# Ceramic Bearing Balls - Grades and Precision

Si3N4 bearing balls G5 / G10 / G20, 3-50 mm, hybrid and full-ceramic sets

NitriCeram silicon nitride bearing balls for hybrid and full-ceramic bearings. Grades and precision per ball-grade convention (ISO 3290); values below are our standard commercial capability.

| Item | Capability |
|---|---|
| Grade | G5 / G10 / G20 |
| Diameter range | 3 - 50 mm (custom sizes on request) |
| Sphericity | <= 0.13 um (G5) |
| Surface finish | Ra <= 0.02 um (polished) |
| Density | >= 3.20 g/cm3 (GPS + HIP) |
| Hardness (HV10) | 1500 - 1800 |

## Why Si3N4 balls outperform steel

| Property | Benefit in the bearing |
|---|---|
| ~60% lighter than steel | Lower centrifugal load at speed - higher RPM, less skidding |
| Higher hardness | Reduced wear and longer relubrication intervals |
| Electrical insulation | Prevents electric pitting in motor / inverter bearings |
| Non-magnetic | Stable in magnetic environments and sensors |
| Runs without lubrication film dependence | Survives marginal lube, dry-run events and vacuum |

## Typical applications

Machine-tool spindles and high-speed turbomachinery; EV motor and inverter-bearing insulation; wind turbines; aerospace and vacuum; pumps handling aggressive media; full-ceramic bearing sets for chemical service.

## Quality with every shipment

Material certificate (grade, sintering route GPS+HIP, measured density), 100% visual and dimensional inspection; grade report with sphericity and roughness on request. Hybrid bearing sets (Si3N4 balls + steel rings) and full-ceramic assemblies available.