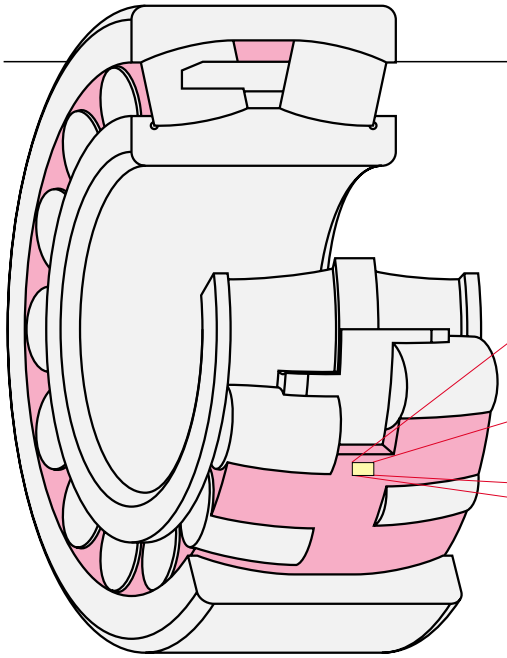
MOTION & CONTROL
NSK

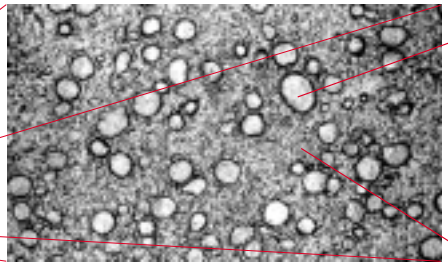
Molded-Oil™ Bearings

- Outstanding performance, even in environments contaminated with water and dust
- Environmentally friendly lubricant
- Low torque

New!

Molded-Oil™ Bearings





Close-up of Molded Oil

100 µm

Portion containing mostly polyolefin

Polyolefin has been used to replace dioxin-generating vinyl chloride for packaging food in supermarkets.

Portion containing mostly lubricating oil

The lubricating oil is mineral oil-based.

Molded-Oil Bearings are lubricated with NSK's own oil-impregnated material, Molded Oil. Molded Oil consists of lubricating oil and polyolefin resin that has an affinity for oil. Oil slowly seeping from this material provides ample lubrication to the bearing for extended periods.

1. Features of Molded-Oil Bearings

1 Excellent performance in water- and dust-contaminated environments

As the lubricant is resistant to both water and dust, bearing life under contaminated lubrication is extended.

2 Environmentally friendly

As oil seeping from the Molded Oil inside the bearing provides sufficient lubrication, troublesome oil refilling is not required and contamination of the surrounding environment is prevented.

3 Low torque

Prior to filling the bearings with Molded Oil, their interior surfaces are specially treated. As a result, bearing torque is not much higher than that of grease-lubricated bearings. (Patent pending)

Applications

- Steel mill equipment
- Food processing equipment
- Liquid crystal and semiconductor manufacturing equipment
- Agricultural machines
- Cleaning equipment and lines
- Material-handling and conveying equipment
- Production lines and machines for which maintenance is difficult

2. Available Types and Specifications

- Temperature range (outer ring): -15 to 80°C
- Bearing types, sizes and limiting speeds (see right).

Bearing type	Maximum available outside diameter, mm	Limiting speed, d_mn
Spherical roller bearings	250	60,000
Deep groove ball bearings	250	150,000

- d_mn = (Bearing bore diameter, mm + Bearing outside diameter, mm) ÷ 2 x Speed, rpm
- The limiting speeds reflect that the internal space of the bearings is completely filled with Molded Oil.
- Regarding bearing numbers and other bearing types, please contact NSK.

3. Performance

Extensive test data and field results demonstrate the outstanding performance of Molded-Oil Bearings.

3.1 Durability test under exposure to water

In wet conditions, Molded-Oil Bearings have a longer life than grease-lubricated bearings.

