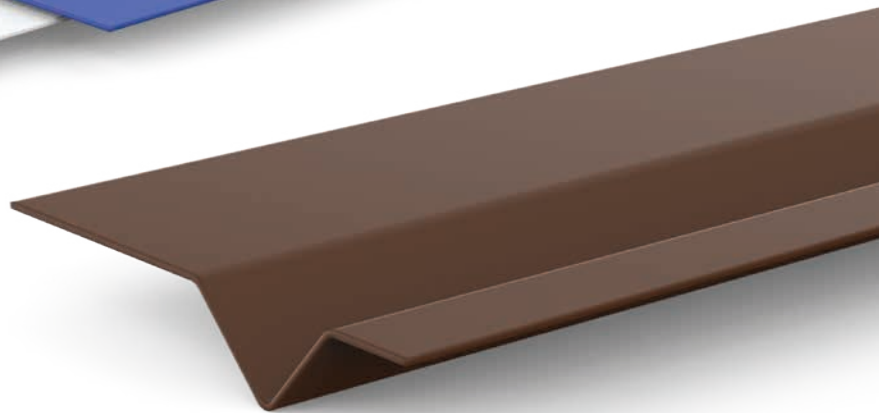
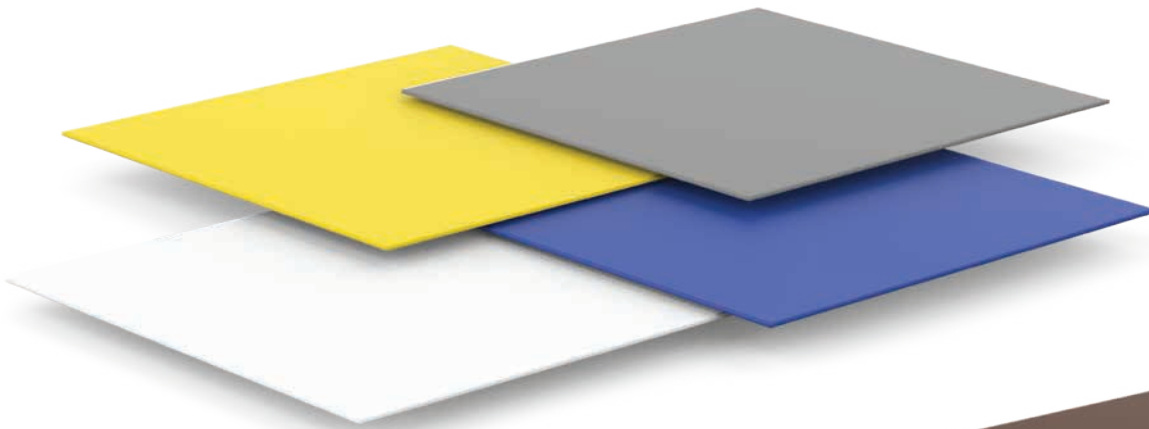


X-Guard™ Wear Strips

Self-lubricating, Maintenance-Free Liner Systems



Innovation. Commitment. Quality. _____

RBC® X-Guard™ Wear Strips

Self-lubricating, Maintenance-Free Liner Systems

Wear strips are designed for applications that have a thin cross section which require abrasion and fretting resistance while supporting impact loading. Chafing damage can lead to fretting corrosion, typically caused by natural vibration. A wear strip provides protection at the mating surfaces.

RBC® Aerospace offers a full line of proprietary, self-lubricating, maintenance-free liner systems that have been customized for use as wear strips-also referred to as fretting buffers. These liner systems have been the preferred option for critical aerospace applications since they were originally developed by the RBC® Transport Dynamics™ division in 1957. The KAHR® Bearing division offers complementary liner systems which can be molded or machined.

These liner systems provide a reduced coefficient of friction and improved wear resistance. The use of a self-lubricating liner system eliminates the need for intervening maintenance and is the ideal "green" option for most general duty applications. PTFE is used as the primary lubricant due to its versatility and chemical resistance. The PTFE creeps under load, but through the use of a weave with reinforcing polymer fibers and resins the compressive strength is improved. These polymer fibers (glass, Nomex® or polyester) improve compressive strength and provide a better bonding interface.

