

# Bearings for the Food and Beverage Industries





# NSK - Serving the Food and Beverage Industries

In addition to performing their basic function of enabling moving machine elements to perform satisfactorily, the rolling element bearings used in the food and beverage industries must also comply with the hygiene requirements synonymous with the industry.

A bearing must perform while under attack from water and chemicals (acids and alkalis), either directly or splash, to qualify for use in the food and beverage industries. In addition, they can also be exposed to temperature extremes. At the same time, the bearing cannot be allowed to contaminate the product process with any material that could be dangerous to the consumer's health if ingested.

NSK has developed a range of bearings specifically for the food and beverage industries to meet these rigorous demands.





# Why Choose NSK?

## We understand the problems

Because of our vast applications experience, we appreciate the key issues faced by designers and manufacturers.

## We can supply the answers

With our extensive product range, plus considerable R&D skills and engineering design capabilities, we find effective, economical solutions both for new machinery and improvements on existing equipment.

## We bring an extra dimension

Our commitment to quality, the industry, and the customer, has led to an unrivalled package of service and product benefits.





# The Benefits

## Quality Assurance

NSK uses the latest production techniques to achieve unrivalled product consistency. At each step in the manufacturing process, industry leading quality assurance techniques are applied to ensure that every bearing produced is of the highest quality.

## Extensive Investment

\$168 million are invested annually in R&D, with considerable research undertaken into materials and lubrication technology. Our American Technology Centers support the whole of America and cooperate with sister facilities in Japan, China and Europe to integrate local market needs into Global product development.

## Product Development

NSK listens to the needs of the industry and has developed a range of products in line with those requirements. New designs are assessed by analytical software and then subjected to rigorous simulation testing on purpose built rigs before they reach the market place.

## Customer Service

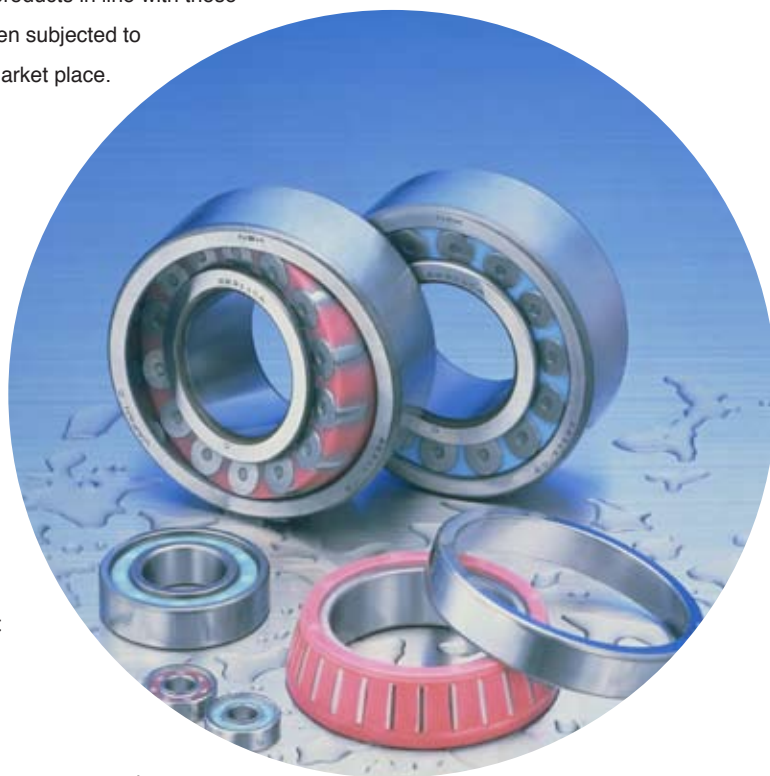
NSK's advanced integrated systems allow location and selection of global and local stock in order to ensure efficient delivery of product, to improve availability and minimize costs.

## Technical support

Our experienced sales managers and our industry specialist engineers support NSK's value added approach to the application of our bearings. We offer on site service visits to diagnose problems and help implement cost effective solutions.

## Design Solutions

Through our extensive resources, accumulated knowledge and experience, we can solve specific application problems as well as continue to develop highly advanced products to meet the current and future needs of industry. In the majority of cases, we already have a solution within our comprehensive product range.



# Service

From reducing maintenance costs and downtime to increasing productivity, NSK is here to offer the best in service the industry has to offer.

NSK's AIP (Asset Improvement Program) is a real opportunity for you to unlock additional profitability through machine reliability and increased working knowledge.

