GORE® SKYFLEX® Aerospace Materials

Tapes and Gaskets

PROVEN TO SOLVE SEALING AND SURFACE PROTECTION CHALLENGES

Gore offers a portfolio of commercially available material sets, forms, and sizes engineered with a wide range of unique properties and specifications. GORE® SKYFLEX® Aerospace Materials are proven to solve well-known sealing and surface protection challenges, including abrasion, corrosion, and gap-filling (Table 1). They can be used in many application environments, such as exposure to fuels and other aviation fluids. These materials are approved for use on multiple civil, defense, and fixed/rotary wing aircraft and are routinely specified by leading OEMs.

Our tapes and gaskets are lightweight, flexible, and easy to install in less time. They are often used as an alternative to form-in-place (FIP) seals because they simplify aircraft assembly with reusable seals that can withstand multiple open/close cycles to help reduce lifecycle costs.

Benefits

- Portfolio of unique material sets, forms, and sizes designed for many applications
- Reliable and predictable surface protection, sealing, and gap-filling with highly conformable materials
- Proven to resist vibration, abrasion, fuels, chemicals, fluids, and wide temperatures
- Low environmental impact and improved safety with non-hazardous materials
- Easy-to-use materials with no mess or curing required to support design goals for manufacturing
- Reduced lifecycle costs with reusable seals over multiple open/close cycles
- Approved for use on multiple civil, defense, and fixed/rotary wing aircraft

Typical Applications

- Access, fuel & dry-bay panels
- Floorboards/cargo & passenger
- Structure/cargo & passenger
- Engine cowlings
- External fuel tanks
- Fairings
- Fuel bladder cavities
- Helicopter tail booms
- Wing D-Nose
- Lighting assemblies

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Tapes and Gaskets

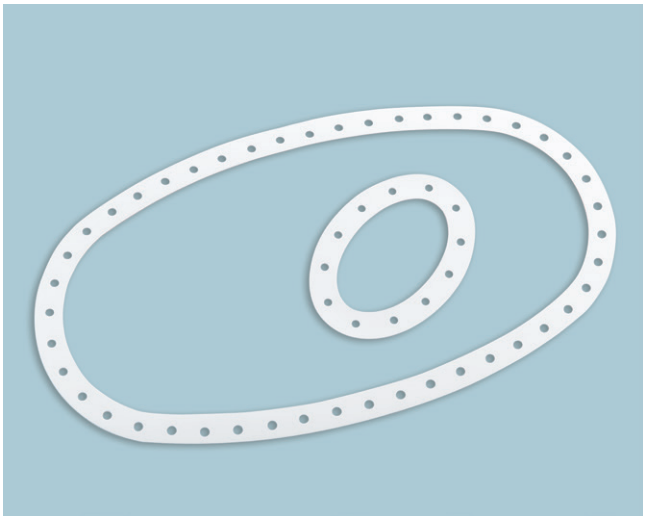
Reliable & Predictable Performance

Aircraft faying surfaces on leading edges and fairings are subjected to mechanical forces and demanding environments that can cause structural damage from abrasion and corrosion. Fuel and access panels require sealing and surface protection against harsh contaminants, regardless of multiple open/close cycles. Therefore, selecting the right interfay material is critical to the success of aircraft production and operation.

Large fairings and panels frequently have significant variations in piece-to-piece consistency due to manufacturing tolerances that lead to gaps where they meet the structure. Highly conformable GORE® SKYFLEX® Aerospace Materials provide reliable and predictable performance when sealing these gaps and other irregular surfaces (Tables 2 and 3).

Unlike liquid sealants, Gore's materials remain in place under compression and do not squeeze out. They provide a durable barrier between faying surfaces and seal against contaminants to protect structures and corrosion-inhibiting coatings on surfaces from abrasion, vibration, and contaminants. With different material properties and sizes, our tapes and gaskets provide design engineers with many options to achieve the desired performance in applications with widespread parameters.

Traditional materials used on aircraft can break down or become brittle when exposed to UV radiation or liquids commonly used in aerospace environments — including fuels, petroleum and phosphate-based hydraulic fluids, engine oils, and de-icing fluids. We offer a wide range of standard and custom solutions that reliably seal and protect against these liquids and UV radiation. For example, our 520 and 720 Series gaskets protect against jet fuels while our 730 Series tape repels many aggressive aviation fluids, such as SKYDROL® hydraulic fluid.



The 720 Series of GORE® SKYFLEX® Aerospace Gaskets protect against jet fuels.

The 730 Series of GORE® SKYFLEX® Aerospace Tapes repel many aggressive aviation fluids.

Quick & Easy Installation

GORE® SKYFLEX® Aerospace Materials are considerably faster and easier to install than FIP seals because they only require a few steps without any special equipment or training. They eliminate curing time for sealing and protective materials, reducing manufacturing cycles and direct maintenance time. They also maintain their protective performance over multiple open/close cycles for fewer replacements and re-work of seals, significantly saving personnel time during production and maintenance.

