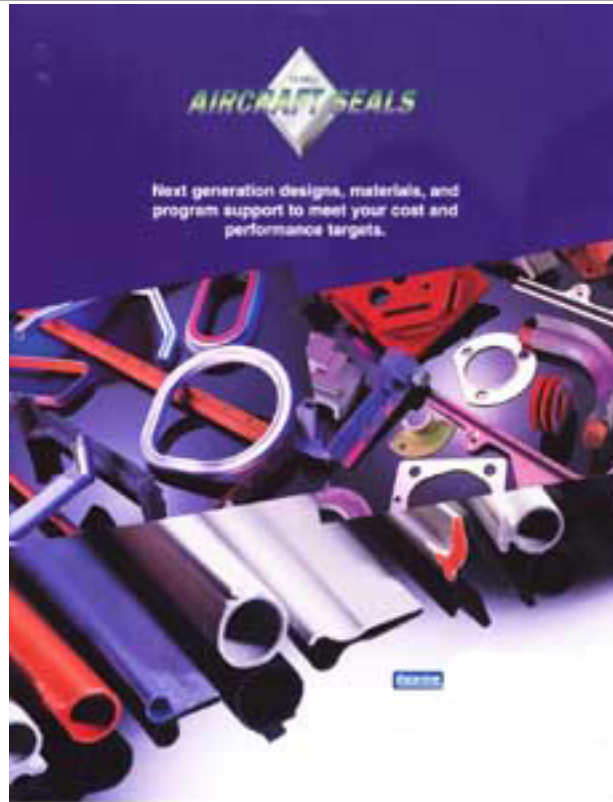


AIRCRAFT SEALS



NEXT GENERATION DESIGNS, MATERIALS, AND PROGRAM SUPPORT TO MEET YOUR COST AND PERFORMANCE TARGETS

Many questions arise when designing a seal. Will a standard material and design work or will a custom design offer better performance and value? How will the seal wear and withstand the service environment? How much compressive force is required to install or energize the seal? What is the best way to handle corners and ends? Which geometry and mounting are best?

Kirkhill-TA has the answers. Whether you are interested in improved performance and longer service life at higher temperatures, solving a nagging problem, or simply selecting a standard seal, we can help. Kirkhill-TA is a fully integrated seal supplier capable of meeting any sealing requirement. Our capability includes leading edge elastomer R&D, design engineering, rapid prototyping, and manufacturing tied together with CATIA/Unigraphics under an ISO 9001 quality system.












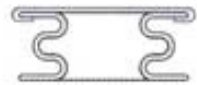


Below is general engineering information to familiarize you with some of our materials and standard designs.

Please contact us for more details and design guidance.

Seal Types

Aerodynamic Firewall High Temperature Hatch, Door, and Window EMI Air Transport Thermally Insulating Thermally Conductive	Seal Components Elastomer	Materials <ul style="list-style-type: none"> ▶ Silicone, fluoroelastomer, nitrile butadiene, ethylene propylene, fluoroelastomer, neoprene ▶ EXTREME-HEAT (trademark of TA Mfg.) silicone for intermittent temperatures to +700°F ▶ Elastomer materials can be certified to most industry standards
	Reinforcing Fabrics	<ul style="list-style-type: none"> ▶ Dacron®, Nomex®, fiberglass, Nextel®, Kevlar®, other proprietary fabrics ▶ Inconel knit wire
	Reinforcing Sheet	<ul style="list-style-type: none"> ▶ Steel, polyester, aluminum, titanium, precision expanded metal foils, other specialty materials
	Cover Core	<ul style="list-style-type: none"> ▶ Teflon®, Dacron®, fiberglass®, Nomex®, Kevlar®, Nextel® ▶ Electrically conductive rubber or wire mesh <ul style="list-style-type: none"> ▶ Silicone or other rubber sponge ▶ Inconel wire

Typical Seal Geometries

	Bulb and Lip Seal ("P" Seal) General purpose low pressure sealing. Works best under straight compressive loading but can accommodate some transverse relative movement through rolling of the bulb. Usually retained with a cover plate on the lip. Variations include "D" – shaped bulb and crowned bulb.		Lip Seal High pressure seal that utilizes a differential pressure to increase sealing force. Used to seal gaps between two substantially parallel surfaces. Mounting on non-pressure side.
	Double Bulb Seal Increased factor of safety due to second bulb. Concept can be applied for EMI sealing with an outer nonconductive bulb for environmental sealing and an interior bulb for EMI protection. Retained with cover plate between the bulbs.		Lip Seal ("y" Section) Low pressure seal used to seal two substantially parallel surfaces. The seal mounts by snapping over the edge of one surface and lip sealing on the other. A common design for window seals.
	Center Bulb Seal ("Omega") Low pressure seal which installs by sliding mounting foot into groove. Seal has better roll stability against transverse loading than bulb and lip seal. A rounded triangular bulb can be used to increase sealing force.		Double Lip Seal A high pressure seal which seals against pressure from either side.
	Center Bulb Seal (Wraparound Mount) Low pressure bulb seal for space-constrained applications. In some cases, the simple snap fit of the seal lip is sufficient for retention. In other cases, an adhesive or cover plate is used. The sealing force in this and other bulb seals can be increased with a sponge rubber core.		Lip Seal (Space-constrained Mount) Same as regular lip seal except with a smaller envelope.
	Center Bulb Seal (Pull-through Tab Mount) Low pressure seal that can be secured with tabs which pull through holes in mounting surface. Fewer tabs can also be used for positioning of a bonded-in-place seal.		U-Section Seal Medium differential pressure seal often used to seal two surfaces that have a large, dynamic gap variation. The seal is mounted on each leg to track the movement of the surfaces. Often used in high temperature applications.
	Tadpole Seal Low pressure seal for edge mounting. Seal will accept some transverse loading.		Kiss (Bellows) Seal An air transport seal used to seal against a land on a hatch or door. Capable of handling some lateral movement.
	Blade Seal Low pressure seal often used as a fairing seal between a straight and a contoured surface. For high temperatures, a metal insert provides long term sealing force.		Diaphragm Seal Low pressure seal that utilizes the aircraft interior pressure to increase the sealing force. Conventional seal is mounted on a vented frame. Used to seal doors and hatches. Variations include bulb styles with vented walls.