

## Press Information

### **High-Tech Ceramic Bearings from Kyocera for magnetic mixers revolutionize production of pharmaceuticals and food**

**Rotors and stators with magnetic coupling as sealing system convince with ceramic bearings through reliable and unproblematic sterilizability and germ-free operation. Additionally, the components ensure long lifetime and comply with the highest FDA safety standards.**

**Kyoto/London, February 24<sup>th</sup>, 2021.** Kyocera has successfully strengthened the development of plain bearings especially for magnetically coupled agitators. Based on universal expertise, Kyocera offers different ceramics for this application from a single source. This guarantees the reliable traceability of the materials. Due to Kyocera's core competence in technical ceramic, both components are Kyocera proprietary and come from a single source, which guarantees full material traceability. This is especially important in the production of pharmaceuticals and food. The pin and bearing ring are made of different ceramic materials. Both components' material perfectly match each other with strict tolerances and surface requirements. Thanks to Kyocera's extensive mechanical machining facility, high quality surfaces with minimal friction in the operating mode and with reduced breakage risk in dry run conditions could be developed.

#### **The mechanics**

The key components of magnetic mixers are ceramic sliding bearings which are in direct contact with the mixed product. Frictional wear, temperature changes and corrosive attack by cleaning chemicals determine the material selection for these highly stressed components. Usually, the male bearing is made from zirconium oxide and the female bearing is made from silicon carbide. The fixed bearing journal made of zirconium oxide is firmly connected to the tank plate of the tank. 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 from zirconium oxide has increased resistance to impacts and damage from sudden rotor settling or during assembly/disassembly of the mixer. The outer bearing made from silicon carbide provides superior abrasion resistance and low surface roughness.

#### **Usage**

In the production of pharmaceuticals and in the food industry, several substances such as powders and liquids are mixed for being employed 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 such as slide ring or stuffing box packing minimize the risk of contamination of the final product.

The hardness of Kyocera's sliding bearings ensures long lifetime and no particle shedding. Thanks to the sterility and inertia of the ceramics, the tank stays maximally clean. 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).

All of the materials employed for Kyocera's bearings comply with applicable FDA requirements and USP Class VI classifications.

**For more information on Kyocera:** [www.kyocera.co.uk](http://www.kyocera.co.uk)

#### **About Kyocera**

Headquartered in Kyoto, Japan, KYOCERA Corporation is one of the world's leading manufacturers of fine ceramic components for the technology industry. The strategically important divisions in the KYOCERA Group, which is comprised of 298 subsidiaries (as of March 31, 2020), are information and communications technologies, products which increase quality of life, and environmentally friendly products. The technology group is also one of the most experienced producers of smart energy systems worldwide, with more than 40 years of know-how in the industry.

The company is ranked #549 on Forbes magazine's 2020 "Global 2000" listing of the world's largest publicly traded companies. With a global workforce of over 75,500 employees, Kyocera posted sales revenue of approximately €13,33 billion in fiscal year 2019/2020. The products marketed by the company in Europe include printers, digital copying systems, semiconductor-, fine ceramic-, automotive- and electronic components as well as printing devices and ceramic kitchen products. The KYOCERA Group has two independent companies in the United Kingdom: KYOCERA Fineceramics Ltd. and KYOCERA Document Solutions Ltd.

The company also takes an active interest in cultural affairs. The Kyoto Prize, a prominent international award, is presented each year by the Inamori Foundation — established by Kyocera founder Dr. Kazuo Inamori — to individuals worldwide who have contributed significantly to the scientific, cultural, and spiritual betterment of humankind (converted at approximately €828,000 per prize category).

---

#### **Contact**

KYOCERA Fineceramics Ltd.  
Daniela Faust  
Manager Corporate Communications  
Prospect House, Archipelago  
Lyon Way, Frimley  
Surrey GU16 7ER  
England  
Tel.: [+44 1276 693450](tel:+441276693450)  
Fax: +44 (0)1276 - 69 34 60  
Mobile: +49 (0)175/727 57 06  
Mail: [daniela.faust@kyocera.de](mailto:daniela.faust@kyocera.de)  
[www.kyocera.co.uk](http://www.kyocera.co.uk)