

THORDON

BEARINGS INC.



Thordon Screw Conveyor Bearings

Thordon's properties make it ideal for use in screw conveyor hanger bearings.

About 2,000 years ago, a wise man named Archimedes invented a device for pumping water. The basic principle has been in use ever since. Today, Archimedes' discovery forms the basis for the screw conveyor; one of the most efficient ways of moving bulk materials.

But, with downtime and maintenance costs on the rise, the reliability of the hanger bearings ... the

critical elements in keeping the screw suspended ... is often the single most important factor in assessing the operating cost of a screw conveyor system. In addition, noise pollution and lubrication problems must be considered.

To ensure reliable, quiet and safe operation of your screw conveyor with minimal maintenance you should take a serious look at Thordon conveyor bearings.

Thordon conveyor bearings are made from a tough, wear resistant and totally unique polymer alloy. Because Thordon is a hard synthetic rubber compound, abrasion resistance is outstanding and we've provided a built-in lubrication source. Hanger bearings usually run dry. Lubrication generally invites retention of abrasion in the bearing area.

Laboratory testing of Thordon is conducted in aluminum oxide powder, the most abrasive environment available. With shaft and bearing continually immersed, Thordon wears better than any competitive product tested. And in more than ten years of field testing on screw conveyors, Thordon has consistently outperformed UHMWPE, Phenolics, wood, nylon, TFE, and hard iron.



Type 226 Split Bearing:

These bearings are available in all grades, fully molded to size. Outside dimensions match standard link-belt design and inner dimensions fit either inch or metric stub shafts. A longitudinal rib on the back of each half prevents rotation and end flanges prevent axial movement.

Type 216 Split Bearing:

This design fits a simple U hanger with a locking bolt. The bearings are available in the same sizes as Type 226.

Trough Wear Strips:

Some designers prefer to eliminate the hanger by allowing the screw to run against the trough bottom on either Thordon longitudinal wear strips or on a complete trough liner made from Thordon sheet. This design is particularly popular in food-processing installations because it provides easier cleaning and no obstructions to restrict flow of material.

Special Designs:

Screw conveyor bearings can be fabricated from tube stock by machining Thordon with standard metal working tools. Anti-rotation pins can be fitted as can lubrication lines or "air sweep" arrangements. If your design isn't standard, it may be worthwhile to consider converting it to accept standard Thordon bearings.

STOCK SIZES

SHAFT DIA.		WIDTH		Grade	ORDER CODE	
(inches)	(mm)	(inches)	(mm)		Type: 226	Type: 216
1.500	38.1	1.930	49	XL	F162-002	F172-002
1.500	38.1	1.930	49	SXL	F163-002	F173-002
2.000	50.8	1.930	49	XL	F162-004	F172-004
2.000	50.8	1.930	49	SXL	F163-004	F173-004
2.438	61.9	2.913	74	XL	F162-006	F172-006
2.438	61.9	2.913	74	SXL	F163-006	F173-006
3.000	76.2	2.913	74	XL	F162-008	F172-008
3.000	76.2	2.913	74	SXL	F163-008	F173-008
3.438	87.3	3.900	99	XL	F162-010	F172-010
3.438	87.3	3.900	99	SXL	F163-010	F173-010

NOTE: For other sizes or for special applications, contact Thordon Bearings Inc.

Thordon wear strips are generally bonded to the trough with TG-75 adhesive depending on radius, strip width, and trough condition. The strips can also be bolted in place but life is reduced by approximately 50 per cent — because wear cannot be allowed to progress beyond the bolt head.

The full lining (shown above), though more expensive than strips, presents a particularly long-lasting solution. Thordon linings are more gouge resistant than UHMWPE and may be bonded or screwed into place.

Thordon screw conveyor bearings can be used for most applications.

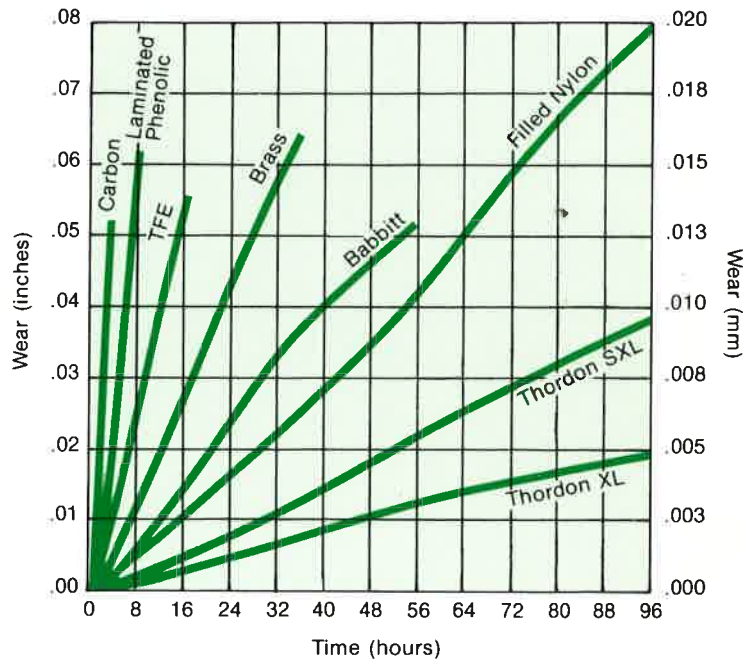
Grades of Thordon differ in composition and performance. An understanding of the features of each grade will help you make the best selection for your application. On the back cover, we also show the grades used in some common situations.

