APTEK LABORATORIES, INC.
ISO 9001 / AS9100 Certified

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TECHNICAL DATA & INFORMATION

PRELIMINARY
APTEK® 2128-A/B

- Low modulus urethane
- Water clear
- UV resistant
- Re-enterable

PRODUCT DESCRIPTION

APTEK 2128-A/B is a two component, water clear, electrically insulating urethane system designed for the potting and encapsulation of electronic components, substrates, and active chips. This is 100% solids, solvent free system that will not form voids during cure or service life.

APTEK 2128-A/B is a non-TDI based urethane system which has outstanding reversion resistance and physical stability when subjected to high heat and humidity environment. As a urethane, this system displays higher ionic purity than epoxy systems minimizing the chance of corrosion around sensitive components and circuitry.

KEY FEATURES AND BENEFITS

- Low modulus to minimize stress to sensitive components and ceramic substrates.
- Low Tg for excellent low temperature cycling and performance
- Wide operating temperature range (-50°C to 100°C) for versatility.
- Excellent substrate adhesion; superior to silicones

HANDLING INFORMATION

Mix ratio, parts by weight:	100 (2128-A) / 55 (2128-B)
parts by volume	2:1 (for meter mixed dispensing)
Work life, @ 25°C, 300 gm. mass, minutes	30*

*Note: The work life may shorten with increased temperature and mass of the A/B mixture. To be determined by customer testing.

Handling notes:

- Part A – store @ room temperature (~19-30°C) in insulated shipping box.
- Approximately 16 – 24 hours prior to use, examine Part A bottles for crystallization; if crystals or slushiness is noted, follow instructions listed below to completely liquefy the resin:
  - Place unopened Part A bottles into an air circulating oven at 55-60°C until the entire bottle is clear liquid. (Typically, heating quart size bottles in an oven overnight for ≥ 16 hours should remove crystals.)

- For maximum pot life, allow to cool to 25-30°C before use. DO NOT FORCE COOL as this may cause re-crystallization.

- Examine Part B bottles for haziness or an insoluble white precipitate. If either is noted, do not use.
- Part B is moisture sensitive, store @ 20-30°C, below 50% RH. If Part B is opened, it must be blanketed with dry nitrogen or argon before resealing.

MIXING

Weigh 100 parts of APTEK 2128 Part A into clean dry glass, metal, or plastic container and then add 55 parts of APTEK 2128 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.

Note: For best results and a void free bond line, vacuum mixture at less than 10 mm Hg for 5-10 mins, no more than 1 minute after "break" to avoid boiling product.

CURE SCHEDULE

6 hours @ 70°C ± 5°C

Note: As typical with urethane systems, a relaxation/stabilization period of 2-4 days at room temperature after heat cure is recommended before testing or service. However, parts may be handled/moved after heat cure.

TYPICAL PROPERTIES

(Values not to be used for specification purposes)

CHARACTERISTICS	2128-A	2128-B	TEST METHOD
Color	Clear, pale blue	Clear,pale yellow	Visual
Specific gravity	1.0	1.1	ASTM D-1475
Viscosity @ 25°C	820	1100	ASTM D-1824
Flash point, °C	>200	>150	ASTM D-92
Shelf Life @ 25°C, factory sealed containers, months	6	6	

CURED PHYSICAL PROPERTIES		APTEK 2128-A/B	TEST METHOD
Hardness, Shore A		70	ASTM D-2240
Glass transition temp., °C		-35	ASTM E-831
Thermal coefficient of expansion, in/in/°C	alpha 1	75×10^{-6}	ASTM E-831
	alpha 2	230×10^{-6}	
Fungus resistance		Non-nutrient	ASTM G-21
Tensile, psi		275	
Elongation, %		75	

Young's Modulus, psi	360

SAFETY AND FIRST AID

APTEK 2128-A is an unfilled 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 physician. Refer to Material Safety Data Sheet for more details.

APTEK 2128-B is an organic isocyanate, which may cause severe eye and skin irritation with direct contact. Inhalation of vapors may result in breathlessness, severe coughing, chest discomfort, and irritation of mucous membranes. Avoid skin and eye contact and use in well-ventilated, hooded area. In case of 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 least one pint of water and contact physician immediately. Refer to Material Safety Data Sheet for more details.

Current Revision: 04/27/15 – jv