

# Orkot<sup>®</sup> C620

COMPOSITE BEARINGS FOR HIGH-LOAD APPLICATIONS



# Orkot® C620

**A high-load composite for demanding applications.**

## DEVELOPED FOR PERFORMANCE

Orkot® C620 pushes the boundaries of composite technology. It has been specifically designed and developed to meet the demands of high-load applications across all market sectors, including energy, off-highway and industrial.

This high-specification material builds upon Trelleborg Sealing Solutions proprietary composite formulation by featuring a strong glass fiber backing alongside a low-friction Orkot® lining. The properties of the different layers increase load capacity and strength, while reducing friction and wear to maximize efficiency and service life.

## OPTIMIZED MATERIAL PROPERTIES

Orkot® C620 is light in addition to being strong. This allows standard metallic components to be replaced with Orkot® material, reducing weight and increasing efficiency in many different applications.

Through careful selection of ingredients within the material, Orkot® C620 meets many performance requirements, including fluid compatibility, low swell rates and low thermal expansion.

## INCREASING PROFIT BY REDUCING DOWNTIME

Mechanical properties have been optimized based on market requirements. Orkot® C620 gives efficient low-friction performance with high wear resistance to eliminate maintenance requirements across the product lifecycle. This means less downtime, reducing overall costs. It is also self-lubricating with dry-running capabilities, enabling new builds to be lubricant-free.

**Withstands  
high loads and  
stresses**

**Zero  
maintenance**

**Strong  
and light**

**Dry-running  
capable  
and self-  
lubricating**

**Reduces  
friction with  
minimal  
stick-slip**

### PROVEN PERFORMANCE

The mechanical properties of Orkot® C620 have been quantified and validated through rigorous testing to industry standards. These properties provide high stiffness and ensure no plastic deformation takes place (Figure 1).

Property	Value (N/mm <sup>2</sup> )
<b>Compressive Strength</b>	470
<b>Compressive Modulus</b>	6,800
<b>Tensile Strength</b>	145
<b>Tensile Modulus</b>	5,200

Table 1: Orkot® C620 mechanical properties

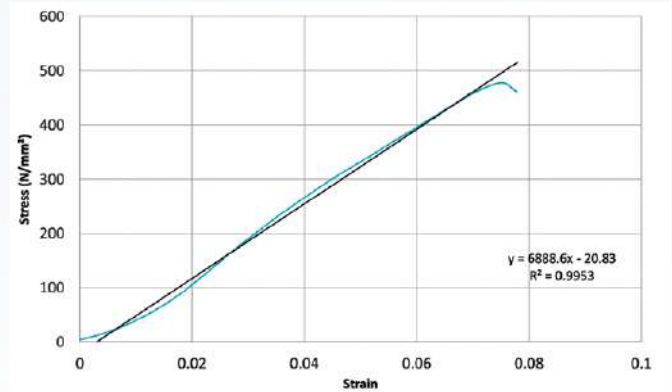


Figure 1: Stress-strain curve for Orkot® C620

### SUPERIOR STRENGTH AND FRICTION PROPERTIES

In comparison to other bearing materials, Orkot® C620 is superior in both compressive strength and frictional properties (Figures 2 and 3). Table 2 gives a comparison of the relative properties of Orkot® C620 against alternative materials.

