

SAPPHIRE

Sapphire can offer the ideal solution for applications where standard glass and technical ceramics are not sufficient. Superior physical, chemical and optical properties allow sapphire to be used in demanding conditions.

Sapphire is transparent, single crystal aluminium oxide. Sometimes, particularly for sapphire balls, a slight trace of chromium oxide is added which gives it a "ruby" color. The material can be made in different ways which affects the properties, particularly optical properties, and the shapes which can be manufactured. Sapphire is anisotropic i.e. some properties are not the same in all directions.

	PROPERTY	UNITS	
GENERAL	Chemical formula	n/a	Al ₂ O ₃
	Water absorption	%	0
	Density	g/cm ³	3.98
MECHANICAL	Compressive Strength	MPa	2000
	Flexural Strength	MPa	480-900
	Young's Modulus	GPa	350
THERMAL	Max. use temperature	°C	1800
	Thermal Conductivity	W/mK	40
	Coefficient of Linear Thermal Expansion	10 ⁻⁶ /°C	8.0
ELECTRICAL	Volume Resistance	Ωcm	10 ¹⁴
	Dielectric Constant		9.4-11.5
	Dielectric Strength	kV/mm	48

Properties shown are typical values, they are not absolute material properties, and should be used for guidance only. It is recommended that materials and components are tested for their suitability for a specific application.

Advantages:

Excellent optical characteristics, UV to IR
 High wear and scratch resistance
 High operating temperature (1800 °C)
 Chemically inert
 High strength
 High electrical resistance
 High thermal conductivity

Applications:

Optics
 Engineered components
 Substrates
 High pressure windows
 Precision spheres

For more information and advice please discuss your application with our sales staff.

→ www.goodfellow-ceramics.com

→ ceramic@goodfellow.com

USA

Goodfellow Corporation
 Tel: +1 800 821 2870
 Fax: +1 800 283 2020

France

Goodfellow SARL
 Tel: 0800 917 241 (n° vert)
 or +44 1480 424813
 Fax: 0800 917 313 (n° vert)
 or +44 1480 424900

Germany

Goodfellow GmbH
 Tel: 0800 1000 579 (freecall)
 or +44 1480 424810
 Fax: 0800 1000 580 (freecall)
 or +44 1480 424900

People's Republic of China

Goodfellow Shanghai Office
 Tel: +86 21 6112 1560
 Fax: +86 21 6130 4901

UK and all other countries

Goodfellow Cambridge Ltd
 Tel: 0800 151 3115 (Freephone)
 or +44 (0)1480 424888
 Fax: 0800 151 3225 (Freephone)
 or +44 (0)1480 424988

