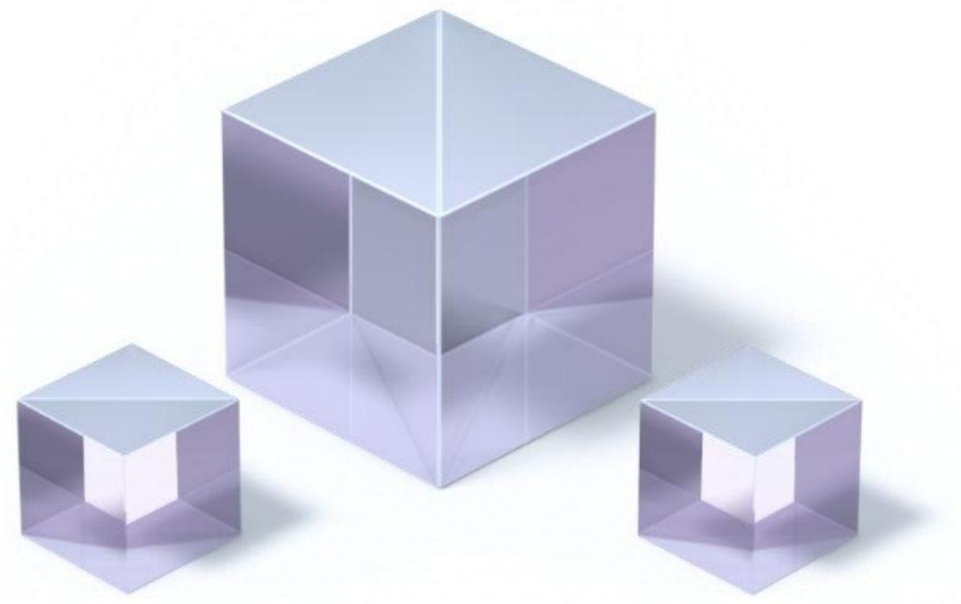
Magnesium Fluoride

MgF_2 Datasheet

德硅凯氟
DESIOPTOE



KEY ADVANTAGES

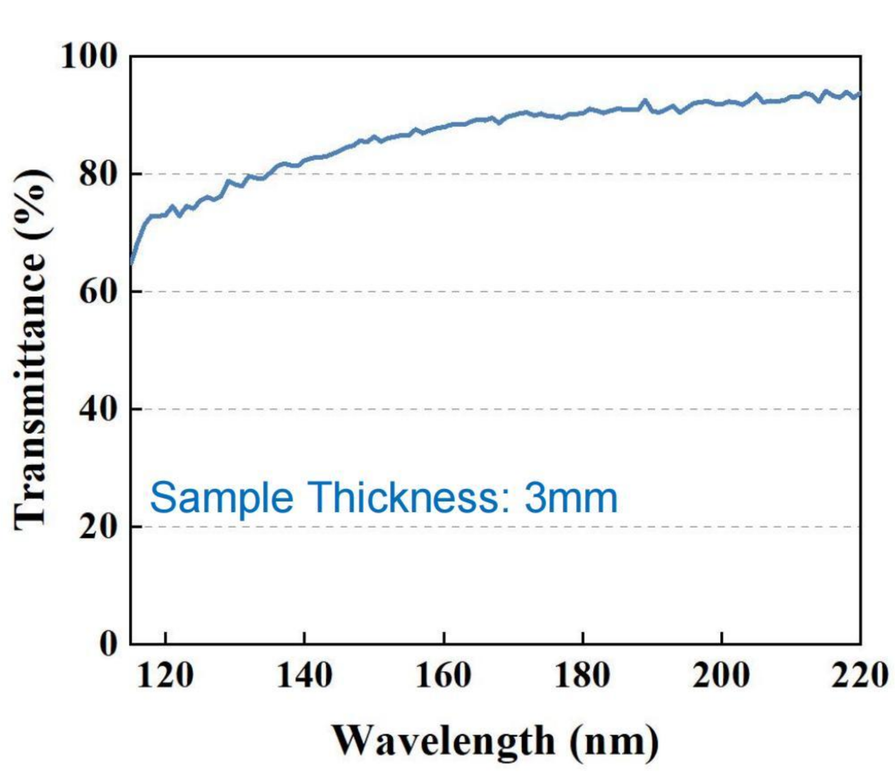
- **Broad Spectrum High Transmittance**
- **High Laser-Induced Damage Threshold**
- **Excellent mechanical properties**
- **Low absorption**

DESIOPTOE is a professional manufacturer of fluoride crystals.

