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ISO 9001 / AS9100 Certified

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TECHNICAL DATA & INFORMATION

APTEK® 2214-A/B

Space Grade, Low Modulus Urethane ESD Coating/Adhesive

PRODUCT DESCRIPTION

APTEK 2214-A/B is a carbon-filled, thixotropic, two component, electrically conductive, flexible urethane coating/adhesive designed to dissipate an electrostatic charge. This low-outgassing system provides a combination of high flexibility and good tensile strength/elongation characteristics.

KEY FEATURES AND BENEFITS

- Capable of full cure at RT for application where heat cure is not desired or possible
- Exceeds NASA outgassing requirements for space applications
- Non-TDI based for safety
- Excellent reversion resistance for good physical stability under high heat and humidity environments
- Tg BELOW -60°C for excellent low temperature cycling, storage and performance
- Excellent substrate adhesion; superior to silicones
- Available in pre-measured kits to minimize handling

HANDLING INFORMATION

Mix ratio, parts by weight:	100 (2214-A) / 14 (2214-B)
Work life, 50 gm mass, @ 25°C, 50% RH, mins:	>30

Note: Work life will be affected by temperature, humidity, and degree of solvent evaporation.

Handling Notes:
- To reduce mixed viscosity, dilute A/B mixture with reagent grade toluene as needed.

- APTEK 2214-B should be stored in tightly closed, factory sealed containers at a temperature of 25-35°C. At this temperature the product will remain liquid. Crystallization, cloudiness, or formation of an insoluble white precipitate which is the solid dimer of the liquid Part B may occur upon prolonged storage at temperatures below 20°C. The precipitate is not harmful; however, do not shake the bottle. Place unopened Part B bottles into an air circulating oven at 45-60°C until clear amber liquid is evident (white precipitate layer may also be present). For 8 oz. containers or smaller the liquid should clear up in less than 2 hours. Carefully remove bottles from oven without disturbing contents. Decant clear liquid out of bottle without disturbing the precipitate.

- 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.

- For a **pre-weighed** kit, drain entire contents of Part B bottle for 15 seconds into Part A container. Do not shake the bottle; sufficient liquid has been packaged to deliver the proper amount when bottle is drained vertically. Hand stir with a clean, dry metal spatula until material is uniformly blended.

MIXING

Weigh 100 parts of APTEK 2214 Part A into a clean dry glass, metal, or plastic container and then add 14 parts of APTEK 2214 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 bubble-free coating, vacuum mixture at less than 10 mm Hg for no more than 10 seconds after "break" to avoid boiling the solvent from the mixture.

CURE SCHEDULE

7 days at 25°C*
or
16 hrs @ RT + 2 hrs @ 85°C

* NOTE: After 24 hours at 25°C, a 5 mil film is cured enough to handle without being tacky. The surface resistivity will be approximately 5 x 10^6 ohms per square. Allow the full 7 day cure to achieve ultimate physical properties and meet the NASA outgassing requirements.

TYPICAL PROPERTIES

(values not to be used for specification purposes)

CHARACTERISTICS	2214-A	2214-B	TEST METHOD
Color	Black	Pale yellow to amber	Visual
Clarity	Opaque	Clear to hazy	
Specific gravity	0.96	1.22	ASTM D-1475
Viscosity @ 20°C, cps	Thixotropic paste	55	ASTM D-1824
Flash point, °C	10	200	ASTM D-92
Shelf life @ 25°C, months factory sealed containers	6	6	

Notes: Shelf life may be reduced once containers are opened and material is exposed to air and moisture. To preserve maximum use life, blanket the contents of the containers with dry nitrogen or argon before resealing.

CURED PHYSICAL PROPERTIES	2214-A/B	TEST METHOD
Hardness, Durometer A	60	ASTM D-2240
Tensile strength, psi	450	ASTM D-412
Elongation, %	300	ASTM D-412
Glass transition temp., °C	<-60	Perkin Elmer TS-2
Outgassing @ 10^{-6} Torr		

TML, %	0.59	ASTM-E-595
CVCM, %	0.04	ASTM-E-595
Fungus resistance	non-nutrient	ASTM-G-21

CURED ELECTRICAL PROPERTIES	**2214-A/B**	**TEST METHOD**
Surface resistivity @ 25°C, 3 mil thick film, ohms/square @ 100 V Bias	3.5×10^6	QCP-016-0110

SAFETY AND FIRST AID

APTEK 2214-A is a carbon-filled polyol resin containing solvent and is thus considered a flammable liquid and should be treated with caution. Avoid storage temperatures above 35°C and keep away from flame, sparks, or other sources of ignition. Use in 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 2214-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 a well-ventilated, hooded area. In case of eye contact, flush profusely with fresh clean water and contact a physician. For skin contact, wash thoroughly with soap and water. If inhaled, move subject to fresh air and provide water to drink. If swallowed, dilute with at least one pint water and contact physician immediately. Refer to Material Safety Data Sheet for more details.

Revised: 12/13/17 – dh