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ISO 9001 / AS9100 Certified

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TECHNICAL DATA & INFORMATION

APTEK® 2100-A7C/B

Low modulus urethane thixotropic encapsulant

PRODUCT DESCRIPTION

APTEK 2100-A7C/B is a thixotropic, medium viscosity, two component, electrically insulating, low modulus urethane system designed for the encapsulation of electrical/electronic components to printed circuit boards.
Although **APTEK 2100-A7C/B** is capable of achieving full cure at room temperature, however, a short term exposure to moderate heat will greatly reduce processing time and optimize cured properties.

KEY FEATURES AND BENEFITS

- 100% solids, solvent free system that will not form voids during cure or service life
- Low Tg for excellent low-temperature cycling and performance
- Very good substrate adhesion; superior to silicones
- Exceeds NASA outgassing requirements for high vacuum environments

HANDLING INFORMATION

Mix ratio, parts by weight:	107 (2100-A7C) / 20 (2100-B)
Work life, @ 25°C, 100 gm, 50% RH, minutes:	>20

Notes:

- Prior to use, examine Part B bottle for crystallization or formation of an insoluble white precipitate which is a solid dimer of the liquid Part B. The precipitate is not harmful; however follow instructions listed below for best results.

- **DO NOT SHAKE BOTTLE**

- Place unopened Part B bottles into an air circulating oven at 45-60°C until clear amber to slightly hazy liquid is evident (white precipitate layer may also be present).
- Carefully remove bottles from oven without disturbing contents. If liquid contains gelled material - DO NOT USE! To use Part B, decant clear liquid out of bottle without disturbing the precipitate. Excess Part B has been packaged to insure sufficient supply of liquid.

- Use entire bottle of Part B for each application if possible. Unused portion must be blanketed with dry nitrogen or argon and resealed to avoid moisture contamination.

- Store at 25°-30°C

MIXING

Weigh 107 parts of APTEK 2100 Part A7C into clean dry glass, metal, or plastic container and then add 20 parts of APTEK 2100 Part B. Machine mix on slow speed or hand stir with glass or metal stirrer until complete and thorough blending is achieved. Care should be taken to avoid any source of moisture contamination or air entrapment during mix.

Due to the type of fillers in this product, specks may be visible by examination under the microscope.

Note: For best results and a void free bond line, vacuum mixture at less than 10 mm Hg for 5-10 mins.

CURE SCHEDULE

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

Notes:

1. As typical with urethane systems, a relaxation/stabilization period of 2-4 days at RT after cure is required before testing, service, or use.

2. For best results, and a void free bond line, vacuum mixture at less than 10 mm Hg for 3-5 minutes after "break".

3. For optimum properties, it is best to cure **APTEK 2100-A7C/B** using one of the heat methods recommended above.

TYPICAL PROPERTIES

(Values not to be used for specification purposes)

CHARACTERISTIC	2100-A7C	2100-B	TEST METHOD
Color	translucent	yellow/orange	Visual
Specific gravity	0.99	1.2	ASTM D-1475
Viscosity @25°C,cps	smooth, thixotropic	40	ASTM D-1824
Flash point, °C	>150	>150	ASTM D-92
Shelf life @ 25°C, months in factory sealed containers	6	6	JMTP C-100

CURED PHYSICAL PROPERTIES	2100-A7C/B	TEST METHOD
Hardness, Durometer A	55	ASTM D-2240
Tensile strength, psi	400	ASTM D-412
Elongation, %	265	ASTM D-412

Glass transition temp.,°C	-70	ASTM E-831
Thermal coefficient of expansion,		
in/in/°C alpha 1	79 x 10^{-6}	ASTM E-831
alpha 2	185 x 10^{-6}	ASTM E-831
Outgassing @10^{-6} Torr		
TML, %	0.38	ASTM E-595
CVCM, %	0.03	ASTM-E-595

CURED ELECTRICAL PROPERTIES	**2100-A7C/B**	**TEST METHOD**
Volume resistivity @25°C,ohm-cm	5.3 x 10^{15}	ASTM D-257
Dissipation factor (D)/Dielectric constant (K) @25°C, 1 KHz	0.030/3.5	ASTM D-150
Dielectric strength, 0.100", 25°C, Volts/Mil.	360	ASTM D-149

SAFETY AND FIRST AID

APTEK 2100-A7C is a filled polyol resin that is safe to handle when used properly. It is judged to be low in toxicity and to be rated as a slight skin irritant. 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.

APTEK 2100-B is an organic isocyanate which may cause eye and skin irritation with direct contact. Inhalation of vapors may result in breathlessness, coughing, chest discomfort, and irritation of mucous membranes. Avoid skin and eye contact, and for eye contact, flush profusely with fresh clean water and contact physician. For skin contact, wash thoroughly with soap and water. If inhaled, move subject to fresh air and provide fresh water to drink. If swallowed, dilute with at lest one pint of water and contact physician immediately. Refer to Material Safety Data Sheet for more details.

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