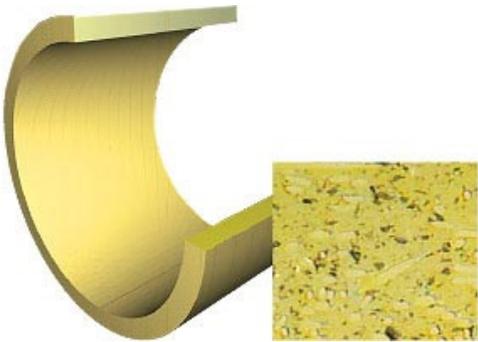


TECHTALK DESIGN ADVICE SERIES

THE 5 MAJOR BENEFITS OF PLASTIC BEARINGS



Plastic Bearings vs. Other Alternatives

Some engineers hesitate to use plastic bearings in their designs. Maybe they have trusted metal and bronze bearings for years or they simply don't think plastics can

handle the tough applications or environments. Plastic bearings, however, can endure extreme temperatures, heavy loads and high speeds. However, it's important to understand both the advantages and disadvantages of the options available.

Metal-backed, PTFE-based (polytetrafluoroethylene) polymer bearings have a steel backing bonded to a porous bronze sinter layer. The layer is impregnated and overlaid with the filled PTFE bearing lining. This thin lining can be scratched off by contaminants causing metal-to-metal contact between bearing and shaft. This increases the coefficient of friction (COF) causing higher wear rates and shaft damage.

With sintered-bronze bearings, oil is drawn from the bearing as it rotates on the shaft (minimum speed of 200ft/min). The oil creates a thin film that then separates the bearing and shaft, preventing wear and shaft damage. At high speeds, a low COF is achieved. However, shaft oscillation, slow speeds, irregular use or uneven loads can impede film lubrication from being maintained. As a result, the coefficient of friction and wear rates increase.

Self-lubricating polymer bearings contain solid lubricants embedded in millions of tiny chambers of the mostly fiber-reinforced material. During



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operation, the bearing transfers lubricant onto the shaft to help lower the COF. Unlike a sintered-bronze bushing, polymer bearings release solid lubricants as soon as the bearing or shaft is set in motion. The fiber-reinforced materials inside the bearing withstand any high forces or edge loads. Plastic bearings can also be used on many different shaft types. Also, it's important not to confuse high-performance plastic bearings with plastic bearings from a local injection molder. With iglide® plastic bushings, you can accurately calculate the life of a bearing according to wear

rates, actual testing results and specific application parameters. igus® provides the Expert System—a complimentary database where users enter the maximum loads, speeds, temperatures, and shaft and housing materials, which then prompts the system to calculate the appropriate plastic bearing and its expected lifetime based on real-world testing.

5 Major Benefits of Plastic Bearings

igus®, iglide® plastic bushings constitute the step from a simple plastic bushing to a tested, predictable and available machine component. They offer many advantages, but these five would make the top of any engineer's list:

1. Freedom from maintenance:

Plastic bushings can replace bronze, metal-backed and custom injection-molded bearings in almost any application. Their resistance to dirt, dust and chemicals make plastic bearings a 'fit-and-forget' solution.

2. Cost savings:

Plastic bushings can reduce costs up to 25%. They feature high wear resistance, a low coefficient of friction and can replace more costly alternatives in a variety of applications.

3. No messy lubricants:

Self-lubricating bearings transfer lubricant onto the shaft to help lower the coefficient of friction and are impervious to dirt, dust or other contaminants.

4. Consistent coefficient of friction (COF):

Plastic bearings are designed to maintain a low COF consistently over the lifetime of the bearing. Compared to metal-backed bearings, which can become scratched and increase the COF, plastic bearings often last longer.

5. Corrosion- and chemical resistance:

Plastic bearings can be used in wash-down applications, salt water and harsh chemicals without compromising performance. Water can even be considered as a lubricant for plastic bearings

Useful Links

[Learn more: iglide® plastic bushings](#)

[Expert System: bearing lifetime calculation program](#)

[Request catalog or sample](#)