



# GORE™ SKYFLEX™

AEROSPACE MATERIALS

## Increased Aircraft Throughput and Availability

In today's competitive aircraft market, increasing the availability of aircraft by improving production efficiency for aircraft OEM's, or by reducing maintenance downtime, is critical to meet the demands of today's customers. Spending time waiting for traditional polysulfide sealants to cure is costly, whether during initial prototyping and production, or when taking an aircraft out of service for maintenance and repairs. Additional time is required to scrape these materials off of aircraft surfaces before replacing them during each production and maintenance open/close cycle.

GORE™ SKYFLEX™ Aerospace Materials are a family of products that can reduce production time and increase aircraft availability because they require no curing. They also maintain their protective performance for multiple open/close cycles during production and maintenance, eliminating the time required to remove used sealants each time the panel is opened.

The durable GORE™ SKYFLEX™ Aerospace Materials ensure reliable mechanical performance in the most challenging environments. These materials are easy to install because their flexible construction conforms to irregular surfaces, making them more forgiving for gap filling. Their non-hazardous properties result in easier clean-up with a low environmental impact.

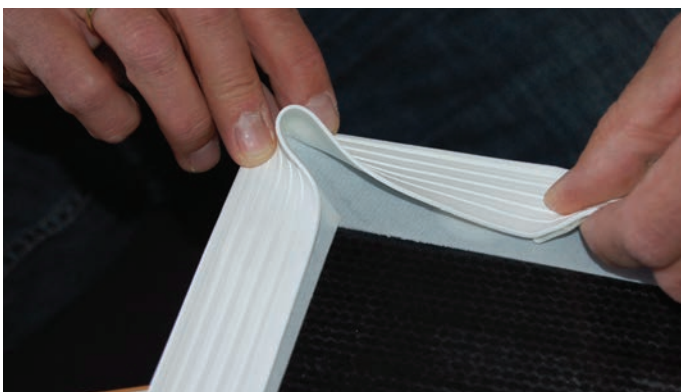
### THE SCIENCE OF GORE™ SKYFLEX™ AEROSPACE MATERIALS

The key to the outstanding performance of GORE™ SKYFLEX™ Aerospace Materials is the proprietary material used in their construction — expanded polytetrafluoroethylene (ePTFE). The mechanical and chemical properties of ePTFE enhance the materials' durability because it is temperature- and abrasion-resistant as well as chemically inert. Gore engineers can manipulate the properties of ePTFE to enable the use of different adhesives for various applications and to withstand exposure to vibration encountered during flight and contaminants such as coffee, fuel, chemicals, and de-icing fluids.



### Benefits of GORE™ SKYFLEX™ Aerospace Materials

- Reduced downtime with materials that require no curing
- Reliable performance in the most challenging environments
- Durable protection against extreme temperatures, fluids, and other environmental hazards
- No degradation when exposed to UV
- Improved sealing of gaps and irregular surfaces with highly conformable materials
- Increased reliability by maintaining seals over multiple open/close cycles during production and maintenance
- Low environmental impact from non-hazardous waste
- Easy installation from single-component material





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## REDUCED DOWNTIME

Using GORE™ SKYFLEX™ Aerospace Materials completely eliminates cure time for sealing and protective materials, significantly reducing direct maintenance time. The unique construction of GORE™ SKYFLEX™ Aerospace Materials enables them to remain flexible and compliant over multiple open and close cycles, which translates to significant savings in personnel time during production and maintenance.

GORE™ SKYFLEX™ Aerospace Materials also reduce downtime because they are significantly easier to install. Unlike traditional two-component materials, Gore's materials require no mixing, masking, or clean-up after installation. Their flexible construction allows them to conform easily to complex shapes and irregular surfaces, making them easier to install in tight spaces of an aircraft. The simple installation process for these materials reduces the number of hours required for successful installation.

## RELIABILITY IN HARSH ENVIRONMENTS

Reliable product performance is crucial in the aerospace industry, and the challenging conditions in which these products are used have a direct impact on their success or failure. GORE™ SKYFLEX™ Aerospace Materials maintain consistent performance over time, remain stable when exposed to ultraviolet radiation, are chemically inert, and withstand extreme temperatures — all of which are key criteria for reliable performance in harsh environments.

