



HIGH-PERFORMANCE CERAMICS

CERAMIC SLIDING BEARINGS FOR MAGNETIC MIXERS

Application:

Pharmaceutical industry

Material:

Zirconium Oxide **FZM**
Silicon carbide

In the production of pharmaceuticals, several substances such as powders and liquids are mixed employing in aseptic equipment. Hence, complete sterility of all mechanical components in such equipment is required. In this type of application magnetic stirrers are commonly used where there is no mechanical connection between the motor and the rotor of the stirrer, and the torque is transmitted by means of a magnetic field. Magnetic drive mixers without mechanical seals or stuffing boxes minimize the risk of contamination of the final product.

Key components of magnetic mixers are ceramic sliding bearings which are in direct contact with the mixed product and additionally are exposed to temperature changes and cleaning chemicals. Usually the male bearing is made of zirconium oxide and the female bearing is made of silicon carbide. The static, robust male bearing is attached to the vessel's tank plate and the rotating female bearing is integrated and sealed with the mixing head. The inner bearing made of zirconium oxide has increased resistance to impacts and damage from sudden rotor settling or during assembly/disassembly of the mixer. The outer bearing made of silicon carbide provides superior abrasion resistance and low surface roughness.

The hardness of both materials ensures long lifetime and no particle shedding. The sterility and inertia of the ceramics ensures maximum cleanliness in the tank. Ceramic bearings do not require additional lubrication. The resistance to temperature variations of both ceramics allows the use of cleaning and sterilization in place (CIP/SIP).



When buying bearings from KYOCERA, both ceramic materials come from a single source, which guarantees full material traceability. Both materials are perfectly matched to each other with strict tolerances and surface requirements. Thanks to our extensive mechanical machining facility we can achieve high quality surfaces with minimal friction in the operating mode and with reduced breakage risk in dry run conditions. For various designs and mounting solutions, we can produce ceramic threads or shrink fit ceramic in metal housings. For many years our bearings have been supplied to the largest manufacturers of magnetic mixers for to critical pharmaceutical applications. All of our materials employed for magnetic mixers comply with applicable FDA requirements and USP Class VI classifications.

KYOCERA supports you in finding the best ceramic solution for your mixing needs

- ▶ Proven quality in application
- ▶ Perfect finish and surface roughness
- ▶ FDA and USP Class VI compliant

Competence in Advanced Ceramics
Engineering for customized solutions