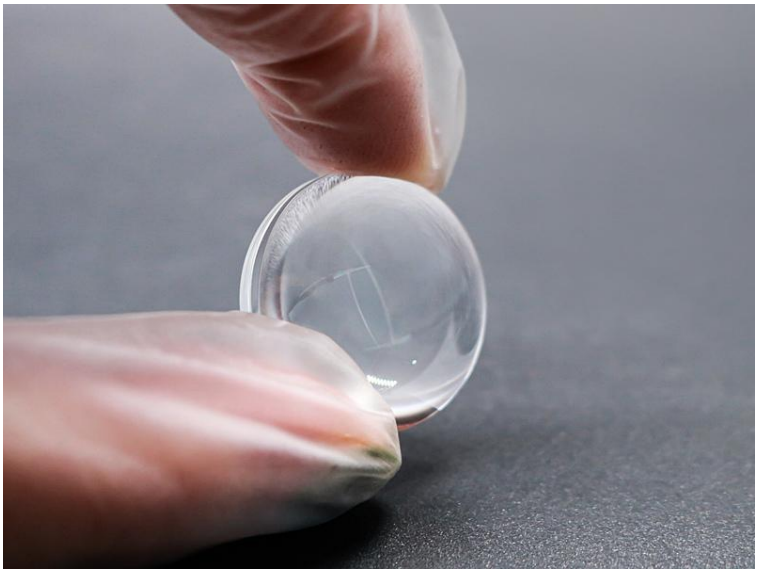
# VUV 级抛光氟化镁 MgF2 正透镜 0.12-7um

# （平凸 PCX/双凸 BCX 透镜）



## 总览

MgF2 能很好地透过 VUV 区域到莱曼-阿尔法氢线（121nm）甚至更远。氟化镁主要用于 UV 光谱，并且对于准分子激光具有很好的应用。MgF2 通过真空 Stockbarger 技术在各种直径的铸块中生长。 氟化镁是一种坚韧的材料，并且抛光良好。 因此，它可以工作到业界高标准。 MgF2 具有微弱的双折射性质，并且通常提供垂直于窗面切割的光轴。

## 产品特点

- 高数值孔径，优秀收集效率
- 紧凑的单透镜设计
- 衍射限制设计
- RoHS 认证

## 产品应用

- 深红外光谱分析
- 紫外激光传输
- X 射线检测
- 红外光学
- 外延基片

## 通用参数

| 透射波长范围: | 0.12 to 7 μm (1) |
|---|---|
| 折射率: | No 1.413 at 0.22 μm (4) |
| 反射损耗 ： | 5.7% at 0.22 μm (2 surfaces) |
| 吸收系数 ： | 40 x 10-3 cm-1 at 2.7 μm |
| Reststrahlen Peak ： | 20 μm (1) |
| dn/dT ： | 2.3 (para) 1.7 (perp) at 0.4 μm (1) |
| dn/dμ = 0 ： | 1.4 μm |
| 密度: | 3.18g/cc |
| 熔点: | 1255° C |
| 热导率: | 21 (para) 33.6 (perp) W m-1 K-1 at 300K (3) |
| 热膨胀: | 13.7 (para) 8.9 (perp) x 10-6 /K (1) |
| 硬度: | Knoop 415 |
| 比热容: | 1003 J Kg m-1 K-1 |
| 介电常数 ： | 4.87 (para) 5.45 (perp) at 1MHz (1) |
| Youngs Modulus (E) ： | 138 GPa (2) |
| 剪切模量 (G) ： | 54.66GPa (2) |
| 体积弹性模量 (K) ： | 101.32 GPa (2) |
| 弹性系数 ： | C11=140 C12=89 C44=57 C13=63 C66=96 (2) |

| | |
|---|---|
| 表观弹性极限 ： | 49.6 MPa (7200 psi) |
| 泊松比 ： | 0.276 (2) |
| 溶解度 ： | 0.0002g/100g water |
| 分子量 ： | 62.32 |
| 类别/结构 ： | 四方 P42/mnm（#136）金红石结构。可以在 c 轴上切割，但不容易。<br>(Tetragonal P42/mnm (#136) Rutile Structure. Can cleave on c-axis but not easily.) |

