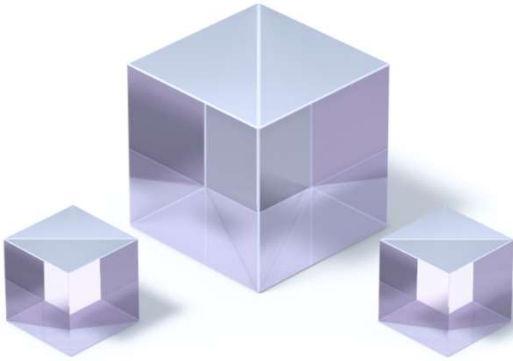


Magnesium Fluoride

德硅凯氟
DESIOPTOE

MgF₂ Datasheet



KEY ADVANTAGE

Excellent broadband transmittance

High laser durability

Low absorption

Naturally birefringence

Excellent mechanical properties

DESIOPTOE is a professional fluoride crystal supplier. DESIOPTOE's excellent crystal growth technology ensures the continuous production of high-quality MgF₂ crystals, making it widely suitable for optical applications of various wavelengths.

Magnesium fluoride(MgF₂) is a crystal material with excellent optical and mechanical properties. MgF₂ has good performance and is durable in high-power lasers.

DESIOPTOE's MgF₂ crystal ingots are grown through a proprietary high-purification material process, which makes DESIOPTOE's MgF₂ crystals have low absorption in the VUV-DUV band and suitable for various deep ultraviolet strong laser irradiation applications. MgF₂ crystals have natural birefringence, making them widely used in polarization optics.

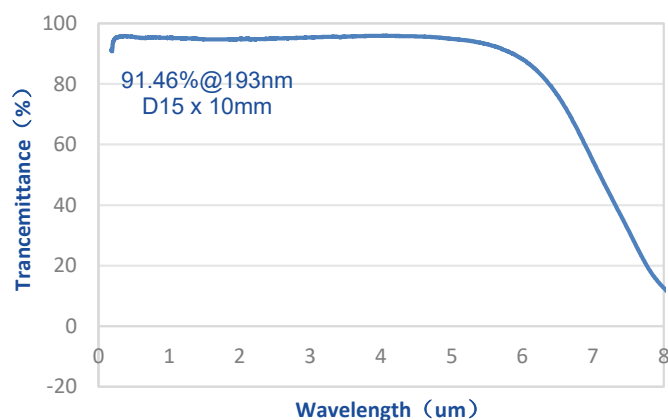
DESIOPTOE can provide (001) (110) (100) standard crystal orientation products, and can support customer-customized crystal orientations.

DESIOPTOE Magnesium General Grades

Material Grade	Crystal Structure	Recommended Wavelength
MGF-A	Single Crystal/ Monocrystal	VUV
MGF-B	Single Crystal/ Monocrystal	DUV-UV
MGF-C	Single Crystal/ Monocrystal	VIS-IR
MGF-D	Poly Crystal	Ordinary

DESIOPTOE Magnesium Transmission

Uncoated sample, uncorrected for surface effects



Physical Properties

Crystal Structure	Tetragonal
Cleavage Plane	(100) (110)
Lattice Constant	a axis 4.64, c axis 3.06
Molecular Weight	62.302 g/mol
Density	3.148 g/cm ³
Melting Point	1255 °C
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/g . K perp C axis 33.6 W/g . 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 Ratio	μ	0.276
Knoop Hardness		415
Mohs Hardness		6



DESIOPTOE can provide various types of optical fabrication, such as grinding, polishing, and coating. DESIOPTOE not only provides MgF₂ crystal ingots and blanks but also customized optical components.

Refractive Indices @ 19 °C

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	1.38281	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	>99.0%@193nm
Stress Birefringence	Naturally birefringent
Bubbles/Inclusions	ISO 10110 – 1 x 0.02
Scratch/Dig Limit	10-5
Micro-roughness Limit	≤ 0.5 nm
Available blanks diameters	up to 110mm
Orientation	(001) (110) (100) orientation are offered
Finish	TSK/rope cut, fine ground, polished
Coatings	Anti-reflective, highly reflective