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Ceramic Bearings in Vibratory Applications

Like ceramic hybrid bearings, we do not recommend ceramic bearings for applications with mild to high vibration.

Whilst ceramic material is harder than SAE52100 chrome steel and AISI440C grade stainless steel, ceramic is also more brittle and prone to chipping, cracking and flaking through impact.

The hardness of silicon nitride is equivalent to around 90 Rockwell C, compared to standard chrome steel bearings at around 58-60 Rc. This makes full ceramic bearings ideal for wear resistance in smooth running situations.

Standard ball bearings don't really like vibratory applications, but ceramic 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 is more likely to crack and break.

It should be noted, that "smooth running" may mean different things to different people. In the context of bearings, "smooth running" means a situation where the bearing is housed in a stationary housing that receives minimal shock from attached or nearby equipment.

We don't recommend full ceramic bearings in mobile applications such as go karts, bicycles, motorbikes, automobiles or similar. Nor are they recommended for industrial assemblies prone to shock loads.

