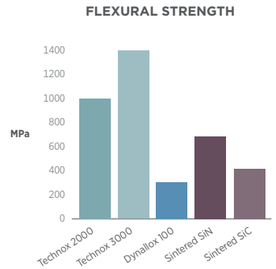
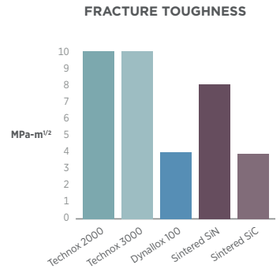
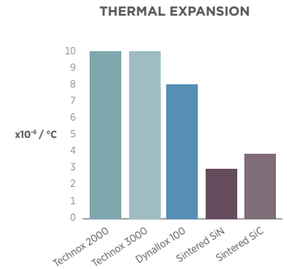
Material Properties

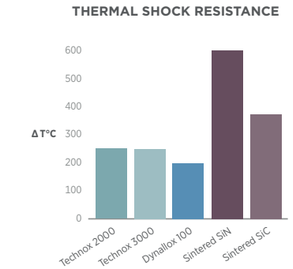
	Properties		Units	TECHNOX® ZIRCONIA					DYNALLOX® ALUMINA				NON OXIDES						HARD METAL
				Technox 500 (Mg-PSZ)	Technox 1000 (3Y-TZP)	Technox 2000 (3Y-TZP)	Technox 3000 (3Y-TZP)	Technox 802 (8Y-FSZ)	Dynallox Z (ZTA)	Dynallox 96 (96% Al_2O_3)	Dynallox 100 (99.7% Al_2O_3)	Dynallox HP (99.9% Al_2O_3)	Sintered Silicon Nitride (SSN)	Sintered Silicon Carbide (SSC)	Macor	Shapal -M	Aluminium Titanate (Al_2TiO_5)	Boron Nitride (HPBN)	Tungsten Carbide (6% Co)
MECHANICAL	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
	Flexural Strength (MOR)	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
	Poisson's 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}	$MPa\text{-}m^{1/2}$	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	Maximum Use Temperature		°C	1000	1000	1000	1000	1800	1500	1700	1800	1800	1150	1400	800	1000	1700	850	-
	Thermal Expansion Coeff.		$1 X 10^{-6}$/°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/m-K	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/kg-K	400	400	400	400	-	-	870	870	870	800	1000	790	480	-	-	480
ELECTRICAL	Resistivity	25 °C	Ω-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	Ω-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	Ω-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	-	-	-	-	-

The chart is intended to illustrate typical properties. Property values vary with method of manufacture, size, and configuration of part. Data contained herein is not to be construed as absolute and does not constitute a representation or warranty for which CoorsTek assumes legal responsibility. All properties are measured according to international standards (ASTM, DIN, JIS, etc.) applicable to country of origin. Contact CoorsTek for more information.









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