



## Dental Technology



## Market Demands

The dental bearing industry is mainly driven by three interests:

- Premium Quality
- Cost effective
- Availability

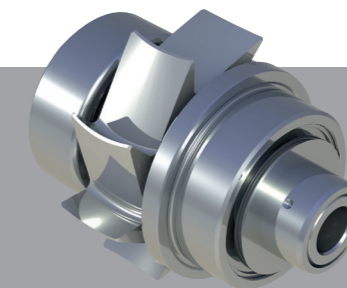
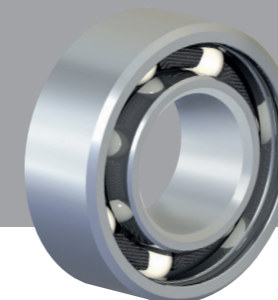
While most OEM's strive to achieve the longest possible product lifetimes in order to secure both their market position and reputation, there are regions in the world that need to look for a quality product, but with a clear focus on price.

In the aftermarket, the availability of high quality products is the most important factor.

Neither of the above requirements are more important than the other.  
The key is to understand and be prepared for the specific need.

On top of this, every region has its own market characteristics that dictate both OEM and aftermarket requirements as well.

As part of MinebeaMitsumi group, myonic brings its background as a leading dental bearing manufacturer to the table. We (myonic) have the customer relationships, engineering experience and established designs which come from years as the market's leading dental bearing manufacturer. As the world's largest bearing manufacturer, MinebeaMitsumi has the resources and industrial capacity which it can leverage in combination with myonic's dental standards to provide best in class quality products at very competitive prices.



# Applications

## Designing the right tool for the job

As dentists require different tools for different operations, so too do these tools require different components to meet the varying demands. Air turbines spin at up to 500,000 RPM, surgical tools must withstand large forces, and all tools must be sterilized or autoclaved at high temperatures. These demands dictate specialized bearing designs for each application, and we have the experience and expertise to do so.



Dental handpiece motors & Low speed prophylactic Handpieces

Contra Angle/Electric Handpieces

Air Turbine Handpieces

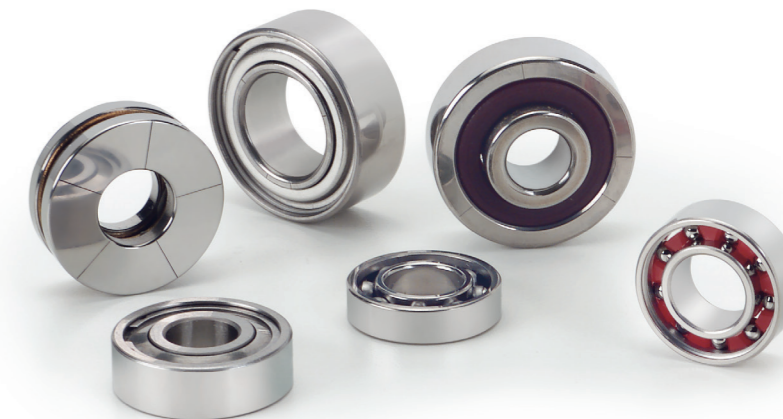
Surgical Instruments

# Bearing Categories

## Covering the needs of the entire dental market with a flexible product portfolio

In addition to varying applications, customers have different needs in terms of volume, lead time and pricing. Handpiece manufacturers require engineered solutions for new products. Aftermarket suppliers require a large variety of established geometries at competitive prices. Both groups have different expectations and we have organized our products to meet the demands of the customer and the dental application in a streamlined way.

We are proven leaders in the market for bearings used in dental instruments. Profound expertise in developing and producing bearings for OEM applications all over the world combined with standardization of components results in a cost-effective bearing for all common dental applications.



custom

- Specially engineered solutions
- Products with unique geometries
- Products containing most cutting edge developments not yet widely used

optimyn™

- Customizable within defined parameters
- Mature dental products with larger volumes

elemental

- Simplified product selection
- Very Large volumes and availability are of paramount importance





