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ISO 9001 / AS9100 Certified

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TECHNICAL DATA & INFORMATION

APTEK® 6533-A/B

- Semi-rigid, insulative epoxy adhesive
- Low outgassing/space grade
- RT cure; high strength

PRODUCT DESCRIPTION

APTEK 6533-A/B is a filled, blue, two component, semi-rigid, high strength, electrically insulating paste adhesive. It is specifically designed to fully cure at room temperature or can be accelerated with moderate heat. This is 100% solids, solvent free system that will not form voids during cure or service life.
APTEK 6533-A/B was designed to maintain its thixotropic, low-sag consistency throughout its' work life for uniform bonding and staking of components.

KEY FEATURES AND BENEFITS

- Meets NASA outgassing requirements per ASTM E-595 for space applications.
- Moderately thixotropic mixed consistency to provide ample wetting of compounds, yet has minimum sag on vertical surfaces with the ability to hold components and wires in place during cure.
- Capable of complete room temperature cure for applications where heat cure is not desired or possible.
- Reaches 85% of cured physical properties in 48 hours at 25°C (77°F).
- Contains no diluents or solvents to minimize formation of voids during cure.
- Available in cartridge kits to minimize handling.
- Available in pre-mixed, frozen, syringes for pin-point dispensable applications applied by robotics or by hand plungers.

HANDLING INFORMATION

Mix ratio, parts by weight	100:74
parts by volume	1:1
Work life @ 25°C (77°F), 20g mass, hrs	2
Shelf life @ 25°C, in factory sealed containers, months	12

Handling Notes:

- Upon prolonged storage of Part A @ 20ºC (68ºF) or below, crystals or graininess may develop. If noted, place container in an ACO @ 60-70ºC for 1-4 hours. Gently hand stir with clean, metal spatula periodically and re-inspect for crystals until material returns to a smooth, paste-like consistency. Allow to cool to 25ºC before use – do NOT force cool.

- Part B is sensitive when exposed to moisture and air, and may dry out if container is left open. Always blanket unused portion of part B with dry nitrogen or argon and reseal for maximum stability.

SURFACE PREPARATION

- Thoroughly clean surface area with detergent and water to remove all dirt, grease, or wax. A better alternative is to scrub areas to be bonded with Ajax oxygen bleach and then rinse with water.
- Clean all parts with a solvent such as methyl ethyl ketone (MEK), isopropyl alcohol (IPA) or toluene.
- For enhanced adhesion: Prior to application of adhesive to metal substrates, apply etching solution or paste such as P2 etch or Pasa-Jell 105 to substrates. Soak surfaces to be bonded in etching solution/paste for prescribed amount of time. Rinse with deionized water followed by rinse with anhydrous IPA. Allow substrate to fully dry prior to application. Contact Aptek for additional information on this topic, as needed.

Note:
- FPL Etch process can be used in place of P2 etch or Pasa-Jell.
- All surfaces must be dry before applying adhesive.
- Apply adhesive to all substrates to be bonded.

MIXING INSTRUCTIONS

Weigh 100 parts of **APTEK 6533** Part A into clean dry glass, metal, or plastic container and then add 74 parts of **APTEK 6533** 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.

Dual cartridge/dispenser kits

- Hold cartridge firmly and upright.
- Twist off protective cap counterclockwise and peel off protective seal if necessary exposing the adhesive ports.
- Insert flanged base of mixing tube over the exposed adhesive ports perpendicular to the cartridge bracket.
- Press and twist tube clockwise until flange is seated firmly.
- Hold gray handles of ratchet gun, with up arrow facing you.
- While lifting and holding up silver lever with thumb, pull back black plunger fully, until it stops.
- Insert the cartridge into slot in front of gun.
- Pull trigger slowly until plunger seats into cartridge.
- Continue to apply pressure to trigger to dispense adhesive through the tube.

- Allow one inch of adhesive to extrude before applying to bonding surface.
- Cut back tip of tube to adjust bead size.
- To remove plunger from spent cartridge hold up silver lever and pull back black plunger fully; then cartridge can be removed from gun.

CURE SCHEDULE

7 days @ RT*
or
3 hrs @ 65°C

*Note: Greater than 85% of physical properties are achieved in 48 hrs at RT. An extended cure time may be required to pass NASA outgassing requirements. User to determine ultimate cure schedule.

TYPICAL PROPERTIES

(Values not to be used for specification purposes)

CHARACTERISTICS	6533-A	6533-B	TEST METHOD
Color	Blue	Translucent; Amber to green	Visual
Specific gravity	1.21	0.97	ASTM D-1475
Viscosity, @25°C, cps	Smooth thixotropic paste	10,500	ASTM D-1824
Flash Point, °C	>125	>125	ASTM D-92

CURED PHYSICAL PROPERTIES (Cure: 3 hrs @ 65°C)	APTEK 6533-A/B	TEST METHOD
Hardness, Durometer D	81	ASTM D-2240
Hardness after 1 hr soak		
IPA	81	
Acetone	81	
Lap shear, Al to Al, psi * ½ inch overlap (5 mil bondline) @25°C * Ajax Oxygen bleach treatment followed by P2 etching process	3500	ASTM D-1002
Glass Transition Temperature (Tg); °C	72	ASTM E-831
Alpha 1, in/in/°C	82×10^{-6}	
Alpha 2, in/in/°C	200×10^{-6}	
Outgassing @10^{6} Torr		
TML, %	0.60	ASTM E-595
CVCM, %	0.02	ASTM E-595

ELECTRICAL PROPERTIES

Dielectric strength VDC/Mil @ 0.040 inches	450	ASTM D-149
Volume resistivity ohm-cm @ 25°C	3.5×10^{15}	ASTM D-257
Dissipation factor @ 1MHZ @ 25°C	0.040	ASTM D-150
Dielectric constant @ 1MHZ @ 25°C	3.3	ASTM D-150

SAFETY AND FIRST AID

APTEK 6533-A is an epoxy resin considered safe to handle when used properly. 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, do not induce vomiting, drink at least one pint of water and call a physician. Refer to Material Safety Data Sheet for more details.

APTEK 6533-B is an amine curing agent considered a slight irritant however, may cause eye and skin irritation on prolonged and repeated exposure. Inhalation of vapors may be harmful in large amounts. Avoid skin and eye contact and use in a well-ventilated area. In case of eye contact or skin contact, flush profusely with water. If swallowed, do not induce vomiting, dilute with at least one pint of water and contact physician. Refer to Material Safety Data Sheet for more details.

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