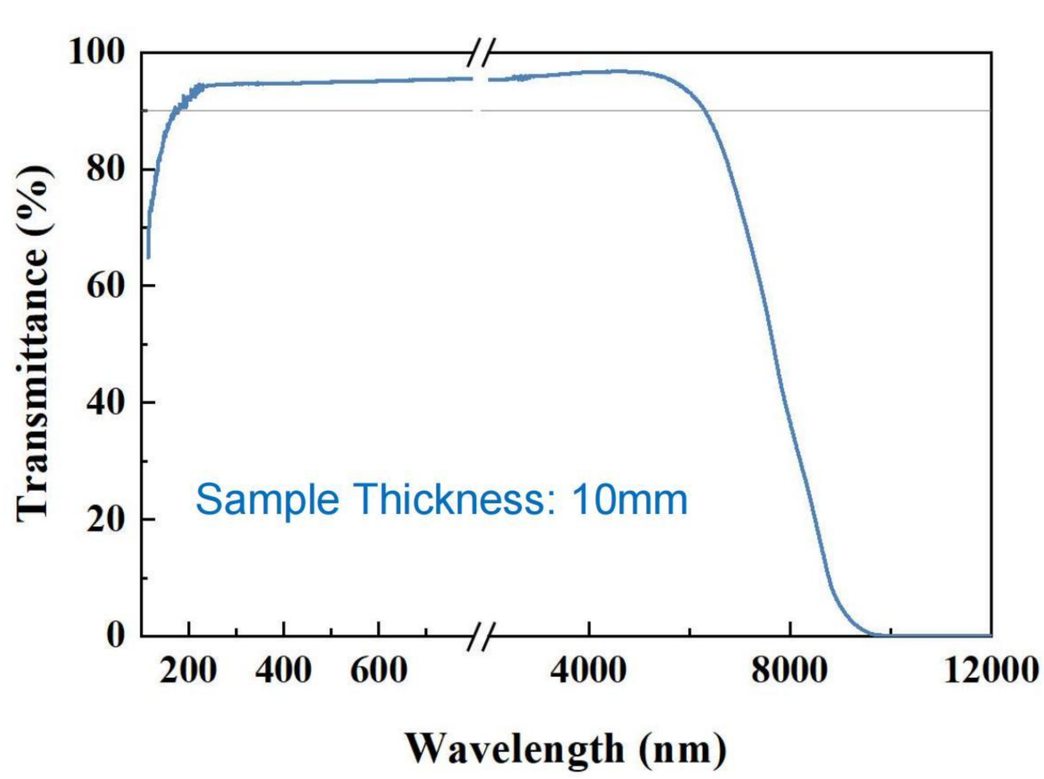
DESIOPTOE's superior crystal growth technology ensures the production of high-quality MgF_2 crystals, enabling them to be widely adaptable to optical applications across various wavelengths.

MgF_2 is a crystal material with excellent optical and mechanical properties. MgF_2 crystals manufactured by **DESIOPTOE** have a low absorption in the VUV-DUV-VIS-IR bands, making them suitable for high-power laser irradiation applications throughout these wavelength ranges and durable in high-power lasers. MgF_2 crystal exhibits natural birefringence, which enables their wide application in polarization optics.

DESIOPTOE provides MgF_2 crystal blanks and optical components in various specifications within 200mm, offering products with standard crystal orientations of (001), (110) and (100) and supporting customized crystal orientations.



VUV Transmittance



Full-SpectrumTransmittance

General Grades

Material Grade	Crystal Structure	Recommended Wavelength
MGF-A	Single Crystal/ Monocrystal	VUV-UV
MGF-B	Polycrystal	VIS-IR
MGF-C	Polycrystal	-

Rev. 2026

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Physical Properties

Crystal Structure	Tetragonal System
Cleavage Plane	(100) (110)
Lattice Constant	a=4.64, c=3.06
Molecular Mass	62.302 g/mol
Density	3.148 g/cm³
Melting Point	1255 ℃
Dielectric Constant	parallel C axis 4.87 perp C axis 5.44

Thermal Properties

Heat Capacity	0.92 J/(g · K)
Thermal Conductivity	parallel C axis 21.0 W/(m · K) perp C axis 33.6 W/(m · K)
Linear Thermal Expansion Coefficient	parallel C axis 13.7 × 10^{-6}/K perp C axis 8.9 × 10^{-6}/K

Mechanical Properties

Bulk Modulus	(GPa)	101.32
Shear Modulus	(GPa)	54.66
Young's Modulus	(GPa)	138.5
Poisson's Ratio	μ	0.276
Knoop Hardness		415
Mohs Hardness		6

Refractive Index @ 19 ℃

λ(μm)	n_o	n_e	β（n_e-n_o）
0.2	1.42309	1.43657	0.01348
0.24	1.40567	1.41859	0.01292
0.28	1.3962	1.40877	0.01257
0.32	1.3904	1.40275	0.01235
0.36	1.38656	1.39875	0.01219
0.4	1.38387	1.39594	0.01207
0.44	1.38189	1.39389	0.012
0.48	1.3804	1.39233	0.01193
0.52	1.37923	1.39111	0.01188
0.56	1.37829	1.39013	0.01184
0.6	1.37752	1.38932	0.0118
0.64	1.37688	1.38865	0.01177
0.68	1.37633	1.38808	0.01175
0.72	1.37585	1.38758	0.01173
0.76	1.37543	1.38714	0.01171
0.8	1.37506	1.38674	0.01168
0.84	1.37472	1.38639	0.01167
0.88	1.3744	1.38606	0.01166
0.92	1.37411	1.38575	0.01164
0.96	1.37384	1.38546	0.01162
1	1.37358	1.38519	0.01161
1.4	1.37134	138281	0.01147
1.8	1.36908	1.3804	0.01132
2.2	1.36649	1.37763	0.0114
2.6	1.36346	1.3744	0.01094
3	1.35995	1.37063	0.01068
3.4	1.35591	1.36631	0.0104
3.8	1.35133	1.36141	0.01008
4.2	1.34618	1.35589	0.00971
4.6	1.34043	1.34972	0.00929
5	1.33404	1.34288	0.00884
5.1	1.32699	1.33532	0.00833
5.8	1.31923	1.327	0.00777
6.2	1.31072	1.31786	0.00714
6.6	1.30142	1.30787	0.00645
7	1.29125	1.29694	569

Optical Fabrication Capacity

Internal Transmittance	>99.8%@193nm
Refractive Properties	Birefringent Crystal
Bubbles/Inclusions	ISO 10110 – 1 x 0.02
Scratch/Dig Limit	10-5
Micro-roughness Limit	≤ 0.2nm
Crystal Orientations	(111) (001) (100) orientations are offered
Surface Finishing	TSK/ Wire Cutting, Fine Grinding, Precision Polishing, Coating
Coatings	Anti-Reflection, High-Reflection

DESIOPTOE can provide various types of optical fabrication, such as grinding, polishing, and coating.