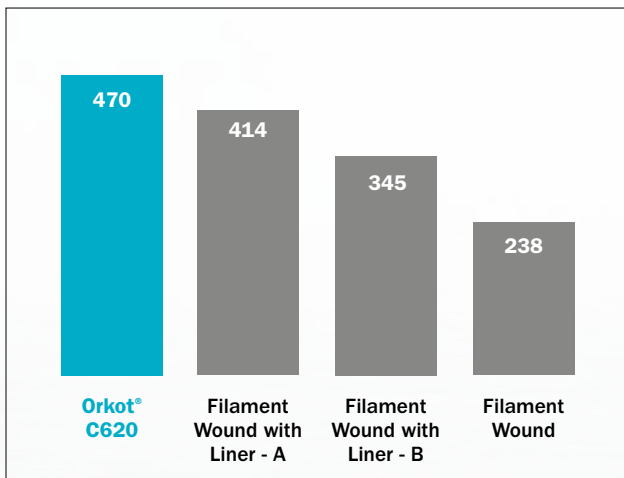


Figure 2: Compressive strength comparison

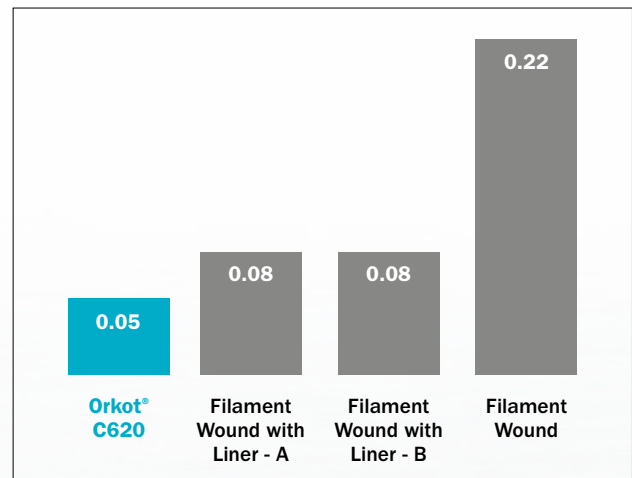


Figure 3: Coefficient of friction comparison

	Orkot® C620	Filament Wound with Liner - A	Filament Wound with Liner - B	Filament Wound
<b>High Load Capability</b>	Superior Performance ●●●●●	High ●●●●	Good ●●●	Satisfactory ●●
<b>Low-Friction Performance</b>	Superior Performance ●●●●●	High ●●●●	High ●●●●	Satisfactory ●●
<b>Dry-Running Capability</b>	High ●●●●	High ●●●●	High ●●●●	High ●●●●

Table 2: Material comparison



# Off-Highway & Industrial

**Orkot® C620 bearings endure high loads with lower friction and stick-slip, giving a longer service life with reduced maintenance requirements.**

## EXCAVATOR

The versatile range of Orkot® grades can be used as a general solution across multiple components. Each grade is customized to specific requirements depending on its location within the vehicle.

### BOOM PIVOT

Orkot® C620 can withstand the high loads encountered in the boom pivot when excavating large volumes of material.

**Optimum materials: C620**

- High load capability during dynamic conditions

### HYDRAULIC CYLINDER PIVOT

The low stick-slip of Orkot® C480 and Orkot® C620 means that operations can be made more efficient and smoother – necessary for applications carrying heavy and valuable loads. This reduces material loss in transit and helps meet health and safety requirements.

**Optimum materials: C480, C620**

- Minimal stick-slip
- Health and safety benefits
- Reduced cost

### TRACK ROLLERS AND UNDERCARRIAGE

The durability of Orkot® allows it to be used in dynamic applications with minimal wear under load, extending service life.

**Optimum materials:**

**C620, C380, TXMM, TLMM**

- Minimal wear and increased service life
- Low maintenance requirements
- Dry-running capability

### BUCKET LINKAGE

Orkot® C620 has a high impact strength of 200 KJ/m<sup>2</sup>, making it both resilient and adaptable in applications where shock and vibration are experienced.

**Optimum materials: C480, C620**

- High impact strength
- High shock tolerance
- Low stick-slip

### HYDRAULIC CYLINDER ROD GUIDE

Orkot® offers low friction and high durability, making it ideal as a Slydring® wear ring material. Reduced stick-slip manages the sharp and repetitive movements of the excavator.

**Optimum materials: C620, C380**

- Low static and dynamic friction and minimal stick-slip with high wear resistance
- Fluid compatibility with industrial lubricants

## OFFSHORE CRANE

The high-load, slow oscillating movements encountered by offshore crane bearings make Orkot® the optimum choice of material. As a composite, it offers higher flexibility to compensate for shaft misalignment and can be engineered to accommodate the design envelope of the application.

**Optimum materials: C620, TXMM**

- Minimal stick-slip on high-load, slow-moving applications
- Minimal wear, low maintenance
- Resistance to environment conditions – dirt, dust and abrasive material from the sea

### HIGH PERFORMANCE MATERIALS



**ORKOT® C620**  
Highest load capability of all Orkot® grades. Features a self-lubricating, low-friction layer on the sliding surface.



**ORKOT® C480**  
Oleophilic behavior reduces stick-slip and can be used in marginally lubricated positions.



**ORKOT® C380**  
Most popular, standard wear ring material, recognized worldwide for its high wear resistance, good sliding properties and turquoise color.



**ORKOT® TLMM**  
Advanced grade featuring solid lubricants with exceptional wear resistance and virtually no swell in water.



**ORKOT® TXMM**  
Most premium grade of Orkot® with the lowest friction and wear of all grades. Builds upon TLMM by featuring a low-friction TX lining containing a high level of polytetrafluoroethylene (PTFE).