Unlike traditional two-component materials, Gore's dry tapes and gaskets require no mixing, masking, or clean up after installation. Their non-hazardous properties reduce environmental impact and disposal costs, and improve safety for installers.

Gore Materials Technology & Expertise

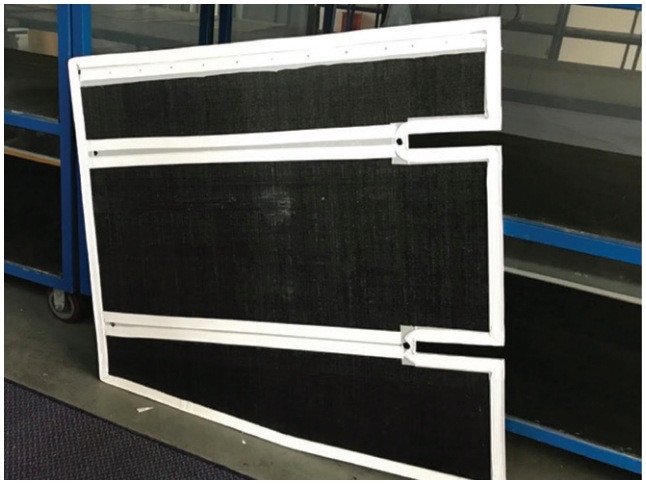
We engineer GORE® SKYFLEX® Aerospace Materials with a unique proprietary material — expanded polytetrafluoroethylene (ePTFE). Our expertise in ePTFE has led to more patents for products and processes than any other company worldwide. We manipulate the structure of the ePTFE membrane to provide different material characteristics, including density, strength, and compression response that form the basis of our material set properties. Our proprietary processes ensure that these properties are consistent along the length of tape and with each gasket.

We use other proprietary processes, equipment, and materials to provide characteristics in our material sets that can resist fuels, aviation, and wide temperatures. While all dry PTFE-based sealants are non-hazardous and chemically inert, no other ePTFE-based sealant in the industry matches the full-scale performance of our unique tapes and gaskets.

Comprehensive Applications Support

Gore's global team of application engineers work closely with you to help evaluate the parameters of your specific application and recommend the appropriate series of GORE® SKYFLEX® Aerospace Materials. We evaluate the material function, operating environment, and faying surfaces to determine compressive forces, gap tolerances, and required material properties. We also evaluate compression curves and our different material properties to determine the appropriate tape or gasket, form thickness, and adhesive for your application to ensure they perform as expected in real-world conditions.

GORE® SKYFLEX® Aerospace Materials are faster and easier to install compared to FIP seals.



GORE® SKYFLEX® Aerospace Tape installed on the floorboard.

GORE® SKYFLEX® Aerospace Materials

Tapes and Gaskets

Table 1: Comparison of GORE® SKYFLEX® Aerospace Materials

	Material Sets							
Properties	**100 Series**	**110 Series**	**200 Series**	**500 Series**	**520 Series**	**700 Series**	**720 Series**	**730 Series**
Purpose								
Abrasion/Anti-Chafe Protection	+	+	+	++	++	++	++	++
Corrosion Protection[a]	+	+	+	+	+	+	+	+
Environmental Sealing	+	+	+	+	+	+	+	+
Gap-Filling	+	+	+	+	+	+	+	+
Jet Fuel Sealing					++ (Gasket only)		++ (Gasket preferred)	
Application								
Low Compressive Forces	++	++	++	+	+	+	+	+
High Compressive Forces	+	+	+	++	++	++	++	++
Vibration	+	+	+	++	++	++	++	++
Frequent Opening/Access	+	+	+	++	++	++	++	++
Aviation Fluid Exposure[b]					+		+	++
Jet Fuel Exposure	+[c]	+[c]	+[c]	+[c]	++[d]	+[d]	++[d]	+[c]
Best Uses	Big gaps, low compressive forces	Big gaps, very low compressive forces	Gap-filling	Gaskets	Fuel seals	Most appliciations, especially high vibration or repeated access	Areas with repeated exposure to hydro-carbons	Areas with repeated exposure to aviation fluids
Forms	Tape	Tape	Tape	Gasket	Gasket	Tape/ Gasket	Tape/ Gasket	Tape

a. Protection of applied corrosion-inhibiting compounds on surface from scratching, protection of surface from standing fluids, and isolation of dissimilar materials (galvanic).

b. Sustained exposure to hydraulic fluids, including SKYDROL®, engine and turbine oils, and de-icing fluids.

c. Tested per AMS3255 Fluid Stability 3.6.5.

d. Tested per AMS3255 Liquid Sealability 3.6.8.