## CUSTOMIZED SOLUTIONS FOR DURABLE PERFORMANCE

Proven by more than 20 years of successful applications, GORE™ SKYFLEX™ Aerospace Materials are lightweight material solutions available for today's aerospace industry. These durable materials have been customized to withstand the most challenging conditions in a variety of applications — surface protection, sealing, and specialized environmental sealing applications.

Available in standard or custom sizes, these materials can be ordered with a variety of adhesives to increase their resistance to specific challenges such as high temperatures, hydraulic fluids, and difficult locations for installation.



GORE™ SKYFLEX™ Aerospace Materials

## GORE™ SKYFLEX™ AEROSPACE MATERIALS FOR SEALING APPLICATIONS

Traditional sealants can become brittle and crack when exposed to liquids commonly used in the aerospace industry. GORE™ SKYFLEX™ Aerospace Materials for sealing applications block fluids and potentially harmful vapors. Under compression, these lightweight, durable materials maintain consistent seals that are resistant to cut-through and abrasion, further extending their useful life. The mechanical and environmental properties of these materials have been engineered to withstand exposure to liquids and vapors that can lead to corrosion — one of the biggest causes of downtime for aircraft maintenance.

**Environmental-Sealing Applications** — Everyday exposure to water and other liquids can quickly compromise traditional sealants. GORE™ SKYFLEX™ Environmental Sealants protect against corrosion caused by exposure to moisture and liquids such as water, solvents, and de-icing fluids.

- Leading edges
- Access panels
- Dry-bay gaskets
- Fastener seals
- Pitot tubes
- Anchor nut gaskets
- Composite floorboard edges



GORE™ SKYFLEX™ Environmental Sealants

**TABLE 1 – SPECIFICATIONS FOR ENVIRONMENTAL-SEALING MATERIALS**

	Property	Test Method	GORE™ SKYFLEX™ Environmental Sealants
<b>MECHANICAL PROPERTIES</b>	Material		Expanded polytetrafluoroethylene (ePTFE)
	Form		Tape
	Color		White
	Thickness* mm (in)	ASTM D1777	0.25 – 3.1 (0.010 – 0.122)
	Density* g/cm <sup>3</sup>	ASTM D792	0.45 – 0.9
	Bulk tensile strength* MPa (psi)	ASTM F152, Method C	> 3.5 (> 500)
	Low temperature flexibility	AMS 3255 Para 4.5.7	Passed
	Storage No adhesive With adhesive		10 years 2 years
<b>ENV. PROPERTIES</b>	Operating temperature range* °C (°F)	Based on AMS 3255A	-73 to 260 (-100 to 500)
	Chemical exposure*	DO 160C	No degradation
	Flammability	ABD0031/ FAR 25.853(a)	Passed

\*Without adhesive

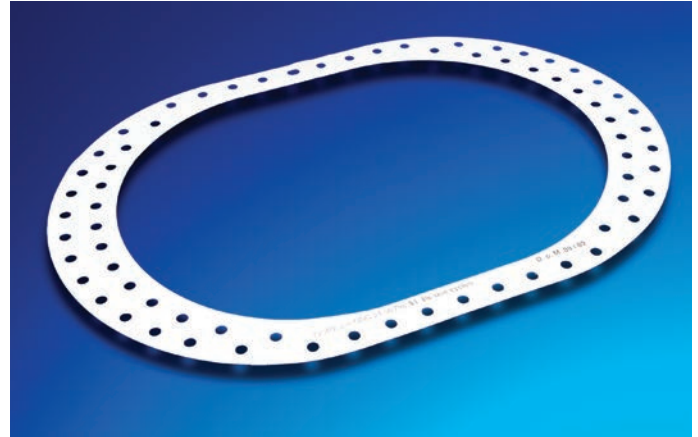


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**Fuel-Sealing Applications** — Traditional rubber sealants around fuel tanks can harden, become brittle, crack, and contaminate the fuel. GORE™ SKYFLEX™ Fuel Sealants provide protection against continued exposure to fuels, water, and oils, ensuring that the seal remains intact. These durable materials operate in high-temperature environments up to 177°C (350°F) and maintain excellent seals with less compression than required for traditional sealants.

