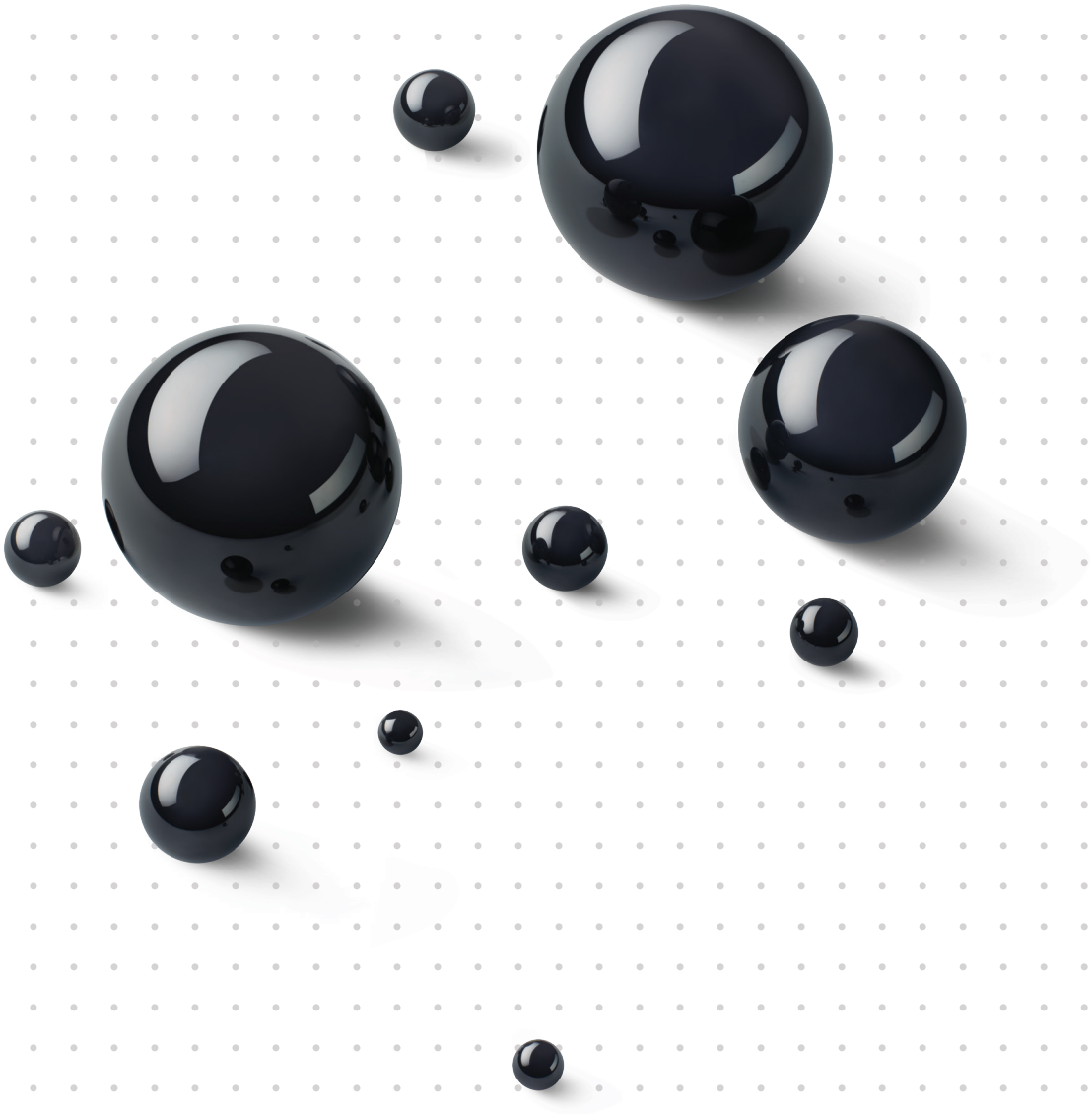
CoorsTek

Cerbec® Silicon Nitride Bearing Balls
For EV Traction Motors



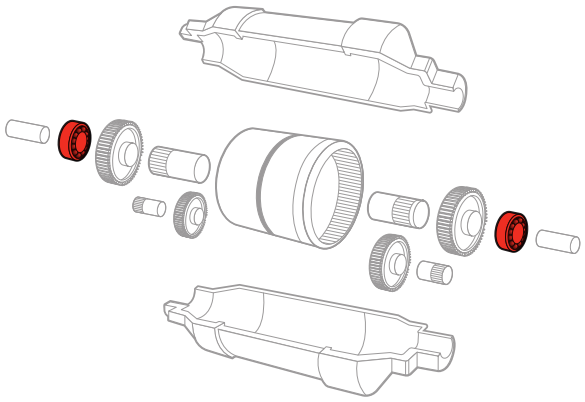
Guaranteed Performance with Cerbec® Silicon Nitride Bearing Balls for EV Motor Shaft Bearings

Silicon nitride bearing balls offer the ideal combination of mechanical strength and electrical resistivity for usage in electric vehicle traction motors. Unlike steel, silicon nitride hybrid bearing assemblies provide strong electrical insulation to eliminate arcing without compromise to critical mechanical properties.

Silicon nitride bearing balls are extremely smooth for low friction, tough enough to withstand shock loads, and very hard for rolling efficiency and durability. Using hybrid bearing assemblies with Cerbec® silicon nitride bearing balls is plug and play—bearing assembly dimensions for hybrid and steel are the same and therefore do not require a system redesign.

PREVENTS ELECTRICAL ARCING: SILICON NITRIDE VS. STEEL

In electric vehicle motors, especially those designed as variable speed drives, shaft voltage occurs from leakage, induction, or capacitive coupling with the windings of the motor and can create arcing in the bearing assembly.



Steel bearing balls in electric traction motors ride on a thin film of oil to reduce contact and friction. This acts as an insulator by blocking the current pathway between the rotor and stator, causing charge build-up. Arcing occurs when this build-up is suddenly released by brief metal-to-metal contact, or when the voltage is high enough to cross the oil film. This arcing can lead to excessive pitting and early failure (total seizure) after enough repetition.

Inherently electrically resistant, silicon nitride bearing balls prevent arcing caused by charge build up or high voltage.

In addition to offering the right mix of mechanical properties and electrical insulation ideal for usage in EV motor shafts, Cerbec® silicon nitride bearing balls require less lubrication, are corrosion resistant, and 58% lighter than steel alloys, which also increases the high-speed capability of hybrid bearing assemblies.

CERBEC® : THE ORIGINAL SILICON NITRIDE BEARING BALL

