

SAPPHIRE (Al₂O₃) COMPONENTS

Features

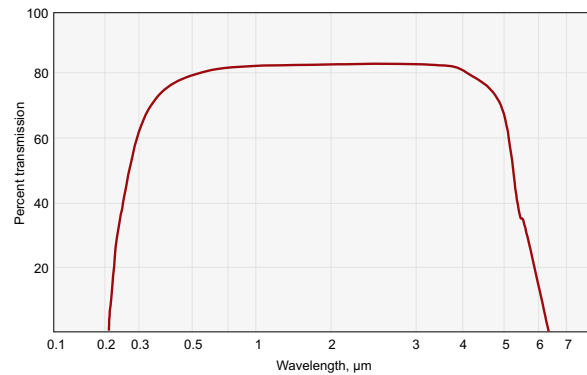
- The hardest of the oxide crystals
- Excellent transparency and thermal properties
- Chemically inert and insoluble
- Can be safely made much thinner than windows from glass or other crystals

Single crystal sapphire combines excellent optical, physical and chemical properties. Chemically inert and almost insoluble, sapphire in many ways is a superior material for windows. It is transparent from 150 nm up to 6 μm in the middle infrared.

Sapphire exhibits anisotropy in many optical and physical properties. Difference in the index of refraction in orthogonal directions is 0.008.

The high index of sapphire makes magnesium fluoride almost an ideal single layer anti-reflection coating.

Exact parameters depend on the orientation of optical axis or c-axis relative to the surface.



External transmission of Al₂O₃ window of 1 mm thickness

Physical properties

Crystal type	Hexagonal
Density, g/cm ³	3.97
Melting point, °C	2040
Refractive index	@ 0.3 μm, n = 1.814 @ 5 μm, n = 1.623
Transmission range, μm	0.17 – 5.5

Specifications for Sapphire windows

Material	Al ₂ O ₃
Surface quality	60 – 40 scratch & dig (MIL-PRF-13830B)
Clear aperture	80% of the diameter
Diameter tolerance	+0.0 / -0.13 mm
Thickness tolerance	±0.2 mm
Surface flatness	1 λ per inch @ 633 nm
Parallelism	3 arcmin
Orientation	C-cut

Diameter, mm	Thickness, mm	Catalogue number	Price, EUR
12.7	0.5	550-7120	29
12.7	1	550-7121	28
12.7	2	550-7122	28
12.7	3	550-7123	28
12.7	4	550-7124	30
12.7	6	550-7126	33
20.0	0.5	550-7200	39
20.0	1	550-7201	39
20.0	2	550-7202	39
25.4	0.5	550-7250	50
25.4	1	550-7251	50
25.4	2	550-7252	50
25.4	3	550-7253	50
25.4	4	550-7254	50
25.4	5	550-7255	55
38.1	2	550-7382	120
50.0	2	550-7502	173
50.0	3	550-7503	182

Please contact us for other size, shape or precision requirements. Coatings are available upon request.

Housing accessories

Mirror / Beamsplitter Mount 840-0036

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