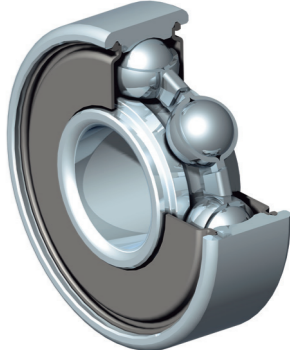
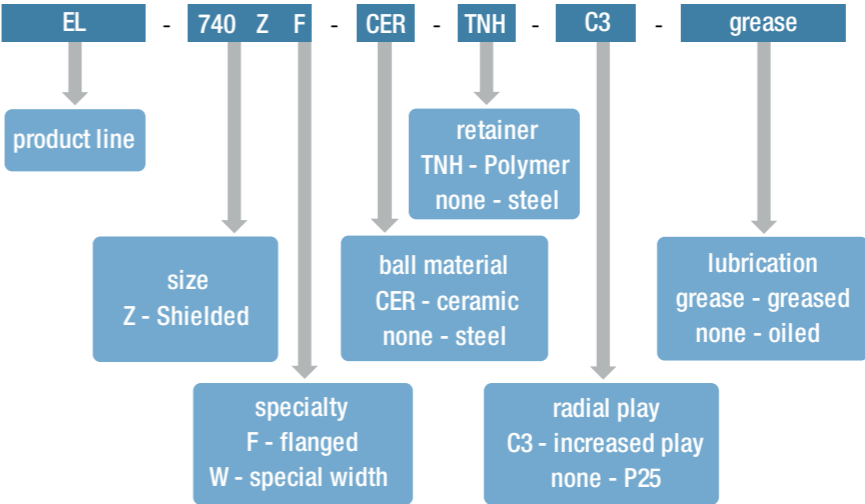
# elemental Line

**Standardized products that cover the low speed market needs at competitive price-points and quantities**

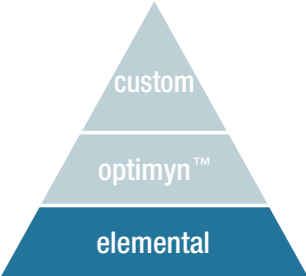
With the elemental bearing line, a simplified product selection eliminates the need to worry about configuring every aspect of bearing design.

MinebeaMitsumi brings together all the expertise from within the group to produce top quality dental bearings, with the cost advantages that come with high efficiency, high volume, standardized production.

### EL Line designation system



A typical reference would be "EL 740 Z" which would represent an elemental bearing with one side shielded, steel balls, steel cage, P25 specification, and oil for lubrication.



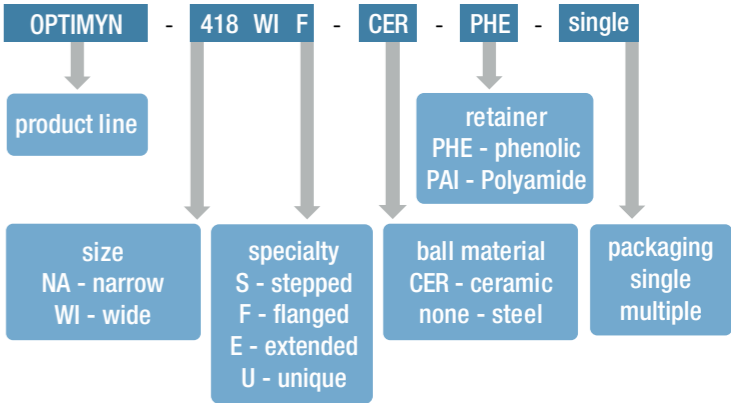
# optimyn™ Line

## Striking the perfect balance between cost, customization, and availability

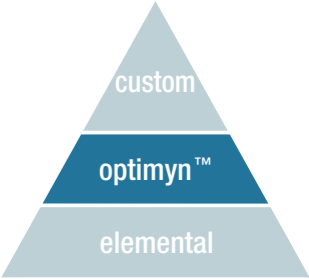
Straddling the line between both fully customizable and a completely fixed design is the optimyn bearing line. When a standard design needs to be altered for a new market or product, the optimyn line is the most streamlined method for doing so.

A few of the most common variations in geometry, material selection and packaging can be customized while still retaining an attractive price point.

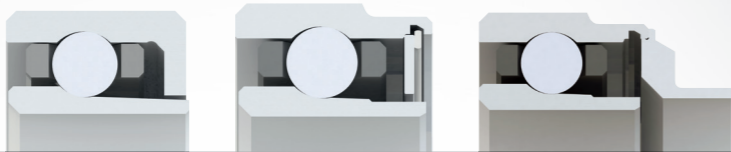
### optimyn Line designation system



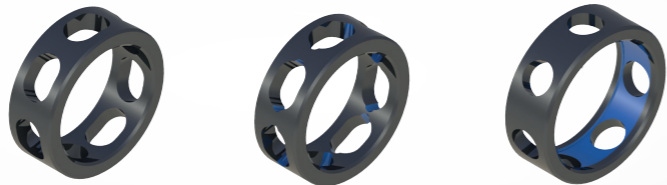
Reference above shows a wide flanged bearing with ceramic balls, phenolic retainer and single packaging.



