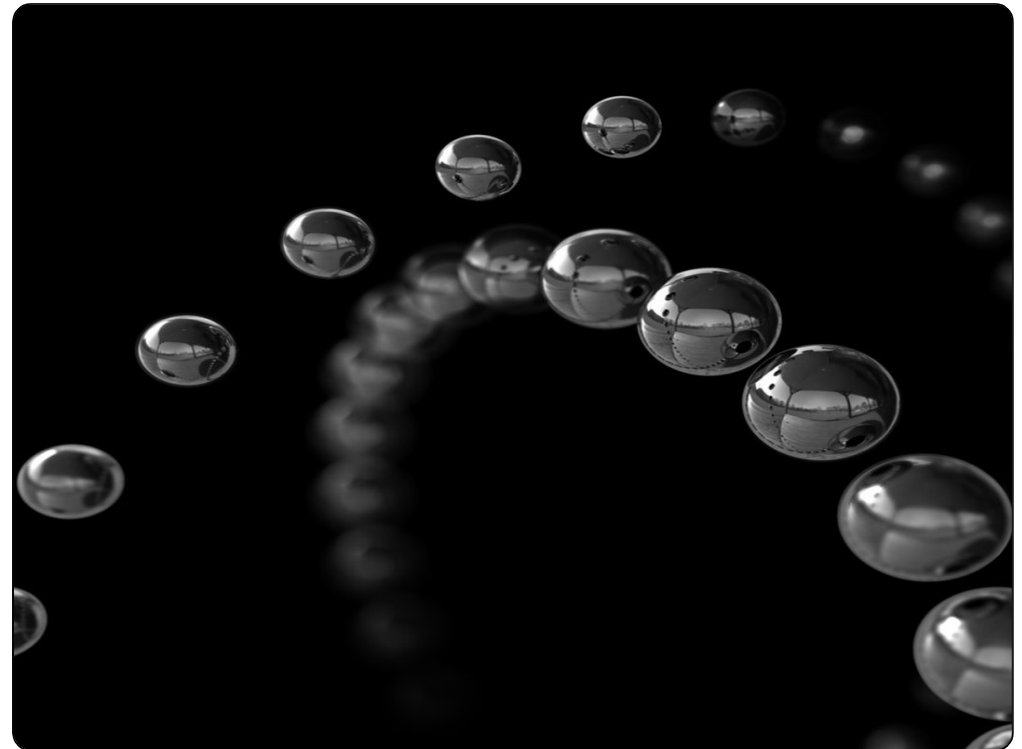


CeramicSpeed Silicon Nitride Balls

In comparison to hardened Steel Balls

- 58 % lighter than
- 128 % harder
- 400 % smoother
- 70% less thermal expansion
- Electrically insulating
- Chemically resistant / none corrosive



CERAMIC SILICON NITRIDE TYPICAL PROPERTIES

Material	NBD-200*	SN-101C**
Sintering Aid	MgO	Y ₂ O ₃ ; Al ₂ O ₃
Density [g/cm ³] (% Theoretical)	3.16 [> 99.9%]	3.21 [> 99.9%]
RT Flexural Strength [MPa]	>900	>1000
Weibull Modulus	15	15
Elastic Modulus [GPa]	320	310
Poisson's Ratio	0.26	0.27
Vicker's Hardness HV10	1550	1550
Fracture Toughness [MPa m ^{1/2}]	6	6.5
Thermal Expansion Coefficient (1 X 10 ⁻⁶ / °C [RT to 1000°C])	2.9	3.7
Thermal Conductivity ([W/m K] @ 25°C)	29	34
Electrical Resistivity [ohm-cm]	10 ¹⁴	10 ¹⁴
Dielectric Constant @ 1MHz	8.0	8.0
Corrosion 5% HF Solution, 500 Hours Weight Loss/Surface Area [g/cm ²]	0.68	0.10
Corrosion 5% HCL Solution, 500 Hours Weight Loss/Surface Area [g/cm ²]	0.0002	0.0036

*NBD-200 typical for balls 3.175 mm (0.125") diameter or smaller

**SN-101C typical for balls greater than 3.175 mm (0.125") diameter