### SHEAVE BEARINGS

**Optimum materials: C620, TXMM**  
The low wear and stick-slip properties of Orkot® C620 ensure smooth operation is maintained throughout the full lifetime of the component – critical when positioning costly equipment over open water.

### HEEL POINT BEARINGS

**Optimum materials: C620**  
Orkot® C620 offers a solution for cranes carrying loads of 1,000 tons or greater with lower friction and maintenance requirements than traditional bearings.

### SLEWING BEARINGS

**Optimum materials: C620, TXMM**  
The high amount of PTFE in Orkot® TXMM minimizes friction during operation, even as the surface temperature increases with load.

### FURTHER INFORMATION





# Mooring Applications

**Orkot® C620 maintains a high-load capacity in the presence of a wide range of chemicals with low swell in seawater, extending service life in mooring systems.**

## FAIRLEADS AND TENSIONER RISERS

The low wear rates of Orkot® allow for continuous operation without compromising on performance. It can be used as radial bushes and thrust washers in fairleads or as Slydring® wear rings within tensioner risers.

### Optimum materials: C620, TXMM, C324

- Orkot® C324 is compatible with HFA and HFC fluids while running at elevated temperatures greater than +100 °C/+212 °F
- Low wear and maintenance requirements in continuously operating applications

## TURRET BEARINGS

Orkot® offers low friction and minimal stick-slip, making it ideal for slow movements in applications such as floating production storage and offloading (FPSO) turrets and swivel stacks.

### Optimum materials: C620, C380, TXMM, TLMM

- Low static and dynamic friction with minimal stick-slip
- Fluid compatibility with industrial lubricants



## MID-WATER ARCHES (MWA)

Orkot® is used throughout the MWA's supporting risers, cables and umbilicals, from the seabed to the vessel or platform. It is manufactured into separate bearings and washers to ensure the direction of lamination is strongest to withstand high loads.

### Optimum materials: C620, TXMM, TLMM

- High compressive strength in both axial and radial directions
- Minimal swell and no galvanic corrosion

## WIND TURBINE PITCH CYLINDERS

Trelleborg offers a wide range of components and assemblies for hydraulic and actuation systems. Orkot® has a very low coefficient of friction, allowing smooth operation at high loads and low speeds.

### Optimum materials: C380, C480

- Peak efficiency and reliability with market-leading Slydring® designs
- Fluid compatibility with industrial lubricants



## DEEP SEA MOORING

### CONNECTORS

Orkot® thrives when operating in marine environments. It removes the need for lubrication and does not corrode, unlike metallic components. The high loads that can occur from rough undercurrents mean Orkot® C620 is the optimum solution.

### Optimum materials: C620, TLMM, TXMM

- High load capability (C620)
- Very little swell in water – dimensional stability
- Low wear and maintenance-free lifetime



## ORKOT® C620



Orkot® C620 has the highest load capability of all Orkot® grades, making it the perfect material for mooring applications. Its high-load, low-friction properties mean it can replace standard metallic components.

### KEY BENEFITS:

- **Strong and light**
- **High load capability**
- **Self-lubricating for dry-running**
- **High fluid compatibility**
- **Low static and dynamic friction**
  - Smoother operation
  - Reduced wear and heat generation
- **Low or no maintenance**
  - Decreased downtime
  - Reduced costs to increase revenue

### FLUID COMPATIBILITY:

- **Standard Hydraulic Fluids:** HEPG, HEES, HEPR
- **Alcohols:** Methanol, Isopropyl Alcohol
- **Fire Resistant Hydraulic Fluids:** HFA, HFB, HFC
- **Other:** Water

### SERVICE & SUPPORT

Trelleborg Sealing Solutions has experienced and highly skilled engineers that offer a complete service, tailored to your requirements. Orkot® C620 bearings are available in sizes from 8 mm in diameter, with laminates available up to 3 m x 1 m x 40 mm.

For support, general enquiries and orders, contact your local Customer Solution Center.

[www.trelleborg.com/en/seals/contact-form](https://www.trelleborg.com/en/seals/contact-form)



Trelleborg is a world leader in engineered polymer solutions that seal, damp and protect critical applications in demanding environments. Its innovative solutions accelerate performance for customers in a sustainable way.

Trelleborg Sealing Solutions is a leading developer, manufacturer and supplier of precision seals, bearings and custom-molded polymer components. It focuses on meeting the most demanding needs of aerospace, automotive and general industrial customers with innovative solutions.

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