ZERODUR

Precision Glass and Optics
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Description:

ZERODUR glass ceramic made by Schott is an inorganic, non-porous material made by a process of controlled volume crystallization. This produces a material with an extremely low coefficient of thermal expansion and of the highest homogeneity which makes it ideal for high precision applications.

Available Thicknesses:

Wide variety – per quotation.

Properties:

Refractive Index: nd (λ = 588 nm) = 1.5422
ng (λ = 435.8 nm) = 1.5544

Transmission: (estimated for 5 mm thick)

@400 nm	48%	@500 nm	80%
@600 nm	87%	@800 nm	91%
@1400 nm	92%	@2857 nm	50%

Mechanical and Thermal:

Density	2.53 g/cm^3
Young's Modulus at 20° C	90.3
Thermal Coefficient of Expansion	(0-50°C) = 0 ± .10 x 10^{-6}
Knoop Hardness (HK 0, 1/20)	620

Chemical:

Hydrolytic Resistance (ISO 719-HGB)	Class 1
Alkali Resistance (ISO being drafted)	Class 1
Acid Resistance (ISO 8424)	Class 1
Stain Resistance	Class 0

Electrical:

Dielectric Constant @ 1 Khz	8.0
Dielectric Loss Factor @ 1 Khz	29 x 10^{-3}
Specific Resistivity (Ω cm)	2.6 x 10^{13} @20°C
	3.5 x 10^{7} @200°C
	6.6 x 10^{3} @500°C

Applications:

Precision engineering, mirror substrates for large astronomical and x-ray telescopes, optical elements for comet probes, weather satellites, microlithography, frames and mirrors for ring laser gyroscopes.

Flatness, parallelism, cutting tolerances, roughness, cosmetic defects and visual inspection all conform to the specifications to be agreed upon by Precision Glass & Optics and the customer.