



AccuTrex Products, Inc.

**Take your Aerospace Shims to New Heights
with AccuPeel® Laminated Polyimide Shims**



Introduction

As an AS9100 registered manufacturer of components for the aerospace industry, **AccuTrex Products, Inc.**, is on the cutting edge of manufacturing technologies for parts designed to meet the rigorous requirements of its customers. It is our dedication to quality and service that defines the **AccuTrex** name and we stand behind the components we produce. **AccuTrex** is unique in the industry because the company has the capability to manufacture the laminated raw material, trademarked AccuPeel®, and also fabricate the high quality, precision shims, washers and other components for this industry.

Custom AccuPeel® Laminated Polyimide Shims

As standard components in machines and assemblies, shims are used to fill small gaps or spaces in order to improve fit or alignment of two surfaces, as well as to prevent vibrations while maintaining the integrity of the assembly or piece of equipment.

Kapton® is an all-polyimide film produced and trademarked by DuPont. Apical® is another brand name of polyimide, branded and manufactured by Kaneka. Polyimide film is a versatile material that can be laminated, punched, or adhesive coated, making it suitable for various types of components. The material features exceptional electrical, thermal, chemical and mechanical properties and can tolerate a wide range of temperature shifts.

Shims made from AccuPeel® laminated polyimide shim stock offer a balance of properties, making them widely used in aircraft and aerospace applications. Under the specification, AMS-DTL-22499, Composition 6, (laminated polyimide material), **AccuTrex** can produce laminated sheets (and custom parts) that feature a combination of properties that was absent in previous materials. AccuPeel® laminated polyimide shims are electrically non-conductive, making them suitable in applications where the shim may be exposed to electricity. Laminated polyimide is extremely lightweight and resistant to corrosive materials which prevents the shim material from weakening or breaking down when exposed to solvents.

AccuPeel® laminated polyimide shims feature outstanding strength and flexibility despite being lightweight. Shims manufactured from AccuPeel® laminated polyimide stock offer the advantages of peelable layers (in .002" or .003" increments) that allow a high level of customization and the ability to achieve a perfect fit every time.

Shims made from AccuPeel® laminated polyimide stock have the following properties:

- Temperature tolerances from -269°C (-452°F) up to 400°C (752°F)
(UL -94V0 rated-Thermal index for continuous operation of 200°C-240°C)
- Not an electrical conductor
- Corrosion resistant
- Lightweight, strong, and flexible

Shims manufactured from polyimide material provide unparalleled structural support, superior protection, and ultimately contribute to a high level of performance for a range of applications in numerous industries. One industry in particular, however, stands to benefit the most from the unique properties of the polyimide material—aerospace.

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Benefits for the Aerospace Industry

Shims are generally used as washers, motor and vibration mounts, and seals. Not all shims, however, can withstand the environment conditions encountered in the aviation and aerospace industry. The severe temperature differentials that aircraft encounter lead to constriction and expansion of parts. Due to the proprietary characteristics of polyimide shims made from this material can withstand extreme environmental conditions.

Precision manufacturing and reliable performance are hallmarks of the shims manufactured from AccuPeel® laminated polyimide, by **AccuTrex**. As a custom manufacturer, we work to your exact specifications, regardless of complexity or order size. Having worked with major companies throughout the aerospace and aviation industry, **AccuTrex** is a leader in providing cutting edge solutions and components.

In one case study, for example, an aircraft manufacturer incorporated Kapton® material with new fire-blocking materials, (Curlon® Orcobloc product) for fuselage burnthrough protection, which acts for 10 minutes, far longer than the 4-minute requirement for fire protection proposed by the Federal Aviation Administration.

AccuPeel® laminated polyimide shims can be fabricated from sophisticated, state-of-the-art manufacturing technologies. Manufacturing processes and capabilities include:

- **Stamping:** Consistent, highly repeatable part production with in-house custom tooling capabilities. Large inventory of dies reduces costs.
- **Waterjet cutting:** CNC-controlled machinery that cuts laminated materials up to 6" thick and maintains tight tolerances, with no heat-effect zone.

The Aerospace Industry and Outgassing

Outgassing presents a significant problem in aerospace applications. This is the process by which volatile substances are dissolved, trapped, or frozen in a material and are released in a vacuum. Outgassing can be a serious issue for aerospace companies, since outgassing products can condense onto lenses and other visual sensors, solar cells, or thermal radiators, obscuring crucial scientific or industrial vacuum processes.

AccuPeel® laminated polyimide shims reduces the risk posed by outgassing. Neither the laminated polyimide material nor its adhesive outgas, which allows the successful operation of aerospace applications in vacuum environments. The absence of outgassing from our shims is a feature unique to the brand.



About Accu**Trex** Products, Inc.

AccuTrex Products is an AS 9100, ISO 9001:2008 and ITAR registered, Veteran-owned company that manufactures a wide range of custom products. Since 1980, we have invested in the people, technologies, and facilities to meet the needs of diverse and demanding industries. Maintaining a global presence enables **AccuTrex** to meet the toughest demands of today's marketplace. For outstanding custom shims, gaskets, metal stampings, sheet metal fabrication, and assemblies, trust in a partner that offers a comprehensive package of customer service and delivery options.



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