

Data Sheet Specifications

General Description

Toshiba silicon nitride combines strength, hardness, toughness, corrosion resistance, high-temperature capability, and reduced weight. These attributes make it useful for many applications involving high contact stress sliding or rolling contact, corrosive chemicals, or high temperatures. TSN-03NH is certified as a Class I material according to the material property requirements of ASTM F2094, the highest industry-recognized classification. TSN-23H is certified as a Class II material.

Contact Information

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Bearing Grade Silicon Nitride

Item/Test Method	Condition	Units	TSN-03NH	TSN-23H
Density JIS R 4108	20 °C	g/cm ³	3.24	3.26
Hardness JIS R 1610	HV, 20 kg	—	1500	1460
Flexural Strength 3 Point Bending JIS R 1601	20 °C	Mpa kgf/mm ²	1100 110	1000 100
JIS R 1604	1000 °C	Mpa kgf/mm ²	750 75	
	1200 °C	Mpa kgf/mm ²	450 45	
Compressive Strength JIS R 1608	20 °C	Mpa kgf/mm ²	5300 530	4500 450
Young's Modulus JIS R 1602	20 °C	Gpa 10 ³ kgf/mm ²	310 31	313 31
Poisson's Ratio	20 °C	—	0.29	0.28
Fracture Toughness (Indentation Method) JIS R 1607	K _{IC} 20 kg, 30 sec	MPa√m	7	6
Thermal Expansion JIS R 1618	RT—500 °C	10 ⁻⁶ /°C	3.0	2.9
Thermal Conductivity JIS R 1611	20 °C	W/m— °C	20	23
Specific Heat JIS R 1611	20 °C	J/g— °C	0.68	0.68
Max. Thermal Shock	—	ΔT _c , °C	800	800
Max. Service Temp.	—	—	800	800
Color	—	—	Black	Black
Forming Process	Die Press	—	—	—
Sintering Process	Pressureless + HIP	—	—	—

This chart is intended to illustrate typical material properties and is representative only for using in comparing products. It is not to be construed as absolute engineering data or constitute a warranty or representation for which we assume legal responsibility. Contact TAEC-AMD to discuss the specific data you require.