



APTEK LABORATORIES, INC.

ISO 9001/ AS9100 Certified

28570 Livingston Avenue, Valencia, CA 91355-4171 • (661) 257-1677 FAX (661) 257-8939

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 ≥ 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, 10 gm mass, hours >3

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 10 - 15 minutes.

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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)

<u>CHARACTERISTICS</u>	<u>DIS-A-PASTE 2001-PMF</u>	<u>TEST METHOD</u>
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	
<u>CURED PHYSICAL PROPERTIES</u> * Cured 4 hours @ 100°C	<u>DIS-A-PASTE 2001-PMF</u>	<u>TEST METHOD</u>
Hardness, Durometer A	83	ASTM D-2240
Lap shear, @25°C, 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 10 inch, 1 inch diameter bar Cured 6 hrs @ 85°C	0.007	ASTM D-2566
Glass transition temp., °C	-60	ASTM E-831
Thermal coefficient of expansion, in/in/C	alpha 1 31 x 10 ⁻⁶ alpha 2 137 x 10 ⁻⁶	ASTM E-831 ASTM E-831
Outgassing @10 ⁻⁶ Torr TML, % CVCM, %	0.27 0.005	ASTM E-595 ASTM E-595
Thermal conductivity, @25°C 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 @25°C, ohm-cm	2.0 x 10 x ¹⁴	ASTM D-257
Dissipation factor (D)/Dielectric constant (K) @25°C, 1 KHz	0.02/5.4	ASTM D-150
Dielectric strength, 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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