



## AeroZero® Thermal Protection Systems AZ-TPS Polyimide

### Product Description

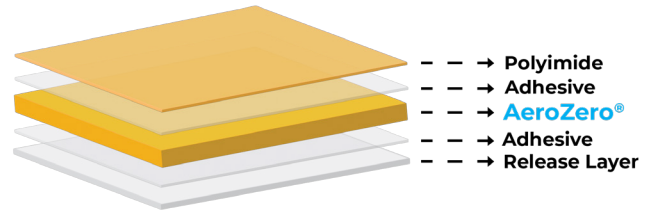
The AZ-TPS Polyimide portfolio consists of a range of products that include a 165 micron (6.5 mil) AeroZero® polyimide aerogel film with an external polyimide layer joined and an adhesive bonding layer. The adhesive is a pressure sensitive adhesive (PSA) with a release layer that is peeled off before application to a substrate. Potential substrates include stainless steel, aluminum, glass, carbon fiber, and polymer substrates such as polyimides, polyether ketones, polyurethanes, and polyesters. Typical use is thermal barrier/protection of parts in the Aerospace, Defense and Electronic industries.

### 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.

### Features

- ◇ Ultra-thin thermal protection system (TPS)
- ◇ Lightweight
- ◇ RF transparent
- ◇ Flexibility enables use on complex parts
- ◇ Easy application with permanent bonding
- ◇ Flame retardant



### Standard Dimensions

- ◇ Test Sample: 216 x 280 mm (8.5 x 11 in)
- ◇ Sample Roll: 304 mm x 3.05 m (1 x 10 ft)
- ◇ Standard Roll: 304 mm x 30.5 m (1 x 100 ft)

### Storage

Recommended Storage Conditions:

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



*Lighten. Protect. Perform.*



### AeroZero® Thermal Protection Systems AZ-TPS PI 100

Physical and Mechanical Properties	Method	Value
Product Code	-	2010-11S1-000
Thickness, µm (mil)	In-House Method	240 (9.5)
Tensile Strength, MPa (ksi)	ASTM D882-12	15 (2)
Young's Modulus, MPa (ksi)	ASTM D882-12	450 (65)
Tensile Elongation at Break, %	ASTM D882-12	8
Density, g/cm <sup>3</sup>	In-House Method	0.58

Thermal Properties	Method	Value
Thermal Conductivity (25 °C), W/m·K	ASTM C518-10	0.046
Specific Heat Capacity (25 °C), J/g·°C	ASTM C1784-20	1.22
IR Emissivity (Polyimide Surface)	ASTM E408-13	0.77

Thermomechanical Properties	Method	Value
Glass Transition Temp (AZ T <sub>g</sub> , DMA), °C (°F)	ASTM E1640-13	305 (580)
Decomposition Temp (10 wt% loss, TGA), °C (°F)	ASTM 2550-17	410 (770)

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	>200 (1.1)
UL Flammability Rating	UL94 VTMO	VTM-O

Data within this table are typical values for the polyimide TPS product family.  
Product Code # 2010-11S1-000

#### AeroZero TPS PI 100



Blueshift products are manufactured under a certified AS 9100D/ISO 9001:2015 Quality Management System facility. See our website for more information on Blueshift products.

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### AeroZero® TPS Additional Configurations AZ-TPS PI 101

Physical and Mechanical Properties	Method	Value
Product Code	-	2015-N1S1-000
Thickness, µm (mil)	ASTM D374	203.2 (8.0)
Tensile Strength, MPa (ksi)	ASTM D882	12.8 (1.86)
Young's Modulus, MPa (ksi)	ASTM D882	390 (56.57)
Tensile Elongation at Break, %	ASTM D882	9.7
Density, g/cm <sup>3</sup>	ASTM D202	0.48

Thermal Properties	Method	Value
Thermal Conductivity (25 °C), W/m·K	ASTM C518	0.040

Thermomechanical Properties	Method	Value
Glass Transition Temp (AZ T <sub>g</sub> , DMA), °C (°F)	ASTM E1640-13	305 (580)
Decomposition Temp (10 wt% loss, TGA), °C (°F)	ASTM 2550-17	415 (779)

Data within this table are typical values for the polyimide TPS product family.  
Product Code # 2010-N1S1-000

#### AeroZero TPS PI 101

		Polyimide (PI): 12.7 micron (0.5 mil)
		Silicone Adhesive (PSA): 25.4 micron (1 mil)
		AeroZero (AZ): 165 micron (6.5 mil)



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