Table 2: Specifications of GORE® SKYFLEX® Aerospace Tapes[a]

Properties	Material Sets					
	100 Series	110 Series	200 Series	700 Series	720 Series	730 Series
Mechanical						
AMS3255 (Class/Type)	2/1	1/1	2/1	2/2	5/2	2/2
Available Uncompressed Thickness,[e,f] mm	0.3, 0.5, 2.0	0.3, 0.5, 1.5	1.0, 1.65, 3.17	0.3, 0.5, 0.6, 0.8, 1.0, 1.4	0.4, 0.6, 0.8, 1.2	0.3, 0.5, 0.6, 0.8, 1.0, 1.4
Density[e] g/cm^3	0.4 to 1.2	0.4 to 1.2	0.4 to 1.2	0.4 to 1.2	0.4 to 1.2	0.4 to 1.2
Popular Widths mm	25, 36, 50, 80	21, 28, 33, 41	25.4, 38.1, 50.8	25, 36, 50, 80	25, 36, 50, 80	25.4, 38.8, 44.5, 63.5
Low-Temperature Flexibility	Passed per AMS3255					
Storage With Adhesive No Adhesive	2 years 10 years					
Material	Engineered Polytetrafluoroethylene (ePTFE)					
Color	Gray	Gray	White	White	White	White
Environmental						
Operating Temperature Range °C (°F)	-73 to +120[d,e] (-100 to +248)	-73 to +120[d,e] (-100 to +248)	-73 to +120[d,e] (-100 to +248)	-73 to +120[d,e] (-100 to +248)	-65 to +177[b,d] (-85 to +350)	-73 to +120[g] (-100 to +248)
Chemical Exposure	No degradation[b]					No degradation[c]
Flammability	Passed per ABD0031 and FAR 25.853[a]					
UV Exposure	No degradation					
Environmental Regulation/Disposal	Non-curing and non-hazardous with no special waste handling required. Download safety information available at gore.com/skyflex.					

a. Test method details available upon request.

b. Tested per AMS3255 Fluid and Thermal Stability.

c. Tested and immersed for 14 days in SKYDROL® LD4/500 B4 hydraulic fluids, H-515/H537 hydraulic fluids, O-148/O-156 turbine oils, and AMS 1424 de-icing fluid with no significant change in properties (e.g., swelling, absorption, or material degradation).

d. Operating temperature range is dependent upon adhesive specified.

e. Material without adhesive.

f. Thickness measurements are for reference only.Compressed thickness dependent upon available compression force. Contact Gore for available Compression Curves.

g. Only available with adhesive

GORE® SKYFLEX® Aerospace Materials

Tapes and Gaskets

Table 3: Specifications of GORE® SKYFLEX® Aerospace Gaskets

Properties	Material Sets 500 Series	520 Series	700 Series	720 Series
Mechanical				
AMS3255 (Class/Type)	4/1	5/1	4/2	5/2
Available Uncompressed Thickness,[d,e] mm	0.5, 1.0, 1.6, 2.0, 3.2	0.55, 0.9, 1.4	0.3, 0.5, 0.6, 0.8, 1.0, 1.4	0.4, 0.6, 0.8, 1.2
WPA[d] g/m^2	312, 624, 998, 1248, 1997	550, 935, 1540	140, 220 400, 385, 475, 620	370, 575, 750, 1020
Density[d] g/cm^3	0.4 to 1.2	0.8 - 1.4	0.4 to 1.2	0.4 to 1.2
Maximum Dimensions mm	1500 x 1500	1250 x 1250	482 x continous	457 x continous
Low-Temperature Flexibility	Passed per AMS3255			
Storage With Adhesive No Adhesive	 2 years 10 years			
Material	Engineered Polytetrafluoroethylene (ePTFE)			
Color	White			
Environmental				
Operating Temperature Range °C (°F)	-73 to +120[b,c,d] (-100 to +248)	-65 to +90[b,c,d] (-85 to +194)	-73 to +120[b,c,d] (-100 to +248)	-65 to +177[b,c,d] (-85 to +350)
Chemical Exposure	No degradation[b]			
Flammability	Passed per ABD0031 and FAR 25.853[a]			
UV Exposure	No degradation			
Environmental Regulation/Disposal	Non-curing and non-hazardous with no special waste handling required. Download safety information available at gore.com/skyflex.			

a. Test method details available upon request.
b. Tested per AMS3255 Fluid and Thermal Stability.
c. Operating temperature range is dependent upon adhesive specified.
d. Material without adhesive.
e. Thickness measurements are for reference only.

Ordering Information

GORE® SKYFLEX® Aerospace Materials are available in standard or custom sizes with a variety of adhesives. Visit **gore.com/skyflex** for the list of distributors. For more information or to discuss your specific application needs and requirements, please contact a Gore representative.

W. L. Gore & Associates, Inc.
gore.com/skyflex

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