DATA SHEET SAPPHIRE PROPERTIES

General	Chemical formula	Al_2O_3 (99.998%)
	Growing method	kyropoulos
Thermal	Melting temperature	2050 °C
	Linear expansion coefficient	6.7 x 10^{-6} / °C parallel to C axis 5.0 x 10^{-6} / °C perpendicular to C axis
	Thermal conductivity	46.06 W/m °K (0°C)
Optical	Refractive index	1.83@0.26um 1.76@0.63um 1.58@5.57um
Mechanical	Density at 20°C	3.98 g/cm^3
	Hardness	Mohs: 9 Knoop: 1800 daN/mm^2 parallel to C axis 2200 daN/mm^2 perpendicular to C axis
	Tensile strength	400 MPa/mm^2 (25°C) 275 MPa/mm^2 (500°C) 345 MPa/mm^2 (1000°C)
	Flexural strength	35 to 39 daN/mm^2
	Compression stress	2.0 GPa
	Young's modulus	3.6 x 10^4 to 4.4 x 10^4 daN/mm^2
Electric	Dielectric permeability	9.3 (10^3 - 10^9 Hz, 25°C) perpendicular to C axis 11.5 (10^3 - 10^9 Hz, 25°C) parallel to C axis
	Dielectric strength	4.8 x 10^5 v/cm
	Specific resistivity	10^{16} Ω/cm (25°C) 10^{11} Ω/cm (500°C) 10^6 Ω/cm (1000°C)
Transmission Range	190 nm to 1100 nm	Transmissivity 75% above at 190 nm to 250nm(without coating) Transmissivity 85% or more at 250 nm To 4500 nm (Without coating)

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