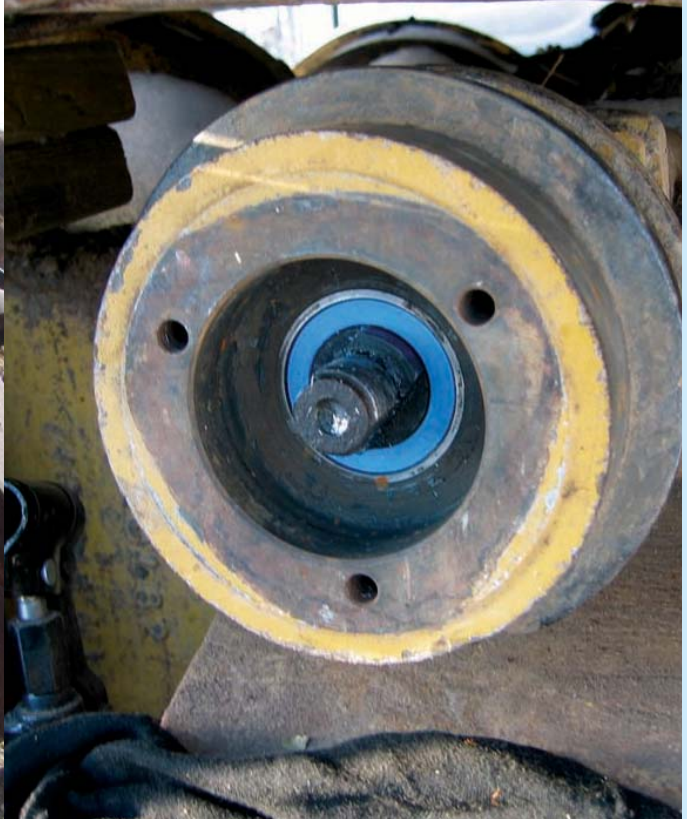
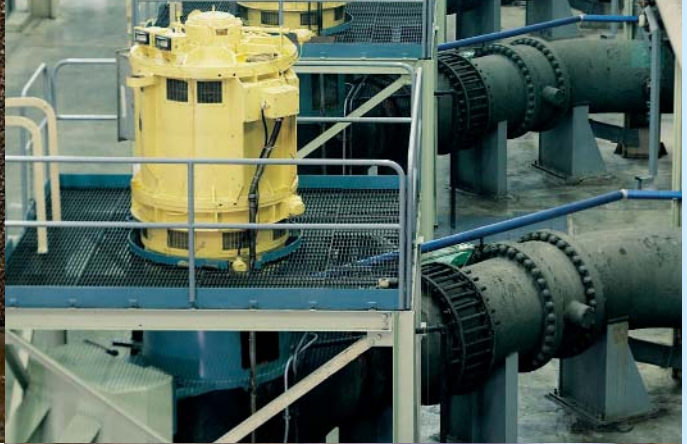


**ThorPlas Industrial
Product Data Sheet**



NEW THORPLAS ENGINEERED THERMOPLASTIC BEARINGS

While the Thordon elastomer range of bearing products (XL, SXL, HPSXL and Composite) offer superior performance in the applications in which they can be specified, there are technical limits, such as maximum temperature, beyond which they cannot be used. To address this issue, Thordon Bearings has developed a new bearing grade, **ThorPlas**, that significantly expands the range of applications where Thordon bearings can be specified, while still maintaining many of the recognized Thordon performance advantages.