AIP is a well-proven asset improvement program that combines your own knowledge of the working environment, culture, processes and problems in your business, with the engineering expertise and innovation of NSK. The key to its success is the close working dialog NSK will have with your own staff to identify and understand the issues and problems that affect them and the financial impact of these problems on your business.



## Technical Support and Consulting

- Application Reviews
- Engineering Support
- Machine Design Support
- Bearing Surveys
- Diagnostic & Vibration Analysis

## Training Programs

- Introduction to Bearings Technology
- Bearing Handling
- Bearing Installation
- Bearing Diagnostics
- Bearing Application and Application Specific Training
- Industry Specific

## Analytical Services

- Failure Mode Analysis
- Material Analysis
- OEM Part Conversion
- Standardization & Rationalization
- On-Site Inspection Service

## Value Added Services

- NSK Cost Down Approach
- Maintenance Schedules
- Site & Stores Surveys
- Maintenance Tool Audits
- Super Precision Service Packages



Please contact NSK for more information on our service programs and NSK's AIP (Asset Improvement Program)



# Pumps & Electric Motors

## Single Row Cylindrical Roller Bearings with Brass Cage, Steel Cage or Polyamide Cage

- High load capacity
- Low noise
- Low heat generation
- Increased service life
- Applications: pumps, compressors, electric motors



## Single Row Angular Contact Ball Bearings.

**HPS™**

- Applications: pumps, compressors

### Brass cage 7200 – 7300

**B | EA | MR | SU | CNB | Series**

- 40° contact angle \_\_\_\_\_
- High capacity design \_\_\_\_\_
- Brass cage \_\_\_\_\_
- Single universal \_\_\_\_\_
- Normal clearance \_\_\_\_\_



### Polyamide cage 7200 – 7300

**B | EA | T85 | SU | N | Series**

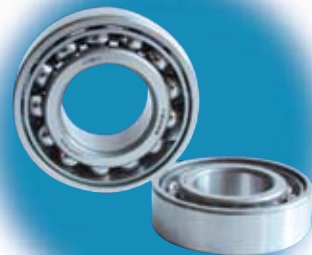
- 40° contact angle \_\_\_\_\_
- High capacity design \_\_\_\_\_
- Polyamide 4–6 cage (temp Max 150 °C) \_\_\_\_\_
- Universally faced \_\_\_\_\_
- Preload or axial clearance following application \_\_\_\_\_



### Steel cage 7200 – 7300

**B | W | G | Series**

- 40° contact angle \_\_\_\_\_
- Steel cage \_\_\_\_\_
- Universally faced \_\_\_\_\_





## Double Row Angular Contact Ball Bearings

**Available ranges: 3200 - 3300 / 5200 - 5300 Series**

- Sealed 2RS
- Steel or polyamide cage
- Open
- Shielded ZZ or 2Z
- Applications : centrifugal pumps, compressors



## Double Row Angular Contact Ball Bearings *Pump Tough™*

**Available ranges: 3200 - 3300**

- Open
- EP steel
- UR heat treatment
- Superior formed cage



## Single Row Radial Ball Bearings

**Available ranges: 6000, 6800, 6900, 16000, 16100,  
6000, 6200, 6300, 6400 Series**

- Standard and special applications
- Steel, brass or polyamide cage
- Low noise
- Full sealing options
- Large choice of grease



# Deep Groove Ball Bearings

NSK Deep Groove Ball bearings provide outstanding performance in a wide range of applications offering world class quality in: bearing steel, lubricants, and sealing technologies.

## Features

- Super finished raceways
- Patented seals
- High quality steel
- Advanced lubrication technology
- Precision balls



## Benefits

### Ultra Clean Steel extends bearing life up to 80%

- NSK's own lubricants extend grease life and performance
- Quiet and smooth operation even at high speeds
- Seal types provide resistance to contamination in the toughest environments

# HPS™ Spherical Roller Bearings

Introducing the newest series of advanced high-performance spherical roller bearings offering higher speed and load capacities suitable for a wide variety of industrial applications. Made from NSK's pure, high-cleanliness Z steel that improves fatigue strength, HPS bearings feature a stronger and better balanced cage that is more resistant to wear and more durable in a variety of applications. Replacing the guide ring with inner and outer ring configurations makes it easier to place large or additional rollers, resulting in increased load capacity.