注 1：警告：镉盐是应该考虑毒性，所以操作时候务必小心。

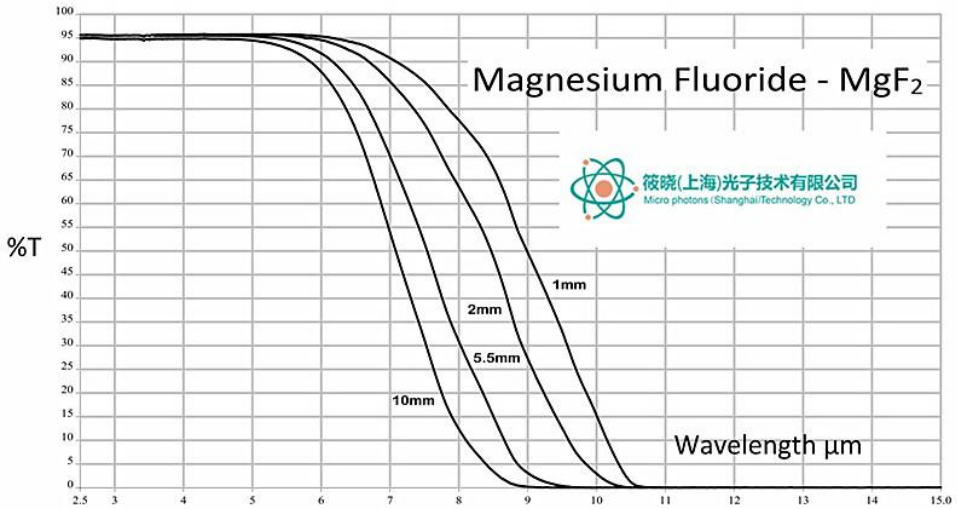
## 折射率

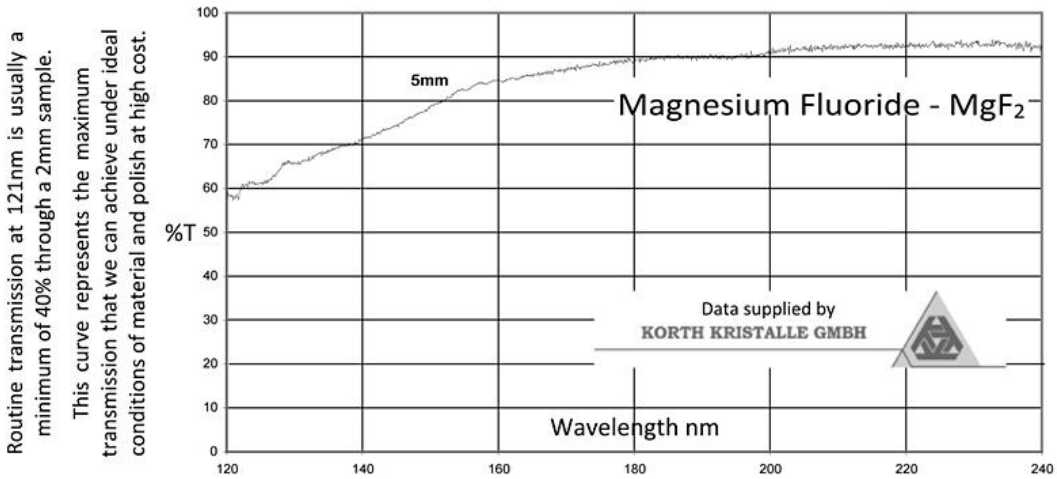
No = Ordinary Ray 普通射线　　Ne = Extraordinary Ray 特殊射线

