APTEK LABORATORIES, INC.
ISO 9001 / AS9100 Certified

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PRELIMINARY

TECHNICAL DATA & INFORMATION

DIS-A-PASTE® 2311HTC-PMF

Premixed-frozen, highly thermally conductive (HTC), low modulus adhesive

PRODUCT DESCRIPTION

DIS-A-PASTE 2311HTC-PMF was developed to be a closely-related analog of DIS-A-PASTE 2311-PMF, displaying higher thermal conductivity and lower CTE values, without loss of the desired characteristics of the standard product, such as low modulus, low Tg, low outgassing, electrical insulation, and excellent adhesion to dissimilar substrates. Aptek has developed a unique, proprietary blend of thermally conductive fillers and has optimized filler loading to drastically increase thermal conductivity over the standard product while maintaining good handling properties and substrate wetting.

KEY FEATURES AND BENEFITS

- More than twice the thermal conductivity compared to standard DIS-A-PASTE 2311-PMF (2.0 W/mK vs. 0.8 W/mK).
- **DIS-A-PASTE 2311HTC-PMF** provides a more effective heat-sink and therefore cooler interface temperatures under heat generating devices/components.
- New style rigid tapered tip included with product for easy dispensing of this highly-filled system
- Low Tg (<-60°C) for excellent low temperature cycling and performance with minimal stress
- Excellent substrate adhesion; superior to silicones: no primer required
- Also available with various thicknesses of internal bondline spacers upon request

HANDLING INFORMATION

1. Work life @ 25°C in 3cc syringe after thaw: 4 hrs
2. **DIS-A-PASTE 2311HTC-PMF** syringes are shipped in dry ice. Upon receipt, transfer frozen syringes to a storage freezer @-40°C or below.
3. To thaw, remove syringe from freezer and allow to warm to room temperature. Do not place in oven or microwave as this will shorten use life.
4. Typical thaw time for 3cc syringe @ 25°C or ambient temperature is approximately 10-15 minutes.
5. Extrusion rate, gm/min @ 25°C and 65psi:
    a. With 16 gauge rigid tapered tip (RTT): 1.6 -- This is the recommended tip to maximize flow characteristics and minimize back-pressure for easy dispensing
    b. With 15 gauge, ½" long metal tip: 0.45

CURE SCHEDULE

(when cured in an air-circulating oven)

4 hours @ 85°C
-or-
2 hours @ 100°C
-or-
1.5 hours @ 125°C
-or-
1 hour @ 150°C

Notes:

1. These schedules are conservative and should be used as guidelines. Achievement of the application requirements/properties should be the determining factor in the selection of cure schedule.
2. The above cure schedules were determined by the achievement of specific physical property values i.e. optimum lap shear strength for adhesive applications and ultimate hardness for encapsulant/potting applications.

TYPICAL PROPERTIES

(Values not to be used for specification purposes)

CHARACTERISTICS	DIS-A-PASTE 2311HTC-PMF	TEST METHOD
Color	Off-white	Visual
Specific gravity	1.80	ASTM D-1475
Viscosity/consistency @ 25°C	Smooth thixotropic paste	Visual
Flash point, °C	>200	ASTM D-92
Shelf life @-40°C or below, months factory sealed, pre-mixed frozen-syringes	6	

CURED PHYSICAL PROPERTIES		DIS-A-PASTE 2311HTC-PMF	TEST METHOD
Hardness, Durometer D		50	ASTM D-2240
Lap shear, @25°C, Al to Al, psi		580	ASTM D-1002
Glass transition temp., °C		-65	ASTM E-831
Thermal coefficient of expansion, in/in/C	alpha 1	24×10^{-6}	ASTM E-831
	alpha 2	126×10^{-6}	ASTM E-831
Thermal conductivity, @25°C, W/m°K		2.0	ASTM C518-04
Outgassing @10^{-6} Torr	TML, %	0.65	ASTM E-595
	CVCM	0.02	ASTM E-595

CURED ELECTRICAL PROPERTIES	DIS-A-PASTE 2311HTC-PMF	TEST METHOD
Volume resistivity @25°C,ohm-cm	2.1×10^{14}	ASTM D-257
Dissipation factor (D)/ Dielectric constant (K) @25°C, 1 MHz	0.010/4.83	ASTM D-150
Dielectric strength, 0.067" thick, volts/mil	530	ASTM D-149

SAFETY AND FIRST AID

DIS-A-PASTE 2311HTC-PMF is a mineral-filled hybrid polymer 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. 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 ingested, drink at least one pint of water and call a physician. Refer to Material Safety Data Sheet for more details.

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