

Mateck Magnesium Fluoride (MgF2)

Category : Ceramic , Halide

Material Notes:

Optical crystals

Order this product through the following link:

http://www.lookpolymers.com/polymer_Mateck-Magnesium-Fluoride-MgF2.php

Physical Properties	Metric	English	Comments
Density	3.18 g/cc	0.115 lb/in ³	
Solubility	0.0076 ppm	0.0076 ppm	
a Lattice Constant	4.64 Å...	4.64 Å...	
c Lattice Constant	3.06 Å...	3.06 Å...	
Molecular Weight	62.32 g/mol	62.32 g/mol	

Mechanical Properties	Metric	English	Comments
Vickers Microhardness	2890	2890	MPa
	4410	4410	MPa
Hardness, Mohs	6.0	6.0	
Modulus of Elasticity	79.7 GPa	11600 ksi	parallel to c-axis
	169.1 GPa	24530 ksi	perpendicular to c-axis
Poissons Ratio	0.577	0.577	
Shear Modulus	57.1 GPa	8280 ksi	perpendicular to c-axis
	95.2 GPa	13800 ksi	parallel to c-axis

Thermal Properties	Metric	English	Comments
CTE, linear	6.23 - 9.25 $\mu\text{m}/\text{m}\cdot\text{Å}^\circ\text{C}$	3.46 - 5.14 $\mu\text{in}/\text{in}\cdot\text{Å}^\circ\text{F}$	perpendicular to c-axis
	@Temperature -60.0 - 60.0 $\text{Å}^\circ\text{C}$	@Temperature -76.0 - 140 $\text{Å}^\circ\text{F}$	
	10.86 - 14.54 $\mu\text{m}/\text{m}\cdot\text{Å}^\circ\text{C}$	6.033 - 8.078 $\mu\text{in}/\text{in}\cdot\text{Å}^\circ\text{F}$	parallel to c-axis
	@Temperature -60.0 - 60.0 $\text{Å}^\circ\text{C}$	@Temperature -76.0 - 140 $\text{Å}^\circ\text{F}$	
Specific Heat Capacity	0.920 J/g- $\text{Å}^\circ\text{C}$	0.220 BTU/lb- $\text{Å}^\circ\text{F}$	

Thermal Properties	Metric	English	Comments
Refractive Index	1.3786	1.3786	at ne
	1.3904	1.3904	at n _f - n _c '
	1.3044	1.3044	no
	@Wavelength 7000 nm	@Wavelength 7000 nm	
	1.3101	1.3101	ne
	@Wavelength 7000 nm	@Wavelength 7000 nm	
	1.3618	1.3618	no
	@Wavelength 3000 nm	@Wavelength 3000 nm	
	1.3724	1.3724	ne
	@Wavelength 3000 nm	@Wavelength 3000 nm	
Transmission, Visible	97 %	97 %	Internal Transmittance
	@Wavelength 500 nm	@Wavelength 500 nm	
IR Transmittance	12 %	12 %	Internal Transmittance
	@Wavelength 8000 nm	@Wavelength 8000 nm	
UV Transmittance	91 %	91 %	Internal Transmittance
	@Wavelength 6000 nm	@Wavelength 6000 nm	
UV Transmittance	95 %	95 %	Internal Transmittance
	@Wavelength 200 nm	@Wavelength 200 nm	

Descriptive Properties	Value	Comments
Cleavability	(100)	perfect
	(110)	
Constants of Elastic Compliance (Pa ⁻¹)	1.053E-11	S66
	1.245E-11	S11

Descriptive Properties	-1.66E-12 Value	S13 Comments
	1.754E-11	S44
	5.94E-12	S33
	-7.16E-12	S12
Symmetry Class	4/mmm	
Syngony	tetragonal	
Thermal Coefficient of Refractive Index	1.5E-6 to 1E-6	Δn _o at 3.39 microns for Δ±60°C
	1.5E-6 to 1E-6	Δn _e at 3.39 microns for Δ±60°C
Transmission Range (microns)	0.13 - 0.7	

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