



Accumet Materials, Co.

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HIGH TEMPERATURE CERAMICS

Accumet Materials Co. offers a complete line of ceramics for applications requiring high temperature resistance, corrosion and thermal shock resistance, dimensional stability and good dielectric strength. Our ceramics offer the user an alternative to metals and polymer materials. Accumet's CERAM ceramics are used in a wide range of applications including, aerospace, chemical processing, defense, foundry, laboratory, optical and electronic.

Accumet is a leading producer of custom fabricated ceramic parts. Production capabilities include precision machining, extrusion, isostatic and dry pressing, low pressure injection molding, and slip-casting. In addition, Accumet can supply standard size tubes, crucibles and labware in CERAM alumina, magnesia and zirconia.

For a prompt quotation, call, fax, e-mail or write your requests and include dimensions, tolerances and a description of the application. Our engineers will recommend the material best suited for your application.

Properties	Units	CERAM-A96 Alumina, 96%	CERAM-A996 Alumina, 99.6%	CERAM-A997 Alumina 99.8%	CERAM-AN Aluminum Nitride	CERAM-AS Aluminum Silicate Fully-fired	CERAM-MGO Magnesium Oxide	CERAM-S Fused Silica	CERAM-Z Zirconia Partially stabilized w/Y ₂ O ₃
Maximum Use Temperature (no load)	°C (°F)	1700 (3090)	1750 (3180)	1750 (3180)	*	1150 (2100)	1500	1100 (2000)	1500
Density	gm/cc (lb/ft ³)	3.72 (232.2)	3.89	3.92	3.30	2.5 (143)	3.58 g/cc	2.2 (137.4)	6.2 (205)
Porosity	%	0	0	0	0	2.5		0	0
Flexural Strength	MPa (lb/in ² x10 ³)	345 (50)	379 (55)	375 (54)	380 (55)	(10)		-	900 (130)
Elastic Modulus	GPa (lb/in ² x10 ⁶)	300 (43.5)	375 (54.4)	370 (54)	320 (46.7)			73 (10.6)	210 (30)
Shear Modulus	GPa (lb/in ² x10 ⁶)	124 (18)	152 (22)		-			31 (4.5)	
Compressive Strength	MPa (lb/in ² x10 ³)	2100 (304.5)	2600 (377)	2500 (363)	2100 (304.5)	(25)	1020 (120)	1108 (160.7)	2500 (363)
Hardness	GPa (Kg/mm ²)	11 (1100)	14 (1400)	14.1 (1440)	11 (1100)	6	8 (800)	6 (600)	12.7 (1300)
Fracture Toughness K _{IC}	MPa•m ^{1/2}	3.5	4	4-5	2.6			-	13
Thermal Conductivity	W/m•°K (BTU•in/ft ² •hr•°F)	25 (174)	35 (243)	30	170	2.9 (5.2)	48.0	1.38 (9.6)	2.2
Coefficient of Thermal Expansion	10 ⁻⁶ /°C (10 ⁻⁶ /°F)	8.2 (4.6)	8.4 (4.7)	8.2	8.2 (4.6)	2.9	13.9	0.55 (0.31)	10.3 (5.2)
Specific Heat	J/Kg•°K (Btu/lb•°F)	880 (0.21)	880 (0.21)	880	740 (0.18)		(.22)	740 (0.18)	400
Dielectric Strength	ac-kv/mm (volts/mil)	14.6 (365)	16.9 (420)	8.7 (220)	17 (425)	(100)	(150)	30 (750)	9.0 (228)
Dielectric Constant	@ 1 MHz	9.0	9.8	9.7	8.9	5.3	9.6	3.82	29.0
Dissipation Factor	@ 1 MHz	0.0011	.00002	-	0.00001	.053		0.00002	
Volume Resistivity	ohm•cm @25°C	>10 ¹⁴	>10 ¹⁴	>10 ¹⁴	10 ¹⁴		10 ¹²	>10 ¹⁰	>10 ¹³