- Fuel access panels
- Fuel probes
- Fuselage fuel panels
- External fuel tanks



GORE™ SKYFLEX™ Fuel Sealants

**TABLE 2 – SPECIFICATIONS FOR FUEL-SEALING MATERIALS**

	Property	Test Method	GORE™ SKYFLEX™ Fuel Sealant
<b>MECHANICAL PROPERTIES</b>	Material		Modified expanded polytetrafluoroethylene (ePTFE)
	Form		Tape / Custom-cut gasket
	Color		White
	Thickness* mm (in)	ASTM D1777	0.4 – 1.4 (0.016 – 0.055)
	Density* g/cm <sup>3</sup>	ASTM D792	0.8 – 1.2
	Bulk tensile strength* MPa (psi)	ASTM F152, Method C	> 3.5 (> 500)
	Low temperature flexibility	AMS 3255 Para 4.5.7	Passed
	Storage No adhesive With adhesive		10 years 2 years
<b>ENV. PROPERTIES</b>	Operating temperature range* °C (°F)	Based on AMS 3255A	-65 to 177 (-85 to 350)
	Chemical exposure*	DO 160C	No degradation
	Flammability	ABD0031/ FAR 25.853(a)	Passed

**Environmental Sealing for Specialized Applications** — Some applications, such as corners or uneven gaps at access panels, require increased flexibility without transverse stress. GORE™ SKYFLEX™ Environmental Sealants for Specialized Applications deliver excellent protection against environmental contaminants such as water, fuels, oils, and corrosion (Table 2).

- Access panels
- Corners
- Large uneven gaps



GORE™ SKYFLEX™ Environmental Sealants for Specialized Applications

**TABLE 3 – SPECIFICATIONS FOR SPECIALIZED APPLICATIONS SEALING MATERIALS**

	Property	Test Method	GORE™ SKYFLEX™ Environmental Sealants for Special Applications
<b>MECHANICAL PROPERTIES</b>	Material		Expanded polytetrafluoroethylene (ePTFE)
	Form		Flat or ribbed tape
	Color		White or gray
	Thickness measured at webbing* mm (in)	ASTM D1777	0.3 – 2.0 (0.012 – 0.080)
	Density* g/cm <sup>3</sup>	ASTM D792	0.4 – 1.2
	Bulk tensile strength* MPa (psi)	ASTM F152, Method C	> 6.9 (> 1,000)
	Low temperature flexibility	AMS 3255 Para 4.5.7	Passed
	Storage No adhesive With adhesive		10 years 2 years
<b>ENV. PROPERTIES</b>	Operating temperature range* °C (°F)		-73 to 260 (-100 to 500)
	Chemical exposure*	AMS 3255	No degradation
	Flammability	ABD0031/ FAR 25.853(a)	Passed

\*Without adhesive



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## AEROSPACE MATERIALS

### GORE™ SKYFLEX™ AEROSPACE MATERIALS FOR SURFACE PROTECTION

Aircraft surfaces are subjected to mechanical forces that can result in abrasion, corrosion, punctures, and tears that can decrease the strength and life of external panels or internal floorboards. GORE™ SKYFLEX™ Aerospace Materials for surface protection help minimize the damaging effects of vibration and other mechanical forces. Their mechanical and environmental properties (Table 3) have been engineered to withstand mechanical wear and increase the durability of these protective materials.

**Anti-Chafe Applications** — Mechanical wear from vibration can cause small fragments to break off as the panels rub together. Whether metallic or non-metallic fragments from composites and epoxy paints or primers, these fragments then oxidize, harden, and become trapped between the panel surfaces, resulting in chafing, pitting, and scoring. The soft conformable nature of GORE™ SKYFLEX™ Anti-Chafe Materials helps minimize vibration force and reduce the abrasive effects of foreign debris between surfaces. These durable materials are chemically inert and resistant to aircraft fluids, thereby minimizing potential corrosive effects.

