

FELIX OPTICAL GLASS

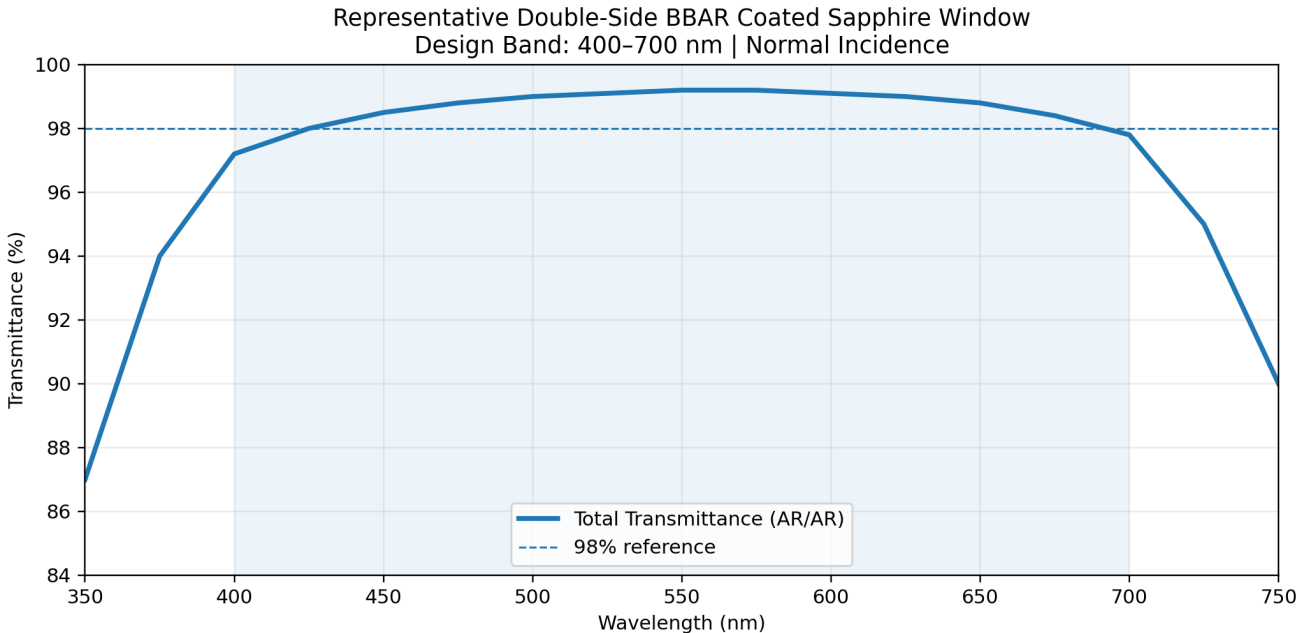
DOUBLE-SIDE AR COATED SAPPHIRE WINDOW

Representative Spectral Transmission Curve & Engineering Data Sheet

Reference Configuration

Item	Engineering Reference / Proposed Specification
Substrate	Optical-grade single-crystal sapphire (Al ₂ O ₃)
Example thickness	2.0 mm
Surfaces	S1 + S2 double-side anti-reflection coated
Coating type	Broadband multilayer AR (BBAR), hard dielectric
Design wavelength	400–700 nm
Angle of incidence	0° / normal incidence
Target average transmission	T _{avg} ≥98% over 400–700 nm
Representative peak transmission	~99.2% near 550–600 nm
Reference reflectance target	R _{avg} <1% per coated surface in design band
Polarization	Unpolarized reference
Clear aperture	≥90% typical / drawing-dependent
Surface quality	60-40 typical; 40-20 / 20-10 available by project

Spectral Transmission Curve



Important: This document shows a representative/proposed 400–700 nm double-side BBAR design for engineering and website reference. It is **not** a spectrophotometer measurement from a specific FELIX production lot. Actual coating performance depends on substrate thickness, coating stack, AOI, polarization, crystal orientation and production tolerances.

Representative Spectral Data — 400–700 nm

Wavelength (nm)	Representative T (%)	Representative R / surface (%)
400	97.2	1.35
425	98.0	0.95
450	98.5	0.70
475	98.8	0.55
500	99.0	0.45
525	99.1	0.40
550	99.2	0.35
575	99.2	0.35
600	99.1	0.40
625	99.0	0.45
650	98.8	0.55
675	98.4	0.75
700	97.8	1.05

Performance Interpretation

The sapphire substrate itself has broad UV-to-mid-IR transmission capability, but an uncoated sapphire window loses significant throughput to Fresnel reflection. A double-side AR/BBAR coating is designed to suppress those surface reflections in the selected band. Published coating suppliers show that double-side broadband AR designs on sapphire can achieve average transmission above 98% in visible bands such as 400–700 nm, depending on the coating design and substrate.

Recommended Customer Specification

Substrate: Optical-grade sapphire (Al₂O₃)

Coating: S1/S2 broadband AR, 400–700 nm

Target: Tavg ≥98% @ 400–700 nm, AOI 0°

Optional acceptance criteria: specify Ravg/Rmax per surface, minimum transmission at critical wavelengths, AOI range, environmental durability and coating adhesion requirements.

Reference Basis

Engineering targets were benchmarked against publicly available sapphire and AR-coating information. Vortex Optical Coatings publishes 400–700 nm two-side broadband AR capability for sapphire with >98% average transmission and <1% reflection per surface; other suppliers publish AR/AR sapphire windows for 400–700 nm and other custom bands. These references demonstrate feasible coating classes but do not constitute FELIX lot-specific test data.

Custom Sapphire Optical Window Manufacturer

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