



MACHINABLES

NON-MACHINABLES

	COLOUR	DENSITY	POROSITY	POISSONS RATIO	THERMAL CONDUCTIVITY	COEFFICIENT OF THERMAL EXPANSION	DIELECTRIC STRENGTH	DIELECTRIC CONSTANT	FRACTURE TOUGHNESS	FLEXUAL STRENGTH	HARDNESS	DC VOLUME RESISTANCY	MAX USE TEMPERATURE	THERMAL EXPANSIVITY	SPECIFIC HEAT	COMPRESSIVE STRENGTH
MACOR	White	2.52 g/cm ³	0%	0.29	1.46 Wm/°C	9.3x10 ⁻⁶ /°C 25-300°C	40 KV/mm	6.03 1 KHZ 25°C		94 MPa	400 Vickers	>10 ¹⁶ ohm/cm	1000°C	13x10/K	0.79 KJ/kg°C	345 MPa
SHAPAL - M	Fawn	2.9 g/cm ³	0%	0.31	90 Wm/°C	4.4x10 ⁻⁶ /°C	40 KV/mm	7.1 1 MHZ 25°C			560 Vickers	>10 ¹² ohm/cm	1000°C/1900°C*	5.2x10/K		1200 MPa
FIRED LAVA	Brown/pink		2.6%		1.25 Wm/°C	29x10 ⁻⁶ /°C	100 V/mm	5.3		10,000 psi	6 Mohs		1100°C/1600°C*			105 MPa
ZSBN	Grey	2.9 g/cm ³	2.4-3.4%		para 22.62 perp 40.21 Wm/°C	para 6.4 perp 1.98 x 10 ⁻⁶ /°C				para 10,460 perp 20,790	95-105 kg/mm Knoop		850°C/1600°C*	1100/1200°C	para 0.722 perp 0.705 (@100°C)	31.74 psi 23°C
BORON NITRIDE grade A	Off-white	1.92 g/cc	2.84%		para 30.13 perp 33.17 Wm/°C	para 11.85 perp 3.12 x 10 ⁻⁶ /°C	2400 V/mm	4.15-4.58		para 11,000 perp 16,400	15.51-24.19 kg/mm Knoop	>10 ¹⁴ ohm/cm	850°C/1100°C*	1100/1200°C	1.61 @700°C (J/g°C)	para 20,780 perp 27,060 psi 25°C
BORON NITRIDE HP grade	White	1.9 g/cc	15.26%		para 27.37 perp 30.97 Wm/°C	para 2.95 perp 0.87 x 10 ⁻⁶ /°C	1700 V/mm	4.02-4.3		para 6,340 perp 8,730	13.79-18.95 kg/mm Knoop	>10 ¹⁴ ohm/cm	850°C/1100°C*	1100/1200°C	1.468@700°C (J/g°C)	para 4,370 perp 6,460 psi 25°C
BORON NITRIDE AX05	White	1.91 g/cc	14.2%		para 71.3 perp 121.2 Wm/°C	para 0.57 perp 0.46 RT -1500°C x 10 ⁻⁶ /°C	2000 V/mm	4.0		para 2,025 perp 3,125	3.42-491 kg/mm	>10 ¹⁴ ohm/cm	850°C/2000°C*		1.5@700°C (J/g°C)	para 2,600 perp 3,400 psi 25°C
ALN	Fawn/grey	3.3 g/cm ³	0%		180 Wm/°C	3.8x10 ⁻⁶ /°C	20 KV/mm	9 1 MHZ	3.0 KIC	360 MPa	1100 Vickers	>10 ¹⁴ ohm/cm	1800°C		800 J/kgK	
BeO	White	2.9 g/cm ³			260 Wm/°C	10 ⁻⁶ /°K	10 KV/mm	7 1 MHZ		200 MPa	1200 Vickers	>10 ¹⁴ ohm/cm	1700°C		1000-1320 J/kgK	1750 MPa
