APTEK LABORATORIES, INC.
ISO 9001 / AS9100 Certified

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TECHNICAL DATA & INFORMATION

APTEK® 6500-PMF

High purity, low outgassing, electrically conductive adhesive

PRODUCT DESCRIPTION

APTEK 6500-PMF is a one component, pre-mixed frozen, 100% solids, silver-filled epoxy adhesive specifically designed for microelectronic die attach applications.

KEY FEATURES AND BENEFITS

- High purity resin system for minimum level of ionic contamination to prevent corrosion problems
- High cross-link density to maintain stability and minimize outgassing during operational life even in high-vacuum environments and sealed packages
- Smooth, thixotropic consistency for machine stamping applications. Viscosity can be factory controlled for screening or dispensing applications.
- Contains no diluents or solvents to minimize formation of voids during cure

HANDLING INFORMATION

Work life in 5cc syringe after thaw @ 25°C, hours	>16

Note: Viscosity increases slowly over time - approximately 20-30% over 8 hours duration. Actual work life to be determined by user for specific application.

Handling Notes

1. **APTEK 6500-PMF** syringes are shipped in dry ice. Upon receipt transfer frozen syringe to a storage freezer @ ≤ -40°C
2. To thaw remove a syringe from freezer and allow to warm to room temperature.
3. Do not place in oven or microwave - this will shorten use life.
4. Typical thaw time for 5cc syringe @25°C ambient is approximately 15-30 minutes.

CURE SCHEDULE

2 hrs @ 165°C

Note: Alternative cure schedules may be determined by the user depending on application requirements.

TYPICAL PROPERTIES

(values not to be used for specification purposes)

CHARACTERISTICS	APTEK 6500-PMF	TEST METHOD
Color	Silver gray	Visual
Viscosity @ 25°C, cps spindle/speed, (rpm)	25,000 #5/10	ASTM D-1824
Specific gravity	2.9	ASTM D-1475
Flash point, °C	>150	ASTM D-92
Shelf life @-40°C, months factory sealed containers	6	

CURED PHYSICAL PROPERTIES		APTEK 6500-PMF	TEST METHOD
Hardness, durometer D		89	ASTM D-2240
Glass transition temp,°C		155	Perkin-Elmer TMS-2
Thermal coefficient of expansion,			
in/in/°C	alpha 1	45×10^{-6}	Perkin-Elmer TMS-2
	alpha 2	147×10^{-6}	Perkin-Elmer TMS-2
Lap shear @ 25°C, Al to Al		1400	ASTM D-1002
Die shear @ 25°C, Ag to Si, 0.070" x 0.070" IC, psi		5700	MIL-STD 883-B
Thermal conductivity, (cal) (cm)/(sec-cm²-°C)		40×10^{-4}	COLORA
Outgassing @10^{-6} torr @125°C			
TML, %		0.10	ASTM E-595
CVCM%		0.001	ASTM E-595
Residual gas analysis			MIL-STD 883-B
Hydrocarbons		not detected	
Ammonia		not detected	
Fluorocarbons		not detected	

Hydrolyzable ionic contaminants

Ion	Extraction Level, ppm
Cl^-	<20
Br^-	<2
F^-	<2
NH^+_4	<10
K^+	<10
Na^+	<20
NO^-_3	<5
PO^-_4	<5

Notes

- Sample ground to 40-60 mesh.
- 1 gm of sample to 50 gm of deionized water.
- Sample/water mixture refluxed 48 hrs @ 125°C, 15 psi.

CURED ELECTRICAL PROPERTIES	APTEK 6500-PMF	TEST METHOD
Volume resistivity @25°C, ohm-cm	0.0002	ASTM D-257

SAFETY AND FIRST AID

APTEK 6500-PMF is a premixed frozen silver-filled epoxy blend which is safe to handle when used properly. The adhesive is packaged in sealed syringes and there should be no need to wet 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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