



Si₃N₄ Ceramics of LD New Materials

Using the by-product of high-purity polysilicon manufactured by the world's fourth-largest polysilicon manufacturer which is our Chinese partner company as a raw material, Partner makes an integrated manufacturing of Si₃N₄ powder and Si₃N₄ sintered products.

Partner provides dense Si₃N₄ sintered ceramics by the gas pressure sintering. Si₃N₄ has many excellent properties such

as wear resistance, heat resistance, thermal shock resistance, and electrical insulation, so it is widely used as mechanical parts and high-temperature corrosion-resistance parts.

In addition, due to its low expansion coefficient, it has excellent characteristics as a precision part at room temperature.

Insulation protect rings for polysilicon manufacturing (φ80~150)



Characteristics Table of JSNM Si₃N₄

Code	JS110	JS120
Color	Dark grey	Grey
Density (g/cm ³)	3.2	3.2
Water Absorption (%)	0.0	0.0
Flexural Strength (MPa)	700	700
Young's Modulus (GPa)	300	290
Poisson's Ratio	0.28	0.27
Fracture Toughness (MPa·m ^{1/2})	6.8	6.5
Hardness HV1	1410	1400
Thermal Conductivity (W/mK)	20	21
Electrical Resistivity (Ωcm)	>10 ¹⁶	>10 ¹⁶
Applications	Wear resistance & Electrical isolation	Wear & Heat resistance

◆Table values are typical measured results of test pieces, actual properties may vary on practical condition and parts shape.

Advantages

1. Wear Resistance
2. Heat Resistance: ~1200°C
3. Thermal Shock Resistance: ΔT 700°C
4. Corrosion Resistance
5. High Strength: ~700MPa
6. Light Weight:
Density 3.2 ; 40% of Cast Iron
7. High Stiffness:
300GPa ; two times of Cast Iron
8. Electrical Isolation: >10¹⁶Ωcm
9. Low expansion:
1.3x10⁻⁶/K(RT); same as Invar alloy

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