A proprietary engineered thermoplastic, **ThorPlas** has been formulated to complement the existing range of Thordon elastomer bearing grades, offering:

- **increased strength and rigidity** - maximum working pressures to 31MPa (4500 psi) in an interference fit bearing
- **improved ability to operate at elevated temperatures** - maximum continuous service temperatures of 80°C (176°F) in water and 110°C (230°F) dry
- **improved chemical resistance in all major chemical product categories**



Other important ThorPlas properties and characteristics to consider are the following:

- **excellent wear performance in reasonably clean application environments**

- **self-lubricating** - homogeneous polymer with lubricants to lower friction and wear formulated into the molecular structure. Once the bearing enters service and a transfer film is established between the shaft and the bearing, friction stabilizes for the life of the bearing
- **low friction** - dynamic coefficients of friction of 0.10 to 0.15 (dry) and 0.12 to 0.17 (wet)
- **dry start-up** - operation dry for 3 minutes at a PV of 15MPa - m/min (7070 psi - ft/min) using a 75mm (3.0") shaft at 0.35 kg/cm² (5 psi) and 1800 rpm; or 1 minute at a PV of 22.4MPa - m/min (10,500 psi - ft/min) is possible
- **low coefficient of thermal expansion** - minimal change in installed bearing dimensions due to temperature variation (50% vs. Nylon and Delrin AF; <25% vs. UHMW/ HDPE and 30% vs. Thordon SXL)
- **low water absorption rate** - minimal change in installed bearing dimensions (6% vs. Nylon; 50% vs. Delrin AF; 50% vs. Railko and 40% vs. Thordon SXL)
- **reasonable abrasion resistance** - less than Thordon elastomer grades, but better than bronze, phenolics and many other common non-metallic bearing materials

Typical ThorPlas Applications:

High Pressure

ThorPlas performs well in high pressure, relatively non-abrasive, industrial bearing applications where a full-form ThorPlas bearing can be specified as a more economical alternative to Thordon TRAXL. Self-lubricating ThorPlas is the ideal bearing solution for applications where high loads are encountered under either dry or wet conditions. An obvious replacement for greased bronze bushings, ThorPlas can also be specified in many applications unsuitable for other non-metallics.

High Temperature and Improved Chemical Resistance

ThorPlas can be used in relatively non-abrasive pump bearing applications with water temperatures up to 80°C (176°F). ThorPlas also has improved chemical resistance versus existing Thordon elastomers and performs well where minimal running clearances are required.

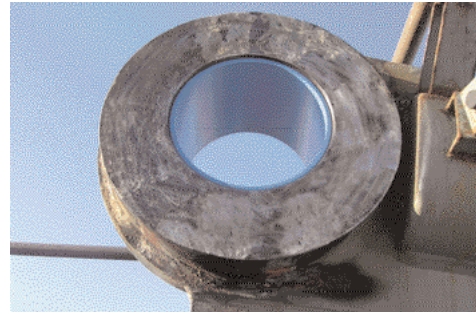
Typical ThorPlas Industrial Applications:

- Waste Water & Sewage Treatment (aerators, traveling screen, drum screens, scum collectors, chain conveyors)
- Grapples or Grabs (pivot linkage bushings)
- Vertical Pump Bearings
- Hydro Power bearings (operating mechanism bearings, wicket gate bearings, Kaplan turbine runner blade bushings)
- Mining (crushers and feeders, materials handling bearings, mine car rocker arm and wheel bearings, skip pivots)
- Butterfly Valves
- Lock and Dam Gate Bearings
- Agriculture (conveyor shaft bearings, sugar cane harvesting and processing equipment bearings, fish farm bearings,)
- Pulp & Paper/Forestry (doctor bushings, mixer bushings, grapple bearings, roller chain bushings)
- Cranes and Hoists (boom slides, sheave wheel bushings)
- Stackers, Reclaimers and Bucket Scoops
- Gate and Door Bushings
- Marine Deck Equipment Bearings

Size Availability:

ThorPlas tubes up to 400mm (16") outside diameter can be supplied quickly to meet specific customer requirements.

For additional application engineering information, contact your local Thordon distributor or Thordon Bearings Inc. to obtain a copy of the ThorPlas® Bearings Engineering Manual or visit www.thordonbearings.com to download a copy.