| μm | No | Ne | μm | No | Ne | μm | No | Ne |
|---|---|---|---|---|---|---|---|---|
| 0.1137 | 1.7805 | | 0.1149 | 1.7420 | | 0.1179 | 1.6800 | |
| 0.1198 | 1.6510 | | 0.121 | 1.628 | 1.632 | 0.130 | 1.566 | 1.568 |
| 0.140 | 1.5095 | 1.523 | 0.150 | 1.480 | 1.494 | 0.160 | 1.461 | 1.475 |
| 0.170 | 1.448 | 1.462 | 0.180 | 1.439 | 1.453 | 0.190 | 1.431 | 1.444 |
| 0.200 | 1.423 | 1.437 | 0.220 | 1.413 | 1.426 | 0.248 | 1.403 | 1.416 |
| 0.257 | 1.401 | 1.414 | 0.266 | 1.399 | 1.412 | 0.280 | 1.396 | 1.409 |
| 0.300 | 1.393 | 1.405 | 0.330 | 1.389 | 1.402 | 0.337 | 1.389 | 1.401 |
| 0.350 | 1.387 | 1.400 | 0.355 | 1.386 | 1.399 | 0.400 | 1.384 | 1.396 |
| 0.546 | 1.379 | 1.390 | 0.700 | 1.376 | 1.388 | 1.087 | 1.373 | 1.385 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1.512 | 1.370 | 1.382 | 2.000 | 1.368 | 1.379 | 2.5 | 1.364 | 1.375 |
| 3.030 | 1.360 | 1.370 | 3.571 | 1.354 | 1.364 | 4.000 | 1.349 | 1.359 |
| 4.546 | 1.341 | 1.350 | 5.000 | 1.334 | 1.343 | 5.556 | 1.324 | 1.332 |
| 6.060 | 1.314 | 1.321 | | | | | | |

## 透射曲线图



## 订购信息:

| 订购型号 | 规格 | 曲率 | 焦距 | 材料等级 | 参数表 |
|---|---|---|---|---|---|
| MGF20LENS40 | 20.0mm Ø | 49.95（±2%） | 40mm @ 121nm | VUV 双凸 | **MAGNESIUM FLUORIDE PLANO-CONVEX LENS**<br>40mm diameter x 235mm F.L. @121nm<br>MATERIAL: VUV Grade $MgF_2$<br>Diameter: 40.0mm (+0/-0.1mm)<br>Clear Aperture 80% of diameter<br>Edge thickness: 2.0mm<br>Centre Thickness: *3.5mm derived*<br>Chamfers: approx 0.1mm break-edge<br>Radius of Curvature 1: 148.08 (test plate)<br>Radius of Curvature 2: Plano<br>Centration Not specified<br>Surface Accuracy Not specified<br>S/D: 40/20<br>Coating: None<br>Effective Focal length<br>121nm 235mm<br>200nm 350mm<br>633nm 393mm<br>2μm 402mm<br>4μm 424mm |
| MGF25LENS275 | 25.0mm Ø | 344（±2%） | 275mm @ 121nm | VUV 双凸 | **MAGNESIUM FLUORIDE BI-CONVEX LENS**<br>25mm diameter x 275mm F.L. @121nm<br>MATERIAL: VUV Grade $MgF_2$<br>Diameter: 25mm (+0/-0.1mm)<br>Clear Aperture 80% of diameter<br>Edge thickness: *3.0mm derived*<br>Centre Thickness: 3.5mm<br>Chamfers: approx 0.1mm break-edge<br>Radius of Curvature 1: 344mm (test plate)<br>Radius of Curvature 2: 344mm (test plate)<br>Centration Not specified<br>Surface Accuracy Not specified<br>S/D: 40/20<br>Coating: None<br>Effective Focal length<br>121nm 275mm<br>200nm 405mm<br>633nm 456mm<br>2μm 467mm<br>4μm 492mm |
| MGF25.4LENS100 | 25.4mm Ø | 59.5（±2%） | 100mm @ 121nm | VUV 平凸 | **MAGNESIUM FLUORIDE PLANO-CONVEX LENS**<br>25.4mm diameter x 100mm F.L. @121nm<br>MATERIAL: VUV Grade $MgF_2$<br>Diameter: 25.4mm (+0/-0.1mm)<br>Clear Aperture 80% of diameter<br>Edge thickness: 2.0mm<br>Centre Thickness: *3.4mm derived*<br>Chamfers: approx 0.1mm break-edge<br>Radius of Curvature 1: 59.9 (test plate)<br>Radius of Curvature 2: Plano<br>Centration Not specified<br>Surface Accuracy Not specified<br>S/D: 40/20<br>Coating: None<br>Effective Focal length<br>121nm 95mm<br>200nm 140mm<br>633nm 159mm<br>2μm 162mm<br>4μm 170mm |

