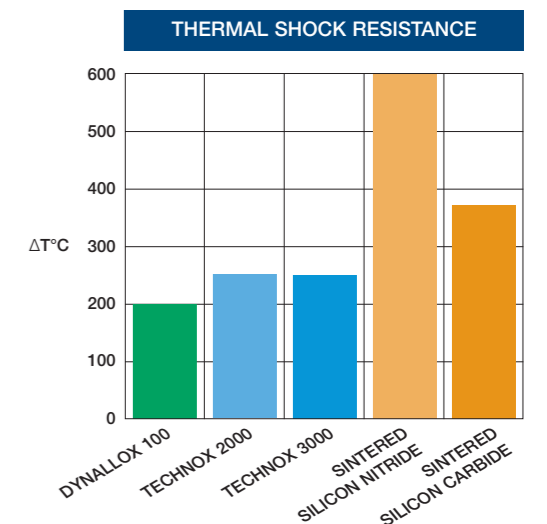
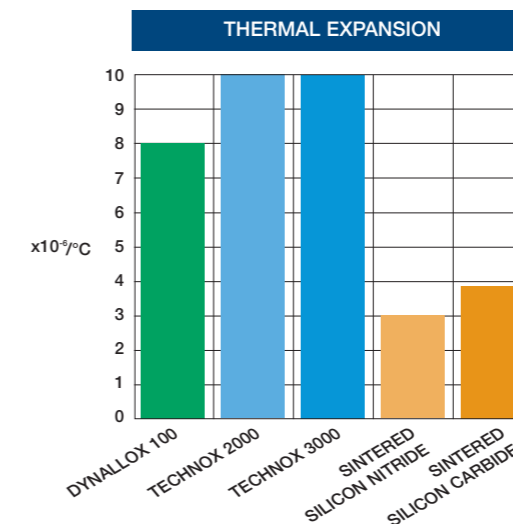
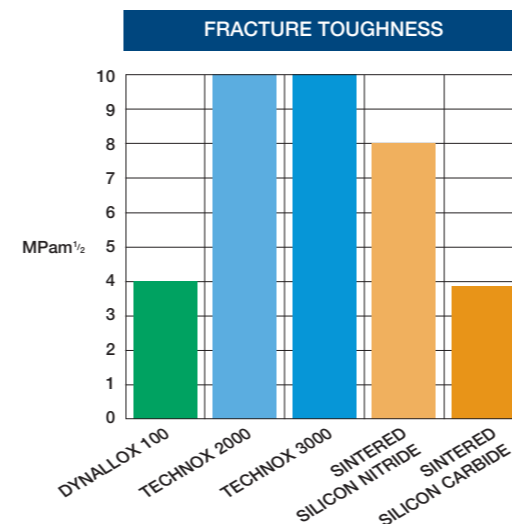
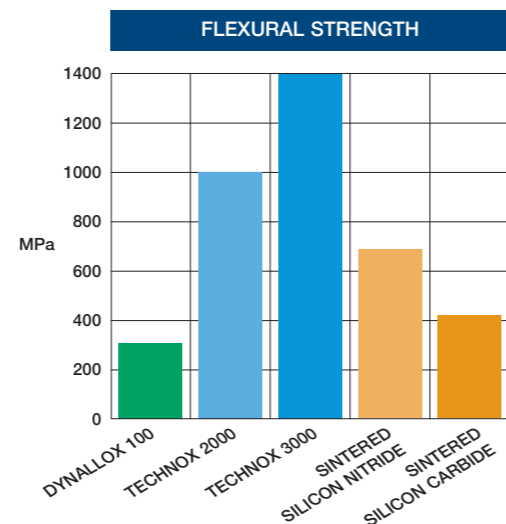


Material Properties

PROPERTIES	UNITS	TECHNOX® ZIRCONIA					DYNALLOX® ALUMINA				NON OXIDES						HARD METAL	
		Technox 500	Technox 1000	Technox 2000	Technox 3000	Technox 802	Dynalox Z	Dynalox 96	Dynalox 100	Dynalox HP	Sintered Silicon Nitride	Sintered Silicon Carbide	Macor	Shapal -M	Aluminium Titanate	Boron Nitride	Tungsten Carbide	
Composition or Abbreviation		Mg-PSZ	3Y-TZP	3Y-TZP	3Y-TZP	8Y-FSZ	ZTA	96% Al ₂ O ₃	99.7% Al ₂ O ₃	99.9% Al ₂ O ₃	SSN	SSC			Al ₂ TiO ₅	HPBN	6% Co	
Density	g/cm ³	5.6	6.05	6.05	6.05	5.7	4.6	3.67	3.89	3.92	3.25	3.12	2.52	2.9	3.15	1.9	15.00	
MECHANICAL PROPERTIES																		
Flexural Strength	20°C	MPa	545	800	1000	1400	180	900	360	330	350	690	410	94	300	35	60	1400
	800°C	MPa	354	250	270	270	270		250	250	250	450	410			50		Degrades
Compressive Strength		MPa	1700	2000	2000	2000	1500	2500	2100	2100	2500	2000	2000	345	1200		35	7000
Modulus of Elasticity		GPa	205	205	205	205	160	330	275	330	350	290	450	66.9	190	20		600
Poissons Ratio			0.31	0.30	0.30	0.30	0.30	0.23	0.22	0.22	0.22	0.24	0.17	0.29	0.31	0.2		0.26
Hardness		Hv _{0.3}	1120	1400	1300	1350	700	1650	1590	1600	1700	1500	2800	230	390		150	1500
Fracture Toughness (K _{IC})		MPam ^{1/2}	6.0	6.0	10.0	10.0	3.5	7.3	3.5	4.0	4.5	8.0	4.0	1.53		1.5		6.0
THERMAL PROPERTIES																		
Max. use Temp.		°C	1000	1000	1000	1000	1800	1500	1700	1800	1800	1150	1400	800	1000	1700	850	
Thermal Expansion Coeff.		x 10 ⁻⁶ /°C	10	10	10	10	11	8.0	7.8	8.4	8.5	3	4	9.3	4.4	0.5		
Thermal Conductivity		W/mK	2.5	2	2	2	2.5	17	25	29	28	25	100	1.46	90	1.5	29	60
Thermal Shock Resistance		ΔT°C	375	250	250	250	200	225	200	200	200	600	380		400	1000		
Specific Heat Capacity		J/kgK	400	400	400	400			870	870	870	800	1000	790	480			480
ELECTRICAL PROPERTIES																		
Resistivity	25°C	Ohm.cm	>10 ¹²	>10 ¹²	>10 ¹²	>10 ¹²	10 ⁸	>10 ¹⁴	>10 ¹⁴	>10 ¹⁴	>10 ¹⁴	10 ¹¹	100	10 ¹⁴	10 ¹²		>10 ¹⁴	
	400°C	Ohm.cm	5 x 10 ⁵	2 x 10 ³	2 x 10 ³	2 x 10 ³	6 x 10 ³	10 ⁹	3.1 x 10 ¹¹	1.6 x 10 ¹³	1.1 x 10 ¹³							
	1000°C	Ohm.cm	<10 ³	<10 ³	<10 ³	<10 ³	<10 ³	10 ⁶	10 ⁶	2 x 10 ⁶	2.4 x 10 ⁶	10 ⁷	0.5					

These values are typical of those obtained from test pieces and are offered for guidance in the design of engineering components.



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