

Properties of Typical MPD Ceramic Bodies

	ALUMINA			FORSTERITE		
General Characteristics	A-1075 Alumina	A-923 Alumina (c)	OW151 Alumina	F-202 Forsterite	OW-6 Forsterite	F-118 Forsterite
Body Type	Low-loss	General purpose, low loss	Fine grained	Low loss, titanium-matching	General Purpose forsterite	Higher Expansion than F-202 and OW-6 forsterite
Color	White	White	Cream	White	Off-White	Buff
Alumina Content	94%	97%	99.6%	N/A	N/A	N/A
Constituent Oxides	Al ₂ O ₃ , SiO ₂ , MgO, CaO	Al ₂ O ₃ , SiO ₂ , MgO, CaO	Al ₂ O ₃ , MgO	MgO, SiO ₂ , Al ₂ O ₃ , BaO	MgO, SiO ₂ , Al ₂ O ₃	MgO, SiO ₂ , Al ₂ O ₃ , BaO
Porosity (a)	Non-porous	Non-porous	Non-porous	Non-porous	Non-porous	Non-porous
Gas Permeability (b)	None	None	None	None	None	None
Hardness, Mohs' Scale	9.0	9.0	9.0	7.5	7.5	7.5
Density, typical, g/cc	3.60 Min	3.70 Min	3.80 Min	3.10 Min	2.80 Min	3.05 Min
Flexural Strength, K psi	45-50	50-55	40-45	20-25	20-25	20-25
Thermal Expansion Coefficient, cm/cm°C x10 ⁻⁶ (d)	8.0 for 25°C - 800°C	8.1 for 25°C - 800°C	8.1 for 25°C - 800°C	10.8 for 25°C - 800°C	10.8 for 25°C - 800°C	11.2 for 25°C - 800°C
Typical Dielectric Constant (e)	9.1 at 10 ⁶ Hz at 25°C	9.28 at 10 ⁶ Hz at 25°C	9.98 at 10 ⁶ Hz at 25°C	6.76 at 10 ⁶ Hz at 25°C	5.2 at 10 ⁶ Hz at 50°C	6.62 at 10 ⁶ Hz at 25°C
Loss Tangent (Tan δ) (e)	.000245 at 10 ¹⁰ Hz at 25°C	.00165 at 10 ⁷ Hz at 25°C	.00664 at 10 ⁶ Hz at 25°C	.000245 at 10 ⁶ Hz at 25°C	.001 at 10 ⁶ Hz at 50°C	.000072 at 10 ⁶ Hz at 25°C

(a) Porosity - As measured by water absorption or dye penetration

(b) Gas Permeability - Measured using a helium mass spectrometer leak detector and a 0.010 inch thick specimen

(c) A-923 meets MIL-I-10B (Grade des. - L525X6/19C).

(d) Thermal Expansion Coefficients - More specific coefficients are available for other temperature ranges: [25-300°C], [25-600°C], [25-1000°C] (They differ only slightly from those shown) Please [contact our Ceramic Engineers](#) if you need more information.

(e) Dielectric Constants and Loss Tangents - More specific constants and tangents may be available for 10^2 Hz, 10^4 Hz, 10^6 Hz, 10^7 Hz, 8.5×10^9 Hz, and 10^{10} Hz at the following temperatures 25°C, 50°C, 200°C, 400°C, 500°C, 600°C. Please [contact our Ceramic Engineers](#) if you need more information.

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