- Access panels
- Fuel bladder
- Tail boom
- Transmission panels



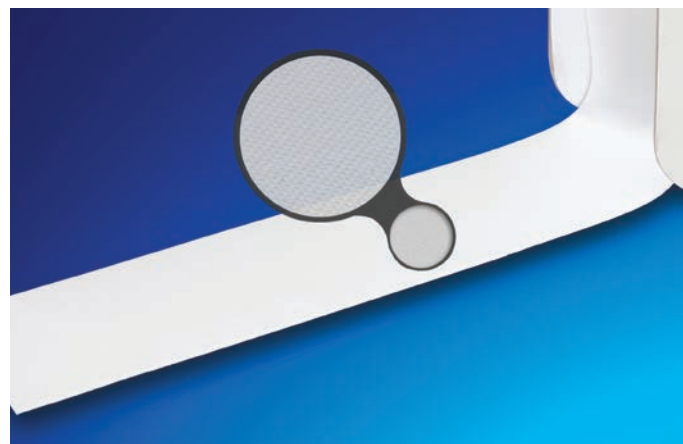
GORE™ SKYFLEX™ Anti-Chafe Materials

TABLE 4 – SPECIFICATIONS FOR SURFACE PROTECTION - ANTI-CHAFE MATERIALS

	Property	Test Method	GORE™ SKYFLEX™ Anti Chafe Materials
MECHANICAL PROPERTIES	Material		Expanded polytetrafluoroethylene (ePTFE)
	Form		Tape / Custom-cut gasket
	Color		White
	Thickness* mm (in)	ASTM D1777	0.3 – 1.4 (0.012 – 0.055)
	Density* g/cm <sup>3</sup>	ASTM D792	0.45 – 1.2
	Bulk tensile strength* MPa (psi)	ASTM F152, Method C	> 3.5 (> 500)
	Low temperature flexibility	AMS 3255 Para 4.5.7	Passed
	Storage		
	No adhesive		10 years
	With adhesive		2 years
ENV. PROPERTIES	Operating temperature range* °C (°F)	Based on AMS 3255A	-55 to 120 (-67 to 248)
	Chemical exposure*	DO 160C	No degradation
	Flammability	ABD0031/ FAR 25.853(a)	Passed

\*Without adhesive

**Edge Protection Applications** — Corrosion, abrasion, and cut-through all compromise the performance of floorboards. Preventing damage to composite floorboard edges reduces potential damage to the airframe structure. More durable than fiberglass tapes, GORE™ SKYFLEX™ Edge Protection Tapes are abrasion-resistant and engineered specifically to prevent damage to composite floorboard edges. These materials can isolate carbon and other components that are galvanically dissimilar. These lightweight, highly conformable materials are easy to install because of their single-component construction, and they simplify maintenance because they are easy to remove for inspection.



*GORE™ SKYFLEX™ Edge Protection Tapes*

- Protection against sharp edges
- Composite floorboard edges

**TABLE 5 – SPECIFICATIONS FOR SURFACE PROTECTION - EDGE PROTECTION TAPE**

	Property	Test Method	GORE™ SKYFLEX™ Edge Protection Tape
<b>MECHANICAL PROPERTIES</b>	Material		Engineered fluoropolymer
	Form		Tape
	Color		White
	Thickness* mm (in)	ASTM D1777	0.38 (0.015)
	Density* g/cm <sup>3</sup>	ASTM D792	1,65
	Strip tensile* N/5cm (lb/in)	ASTM D4851	Warp: 3000 (342) Fill: 2900 (330)
	Trapezoidal tear* N (lb)	ASTM D5587	Warp: 818 (184) Fill: 854 (192)
	Storage No adhesive With adhesive		10 years 2 years
<b>ENV. PROPERTIES</b>	Operating temperature range* °C (°F)	Based on AMS 3255A	-55 to 120 (-67 to 248)
	Flammability	ABD0031/ FAR 25.853(a)	Passed

\*Without adhesive



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## GORE EXPERIENCE AND EXPERTISE

Gore is a technology-driven company focused on discovery and product innovation. Well-known for waterproof, breathable GORE-TEX® fabric, the company's portfolio includes everything from high-performance fabrics and implantable medical devices to industrial manufacturing components and aerospace electronics. Founded in 1958 and headquartered in Newark, Delaware, Gore posts annual sales of more than \$3.2 billion and employs approximately 10,000 associates in 30 countries worldwide. Gore is one of a select few companies to appear on all of the U.S. "100 Best Companies to Work For" lists since the rankings debuted in 1984. The company also appears regularly on similar lists around the world. Learn more at [gore.com](http://gore.com).

For more than 50 years, Gore has remained at the forefront of the electrical and electronics industry with cable assemblies and electronic materials that ensure reliability in environments where failure is not an option. Engineered with the latest materials and technology, Gore cable assemblies deliver signal integrity, speed, and durability to meet the electrical, mechanical, and environmental requirements of the most rigorous applications. Gore's strong materials focus has led to the development of high-performance materials ranging from gaskets that prevent electromagnetic interference (EMI) in a small GPS system to aerospace materials that reduce mechanical wear from vibration in a satellite.

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