The wear strips can be bonded with commercially available structural epoxies or through a peel-and-stick option.

Scan to view
video on
X-Guard™
Wear Strips



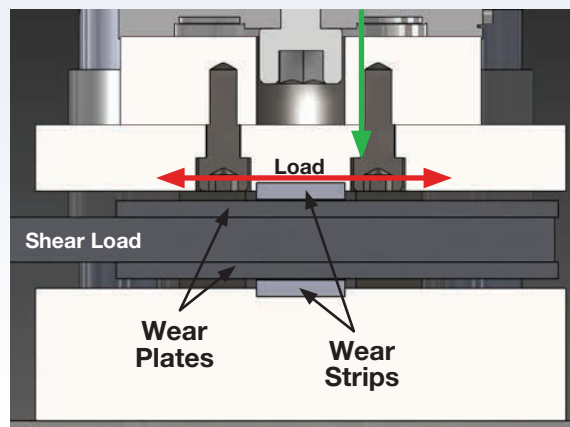
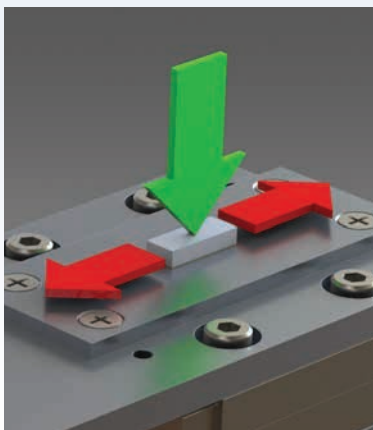
Why Wear Strips?

- ✓ Eliminate fretting on metal-to-metal surfaces
- ✓ Prevent galling & corrosion
- ✓ Reduce maintenance cost by eliminating metal wear
- ✓ Improve service life by protecting critical components



Dynamic Testing

The wear strips have been rigorously tested in-house and on numerous customer applications.



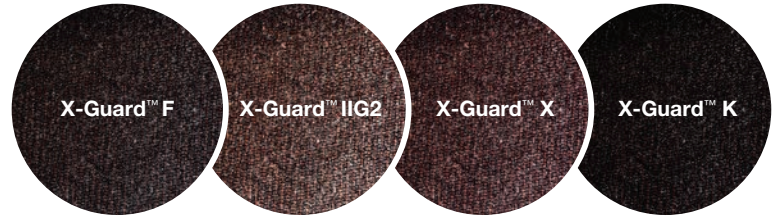
- ✓ Puts a lined plate in direct contact with a wear plate
- ✓ Applies a load to create an evenly distributed contact pressure between the two surfaces
- ✓ A shear load is then applied to one of the plates to create a reversing sliding motion

X-Guard™



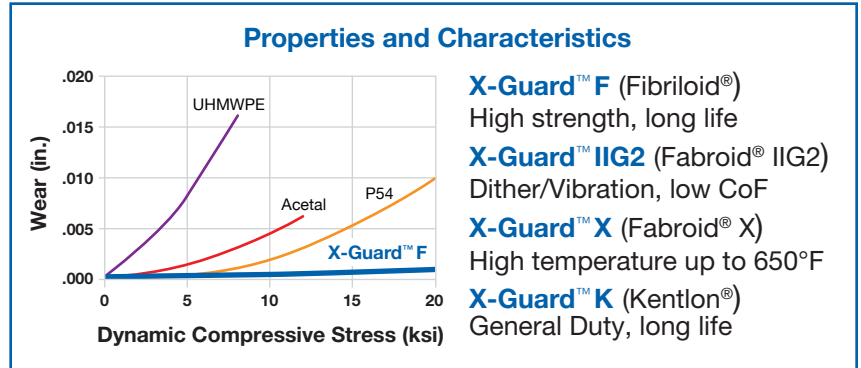
The X-Guard™ self-lubricating liner system can serve to minimize wear and reduce fretting and corrosion in your application. These liner systems can be custom cut to size or bonded to most surfaces to provide the same operational benefits as part of our bond only offering.

