

### Magnesium Fluoride (MgF<sub>2</sub>)

Magnesium Fluoride is a tetragonal positive birefringent crystal grown using our proprietary source purification process with a vacuum Bridgeman technique. MgF<sub>2</sub> transmits well into the VUV region at the hydrogen Lyman-alpha line (121 nm) and beyond. It is a rugged material resistant to chemical etching, laser damage, mechanical, and thermal shock. MgF<sub>2</sub> is used for UV-radiation sources and receivers, windows, excimer laser windows, polarizers and lenses. Fairfield Crystal produces single crystal MgF<sub>2</sub> material to support commercial, defense and research and development applications and in addition to blanks we supply polished optical windows, lenses, prisms and customer specified optics.



Substance	Form	Diameter Range	Thickness Range	Transmission Range (μm)	Surface Finish
Magnesium Fluoride	Single Crystal	5 to 125 mm	1 to 80mm*	0.12 to 7.00	Fine Ground**

\*Special orders available

\*\*Standard finish – other finish available upon request

#### OPTICAL PROPERTIES

Transmission Range	0.12 to 7 microns
Refractive Index	1.37608 at 0.7 microns
Reflection Loss	5.2% at 0.6 microns (2 surfaces)
Absorption Coefficient	40 x 10 <sup>-3</sup> /cm at 2.7μm
Energy Gap	11eV

#### PHYSICAL PROPERTIES

Density	3.18 gm/cc
Melting Point	1585°C
Poisson Ratio	0.271
Hardness	415 Knoop
Crystal Structure	Tetragonal

**Fabrication**

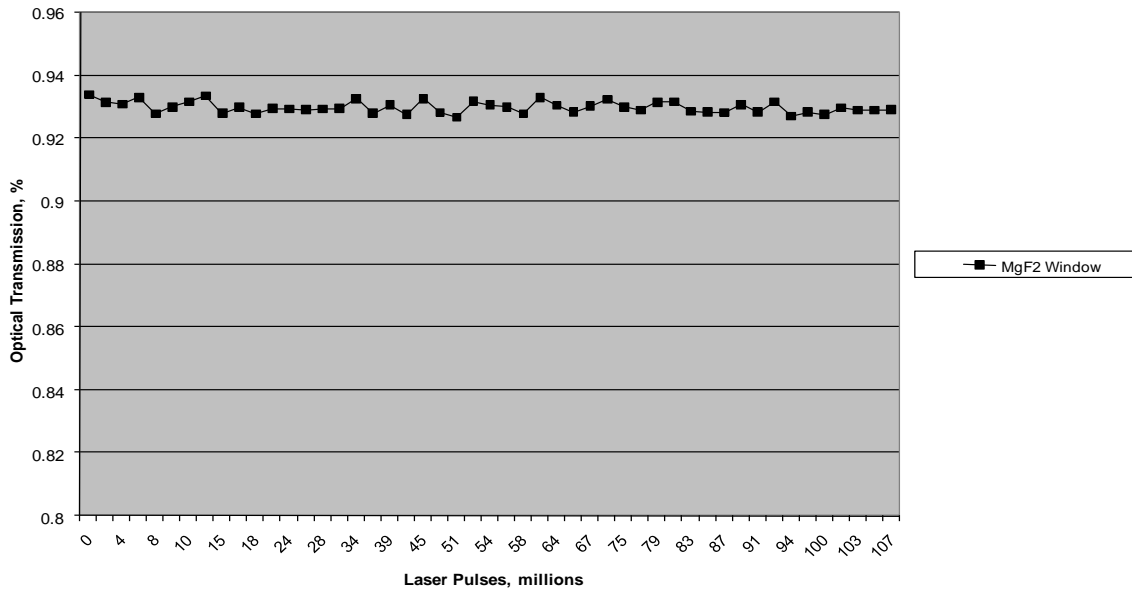
MgF2 can be oriented and cut along customer specified axes such as C-axis, y-cut or random axis. The material can be polished using diamond turning or standard pitch polish. Fairfield Crystal also provides polishing services. Our expertise in crystal growth and understanding of the crystal structure gives us an advantage and enables us to offer superior polished surfaces and surface figure to customers' rigorous specifications. For other specifications or specific requirements please contact our sales team.



**Polishing Capabilities**

Surface figure: 1/20λ @ 632.8nm  
 Surface quality: 10/5 S/D, <5 angstrom RMS  
 Parallelism: < 10 arc seconds  
 Sizes: 4.0 to 76 mm Diameter

193nm Laser Test for MgF2 window (7mm thickness)



Hazard Labeling: Not regulated by Department of Transportation (DOT)  
 Shipping Classification: UPS or FedEx: Ground, Air  
 Fairfield Crystal Technology will be pleased to quote you price and delivery.

**Contact us**

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