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PRODUCT DATA SHEET

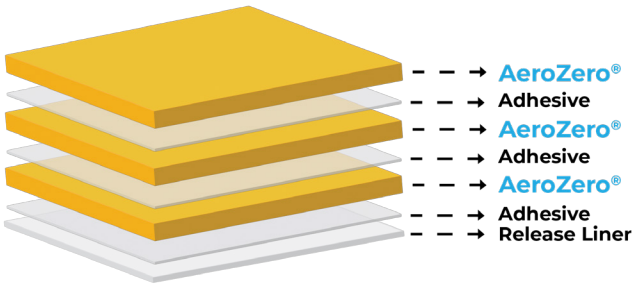
AeroZero® Thermal Protection Systems

TripleZero™ TPS 300

Product Description

TripleZero™ TPS 300 consists of three standard 165 micron (6.5 mil) AeroZero® polyimide aerogel films bonded with a 25.4 micron (1 mil) adhesive. The adhesive is a high-performance engineering grade silicone pressure sensitive adhesive (PSA) with a release layer that is peeled off before application to a substrate.

Potential substrates for bonding include carbon fiber composites, glass-reinforced composites, polymers (such as PEEK, polyimides, PET), and metals (such as aluminum, steel, titanium). Typical use is for thermal protection/insulation of battery housing and other sensitive parts exposed to high heat or very cold environments. Industries include aerospace, defense, medical and electronic devices.



Standard Dimensions

- Test Sample: 216 x 280 mm (8.5 x 11 in)
- Starter Roll: 304 mm x 7.62 m (1 x 25 ft)
- Standard Roll: 304 mm x 30.48 m (1 x 100 ft)
- Available as sheets cut to custom sizes

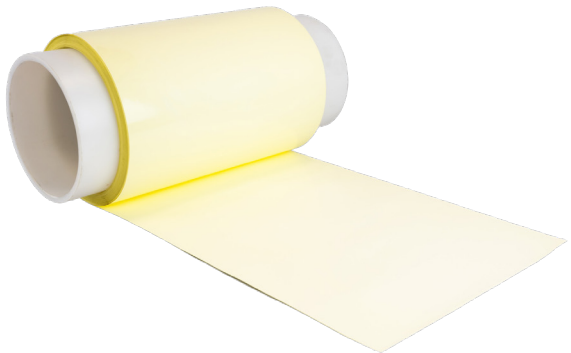
Application

Prior to peeling the release liner from the adhesive, ensure the surface is clean and free of loose particles. Standard application temperature is 25 °C (77 °F) and the recommended set time for optimal adhesion is 3 days prior to testing. The minimum application temperature is 10 °C (50 °F) and minimum set time is 24 hours before performing any tests. Increasing temperature and dwell time may increase adhesion strength.

Storage

Recommended Storage Conditions:

- Temperature: below 25 °C (77 °F)
- Relative Humidity: below 50%



Features

- Ultra-thin thermal protection system (TPS)
- Lightweight
- Flexible application onto complex parts
- Enhances the thermal endurance of protected parts
- Easy application with permanent bonding
- Flame retardant

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AeroZero® Thermal Protection Systems

TripleZero™ TPS 300

Physical and Mechanical Properties	Method	Value
Product Code	-	2000-03S1-000
Thickness, µm (mil)	ASTM D374/D374M	570 (22.4)
Tensile Strength, MPa (ksi)	ASTM D882	7.1 (1.0)
Young's Modulus, MPa (ksi)	ASTM D882	200 (29)
Tensile Elongation at Break, %	ASTM D882	9.8
Density, g/cm^3	ASTM D202	0.40
Basis Weight, g/m^2	ASTM D202	230

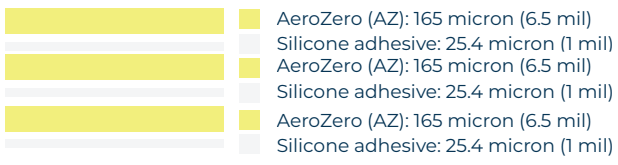
Thermal Properties	Method	Value
Thermal Conductivity (25 °C), W/m·K	ASTM C518	0.036
Specific Heat Capacity (25 °C), J/g•°C	ASTM C1784	1.20

Thermomechanical Properties	Method	Value
Glass Transition Temperature (AeroZero T_g, DMA), °C (°F)	ASTM E1640	305 (580)
Decomposition Temperature (10 wt% loss, TGA), °C (°F)	ASTM E2550	400 (600)

Additional Properties	Method	Value
Adhesive Strength: 180 °peel/3 day-RT dwell time AZ film on 50.8 micron (2 mil) Al Foil N/m (Lbf/in)	ASTM D3330	>250 (1.7)
Flammability, 12 s vertical burn	FAR Part 25 Appx. F Part 1 (a) (1) (ii)	Pass
UL Flammability Rating	UL94 Vertical Burn	V0
Adhesive Type	-	Silicone

Data within this table are typical values for the standard TripleZero™ TPS product family.
Product Code #2000-03S1-000

TripleZero™ TPS 300



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