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ISO 9001 / AS9100 Certified

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TECHNICAL DATA & INFORMATION

DIS-A-PASTE® 2150-PMF

Premixed-frozen, thermally conductive, low modulus reworkable hybrid epoxy BGA (Ball Grid Array) underfill

PRODUCT DESCRIPTION

DIS-A-PASTE 2150-PMF is a one component, premixed-frozen, mineral filled, electrically insulating flexible underfill. It is designed to flow underneath BGA devices via capillary action and dissipate device-generated heat. This unique underfill is flexible and will not impart excess stresses to the BGA during temperature cycling and operational life. Due to its flexibility, it is easily repairable by mechanical methods.

DIS-A-PASTE 2150-PMF is a 100% solids, solvent free system that will not form voids during cure or outgas after being fully cured.

KEY FEATURES AND BENEFITS

- Flexible for ease of repairability.
- Low viscosity and surface tension to allow for penetration into clearances of 0.010”
- Long pot life, and snap cure for production friendly handling.
- Low modulus to minimize stress to sensitive components and ceramic substrates
- Can withstand 125°C continuously, with intermittent exposures up to 175°C

HANDLING INFORMATION

Work life in syringe after thaw @25°C, 5 gm mass, hours >8

1. **DIS-A-PASTE 2150-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 3cc syringe @25°C ambient is approximately 10-15 minutes.
4. Recommended processing procedures: For best results, place the printed circuit board on a hot plate until the BGA surface is heated and maintained at 95° - 105°C prior to dispensing. The dispense pattern should be optimized for each specific BGA/chip size. The objective is to apply a precise bead at the chip edge to allow for capillary action and a complete and void free “underfill” beneath the chip. Small chips (<1/4’) may require only a single edge bead. Larger size chips require an “L” shaped dispense pattern starting in one corner and spanning out on both perpendicular sides. It is best to gradually increase the size of the “L” pattern via multiple passes. Start dispensing the first pass to span about 1/3 of the length of the chip for each side of the “L”. Increase the length of the second pass to about ½ of the length of each side. On the third pass, traverse ¾ the length of each side and the final pass, if needed, traverse the whole length of each side. This gradual multiple pass approach will ensure the most complete penetration and a void-free underfill. Work time at 95° - 105°C is approximately 5 minutes. Gelation at 95° - 105°C will occur in approximately 10-15-minutes.

CURE SCHEDULE*

30 mins @150°C

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

TYPICAL PROPERTIES
(Values not to be used for specification purposes)

CHARACTERISTICS	DIS-A-PASTE 2150-PMF	TEST METHOD
Color	off-white	Visual
Specific gravity	1.7	ASTM D-1475
Flash point, °C	>100	ASTM D-92
Shelf life @-40°C, months in factory sealed pre-mixed frozen-syringes	3	

CURED PHYSICAL PROPERTIES	DIS-A-PASTE 2150-PMF	TEST METHOD
Hardness, Durometer A	88	ASTM D-2240
Thermal conductivity, @25°C W/mK	0.9	Comparison
Glass transition Temp (Tg), °C	-60°C	TMA Q400
Coefficient of thermal expansion, in/in/°C		
Alpha 1	$40x10^{-6}$	TMA Q400
Alpha 2	$163x10^{-6}$	

CURED ELECTRICAL PROPERTIES	DIS-A-PASTE 2150-PMF	TEST METHOD
Volume resistivity @25°C, ohm-cm	$7.0 \times 10 \times^{14}$	ASTM D-257
Dissipation factor (D)/Dielectric constant (K) @25°C, 1 KHz	0.030/5.8	ASTM D-150

SAFETY AND FIRST AID

DIS-A-PASTE 2150-PMF is a mineral filled resin 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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