



# Duralon Composite Bearings Catalog

Imperial



## Applications

**Duralon bearings can be used in a wide range of other applications that require:**

- Precision Tolerances
- Self-Lubricating to prevent build up of dirt, dust and paper collection
- Low wear rate for longer bearing life
- High Load and Shock resistance
- Reduced galling and scoring
- Corrosion resistance in wet environments
- Simple design
- Reduced weight
- Low sliding friction

## Construction Equipment

*Motor Grader Pivot Points*

Applications are in the hinge pins that connect the arms that raise & lower the scraper blade and the clevises used on the steering cylinders. Bearings are exposed to severe impact loads and dusty and dirty environments.



## Agriculture Equipment

*Cotton Harvester*

Self-lubricating bearings are used in the universal joint pivots. High load oscillating joint.



## Cylinders, Valves and Actuators

*Hydraulic & Pneumatic Cylinders*

Self-lubricating bearings provide long life without the need for external lubricants. Bearing precision maintains the rod location minimizing seal leakage. Cylinders can experience high side loads which react at the rod and the piston bearings. Self-lubricating bearings replace nodular iron, cast bronze, and other strip bearing materials.



## Recreational

### *Snowmobiles and ATV's*

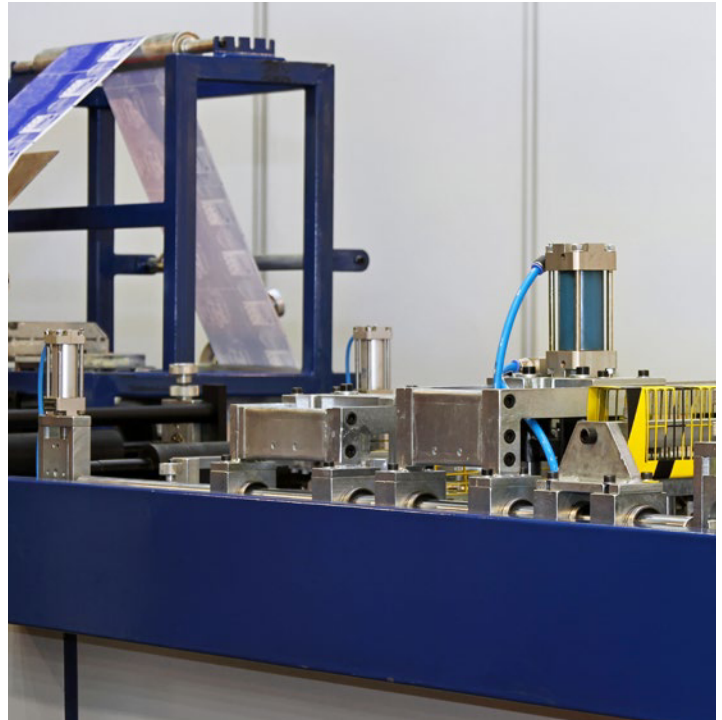
Self-lubricating bearings can handle temperature variations from -65° up to +325° F. Self-lubricating bearings do not “gum up” from the belt dust. This is a high load application on continuously varying transmission weights, rollers, and linear sheave half bearings.



## Food

### *Packaging Machinery*

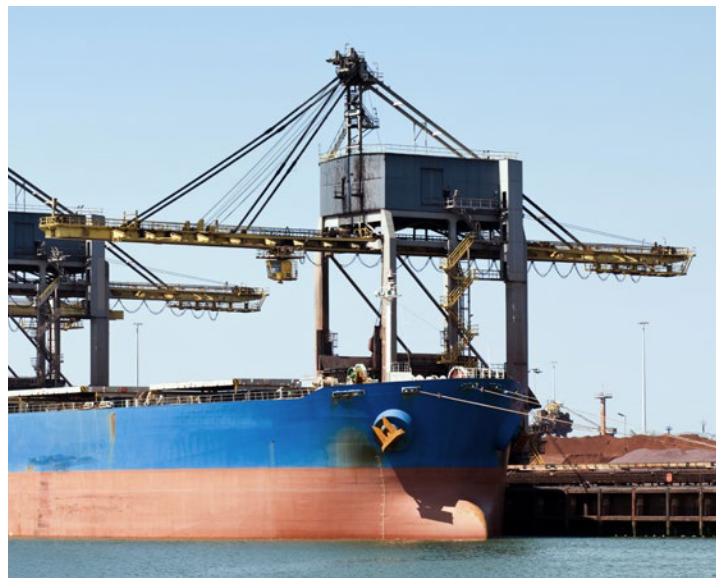
Self-lubricating bearings eliminate the need for maintenance and lubrication. Environmental exposure to mild alkalis, acid, brine solutions, and wash down fluids as well as low and high temperatures and dust are not a problem.



## Fresh & Saltwater

### *Self-Unloading Barges*

The dual-pivot cylinder mounting uses self-lubricating bearings, allowing the boom to swing and elevate a 250 foot long conveyor with a load capacity of 200 tons.