- Improved wear resistance
- Reduced coefficient of friction
- Excellent bond integrity
- Meets AS81820 requirements
- Temperature range (°F): -320 to +450



Thicknesses

- 0.010"
- 0.015"
- 0.020"



X-Guard™ X105

X-Guard™ X105 is an engineered composite that prevents fretting, galling and galvanic corrosion damage associated with mating materials in precision fit bearing applications. It contains a custom designed woven fabric, fully encapsulated in a high performance thermosetting resin that is resistant to high compressive loads and shear loads.



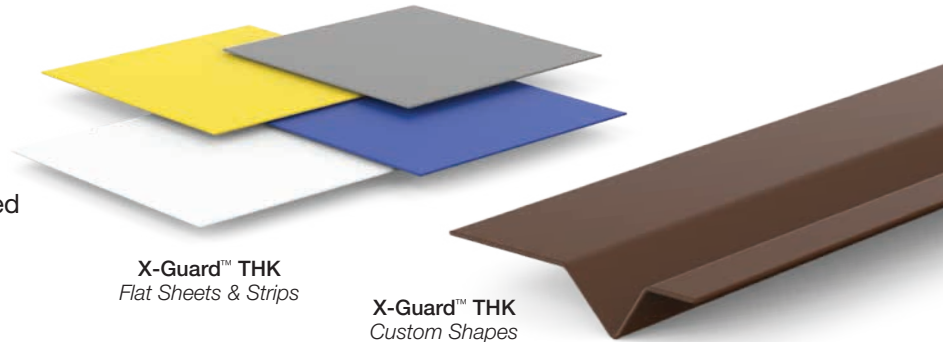
Properties and Characteristics

- Density:** 0.047 lb/in³
- Operating Temperature:** -65°F to +375°F
- Static Ultimate Load:** 100,000 psi
- Static Limit Load:** 80,000 psi

- Thickness**
0.004" to 0.006"
- Color**
Light Brown

X-Guard™ THK

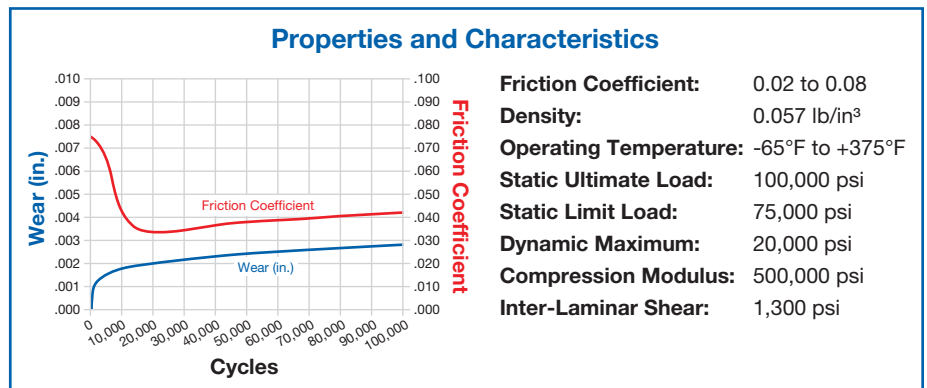
X-Guard™ THK has the same basic composition, but also features the ability to be machined/molded and can be manufactured in varying thicknesses with a color match option.



