



# APTEK LABORATORIES, INC.

ISO 9001 / AS9100 Certified

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

## TECHNICAL DATA & INFORMATION

### APTEK® 2100A7C-PMF

Premixed-frozen, low modulus urethane thixotropic enapsulant

### PRODUCT DESCRIPTION

**APTEK 2100A7C-PMF** is a one-component, premixed-frozen, electrically insulating, low modulus urethane system designed for the encapsulation of electrical/electronic components on printed circuit boards. **APTEK 2100A7C-PMF** is a 100% solids, solvent-free system that will not form voids during cure or outgas after being fully cured. This system is capable of achieving full cure at room temperature or cure can be accelerated with heat cure.

**APTEK 2100A7C-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.

### FEATURES AND BENEFITS

- Premixed, deaired, and frozen version of **APTEK 2100-A7C/B** packaged in syringes for convenient dispensing – eliminates the need to weigh, mix, and degas
- 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

### HANDLING INFORMATION

Work life in syringe after thaw @ 25°C, 10 gm mass, minutes > 20

- **APTEK 2100A7C-PMF** syringes are shipped in dry ice. Upon receipt transfer frozen syringes to a storage freezer @ -60°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 5 minutes.

### **- DISCLAIMER NOTICE -**

All statements, technical data, and recommendations expressed herein are based on tests believed to be reliable and accurate. However, APTEK LABORATORIES, INC. gives no warranty, expressed or implied, regarding the accuracy of this information. It is intended that the buyer and user of these products shall determine the suitability of the information provided for his specific application, and is responsible for its selection.

APTEK LABORATORIES, INC. shall not be liable for any injury, loss or damage, direct or consequential, arising out of the use or misuse of these products, or of the information given in these data bulletins. Purchasers assume all risk and liability whatsoever in connection with the use of these products and this information.

**CURE SCHEDULE\***

7 days @ 25°C  
 OR  
 ≥ 2 hours @ RT + 5 hours @ 80°C  
 OR  
 ≥ 2 hours @ RT + 3 hours @ 100°C

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

**Notes:**

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. For optimum properties, it is best to cure **APTEK 2100A7C-PMF** using one of the heat post-cure methods above.
3. 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)

<b><u>CHARACTERISTICS</u></b>	<b><u>APTEK 2100A7C-PMF</u></b>	<b><u>TEST METHOD</u></b>
Color	hazy/translucent	Visual
Specific gravity	1.05	ASTM D-1475
Viscosity after thaw @ 25°C	Thixotropic paste	ASTM D-1824
Flash point, °C	>150	ASTM D-92
Shelf life in factory sealed, PMF syringes @ -60°C, months	3	
<b><u>CURED PHYSICAL PROPERTIES</u></b>	<b><u>APTEK 2100A7C-PMF</u></b>	<b><u>TEST METHOD</u></b>
Hardness, Durometer A	55	ASTM D-2240
Tensile Strength @ 25°C 0.058" thickness, psi	400	ASTM-D-638
Elongation, %	300	ASTM-D-638
Young's modulus @25°C, psi	750	ASTM D-412
Glass transition temp., °C	-65	ASTM E-831
Thermal coefficient of expansion, in/in/°C      alpha 1 alpha 2	79 x 10 <sup>-6</sup> 185 x 10 <sup>-6</sup>	ASTM E-831
Thermal conductivity, W/mK	0.2	ASTM C-518

Outgassing @10 <sup>-6</sup> Torr		
TML, %	0.38	ASTM E-595
CVCM, %	0.03	ASTM E-595
Moisture absorption, %	0.20	ASTM D-570
Fungus resistance	Non-nutrient	ASTM G-21

**CURED ELECTRICAL PROPERTIES****APTEK 2100A7C-PMF****TEST METHOD**

Volume resistivity, ohm-cm		
@ 25°C	1.0 x 10 <sup>15</sup>	ASTM D-257
@ 90°C	3.5 x 10 <sup>13</sup>	ASTM D-257
Dielectric constant, @ 1 KHz		
@25°C	3.2	ASTM D-150
@90°C	3.5	ASTM D-150
Dissipation factor @ 1 KHz		
@25°C	0.024	ASTM D-150
@90°C	0.031	ASTM D-150
Dielectric strength, volts/mil		
@ 0.005" thick	>2000	ASTM D-149
@ 0.500" thick	370	ASTM D-149

**SAFETY AND FIRST AID**

**APTEK 2100A7C-PMF** is a 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.

Version dated: 01/14/20– mjb

**APTEK®** is a registered trademark of Aptek Laboratories, Inc.