

July 19, 2022

Toshiba Materials Co., Ltd.

**Toshiba Materials in Major Investment to  
Increase Silicon Nitride Ball Production Capacity**

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Yokohama--Toshiba Materials Co., Ltd. (President: Katsuaki Aoki) today announced a major investment in a new manufacturing facility for silicon nitride balls on the same site as its headquarters in Yokohama, Japan. The project has a budget of over 5-billion yen (approx. US\$38 million) and is expected to see production start in November 2023. It will increase capacity by 50% against fiscal year 2021.

Continued advances in automobile electrification requires solutions that go beyond higher voltage batteries and shorter charging times. One measure to reduce costs and improve performance is the integration of motors and inverters. Although this increases risk of electrolytic corrosion<sup>[1]</sup> in motor bearings<sup>[2]</sup>, the problem can be overcome with hybrid bearings, which replace standard steel balls with ceramic balls with steel inner and outer races. Advantages of high reliability, excellent strength and superior wear resistance are increasingly positioning ceramic balls as the solution of choice.

Toshiba Group has long recognized the potential of fine ceramic products, and won basic patents for silicon nitride compounds as early as 1974. Today, Toshiba Materials, spun off from Toshiba in October 2003, continues to advance R&D and manufacturing of silicon nitride balls, recognized for their reliability and for delivering the highest mechanical performance of any silicon balls. Its experience and record of success in bearing balls that meet demands for high speed rotation and anti-electrolytic corrosion, including machine tools, wind power generators and rolling stock, have won the company about 50% of the world market<sup>[3]</sup>. With significant increases in demand for bearings for electric vehicles on the horizon, Toshiba Materials has now decided to make this significant investment in increasing capacity.

The new production facility will be built on the company's headquarters site, where an old building, no longer in use, will be demolished to make way for it. The new facility should be seen as the first phase of expansion, and Toshiba Materials is already



considering further expansions to meet future demand growth.

Toshiba Materials will continue stable supply of high quality products, and will contribute to increased use of environmentally friendly electric vehicles.



Images of silicon nitride balls and bearings

#### Features of silicon nitride balls

- Low density: less than half the weight of a steel ball of the same size
- High heat resistance
- Resistant to electrolytic corrosion, as it is an insulator
- Resistant to corrosion and rust caused by acids and alkalis
- A non-magnetic material, not easily affected by a strong magnetic field

1 Electrolytic corrosion: damage to a bearing caused by a current flowing through it.

2 Bearing: A part that allows a shaft to rotate smoothly in a machine. Formed with an inner race, balls, and outer race.

3 Toshiba Materials' investigation, July 2022

#### **About Toshiba Materials**

Toshiba Materials Co., Ltd. (<https://www.toshiba-tmat.co.jp/en/>) was spun off from Toshiba Corporation in 2003. With material designing technology as its core capacity, Toshiba Materials supplies materials and components essential for society's development. Main products include metallic materials, components, fine ceramics parts and chemical materials. In the year ended March 31, 2021, net sales totaled 24.3 billion yen (approx. USD 210 million).

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