

List of Characteristic Values

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Item / Unit			Single Layer					HTCC			Microwave Dielectric Ceramics*	
			Al ₂ O ₃		AlN			Al ₂ O ₃		AlN		
			HA-96-2	HA-996	AN-170	AN-200	AN-230	-	-	-		
Color	-	White	White	Gray	Gray	Baige	White	Brown	Gray	-		
Composition		96	99.6	-	-	-	92	92	-	-		
Reflectivity	%	70	-	-	-	-	-	-	-	-		
Bulk Density	g/cm ³	3.75	3.90	3.30	3.30	3.30	3.60	3.80	3.30	3.0~5.7		
Surface Roughness	μm	0.4	0.1	0.2	0.3	0.3	0.4	0.4	0.3	-		
Mechanical Characteristics	3-Point Bending Strength	MPa	400	470	450	400	350	350	350	350	-	
	Young's Modulus	GPa	330	330	320	-	-	280	280	320	-	
	Vickers Hardness	GPa	14	16	11	11	11	-	-	10	-	
Thermal Characteristics	Coefficient of Thermal Expansion	40-400°C	×10 ⁻⁶ /K	6.7	6.8	4.6	4.6	4.6	7.0	7.3	4.6	9.6~12.3
		40-800°C	×10 ⁻⁶ /K	7.8	7.9	5.2	5.2	5.2	-	-	5.2	
	Thermal Conductivity	25°C	W/(m · K)	24	29	180	200	230	16	15	170	-
	Specific Heat		J/(kg · K)	750	780	720	720	720	800	800	720	-
Electrical Characteristics	Dielectric Constant	1MHz	-	9.8	9.7	8.5	8.5	8.5	9.0	9.1	8.8	7~200
	Dielectric Loss	1MHz	×10 ⁻⁴	2	0.5	3	3	3	10	10	4	-
	Volume Resistivity	25°C	Ω · cm	> 10 ¹⁴	> 10 ¹⁴	> 10 ¹⁴	> 10 ¹⁴	> 10 ¹³	> 10 ¹⁴	> 10 ¹⁴	> 10 ¹⁴	-
	Dielectric Breakdown Voltage		kV/mm	> 15	> 15	> 15	> 15	> 15	> 15	> 15	>15	-

*Please refer to the category of Microwave Dielectric Ceramics for more details.