ThorPlas Chemical Resistance Chart

The compatibility of ThorPlas to the following chemical fluids is a general rating based on the effect of the chemical at room temperature. For more information, please contact Thordon Bearings Inc.

Chemical/Fluid	ThorPlas	Thordon Elastomers	Chemical/Fluid	ThorPlas	Thordon Elastomers
Salt solutions	A	A	Hydrocarbon/fuels	A	A-B
Sodium chloride	A	A	Aromatic – benzene, toluene	A	B
Weak acids	A-B	B-D	Aliphatic – gasoline, grease	A	A-B
Acetic acid	B	D	Lubricating oils (petroleum)	A	B
Lactic acid	A	B	Chlorinated solvents	C-D	D
Strong acids	A-C	B-D	Alcohols	A	D
Sulphuric, 5%	A	B-C	Ethanol	A	D
Sulphuric, concentrated	C	D	Methanol	A	D
Hydrochloric, 10%	C	B	Ketones	A-B	D
Weak bases	A-B	A-B	Methyl ether ketone	A	D
Ammonia 10% Aq.	A	A	Acetone	B	D
Sodium carbonate	A	B	Ethers	A	D
Triethanolamine	B	B-D	Diethyl ether	A	D
Strong bases	C-D	B	Esters	A	D
Sodium hydroxide, 10%	C	B	Ethyl acetate	A	D
Oxidizing agents	A	B-C	Methyl acetate	A	D
Hydrogen peroxide, 1-3%	A	B	Freon 12	A	A-C
Chromic acid	A	C	Vegetable Oils	A	A-B

A: Excellent-No Affect; B: Good-Little Affect; C: Fair-Moderate Affect; D: Unacceptable

ThorPlas Typical Physical Properties - Metric and Imperial

Property	Unit	Values
Density	g.ml ⁻¹	1.40
Hardness (Shore D)	–	83
Tensile Strength at Break (D638)	MPa (psi)	67 (9,750)
Tensile Modulus of Elasticity	MPa (psi)	2930 (425,000)
Elongation at Break	%	~10
Compression Strength (D695)	MPa (psi)	105 (15,300)
Compression Stress at Yield	MPa (psi)	92 (13,400)
Compressive Young's Modulus of Elasticity	MPa (psi)	2,410 (350,000)
Compression Strain at Yield	%	~8
Minimum Notched Impact Energy (D256)	J.m ⁻¹ (Ft.lb.in. ⁻¹)	31 (0.60)
Notched Specific Impact Energy (D256)	J.m ⁻² (Ft.lb.in. ⁻²)	506 (0.24)
Coefficient of Linear Thermal Expansion (20-120°C)	°C (°F)	4.6 x 10 ⁻⁵ (2.5 x 10 ⁻⁶)
Volumetric Swell -Water, 24-h immersion (D570)	Wt%	0.034
Volumetric Swell -Water, long-term immersion	Vol%	< 0.15
Dynamic Coefficient of Friction (0.27 MPa or 40psi), dry (D3702)	–	~0.1
Dynamic Coefficient of Friction (>200 bar or >3000psi), dry	–	~0.10
Dynamic Coefficient of Friction (>200 bar or >3000psi), wet	–	0.10-0.17
Abrasive Wear (Rotary Drum Abrasion), dry (D5963)	mm ³ (in. ³)	195 (0.012)
Melting Temperature	°C (°F)	> 250 (> 480)
Max. Continuous Service Temp. in Air	°C (°F)	110 (230)
Max. Continuous Service Temp. in Water	°C (°F)	80 (176)

Note: Properties are typical values, unless otherwise noted, and may be altered to some extent by processing conditions.

The information contained in this document is offered as part of our service to customers. It is intended for use by persons having technical training and skill, at their discretion and risk. The company reserves the right to change or amend any specification without notice.

Your Local Thordon Distributor

THORDON

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ZERO POLLUTION | HIGH PERFORMANCE | BEARING SYSTEMS

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