H-O PRODUCTS CORPORATION

# TECHNICAL DATASHEET:
# AZ-TPS 101

## PRODUCT DESCRIPTION

AZ-TPS 101 is a 216 micron (8.5 mil) thermal protection film built from a 165 micron (6.5 mil) AeroZero® polyimide aerogel core bonded between two 25.4 micron (1 mil) silicone pressure-sensitive adhesive layers, with a density of 0.50 g/cm$^3$. The film delivers a thermal conductivity of 0.040 W/m·K at 25 °C, a decomposition temperature of 380 °C (716 °F), and a UL94 VTM-0 flammability rating, with adhesive strength greater than 300 N/m (1.7 Lbf/in) to aluminum foil after a 3-day room-temperature dwell. It maintains a glass transition temperature of 305 °C (580 °F) and is designed for permanent, flexible bonding to metal, glass, carbon fiber, and polymer substrates.

## TYPICAL APPLICATIONS

- Thermal barrier protection for aerospace structures and components
- Defense system thermal shielding and insulation
- Electronic device and enclosure thermal protection
- Permanent bonding to metal, glass, carbon fiber, and polymer substrates
- Thermal wrapping of complex, contoured part geometries

## PRODUCT FEATURES & BENEFITS

- Ultra-thin thermal protection system (TPS)
- Flexible application onto complex parts
- Enhances thermal performance of substrates
- Easy application with permanent bonding
- Flame retardant
- Lightweight
- UL94 VTM0 compliant (VTM-0 rating)

### Physical/Mechanical Properties

| PROPERTY | VALUE | TEST METHOD |
|---|---|---|
| THICKNESS, MM (MIL) | 216 (8.5) | ASTM D374/D374M |
| TENSILE STRENGTH, MPA (KSI) | 5.3 (1.0) | ASTM D882 |
| YOUNG'S MODULUS, MPA (KSI) | 160 (23) | ASTM D882 |
| TENSILE ELONGATION AT BREAK, % | 9 | ASTM D882 |
| DENSITY, G/CM3 | 0.50 | In-House Method |
| UL FLAMMABILITY RATING | VTM-0 | UL94 VTM0 |

### Thermal Properties

| PROPERTY | VALUE | TEST METHOD |
|---|---|---|
| THERMAL CONDUCTIVITY (25 °C), W/M·K | 0.040 | ASTM C518 |
| SPECIFIC HEAT CAPACITY (25 °C), J/G·°C | 1.20 | ASTM C1784 |
| GLASS TRANSITION TEMP (AZ TG, DMA), °C (°F) | 305 (580) | ASTM E1640 |

Specifications are believed to be accurate at the time of publication and are subject to change without notice. It is the responsibility of the end-user to test and determine suitability of this material for a particular application. H-O will provide samples for this purpose at no charge. **REV. 0**

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| PROPERTY | VALUE | TEST METHOD |
|---|---|---|
| **DECOMPOSITION TEMP (10 WT% LOSS, TGA), °C (°F)** | 380 (716) | ASTM 2550 |

### Adhesion Properties

| PROPERTY | VALUE | TEST METHOD |
|---|---|---|
| **ADHESIVE STRENGTH: 180° PEEL/3 DAY-RT DWELL TIME AZ FILM ON 50.8 MICRON (2 MIL) AL FOIL, N/M (LBF/IN)** | >300 (1.7) | ASTM D3330 |
| **ADHESIVE TYPE** | Silicone | — |

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