



APTEK LABORATORIES, INC.

ISO 9001 / AS9100 Certified

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TECHNICAL DATA & INFORMATION

APTEK® 2120-PMF

Premixed-frozen, low modulus, low outgassing, urethane staking compound

PRODUCT DESCRIPTION

APTEK 2120-PMF is a one component, premixed-frozen, thixotropic, electrically insulating soft urethane adhesive. It was designed for the staking of electrical/electronic components to printed circuit boards. **APTEK 2120-PMF** is a 100% solids, solvent free system that will not form voids during cure or outgas after being fully cured.

APTEK 2120-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.

- Premixed-frozen and packaged in syringes for convenient dispensing to circuit board
- Low modulus to minimize stress to sensitive components and ceramic substrates
- Low outgassing for space applications and passes requirements of ASTM E-595
- Low Tg for excellent low temperature cycling and performance
- Excellent substrate adhesion; superior to silicones

HANDLING INFORMATION

Work life in syringe after thaw @25°C, 10 gm mass, hours >2

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

- **APTEK 2120-PMF** syringes are shipped in dry ice. Upon receipt transfer frozen syringes to a storage freezer @-40°C or below.
- 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.
- Typical thaw time for 10cc syringe @25°C ambient is approximately 15-20 minutes.

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CURE SCHEDULE*

8 hours @ 65°C
 OR
 5 hours @ 85°C
 OR
 3 hours @ 100°C
 OR
 7 days @ 25°C

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

Note: 1) As typical with urethane systems, a relaxation/stabilization period after cure of 2-4 days at room temperature is required to reach final properties.

2) Cured material exposed to excess heat and long-term aging may darken in color over time. Please note that this is a natural occurrence and no adverse effects to mechanical or electrical properties take place.

TYPICAL PROPERTIES

(Values not to be used for specification purposes)

<u>CHARACTERISTICS</u>	<u>APTEK 2120-PMF</u>	<u>TEST METHOD</u>
Color	hazy/translucent	Visual
Specific gravity	0.98	ASTM D-1475
Viscosity @25°C, initial cps	Smooth thixotropic paste	ASTM D-1824
Flash point, °C	>150	ASTM D-92
Shelf life @-40°C, months in factory sealed pre-mixed frozen-syringes	6	

<u>CURED PHYSICAL PROPERTIES</u>	<u>APTEK 2120 PMF</u>	<u>TEST METHOD</u>
Hardness, Durometer A	68	ASTM D-2240
Lap Shear, psi	400	ASTM D-1002
Tensile Strength @ 25°C 0.058" thickness, psi	450	ASTM-D-638
Elongation, %	110	ASTM-D-638
Glass transition temp., °C	-64	ASTM E831-86
Thermal coefficient of expansion, in/in/C° alpha 1 alpha 2,	90 x 10 ⁻⁶ 230 x 10 ⁻⁶	ASTM E831-86
Outgassing @10 ⁻⁶ Torr TML, % CVCM, %	0.45 0.04	ASTM E-595 ASTM-E-595

<u>CURED ELECTRICAL PROPERTIES</u>	<u>APTEK 2120-PMF</u>	<u>TEST METHOD</u>
Volume resistivity @25°C, ohm-cm	$>1 \times 10^{15}$	ASTM D-257
Dissipation factor (D)/Dielectric constant (K) @25°C, 1 KHz	0.024/3.5	ASTM D-150
Dielectric strength, 0.5" thick, volts/mil	>350	ASTM D-149

SAFETY AND FIRST AID

APTEK 2120-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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