Since 1910, CoorsTek has been at the forefront of technical ceramic engineering and development and has been a trusted and consistent automotive supplier for over 70 years. As a vertically integrated manufacturer, CoorsTek oversees every step of the production process from powder processing through forming, firing, finishing, and inspection—guaranteeing the highest possible quality and performance.

Since developing the original Si_3N_4 bearing ball technology and introducing the Cerbec® brand in 1985, we have since manufactured and sold billions of Si_3N_4 balls for use in critical duty applications—setting the industry standard for high performance, quality, and supply continuity.

With unparalleled ceramics expertise, CoorsTek offers a full suite of technical capabilities, custom solutions, and cooperative development opportunities to ensure optimized performance for individual applications.

SIZE RANGE AND CUSTOM MANUFACTURING

In addition to 5/16” diameter bearing balls suitable for EV motor shaft applications, Cerbec® bearing balls are available in sizes ranging from .5mm (.02”) to 50mm (2”). Additionally, CoorsTek offers custom manufacturing capabilities for roller, tapered roller, and other rolling element designs.

CERBEC® SILICON NITRIDE MATERIALS

CoorsTek offers ceramic balls in different classes of Cerbec® silicon nitride with properties tailored to meet individual performance requirements.

Cerbec® balls are used in a wide variety of high-performance applications for automotive and other industries, including premium fuel injection systems, wind turbines, dental drills, and more.

CoorsTek engineers work with our customers to determine the best fit for their application. Contact your CoorsTek representative today to discuss your silicon nitride bearing needs.

Americas
+1 303 271 7100 tel
+1 855 929 7100 toll free in USA
info@coorstek.com

Europe
+49 160 530 3768
infoeurope@coorstek.com

Japan
+1 81 3 5437 8411
japaninfo@coorstek.com

China
+86 21 6232 1125
info_shanghai@coorstek.com

Korea
+82 31 613 2946
koreainfo@coorstek.com

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coorstek.com