



Silicon Nitride Heater Protection Tubes

Product ID / SKU: FWM/SN-HPT-001

Material: Silicon Nitride (Si_3N_4) - Gas Pressure Sintered (GPS)

Product type: Silicon Nitride Ceramic Component

Silicon nitride heater protection tubes for immersion-heating assemblies in aluminum melting and holding equipment.

Representative silicon nitride heater protection tube configuration.

95% Si_3N_4 Typical Properties

Property	95% Si_3N_4	Condition / method
Density (g/cm^3)	≥ 3.2	-
Young's modulus (GPa)	300	-
Fracture toughness ($\text{MPa}\cdot\text{m}^{1/2}$)	6.2	-
Flexural strength (MPa)	> 720	25°C
Compressive strength (MPa)	2200	25°C
Thermal conductivity ($\text{W}/(\text{m}\cdot\text{K})$)	15-20	25°C
Coefficient of thermal expansion ($10^{-6}/\text{K}$)	3.0-3.2	25-1000°C
Volume resistivity ($\Omega\cdot\text{cm}$)	$> 10^{14}$	25°C
Typical maximum material temperature (°C)	1200	-
Poisson's ratio	0.26	-
Dielectric strength (kV/mm)	16	-
Relative permittivity	8.2	1 MHz; 25°C
Dielectric loss tangent	0.004	1 GHz; 25°C