XL

- most popular grade
- self-lubricating in most situations
- good balance between low friction and wear resistance
- black in colour

SXL

- low friction, able to operate dry at highest levels of pressure/velocity
- next to XL in general popularity
- quietest operating grade
- best in applications where dark-coloured wear debris would be objectionable such as food, white products, etc.
- white in colour



Thordon wear rate:

This graph shows wear performance of Thordon compared with frequently used competitive products. To induce maximum wear over a minimum period, each product was tested in alumina oxide suspended in oil. At an operating pressure of 100 psi (7.2 kg/cm²) and a speed of 52 feet per minute (0.27 m/s), substantial wear is recorded in a 96 hour period on most materials. Field results on actual screw conveyor applications confirm these test relationships.

Proper installation and maintenance are keys to maximum life expectancy.

Maximum hanger bearing life is dependent not only on the bearing material selection but also on fitting, maintenance and operation. Here are a few recommendations gained from experience:

1. Shaft condition and finish — For best bearing life, fit a new stub shaft of a **hardened** steel with a good finish. The harder the surface and the better the finish, the better the bearing performance. A badly worn shaft will cause rapid wear until the bearing's surface conforms to the shaft profile.

2. Alignment of the screw axis — If the hanger and shaft axes don't match, rapid bearing wear may result because of the heat produced from excess pressure.

3. Bearing support — A Thordon bearing will only support a load over an area where it is completely backed by the steel hanger. A U bolt for example, gives the bearing little support. A bearing which does not fully contact the lower half of the hanger will also result in excess pressure causing heat softening and high wear rates. We've found that a fully machined hanger which gives 100%

contact is the optimum arrangement, particularly where significant loads are expected.

4. Loading — Screw conveyors handling abrasive materials should be loaded at less than 30 per cent capacity dependant on screw speed so that the abrasive material doesn't flow past the bearing. If higher loadings are used, more rapid wear should be expected.

5. Speed — If the bearing is running dry, a high speed conveyor may impose pressure/velocity conditions that exceed

even the limits of SXL. Nevertheless, we know of no bearing that outperforms Thordon. The only alternative to improve wearability is to either reduce the speed or to introduce lubrication.

6. Noise — If noise reduction is desired, try SXL. This grade has successfully reduced noise in several installations with only a slight reduction in wear resistance. It is also possible to flexibly isolate the hanger with rubber to minimize noise transmission.

Selection Guide

General service	Thordon Grade	Notes
Grains	XL or SXL	Choose SXL for higher speeds
Damp, Abrasive	XL	
Dry, Abrasive	XL or SXL	Choose XL for low speeds, SXL for high
Extremely Abrasive	XL	Must be equipped with lubrication
Mildly Corrosive	Any	Thordon can handle PH4 to PH10

Thordon screw conveyor bearings should be used with caution in some situations

Hot applications

Thordon's maximum recommended limit is 105°C (225°F), combining both environmental and frictional heat. Therefore, the higher the product temperature, the less margin there is for friction. Since the bearings often run dry, frictional heat must be considered. For example, cement at 80°C might be handled by SXL rather than XL as SXL has lower friction levels. At temperatures over the limit, Thordon may soften slightly with an accompanying loss of strength and abrasion resistance.

Hot, wet applications

Water of 60°C (140°F) tends to soften the bearings reducing wear life. Wet sugar may cause a hydrolysis problem with Thordon causing softening and rapid wear.

Fine dusts:

Materials which pack, like grain dust, tend to fill the clearance space between bearing top cap and shaft. This can create excessive pressure between the bearing bottom and the shaft. The result softens Thordon and increases wear especially if the bearing is not well supported. If the conveyor is run with the top cap removed, the problem may be avoided.

If you're in doubt and would like our opinion on the best grade for your specific application, contact us. We are exclusive stocking distributors for Thordon. Part of that commitment involves employing factory trained Thordon specialists whose primary job is to help you save money. That also means we can often apply experience gained in parallel situations as we have access to product application reports from around the world.

Thordon bearings were developed for use in the tough dirty environment that is usually associated with screw conveyors. Proper grade selection and conveyor operation should result in long, trouble-free service. Specific advice is available on request. Thordon screw conveyor bearings are manufactured in Burlington, Ontario, Canada by Thordon Bearings Inc.

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