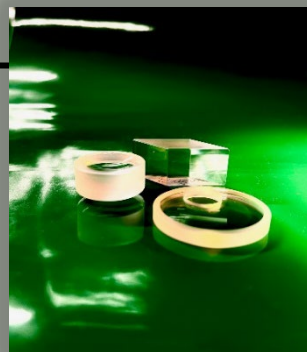


# MATERIAL PROPERTIES & SPECIFICATIONS

## Magnesium Fluoride (MgF2)

Magnesium Fluoride is a tetragonal positive birefringent crystal grown using our, proprietary source purification process with a vacuum Bridgeman technique. MgF2 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. MgF2 is used for UV-radiation sources and receivers, windows, excimer laser windows, polarizers and lenses. Fairfield Crystal provides single crystal MgF2 material to support commercial, defense and research and development applications. We supply blanks, polished optical windows, lenses, prisms and customer specified optics.



Magnesium Fluoride	MgF2
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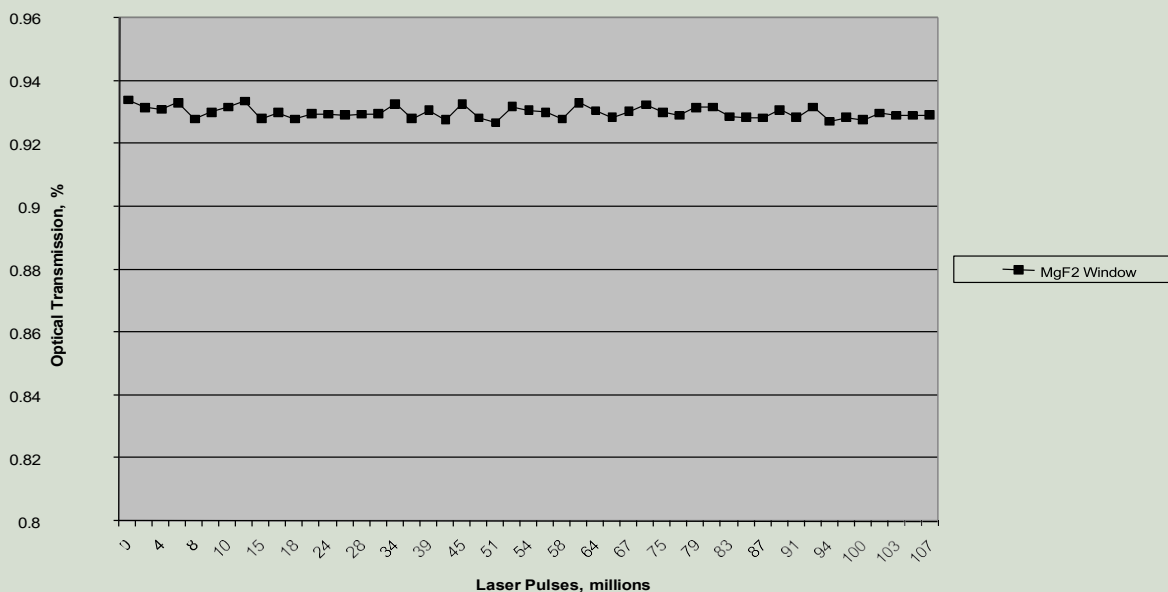
### Optical Properties

<b>Transmission Range</b>	0.12 to 7.0 microns
<b>Internal Transmittance</b>	>99% @ 193.3 nm
<b>Refractive Index</b>	1.37608@0.7 μm
<b>Crystal Orientation</b>	<111>, <100>, or Random
<b>Stress Birefringence</b>	Naturally birefringent
<b>Crystal Structure</b>	Tetragonal
<b>Surface Figure</b>	1/20λ @632.8nm
<b>Surface Quality</b>	Fine Ground to 10/5 S/D <5 angstroms RMS
<b>Energy Gap</b>	11 eV
<b>Reflection Loss</b>	5.2 % @ 0.6 microns (2 surfaces)

### Physical properties

<b>Density</b>	3.18gm/cc
<b>Melting Point</b>	1585deg C
<b>Thermal Conductivity @18C</b>	11.6 W/ (m x K)
<b>Knoop Hardness</b>	415 Knoop
<b>Density</b>	3.18 gm/cc
<b>Absorption Coefficient</b>	40 x 10 <sup>-3</sup> @ 2.7μm
<b>Thermal Expansion Coefficient @ 20 deg C/-160 deg C parallel to c-axis</b>	2.90 x 10 <sup>-6</sup> /K – 17.00 x 10 <sup>-6</sup> /K

# 193 nm Laser Test for MgF2 window (7mm thick)



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 9.00	Fine Ground**

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