**Customized Shield Configuration**



**Unique Cage Geometries to Optimize Bearing Dynamics**



**Special Solutions**



Laser Welding

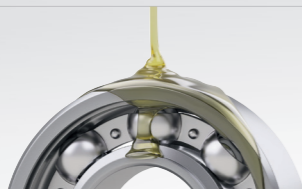
Integrated Raceway

Quick Stop

**Unique Geometries**



**Special Dental Lubricants**



**Turbine Assemblies**



# Custom Solutions

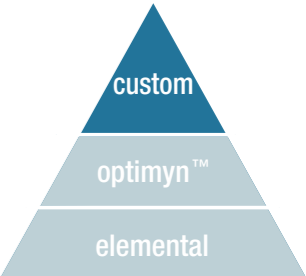
**Engineered solutions for the next generation of dental tools**

The elemental and optimyn lines are standards based on the most successful dental bearing designs of today. To stay competitive, handpiece manufacturers must always be pushing the cutting edge in terms of durability, size and performance. Manufacturers must also design to the needs of their market, whether it be for new applications, a specific market group, or new regulatory requirements.

Our custom solutions range from simply incorporating new materials into existing designs, to multi year projects designing, manufacturing and validating completely new bearing concepts.

**OEM partnership for product development**

Our greatest assets are our technical competence and experience with product integration. Our engineering teams are available to offer manufacturing for the entire rotational assembly. We differentiate ourselves by being a development partner, not just a supplier.



# Materials

## Designing the foundation for a precision product

There are specific requirements for the materials used in a dental instrument.

- Structural strength
- Wear resistance
- Autoclave stability

### Rings

We manufacture our bearings using the most widely established bearing steels, but purchased with unique specifications to achieve fine grained structure and the highest hardness. Additionally, MinebeaMitsumi group has developed nitrogen alloyed steels which can be used to have even greater corrosion resistance.

### Balls

We only use the best industrially available balls on the market. There's the choice between 440C stainless steel or ceramic balls.

### Retainer materials

myonic offers a variety of retainer materials applicable for any dental market in the world. The standard material is phenolic resin, which has been well established and widely used on the market for many years.

**PEEK with glass fibers** is the material of choice when autoclave stability is crucial.

**PEEK with dry lube ingredients** adds emergency running properties to the regular PEEK.

**PAI** has established itself as the high performance material with a good mixture of dry running properties and autoclave stability.

**PI** is our premium retainer material. Our exclusive PI formulation outperforms every other known retainer material in the market.

### Lubrication

Besides the well known and established greases used in dental applications, myonic has success developing and using its own high speed dental greases. If needed there are even lubricants with H1 approval available.

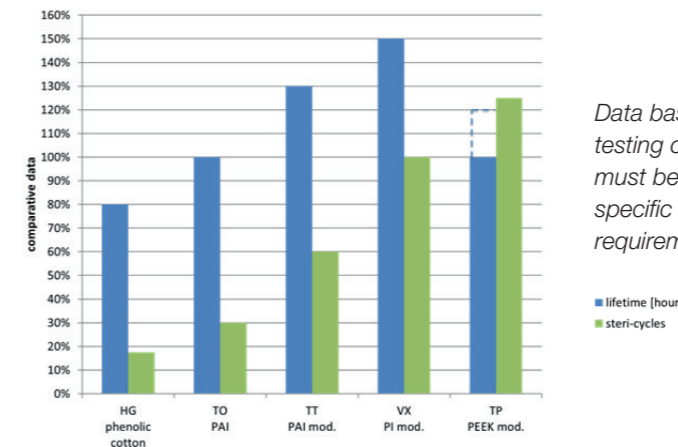
### Exclusivity

Some of the above mentioned materials are only available at MinebeaMitsumi group due to exclusivity agreements with the materials suppliers. With ongoing development programs, we ensure continuous advancement of our products and processes.

# Validation and Testing

## The proof is in the data

With our internally developed dental test rigs, myonic is able to test and verify the effectiveness of designs and materials used in a specific application. For example, we can reliably and accurately analyze retainer material developments in order to improve lifetime performance.



*Data based on internal testing only and must be verified for specific applications and requirements.*

## Improving corrosion resistance

To meet the growing demand for corrosion resistance, a new highly corrosion resistant nitrogen alloyed steel has been developed by MinebeaMitsumi group. For verification purpose the ISO specified salt spray test has been used.



Regular steel after standard ISO test

Common nitrogen alloyed steel used for improved corrosion resistance after extended test

Newly developed nitrogen alloyed Steel after extended test



**MinebeaMitsumi**  
Passion to Create Value through Difference

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Japan's **MinebeaMitsumi Inc.** is a global market leader in the manufacture of miniature ball bearings and high-precision components for the telecommunications and aerospace sectors, as well as for the automobile and electrical industries.

**myonic** is an independently operating company within the group, but also profits from the good transnational collaboration inside both the group and the business unit, an amalgamation with three other MinebeaMitsumi companies. These synergy effects enable us to provide our clients with extraordinary combinations of customized technical and methodological solutions, not to mention volume production.