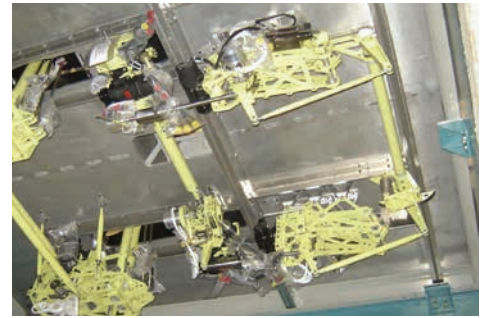
- Boeing approved material
- Bonded with commercially available epoxies
- Moldable / machineable
- Various thicknesses
- Color match capabilities

Thicknesses Standard Colors

- 0.020" Blue
- 0.030" Yellow
- 0.060" White
- 0.090" Grey
- 0.120" Grey



X-Guard™ Wear Strip Applications



Typical Applications:

- Landing Gear Shock Struts
- Steering Collars/Torque Tubes
- Axle Retainers/Tow Fittings
- Actuation
- Flight Controls
- WiFi Domes
- Nacelles
- Helicopters
- Engine Blade Roots
- Inlet Cowls
- Doors
- Tail Pylons
- Radomes
- Bump Stops
- Side Rails
- Thrust Reverser Tracks
- Rub Pads
- eVTOL
- Cargo Bay
and more...

Primary Flight Controls

Doors

Interiors

Secondary Flight Controls

Nacelles

Auxillary Systems

Landing Gear

Structures

Fluid Compatibility

- ✓ AS1241 - Hydraulic Fluid
- ✓ MIL-PRF-7808 - Lubricating Oil
- ✓ MIL-DTL-5624 - Turbine Fuel
- ✓ MIL-PRF-87937 - Detergent
- ✓ AMS1424 - Anti-Icing Fluid
- ✓ AMS1435 - Anti-Icing Fluid
- ✓ Phosphate Ester (Skydrol®)

Substrate Capabilities

- ✓ Steel
- ✓ Stainless Steel
- ✓ Aluminum
- ✓ Aluminum Bronze
- ✓ Titanium
- ✓ Composites

RBC has the unique design solutions for your application. Please give us the opportunity to put our extensive technical and manufacturing resources to work for you.

Engineered Solutions Provider

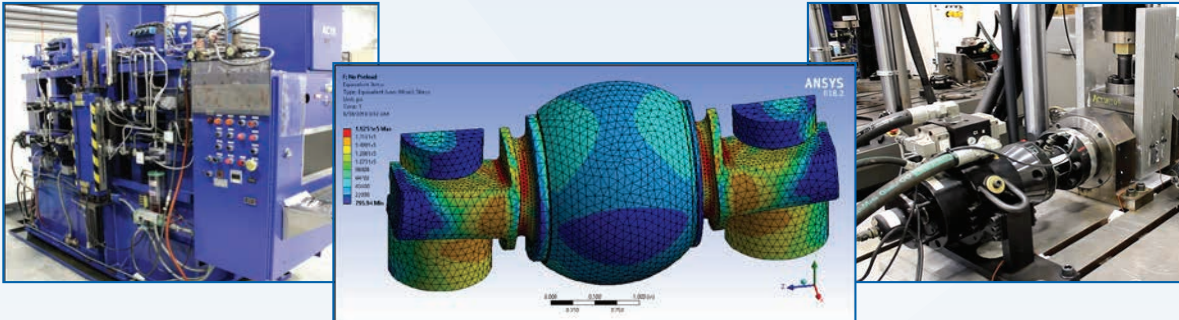
Offering a full range of bearings, rods, hydraulics, gears, specialty fasteners & precision machined components with a Corporate Commitment to vertical integration.

We welcome your application challenge.

Extreme Loads | Light-weight | Low Noise | Extensive Material Options | Custom Designed
Physical Space Limitations | Optimized Operational Life | Critical Flight Safety | Reliability

Technology developed, evaluated, and qualified in-house using innovative software and comprehensive testing capabilities.

