide water to drink. If swallowed, dilute with at least one pint of water and contact physician immediately. Refer to Material Safety Data Sheet for more details.

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