This Certificate of Registration acknowledges

## **Rexnord Industries, LLC Filament**

2324 Curtiss Street  
Downers Grove, Illinois 60515  
United States

is registered as a Single Site quality management system in conformance with


### **ISO 9001:2015 and AS9100D**

The audit was conducted in accordance with the requirements of SAE AS9104/1:2012-01. PRI Registrar<sup>SM</sup> is accredited under the ICOP Scheme.

### **Scope of Registration:**

Manufacture of Composite Bearings



  
**Randy Daugharthy**  
Director of PRI Registrar

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## General Description

Duralon bearings are a self-lubricated bearing, normally used between 4,000 and 30,000 psi in sliding and oscillating linkages. It is constructed from woven Teflon® high strength fiber and bondable yarns to make up the bearing element. Continuous strands of fiberglass and epoxy resin make up the matrix of the composite bearing material.

## Features and Benefits

| Duralon Features     | Duralon Benefits  |
|----------------------|---|
| Strength             | Applications that have 30,000 psi dynamically<br>Optimizes strength/weight ratio  |
| Corrosion Resistance | Resists galvanic and fretting corrosion   |
| Self-Lubricating     | Eliminates contaminating lubricants<br>Operates above or below useful temperature of lubricants<br>Eliminates complex lubrication systems<br>Minimizes slipstick problems |
| Seizure Resistance   | Minimizes galling and scoring   |
| Lightweight          | 77% of steel weight, 30% of aluminum – easier handling, reduces equipment weight  |
| Non-Metallic         | Electrical insulation<br>Reduces noise volumes<br>USDA approved for non-contact use   |

## Size and Shape Available

|                                 |  |
|---------------------------------|--|
| <b>Straight Sleeve Bearings</b> | Round, Square and Hex Bore<br>Round Bore Diameter – 1/8" to 26"<br>PTFE fabric on ID bore and optional on OD |
| <b>Linear Bearings</b>          | Bore Diameter – 1/4" to 4"<br>Available in open configuration to clear pedestal shaft mounts                 |
| <b>Flange Bearings</b>          | Bore Diameter – 1/8" to 26"<br>Available with or without woven PTFE liner on the flange face                 |
| <b>Thrust Washers</b>           | Outer Diameter – 3/8" to 18"   |
| <b>Spherical Annular</b>        | Bore Diameter - 1/4" to 6"   |
| <b>Acutator Bearing</b>         | Bore Diameter – consult Rexnord Engineering<br>Bore Shapes – Helical and threaded                            |

## Material Properties

### Mechanical Properties

The mechanical properties of the filament wound back-up material are derived from the modulus of elasticity of the individual materials, and the construction. The values shown in Table 1 have been developed by using standard tests for cylindrical shapes.

|                                 | <b>Modulus (PSI)</b> | <b>Ultimate Strength (PSI)</b> |
|---------------------------------|----------------------|--------------------------------|
| Axial Compression               | .8x10 <sup>6</sup>   | 20,000                         |
| Hoop Tension                    | 2.7x10 <sup>6</sup>  | 35,000                         |
| Bending                         | 1.5x10 <sup>6</sup>  | 25,000                         |
| Torsion (45 degree helix angle) | 1.5x10 <sup>6</sup>  | 27,000                         |
| Interlaminar Shear              | N/A                  | 3,000-5,000                    |

Impact resistance (notch).....41 ft.lb./in.  
 Specific gravity .....1.9  
 Spring rate .....3.467x10<sup>6</sup> lb./in.  
 Ultimate strength (Sleeve Configuration) .....77,000 psi

NOTE: These values are applicable in -65 deg. to 250° F temperature range. Bearing wall thickness was .125” in these tests; varying that dimension and/or the helical winding angle will alter these values.

### Thermal Properties

Comparative values of the coefficient of expansion for the filament wound back-up material, aluminum and steel are given in table 2. The similarity between steel and filament wound back-up material in the hoop direction should be noted. A higher value for thermal expansion is realized in the axial direction because of the fiberglass filament orientation.

| <b>Thermal Properties</b>          | <b>Duralon Bearing filament wound material</b> | <b>Aluminum</b>       | <b>Steel</b>         |
|------------------------------------|--|-----------------------|----------------------|
| 1. Expansion (IN/IN/°F)            |  |                       |                      |
| Axial Direction                    | 15.0x10 <sup>-6</sup>                          | 13.3x10 <sup>-6</sup> | 6.0x10 <sup>-6</sup> |
| Hoop Direction                     | 7.0x10 <sup>-6</sup>                           | 13.3x10 <sup>-6</sup> | 6.0x10 <sup>-6</sup> |
| 2. Conductivity (BTU IN/FT 2°F Hr) | 1.4  | 610-1100              | 95-185               |

### Electrical Properties

The filament wound back-up material is an electrical insulator. Its dielectric strength is about 300 volts per mil. Since the back-up material is electrically non-conducting, electrolytic or galvanic action will not take place between it and the housing or the shaft.

### Chemical Properties

While Duralon bearings are typically chemical resistant, however due to the wide range of exposures, specific conditions must be checked. See Appendix for listing. Consult Rexnord engineers at (800) 591-0886 or [www.rexnordcomposites.com](http://www.rexnordcomposites.com) with specific conditions and applications.