Test conditions	Test bearings:	6206
	Speed:	1000 rpm
	Radial load:	980 N
	Water exposure:	500 cm³/min

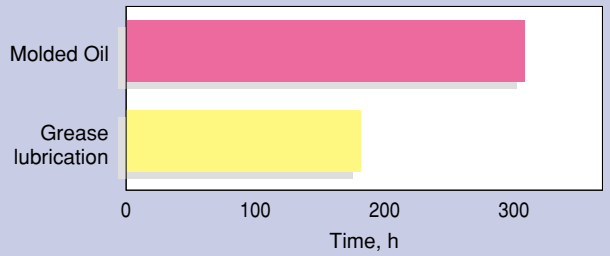


Fig. 1 Results of durability tests under exposure to water

3.2 Performance test

As Molded Oil contains a large quantity of lubricating oil, it provides excellent lubrication for extended periods.

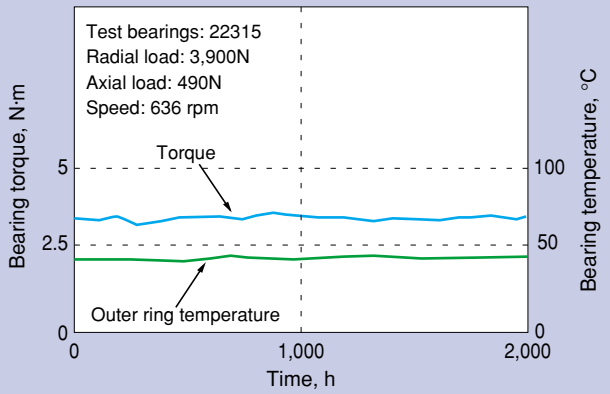


Fig. 2 Results of performance test

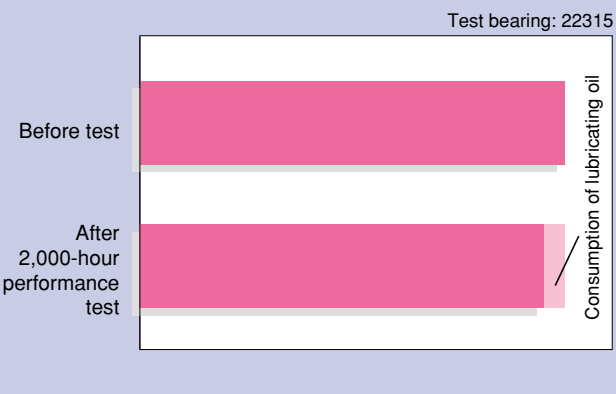


Fig. 3 Oil content before and after performance test

3.3 Bearing torque

Figure 4 compares the torque of grease-lubricated bearings, untreated bearings lubricated with Molded Oil, and Molded-Oil Bearings.

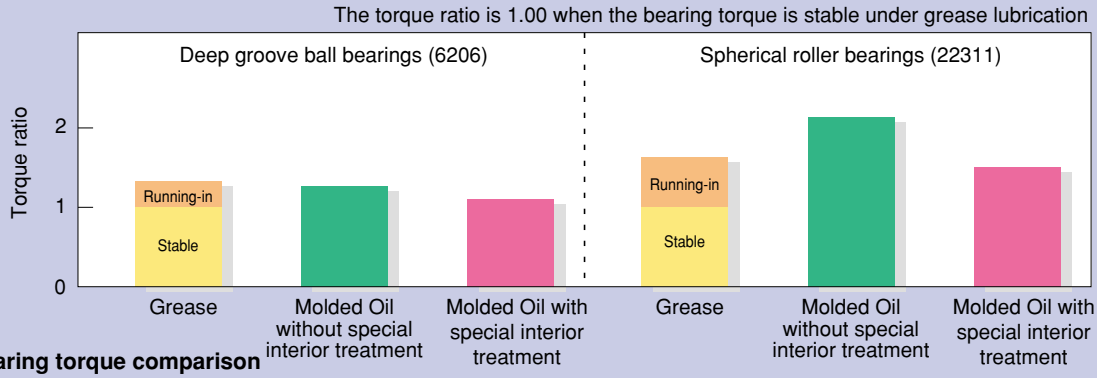


Fig. 4 Bearing torque comparison

Handling Precautions

To maintain the excellent long-term lubricating capacity of Molded-Oil Bearings, the following precautions should be observed:

- Molded Oil melts at about 120°C. The bearings must not be heated over 100°C, especially during shrink-fitting. Additionally, the bearings should not be heated by the oil bath method.
- The bearings cannot be used in conditions where they may be exposed to degreasing liquids such as organic solvents.
- A radial load is required for the bearings to properly rotate. The minimum radial load recommended for maintaining proper rotation is at least 1% of the basic dynamic load rating.