## Features

- Average 12% higher load carrying capacity compared to competition
- Producing an average 50% increase in bearing life
- Higher limiting speed
- Reduced maintenance and improved productivity



## Benefits

- Improved Productivity
- Reduced Maintenance
- Increased Uptime

# Hybrid Ball Bearings

Hybrid Ball Bearings have an operating life in water five times longer than stainless steel bearings. They can be completely immersed and still give satisfactory performance.

## Features

- Martensitic stainless steel rings
- Silicon nitride balls
- Fluororesin cage
- Waterproof grease option
- Operating temperatures to 80°C
- Open, sealed and stainless shield executions available



## Benefits

### Long life/low cost of ownership

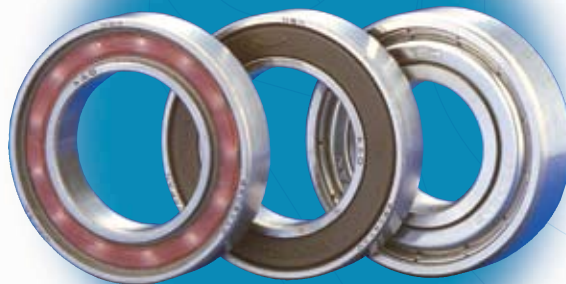
- Operating life in water 5 times longer than stainless steel bearings
- Simple to retrofit
- Resists failure due to chemical attack
- Self lubricating cage generally eliminates need for additional lubrication

Environmentally friendly Molded-Oil bearings offer high performance in water and dust contaminated applications to extend the bearing life and offer negligible lubricant leakage.

# Molded-Oil Bearings

## Features

- Special Molded-Oil lubricant
- Plated shields or nitrile rubber seals
- Spherical roller bearings and tapered roller bearings also available with Molded-Oil



## Benefits

### Long life/low cost of ownership

- Relubrication eliminated
- Bearing life extended under dusty or water-splash conditions
- Cost effective option for many applications



# Stainless Steel & Molded-Oil Bearings

The combination of stainless steel bearing components and Molded-Oil lubricant provides a cost effective solution to problems caused by high humidity, water splash and particle contamination.

## Features

- Martensitic stainless steel rings
- Martensitic stainless steel balls
- Austenitic stainless steel cage
- Special Molded-Oil lubricant
- Open, sealed and stainless shield executions available



## Benefits

### Will not contaminate process

- Non-corroding components
- No leakage from Molded-Oil

### Long life/low cost of ownership

- Good life in totally immersed conditions
- Relubrication eliminated

# Stainless Steel Bearings

Our Stainless Steel Bearings have a higher corrosion resistance than those manufactured from standard bearing steel and are suited to high humidity applications

## Features

- Stainless steel components
- ISO standard dimensions/ tolerances
- Open, sealed and shielded executions available
- Operating temperatures to 80°C
- Ex-stock availability



## Benefits

### Long life/low cost of ownership

- Significantly longer service life than standard bearings
- Totally interchangeable with standard bearings
- More cost effective than hybrid or full ceramic bearings in most cases

# Fluoride, Low-Temp Chrome Coated Bearings

These bearings have a higher corrosion resistance than hard chrome or electroless nickel-plated bearings and can be totally immersed in water.

## Features

- Martensitic stainless steel rings, fluoride low-temp chrome coated
- Stainless steel or ceramic balls
- Operating temperatures to 80°C
- Fluororesin or pressed stainless steel cage
- Waterproof grease option
- Open, sealed and stainless shield executions available



## Benefits

### Optimum performance in extreme conditions

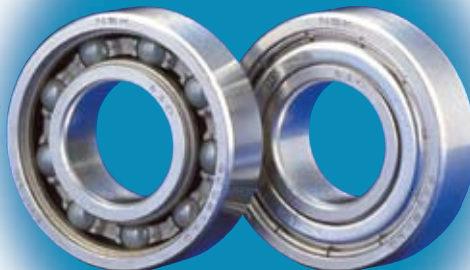
- Superior corrosion resistance even in acidic environments
- Superior life in wet and hot conditions through self-lubricating cage

# Nickel Alloy Coated Bearings

Nickel Alloy Coated Bearings are resistant to chemical wash processes and offer a cheaper alternative to all-ceramic bearings.

## Features

- Martensitic stainless steel rings with nickel alloy coating
- Nickel alloy coated martensitic stainless steel balls or ceramic balls
- Fluororesin cage
- Lubrication provided by cage or waterproof grease
- Stainless steel shields
- Operating temperatures to 200°C



## Benefits

- Optimum performance in extreme conditions
- Suitable for alkali or weak acid environments
- Higher corrosion resistance than martensitic stainless steel or hard chrome plated bearings



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