

SILICON NITRIDE Si_3N_4



PANGEA INTERNATIONAL
www.pangea-intl.com

Applications Typical

- > ceramic cutting tools
- > heavy duty components in automotive engines
- > high-performance parts for mechanical engineering
- > bearing components, like high precision balls
- > SiAlONs
- > metallurgy (thermocouple protection tubes, stalk tubes, crucibles)
- > chemical engineering, e.g. heat exchangers
- > functional parts in textile machinery

Typical analysis

Si_3N_4	(%)	≈99.42
Free Si		≤ 0.5
Oxygen		≤ 1.5
Fe_2O_3		≤ 0.2
α - Si_3N_4	(%)	>90
Specific Surface Area (BET)	(m^2/g)	9~12
Average Particle Size / Laser		
Diffraction d_{50}	(μm)	0.35

Material characteristics

Density	(g/cm^3)	3.20~3.40
Hardness	(HV)	1500~1700
Bending Strength	(Mpa)	1080
Fracture Toughness	($\text{Mpa m}^{1/2}$)	6~8
Thermal Conductivity	($\text{W}/\text{m}\cdot\text{K}$)	23~25
Heat Expansion Coefficient	($\times 10^{-6}/^\circ\text{C}$) (0~1400 $^\circ\text{C}$)	2.95~3.00