BORON CARBIDE (B ₄ C)		2.48 + 0.02/ g/cm ³	0%	0.19 ± 0.02							3330 Vickers	- 0.85 ¹⁰	680°C		1.2 J/kgK	390 MPa
SILICON NITRIDE	Grey	2.5 g/cm ³		0.2	10-15 Wm/°C	3.2x10 ⁻⁶ /°C 20-800°C		10		200 MPa	1100 Vickers	>10 ¹⁰ ohm/cm	1150°C	3.1 500-1300	1100 J/kgK	550 MPa
PORCELAIN	White	2.4 g/cm ³	0%		2.06 Wm/°C	6.5x10 ⁻⁶ 20-800°C	25 KV/mm				7-8 Mohs					480 MPa
SILICON NITRIDE sintered	Grey	3.3 g/cm ³	0%	0.24	25 Wm/°C	3x10 ⁻⁶ /°C				650 MPa 20°C	1500 Hvo.3	>10 ¹⁰ ohm/cm	1150°C	3.3 500-1300K	800 J/kgK	2000 MPa
SILICON CARBIDE sintered	Black	3.1 g/cm ³	0%	0.17	150 Wm/°C	3x10 ⁻⁶ /°C				400 MPa 20°C	2800 Hvo.3		1400°C	3x10 ⁻⁶ °C	1100 J/kgK	2000 MPa
ZIRCONIA YTRIA stabilised	White	6.05 g/cm ³	0%	0.3	2 Wm/°C	10x10 ⁻⁶ /°C			10 KIC	1000 MPa (e20°C)	1300 Hvo.3	10 ⁹ ohm/cm 25°C	1000°C	10x10°C	400 J/kgK	2000 MPa
ZIRCONIA Mgo stabilised	Cream	5.6 g/cm ³	0%	0.31	2.5 Wm/°C	10x10 ⁻⁶ /°C			6.0 KIC	545 MPa (e20°C)	1120 Hvo.3	>10 ¹⁰ ohm/cm 25°C	1000°C		400 J/kgK	1700 MPa
ULE	Clear	2.2 g/cm ³	0%	0.17	1.31 Wm/°C	0x10 ⁻⁹ /°C						>10 ¹¹ ohm/cm	800°C		766 J/kgK	
ALUMINA 96% substrate	White	3.8 g/cm ³	0%		24 Wm/°C	7.8x10 ⁻⁶ /°C	10 KV/mm	9.8		360 MPa	1500 Vickers	10 ¹³ ohm/cm	1600°C	64x10 ⁻⁶	800 J/kgK	
ALUMINA high-purity re-crystalised	Off-white	3.8 g/cm ³	0%		30 Wm/°C		17 KV/mm	9.9			9 Mohs scale	10 ¹⁴ ohm/cm	1900°C	8.5x10 ⁻⁶	900 J/kgK	3500 MPa
ALUMINA high purity	Off-white	3.5 g/cm ³	0%	0.22	20-28 Wm/°C	84x10 ⁻⁶ /°C	10-25 KV/mm	9-10		330 MPa	1650 Vickers	10 ¹⁴ ohm/cm	1650°C	7.5-8.2x10 ⁻⁶	880 J/kgK	3700 MPa
QUARTZ	Clear	2.2 g/cm ³	0%	0.17	1.4 Wm/°C	0.55x10 ⁻⁶ /°C	25-40 KV/mm	3.8		80 MPa	1000 Vickers	10 ¹⁸ ohm/cm	1100/1400°C*	54x10 ⁻⁶	700 J/kgK	1100
SAPPHIRE	Clear	3.97 g/cm ³	0%	0.27-0.30	40 Wm/°C	8.8x10 ⁻⁶ /°C	15-50 KV/mm	7.5-11.5		1000 MPa	1700 Vickers	10 ¹⁴ ohm/cm	2000°C	5.8x10 ⁻⁶	750 J/kgK	2100

* Inert atmosphere

PRECISION CERAMICS USA

This table is intended as a guide only. Although every effort is made to ensure the accuracy, in some cases properties can vary.

total ceramic solutions for the 21st century - phone: (727) 388 5060 www.PCusinc.com