

TripleZero™ Thermal Protection System

TripleZero[™] TPS

Product Description

The TripleZero[™] thermal protection system (TPS) 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.

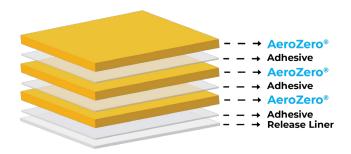
Potential substrates for bonding include carbon fiber composites, glass-reinforced composites, polymers (such as PEEK, polyimides, PET), and metals (such as aluminum, steel, titanium). Typical use is for thermal protection/insulation of battery housing and other sensitive parts exposed to high heat or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

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
- Flexible application onto complex parts
- Enhances the thermal endurance of protected parts
- ♦ Easy application with permanent bonding
- Flame retardant



Standard Dimensions

- Test Sample: 216 m x 280 mm (8.5 x 11 in)
- ♦ Starter Roll: 30.5 cm x 7.62 m (12 in x 25 ft)
- Standard Roll: 30.5 cm x 30.48 m (12 in x 100 ft)
- Available as sheets cut to custom sizes

Storage

Recommended Storage Conditions:

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



Lighten. Protect. Perform.

5 South Spencer Road Spencer, MA 01562 USA

+1 (888) 350 - 7586 www.blueshiftmaterials.com Please Recycle *DISCLAIMER: Blueshift MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, COURSE OF PERFORMANCE, OR TRADE USAGE. All of the descriptive information, the typical performance data, and recommendations for the use of Blueshift products shall be used only as a guide and do not reflect the specification or specification range for any particular property of the product. Furnishing such information is merely an attempt to assist you after you have indicated your contemplated use and shall in no event constitute a warranty of any kind by Blueshift. All purchasers of Blueshift products shall be responsible for independently determining the suitability of the material for the purpose for which it is purchased, and for performing any additional testing that may be necessary to support purchaser's intended use. No distributor, salesman, or representative of Blueshift is authorized to give any warranty, guaranty, or make any representation in addition or contrary to the above. Blueshift, the Blueshift Logos, AeroZero and RockeTape are trademarks or registered trademarks of Blueshift Materials, Inc. in the United States and/or around the world. Copyright © 2023 Blueshift Materials, Inc. All rights reserved.



TripleZero™ Thermal Protection System

TripleZero[™] TPS

Physical and Mechanical Properties	Method	Value
Product Code		2000-0351-000
Thickness, µm (mil)	ASTM D374, Method C	570 (22.4)
Tensile Strength, MPa (ksi)	ASTM D882-12	7 (1)
Young's Modulus, MPa (ksi)	ASTM D882-12	200 (29)
Tensile Elongation at Break, %	ASTM D882-12	9
Aerial Density, g/m²	ASTM D202	230
Density, g/cm³	In-house method	0.40
Thermal Properties	Method	Value
Thermal Conductivity (25 °C), W/m·K	ASTM C518-21	0.036
Thermomechanical Properties	Method	Value
Glass Transition Temperature (AeroZero T _g , DMA), °C (°F)	ASTM E1640-13	305 (580)
Decomposition Temperature (10 wt% loss, TGA), °C (°F)	ASTM E2550-17	400 (600)
Additional Properties	Method	Value
Adhesive Strength:		
180 °peel/3 day-RT dwell time AZ film on 50.8 micron (2 mil) AI Foil (lb/in)	ASTM D3330	>250 (1.7)
Flammability, 12 s vertical burn	FAR Part 25 Appendix F Part 1 (a) (1) (ii)	Pass
UL Flammability Rating	UL94 Vertical Burn	VO

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





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.

5 South Spencer Road Spencer, MA 01562 USA

+1 (888) 350 - 7586 www.blueshiftmaterials.com Please Recycle *DISCLAIMER: Blueshift MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, COURSE OF PERFORMANCE, OR TRADE USAGE. All of the descriptive information, the typical performance data, and recommendations for the use of Blueshift products shall be used only as a guide and do not reflect the specification or specification range for any particular property of the product. Furnishing such information is merely an attempt to assist you after you have indicated your contemplated use and shall in no event constitute a warranty of any kind by Blueshift. All purchasers of Blueshift products shall be responsible for independently determining the suitability of the material for the purpose for which it is purchased, and for performing any additional testing that may be necessary to support purchaser's intended use. No distributor, salesman, or representative of Blueshift is authorized to give any warranty, guaranty, or make any representation in addition or contrary to the above. Blueshift, the Blueshift the AceroZero and RockeTape are trademarks or registered trademarks of Blueshift Materials, Inc. in the United States and/or around the world. Copyright © 2023 Blueshift Materials, Inc. All rights reserved.