MBA

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Ceramic Hybrid Bearings in Vibratory Applications

We do not recommend that ceramic hybrid bearings be used in applications with mild to high vibration.

Ceramic hybrid bearings consist of a standard inner and outer race made from either AISI440C grade stainless steel or SAE52100 grade chrome steel, and balls made from ceramic – usually silicon nitride (Si3N4).

The races of these bearings are hardened to between 58 and 62 Rockwell C, the same as standard type ball bearings made from the same material. However, silicon nitride is even harder. Its hardness is greater than the hardness grades on the Rockwell C scale, but would be somewhere around 80-90 Rockwell C if the scale allowed for it.

Standard ball bearings don't really like vibratory applications, but ceramic hybrid bearings absolutely hate them. A standard ball bearing that has been subjected to high vibration will usually show signs of damage to balls and the cage, the weakest parts of the bearing. In a similar application, a ceramic hybrid bearing will usually develop wear and flaking of the raceways due to the repetitive pounding with a much harder object – the ball.

Ceramic hybrid bearings are much better suited to smooth running applications.