



BEARING SPECIALISTS ASSOCIATION

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Bearings for the Food and Beverage Industry

One of the most critical components required to help process the foods and beverages is mounted ball bearings.

Many of the companies associated with the food industry have implemented the seven key principles of the HACCP (Hazard Analysis and Critical Control Point) program which focuses on prevention rather than inspection.

- Principle 1: Conduct a hazard analysis.
- Principle 2: Determine the critical control points (CCPs).
- Principle 3: Establish critical limits.
- Principle 4: Establish monitoring procedures.
- Principle 5: Establish corrective actions.
- Principle 6: Establish verification procedures.
- Principle 7: Establish record-keeping and documentation procedures.

Typical food industry bearing applications

- Bakeries
- Beef, Pork, Poultry & Fish Processing
- Beverage Bottling
- Dairies
- Fruit & Vegetable Processing
- Packaging & Processing

The regulations mandated by the government require FDA/USDA approval of the bearings utilized in many of the food applications. This means that all of the materials, including the lubricants, must comply with all applicable federal food processing requirements.

What are the bearing choices?

Just like the menu in our favorite restaurant, the menu of food grade bearings seems to be unlimited.

Depending on the application and the preference by the customer the choices are many. The availability of housing materials are frequently mixed and matched to the available bearing insert materials. For example, some of the more popular choices available for the housings and inserts are:

Housings:

- Stainless Steel
- Thermoplastic Composites
- Cast Iron (Nickel Plated)
- Cast Iron (Teflon Coated)
- Polymer

Bearing Inserts:

- Stainless Steel
- Thin Dense Chrome
- Zinc Coated
- Black Oxide

Housings

In many cases, the bearings are subjected to some rather harsh conditions including daily high pressure washdowns, environments saturated with moisture and contact with all types of caustic antibacterial cleansing solutions.

Periodically the bearings may come in contact with acids, cooking fats and other types of chemicals normally used in the processing of food and beverage products. Composite or thermoplastic housed units can help in these types of situations. They are typically lighter in weight than a cast iron housing with the added advantage that the housing will not chip or flake as compared to a plated housing. The improved technology in developing new composite materials has allowed significant improvements in the tensile strength of the composite housings and actually exceeds the static capacity of the inserts.

Higher strength cast iron units are generally a good choice for the red meat, pork and poultry sectors. Although plated housings and composite units withstand most chemicals, strong concentrations of chlorine, hydrogen peroxide and some other types of solutions could have harmful effects. This would be an excellent reason to consider using cast stainless steel units as an alternative. The housings are usually made from an AISI 300 series stainless material.

Another solution to consider is the use of nickel plated cast iron housings. Two of the more common methods used for nickel plating are either electroless nickel or the more popular CNC (copper, nickel, chrome) plating. The CNC plating provides the durability of corrosion protection with the added benefit of having a brighter, shinier appearance resembling stainless steel, as opposed to the older electroless nickel which has a dull appearance but also has good corrosion protection. The cast iron provides the strength, the nickel provides the protection and the cost is considerably less than all stainless steel. For those applications not requiring all stainless this is a very suitable alternative.

A smooth surface finish on the housings is a key characteristic. The smooth finish will permit better cleaning and allow any debris and bacteria to be easily washed away without becoming trapped in any crevices or imperfections. Solid base mounting surfaces play an important role in achieving this result.

Proper sanitation will help prevent the growth of *E. coli*, *salmonella* and *staphylococcus aureus* among other types of bacteria. In fact, housings are now available with anti-microbial coatings that further help prevent bacteria and fungal growth.