

Technical Ceramics

The Durox® family of alumina (Al₂O₃) ceramics are ideal for demanding applications requiring excellent thermal stability and low thermal expansion. Materion specializes in shapes with tight tolerances and/or complex geometric features. Alumina ceramic material is reliable when used in parts and components subjected to high temperatures. Durox is available in a range of shapes and purities.

Durox High-Purity Alumina Specifications*

			Durox 98	Durox AL
			97.6% Al ₂ O ₃	99.8% Al ₂ O ₃
	Property	Units		
Physical	Color		Off-white	Off-white
	Density	g/cm ³	3.83	3.94
	Grain Size	Micron (typical)	2	2
	Hardness	Rockwell 45N	85	85
	Gas Impenetrability	cc/sec He	10 ⁻⁸	10 ⁻⁸
Thermal	Thermal Conductivity	W/m•K (at RT)	27	30
	Coefficient of Thermal Expansion	10 ⁻⁶ /°C (RT to 1000°C)	7.5	8.0
	Specific Heat	Cal/g°C	0.20	0.20
Mechanical	Flexural Strength (MOR)	MPa (kpsi)	379 (55)	379 (55)
	Elastic Modulus	GPa (Mpsi)	351 (50.9)	360 (52.2)
	Tensile Strength	MPa (kpsi)	152 (22)	276 (40)
	Compressive Strength	MPa (kpsi)	2413 (350)	2413 (350)
	Poisson's Ratio		0.22	0.22
	Fracture Toughness (K _{IC})	MPa√m	4	4
Elastic Modulus	Dielectric Constant	1 MHz (at RT)	9.5	9.7
	Dielectric Constant	10 GHz (at RT)	9.4	9.6
	Dissipation Factor	1 MHz (at RT)	0.0001	0.0001
	Dissipation Factor	10 GHz (at RT)	0.0001	0.0001
	Volume Resistivity	Ω-cm (at RT)	>10 ¹⁵	>10 ¹⁵
	AC Dielectric Strength	V/mil (6.35 mm)	220	220

*Typical property values shown. Actual values may vary with size, shape and method of manufacture.

Disclaimer:

Only the buyer can determine the appropriateness of any processing practice, end-product or application. Materion does not make any warranty regarding its recommendations, the suitability of Materion's product, or its processing suggestions for buyer's end product, application or equipment.

The properties presented on this data sheet are for reference purposes only, intended only to initiate the material selection process. They do not constitute, nor are they intended to constitute, a material specification. Material will be produced to one of the applicable industry standards, if any, listed in the Industry Standards and Specification section.

Actual properties may vary by thickness and/or part number. Please contact your local sales engineer for detailed properties to be used in simulation.

Any properties marked as preliminary are subject to change at any time as the manufacturing process is further refined.

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