

Optics from Sapphire

We offer raw materials in blanks (or other shapes) with requested sizes and orientations as well as completed polished and coated optical elements from this material. Usually there are customized elements.

refraction, transmission per 10mm (with Fresnel reflection)

λ [nm]	n_o	n_e	$T(\lambda)$ [%]		
200.0	1.9127	1.9016	75.0	Young's Modulus	\parallel 463 GPa, \perp 426 GPa
250.0	1.8452	1.8315	82.0		
300.0	1.8144	1.8053	83.8	Shear Modulus	148 GPa
350.0	1.7972	1.7885	84.2		
400.0	1.7865	1.7781	84.6	Bulk Modulus	240 GPa
450.0	1.7794	1.7710	84.9		
480.0	1.7761	1.7679	85.0	Specific Heat Capacity	760 J/Kg·K
486.1	1.7755	1.7673	85.0		
546.1	1.7707	1.7626	85.1	Dielectric Constant (at 30MHz)	\parallel 10.55 \perp 8.6
587.6	1.7681	1.7601	85.2		
643.8	1.7654	1.7574	85.3	Density	3.98 g/cm ³
656.3	1.7649	1.7569	85.3		
1000.0	1.7557	1.7678	85.5	Knoop Hardness (1000g load)	1370 kg/mm ²
3000.0	1.7122	1.7047	86.7		
4000.0	1.6752	1.6682	78.0	Melting Point	2030 °C
5000.0	1.6240	1.6184	40.0		
7000.0	1.4663	1.4590	5.0	Expansion Coefficients (+0~ +200°C)	\parallel 6.7x \perp 5.0x 10 ⁻⁶ /K
				Thermal Conductivity	\parallel 25.2 \perp 23.1 W/m·K
				Orientation: z-surface to y- and x- axes	zx +/- 15 arcmin zy +/- 15 arcmin
				Dimensions	y up to 350 mm x up to 500 mm z up to 30 mm

dispersion

λ [nm]	$v(\lambda)$	$v(\lambda)$
e-line 546.1	72.0	72.6
d-line 587.6	72.5	73.1
4000.0	7.7	7.7