

THE
BEST-VALUE
PERFORMANCE
SUBSTRATE!

MATERIAL DATA



E L E C T R O N I C S

Advanced Ceramics for Power
Electronics Applications

**Material properties
of Rubalit® 708 S**
96% Al₂O₃

Rubalit® 708 S Al₂O₃ with 96% Aluminum Oxide

Rubalit® 708 S 96% Al₂O₃ is a power electronics substrate known for its best value-performance ratio, making it an ideal choice for a variety of industrial applications. Rubalit® 708 S 96% Al₂O₃ strikes a balance between thermal management and affordability. This material is widely used in applications requiring reliable electrical insulation and mechanical stability, such as industrial equipment, vehicle electrification systems, and renewable energy solutions, particularly for low-power devices. Its versatility and durability make it a preferred choice in demanding environments where efficient thermal management is still critical but secondary to cost optimization. As a result, Rubalit® 708 S 96% Al₂O₃ serves as the “backbone” of every bread-and-butter power module, ensuring reliable performance across multiple industries.

“Backbone” of
every Bread &
Butter Power
Module

Key advantages

Bending strength: ≥ 500 MPa
fracture toughness: ≥ 3.0 MPa* \sqrt{m}

The ceramic workhorse

Best price level for ceramics substrates

Ideally for copper metallization **DBC**

Mainly used in industrial applications

And for **power modules** for renewable energy and automotive applications **up to medium power class**



Standard Specification for Rubalit® 708 S 96% Al₂O₃

Physical Parameters		Unit	Range	Values*	Measurement Method
Surface roughness	R _a	µm	≤	0.6	Based on DIN EN ISO 4288
Density	-	g/cm ³	≥	3.75	Based on DIN EN 993-1
Bending strength DR sigma 0	3 Point Method, Sigma0 @0.38	MPa	≥	500	Based on ASTM C1499-08, typical value
Young's modulus	-	GPa	≥	300	Based on ASTM C1250-15, typical value
Thermal conductivity	RT	W/(m x K)		24	According to DIN EN 821-2, typical value
Coefficient of thermal expansion (CTE)	100 - 800 °C	10 ⁻⁶ /K	+/-	7.0 - 9.0	According to DIN 51045-1, typical value
Specific heat capacity	25 °C	J/(g x K)	≥	0.75	Based on DIN EN 821-3, method B, typical value
Dielectric constant (@ R _a ≤ 0.4 µm)	RT, 1 MHz	-	+/-	9.8	Based on ASTM D150, typical value
Dielectric loss factor (@ R _a ≤ 0.4 µm)	RT, 1 MHz	[10 ⁻³]	≤	1	Based on ASTM D150
Volume resistivity	RT	Ωcm	≥	10 ¹⁴	Based on IEC 62631-3, typical value
Breakdown strength	20 °C	kV/mm	≥	AC 15 DC 15	Based on DIN EN 60243-1
Standard size	-	inch		7.5" x 5.5" +/- 1.2 %	Based on DIN EN 60243-1
Thickness	-	mm		0.25 to 1.5 +/- 10%	
Warpage/camber**	-	%		0.2 - 0.6 %	
Fracture toughness	IF method	MPa*√m	≥	3.0	Typical value

* +/- 10% measurement tolerances

** Depends on substrate thickness.

The measured values mentioned before were determined for test samples and are applicable as standard values. The values were determined on the basis of DIN-/DIN-VDE standards and if these were not available, on the basis of CeramTec standards. The values indicated must not be transferred to arbitrary formats, components or parts featuring different surface qualities. They do not constitute a guarantee for certain properties. We expressly reserve the right to make technical changes.

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