APTEK LABORATORIES, INC.
ISO 9001 / AS9100 Certified

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TECHNICAL DATA & INFORMATION

APTEK® 2711

Inorganic, thermally radiative, ESD paint

PRODUCT DESCRIPTION

APTEK 2711 is a white, rigid, mineral oxide filled, one component, room temperature curing, inorganic coating/paint designed for very high temperature space applications. **APTEK 2711** was developed for use as thermally conductive coating where excellent resistance to intense UV light exposure is required.

KEY FEATURES AND BENEFITS

- JPL field-approved formulation; already on hardware in space
- Inorganic silicate binder provide coating with a service temperature ≥ 700°C (1300°F). This coating somewhat brittle and should only be used on rigid substrates
- Passes NASA outgassing per ASTM-E 595
- Inherently has sufficient surface conductivity for ESD applications on conductive surfaces
- Water-based formulation for safety. Formulated to sprayable viscosity for convenience

HANDLING INFORMATION

1. **APTEK 2711** is a one component, ready-to-spray system; however, it may be thinned further with distilled water, if needed.

2. Filler will settle upon storage. Homogenize prior to use by vigorously shaking the sealed container. Ceramic stirrer beads are embedded in the filler layer to aid in easy re-dispersion and rehomogenization.

3. Once uniform, pour freshly agitated **APTEK 2711** into spray gun reservoir. For best results, keep mixture in spray reservoir stirred or shaken during spraying procedure.

4. SURFACE PREPARATION
    a. Substrate surface to be sprayed should be clean and dry and free from silicone, mineral, petroleum oils/greases, etc.
    b. It is recommended that substrates be scrubbed with an abrasive cleaner. Then rinse with distilled water until a uniform "sheet" of water film appears on surface. Rinse in clean, anhydrous IPA, and allow to air dry for 15 minutes. Then bake for 15 minutes @ 65°C in an air circulating oven.

5. SURFACE PRIMING
    a. Priming of some surfaces may not be required. User to determine if needed.
    b. Specimens should be cleaned/prepared by above procedure (or equivalent) within 2 hours prior to priming.
    c. The best primer to use is **APTEK 2711** itself. Apply a thin coat (≤0.5 mil) by rubbing **APTEK 2711** into the cleaned surface using a clean, dry, lint-free cloth. This rubbed in coating shall air dry until the water has evaporated and surface looks dry. This should occur within a few minutes but not more than 15 minutes.

6. PAINT APPLICATION
    a. Use dry nitrogen, dry air, or argon as pneumatic spraying medium
    b. Recommended spray equipment is HVLP (high-volume, low-pressure) spray guns, such as a Devilbiss SRIPRO 65-35G-10 spot repair gun for lab and small volume use (www.devilbiss.com). The canister for this gun is 265ml. For larger production scale use, the Anest Iwata LPH400-164LV Gravity Gun (www.anestiwata.com) is preferred. The canister for this gun is 600ml.
    c. Spray multiple thin coats to freshly primed surfaces until a total thickness of 2-4 mils is achieved.
    d. A uniform thickness draw-down blade applicator may be used to screed down the coating in lieu of a spray application for small specimen sizes.
    e. Estimated surface area coverage per quart is approx. 25 sq. ft. at 3-4 mils cured thickness.

CURE SCHEDULE

7 days at @ RT @ 40-60% RH

Cure schedule is a guideline. User to determine actual cure for application. Note that lower % RH will speed up cure rate and higher % RH will tend to slow cure rate.

TYPICAL PROPERTIES

(values not to be used for specification purposes)

CHARACTERISTICS	2711	TEST METHOD
Color	white to off-white	Visual
Specific Gravity	1.47	ASTM D-1475
Viscosity @ 25°C, cps	125	ASTM-D-1824
Flash point, °C	N/A	
Shelf life, months @25°C in factory sealed containers	6	

CURED PHYSICAL PROPERTIES	2711	TEST METHOD
Solar absorption, $alpha_s$ vs thickness	$alpha_s$/mils 0.20/2 0.185/3 0.17/4	ASTM E-903
Outgassing @ 10^{-6} torr,		ASTM E-595
TML, %	0.50	
CVCM, %	0.02	
Surface resistivity, on conductive surfaces ohms/sq, on 100 volts bias meter	10^7 to 10^9	ETS-872A
Total normal emittance	0.93	ASTM E-408

SAFETY AND FIRST AID

APTEK 2711 is a water-based, mineral filler, low viscosity coating which is safe to handle when used properly. Store the coating at 15-30°C in original factory sealed containers. 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 MSDS for more details.
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