



Overview

Silicon Nitride (Si_3N_4) has the most versatile combination of mechanical, thermal, and electrical properties of any advanced ceramic material. It is tough, strong, electrically insulating, and has exceptional thermal shock and impact resistance. PCSN3000 has enhanced strength due to hot isostatic pressing.

Primary Advantages

- High Strength Si_3N_4 Grade
- Good Fracture Toughness
- Good flexural strength
- Lightweight – Low density
- Electrically Insulating

Common Applications

- Aerospace Applications
- Bearing Applications
- Engine Wear Parts
- Foundry Applications
- Mechanical Engineering
- Medical Components
- Chemical Plant Engineering & Construction

	Properties	Units	PCSN3000
Mechanical	Compressive Strength	MPa	3000
	Density	g/cm^3	3.18-3.26
	Flexural Strength @ 25°C	MPa	760-830
	Fracture Toughness K_{Ic}	$\text{MPa m}^{1/2}$	6.2-6.5
	Hardness	GPa	15.3-15.6
	Young's Modulus	GPa	300-310
	Poisson's Ratio	-	0.26
Thermal	Thermal Conductivity	W/mK	22
	CTE @ 25°C – 250°C	$10^{-6}/\text{K}$	1.4
	CTE @ 25°C – 1000°C	$10^{-6}/\text{K}$	3.2
	Thermal Shock Parameter R1	K	590-620
	Thermal Shock Parameter R2	W/m	13
	Maximum Temperature (Air)	°C	1200
	Maximum Temperature (Inert)	°C	1400
Electrical	Dielectric Constant @ 1 MHz	-	8
	Dielectric Strength @ 25°C	kV/mm	19
	Volume Resistivity @ 25°C	ohm-cm	10^{14}

Disclaimer: The values presented are mean and typical of those resulted from test samples. They are provided as an indication only to serve as guidance in the design of ceramic components and are not guaranteed in any way. The actual values can vary according to the shape and size of the envisioned component.

