



# APTEK LABORATORIES, INC.

ISO 9001/ AS9100 Certified

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## TECHNICAL DATA & INFORMATION

### DIS-A-PASTE® 2001-PMF

Premixed-frozen, thermally conductive urethane adhesive

### PRODUCT DESCRIPTION

**DIS-A-PASTE 2001-PMF** is a one component, premixed-frozen, mineral filled, electrically insulating soft urethane paste adhesive. It is designed to bond many dissimilar substrates and dissipate device generated heat.

**DIS-A-PASTE 2001-PMF** is a 100% solids, solvent free system that will not form voids during cure or outgas after being fully cured.

**DIS-A-PASTE 2001-PMF** 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

- Premixed-frozen and packaged in syringes for convenient dispensing to circuit board
- Low modulus to minimize stress to sensitive components and ceramic substrates
- Low Tg for excellent low temperature cycling and performance
- Excellent substrate adhesion; superior to silicones
- Wide operating temperature range (-65°C - 100°C) for versatility
- Exceeds NASA outgassing requirements for high vacuum environments
- Bonds DAT-A-THERM 1000™ thermally conductive urethane film to devices and substrates without loss of thermal conductivity
- Product also available with Bond line spacers  $\geq 0.004$ ".
- Product also available as A/B designated DIS-A-PASTE 2003-A/B

### HANDLING INFORMATION

Work life in syringe after thaw @25°C, 25 gm mass, hours >3

Note: Viscosity increases with time, ~ 50-70% over 4 hours duration. Work life to be determined by user for specific application.

1. **DIS-A-PASTE 2001-PMF** syringes are shipped in dry ice. Upon receipt, transfer frozen syringes to a storage freezer @-40°C or below.
2. To thaw remove a syringe from freezer and allow to warm to room temperature. Do not place in oven or microwave-this will shorten use life.
3. Typical thaw time for 5cc syringe @25°C ambient is approximately 20-30 minutes.

#### **- DISCLAIMER NOTICE -**

All statements, technical data, and recommendations expressed herein are based on tests believed to be reliable and accurate. However, APTEK LABORATORIES, INC. gives no warranty, expressed or implied, regarding the accuracy of this information. It is intended that the buyer and user of these products shall determine the suitability of the information provided for his specific application, and is responsible for its selection.

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**CURE SCHEDULE\***

6 hours @85°C  
or  
4 hours @ 100°C

\* Alternative cure schedules may be possible depending on application requirements.

Note: As typical with urethane systems, a relaxation/stabilization period after cure of 2-4 days at room temperature is required to reach final properties.

**TYPICAL PROPERTIES**

(Values not to be used for specification purposes)

| <b><u>CHARACTERISTICS</u></b>   | <b><u>DIS-A-PASTE 2001-PMF</u></b>                                    | <b><u>TEST METHOD</u></b> |
|---|---|---------------------------|
| Color   | off-white   | Visual                    |
| Specific gravity  | 2.05  | ASTM D-1475               |
| Viscosity @25°C, initial cps  | Thixotropic paste   | ASTM D-1824               |
| Flash point, °C   | >200  | ASTM D-92                 |
| Shelf life @-40°C, months in factory sealed pre-mixed frozen-syringes             | 6   |                           |
| <b><u>CURED PHYSICAL PROPERTIES</u></b><br>* Cured 4 hours @ 100°C                | <b><u>DIS-A-PASTE 2001-PMF</u></b>                                    | <b><u>TEST METHOD</u></b> |
| Hardness, Durometer A   | 83  | ASTM D-2240               |
| Lap shear, @25°C,<br>Al to Al, psi 0.005" Bond line                               | 450   | ASTM D-1002               |
| Tensile strength, psi   | 450   | ASTM D-638                |
| Elongation, %   | 90  | ASTM D-638                |
| Linear shrinkage, inch/inch<br>10 inch, 1 inch diameter bar<br>Cured 6 hrs @ 85°C | 0.007   | ASTM D-2566               |
| Glass transition temp., °C  | -60   | ASTM E-831                |
| Thermal coefficient of expansion,<br>in/in/C                                      | alpha 1<br>31 x 10 <sup>-6</sup><br>alpha 2<br>137 x 10 <sup>-6</sup> | ASTM E-831<br>ASTM E-831  |
| Outgassing @10 <sup>-6</sup> Torr<br>TML, %<br>CVCM, %                            | 0.27<br>0.005   | ASTM E-595<br>ASTM E-595  |
| Thermal conductivity, @25°C<br>W/mK   | 0.74  | ASTM E-1461               |

| <u>CURED ELECTRICAL PROPERTIES</u>                             | <u>DIS-A-PASTE 2001-PMF</u> | <u>TEST METHOD</u> |
|--|-----------------------------|--------------------|
| Volume resistivity<br>@25°C, ohm-cm                            | 2.0 x 10 x <sup>14</sup>    | ASTM D-257         |
| Dissipation factor<br>(D)/Dielectric constant (K) @25°C, 1 KHz | 0.02/5.4                    | ASTM D-150         |
| Dielectric strength,<br>0.050" thick, volts/mil                | 620                         | ASTM D-149         |
| 0.500" thick, volts/mil  | 340                         | ASTM D-149         |

### SAFETY AND FIRST AID

**DIS-A-PASTE 2001-PMF** is a mineral filled polyol resin / organic isocyanate blend which is safe to handle as it is packaged in sealed syringes. There should be no need to touch the adhesive. 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.

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