- Metrology (NDT, ultrasonic, mag particle, dye penetrant) along with ANSYS FEA
- Bearing specific analysis software (COBRA AHS, GENROL, RESA)
- Endurance, environmental, extreme load, noise, and static/dynamic testing



Optimized operational life & corrosion resistance focus; offering in-house special processes, proprietary materials, and RBC developed liner technologies

Self-Lubricating/Anti-Fretting Liners including:

Fibriloid[®], KAHR-LON[®], Kentlon[®], Uniflon[®] E, Fiberglide[®], Fabroid[®], FibriloidCR[™] (Cryogenic Rated), M889[™], Dyflon[®] and Speclon[™]

Manufacturing Competencies:

Elastomeric Injection, Swaging, Roll and Anvil Staking, Laser Welding, Water Jet, Nital Etch

Custom Plating and Coatings:

HVOF tungsten carbide coating and super finishing, **ArmorGuard[™]** and **X-Guard[™]** for wear protection, Chrome/TDC/Cad/Copper/ZnNi Plating, Dry Film, Hard Anodize, Aluminum Pigment, Molycoat, Passivation, and Chem Film (rods).

Patented Corrosion Resistant Materials:

AeroCres[®] (T8) CREN



RBC Bearings® has been producing bearings in the USA since 1919. In addition to unique custom bearings, RBC Bearings® offers a full line of standard industrial and aerospace bearings, including:



Spherical Bearings

- MS approved to AS81820 (formerly MIL-B-81820)
- Self-lubricating • Metal-to-Metal
- Loader slots • High temperature
- Low coefficient of friction
- Special configurations and materials



Rod End Bearings

- MS approved to AS81935 (formerly MIL-B-81935)
- Self-lubricating • Metal-to-Metal
- Loader slots • High temperature
- Low coefficient of friction
- Special configurations and materials



Thin Section Ball Bearings

- Standard cross sections to one inch
- Stainless steel and other materials are available
- Sizes to 40"
- Seals available on all sizes and standard cross sections
- Super duplex configurations



Track Rollers

- MS approved to AS39901 (formerly MIL-B-3990)
- ATF single row and ATL double row
- Sealed with lube holes and grooves
- Heavy duty cross sections
- Advanced AeroCres® materials available



Journal Bearings

- MS approved to AS81934 (formerly MIL-B-81934)
- Plain and flanged • Self-lubricating
- High temperature • High loads
- Available in inch and metric sizes



Cam Followers

- MS approved to AS39901 (formerly MIL-B-3990)
- Advanced AeroCres® materials available
- Maximum corrosion resistance
- Superior lubricants & seals to reduce maintenance



Airframe Control Ball Bearings

- MS approved to AS7949 (formerly MIL-B-7949)
- Single and double row
- Radial, self-aligning, and pulley series
- 52100 Cad plated and 440C stainless
- Zinc Nickel plated



Load Slot Bearings

- Spherical and rod end designs
- Superior ball-to-race conformity
- Reduced maintenance cost
- Variety of race materials available



Ball Bearing Rod Ends

- MS approved to AS6039 (formerly MIL-B-6039)
- Various shank configurations
- Low coefficient of friction
- Advanced AeroCres® materials available



Specials

- Many specialty bearings, custom-designed and configured for diverse aerospace applications
- Capability for advanced aerospace specialty corrosion resistant and high temperature materials



Rings and Seals

- Solutions for any pneumatic and hydraulic applications
- Seals from .5" to 55" diameter
- Cast Iron to Rene 41
- Precision machined & wire rings to tight tolerances



Control Rods

- Swaging up to 14' length and 4" dia
- Nadcap and customer special process approvals including NDT
- Surface treatments, CNC Machining, Flash Welding, Aluminum Heat Treat
- Design and build to print



Specialty Fasteners

- Hollow Bolts, Fuse Pins, Solid Bolts (Standards), Customized Machined Parts & Nuts
- Hot Headed, Thread Rolled, HVOF Coated
- Large Diameter over 3/4"



Ducting Solutions

- Solutions for pneumatic ducting
- Patented couplings
- Temperatures 450° to 1,500°F
- Engines, Aircraft, APUs



Hydraulic Actuators

- 2-Position Fluid Hydraulic
- Auto or Manual Mechanical Locking
- Lock Sensing/Position Sensing
- Flow/Directional Control Valves; Solenoid/Manual



Machined Components

- Exotic materials • 3, 3.5, 4 and 5 Axis
- Horizontal and Vertical Milling
- Lathes, Hot Head, Gearing, Heat Treat, Special Processes



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