

PROPERTIES of Magnesium Fluoride (MgF₂)

MECHANICAL PROPERTIES

Young Modulus	: 138.5 GPa
Shear Modulus	: 54.66 GPa
Bulk Modulus	: 101.32 GPa
Knoop Hardness	: 5.7 GPa
Poisson's Ratio	: 0.276
Elastic Coefficients	: C ₁₁ =140; C ₁₂ =89; C ₄₄ =57; C ₁₃ =63; C ₆₆ =96
Apparent Elastic Limit	: 49.64 MPa
Solubility	: none
Density	: 3.18 g/cm ³

THERMAL PROPERTIES

Melting Point	: 1255°C
Specific Heat	: 0.24 cal/(g·°C) at 25°C : 0.362 cal/(g·°C) at 1427°C
Thermal Expansion Coefficient	
Parallel	: 14×10 ⁻⁶ °C ⁻¹ at 37°C
Perpendicular	: 8.9×10 ⁻⁶ °C ⁻¹ at 37°C
Thermal Conductivity	: 14-15 W/(m·°C) at 27°C

ELECTRICAL PROPERTIES

Dielectric Constant	: 5.45 for 29×10 ³ -42×10 ⁶ Hz
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OPTICAL PROPERTIES

Transmission Range	: 0.11...7.5μm
Transmittance	: > 90% (1.5...7μm; 1mm thick)
Refractive Index	: N ₀ =1.3836 at 0.405μm; N _e =1.3957 at 0.405μm
Absorption Coefficient	: 40×10 ⁻³ cm ⁻¹ at 2.7μm

TRANSMISSION CURVE