<table>
<tr><td>MGF25.4L<br>ENS125</td><td>25.4mm Ø</td><td>80.482<br>（±2%）</td><td>125mm @<br>121nm</td><td>VUV 平凸</td><td>

**MAGNESIUM FLUORIDE PLANO-CONVEX LENS**
25.4mm diameter x 125mm F.L. @121nm

MATERIAL: VUV Grade $MgF_2$

| | |
|---|---|
| Diameter: | 25.4mm (+0/-0.1mm) |
| Clear Aperture | 80% of diameter |
| Edge thickness: | *2.0mm derived* |
| Centre Thickness: | 3.0mm |
| Chamfers: | approx 0.1mm break-edge |
| Radius of Curvature 1: | 80.482 or 80.78 (test plate) |
| Radius of Curvature 2: | Plano |
| Centration | Not specified |
| Surface Accuracy | Not specified |
| S/D: | 40/20 |
| Coating: | None |

| Effective Focal length | |
|---|---|
| 121nm | 125mm |
| 200nm | 190mm |
| 633nm | 210mm |
| 2μm | 215mm |
| 4μm | 230mm |

</td></tr>
<tr><td>MGF25.4L<br>ENS200</td><td>25.4mm Ø</td><td>123.9（±<br>2%）</td><td>200mm @<br>121nm</td><td>VUV 平凸</td><td>

**MAGNESIUM FLUORIDE PLANO-CONVEX LENS**
25.4mm diameter x 200mm F.L. @121nm

MATERIAL: VUV Grade $MgF_2$

| | |
|---|---|
| Diameter: | 25.4mm (+0/-0.1mm) |
| Clear Aperture | 80% of diameter |
| Edge thickness: | 2.0mm |
| Centre Thickness: | *2.65mm derived* |
| Chamfers: | approx 0.1mm break-edge |
| Radius of Curvature 1: | 123.9 (test plate) |
| Radius of Curvature 2: | Plano |
| Centration | Not specified |
| Surface Accuracy | Not specified |
| S/D: | 40/20 |
| Coating: | None |

| Effective Focal length | |
|---|---|
| 121nm | 200mm |
| 200nm | 292mm |
| 633nm | 330mm |
| 2μm | 337mm |
| 4μm | 355mm |

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<tr><td>MGF25.4L<br>ENS75</td><td>25.4mm Ø</td><td>47.0（±<br>2%）</td><td>75mm @ 1<br>18nm</td><td>VUV 平凸</td><td>

**MAGNESIUM FLUORIDE PLANO-CONVEX LENS**
25.4mm diameter x 75mm F.L. @118nm

MATERIAL: VUV Grade $MgF_2$

| | |
|---|---|
| Diameter: | 25.4mm (+0/-0.1mm) |
| Clear Aperture | 80% of diameter |
| Edge thickness: | 2.0mm |
| Centre Thickness: | *3.75mm derived* |
| Chamfers: | approx 0.1mm break-edge |
| Radius of Curvature 1: | 47.0 (test plate) |
| Radius of Curvature 2: | Plano |
| Centration | Not specified |
| Surface Accuracy | Not specified |
| S/D: | 40/20 |
| Coating: | None |

| Effective Focal length | |
|---|---|
| 118nm | 75mm |
| 200nm | 111mm |
| 633nm | 125mm |
| 2μm | 127mm |
| 4μm | 135mm |

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<tr><td>MGF40LE<br>NS110</td><td>40mm Ø</td><td>69.9（±<br>2%）</td><td>110mm @<br>121nm</td><td>VUV 平凸</td><td></td></tr>
</table>

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<tr><td>MGF40LE<br>NS115</td><td>40mm Ø</td><td>72.78（±2%）</td><td>115mm @ 121nm</td><td>VUV 平凸</td><td>
MAGNESIUM FLUORIDE PLANO-CONVEX LENS<br>
40mm diameter x 115mm F.L. @121nm<br>
MATERIAL: VUV Grade $MgF_2$<br>
Diameter: 40.0mm (+0/-0.1mm)<br>
Clear Aperture 80% of diameter<br>
Edge thickness: 2.0mm<br>
Centre Thickness: 4.8mm derived<br>
Chamfers: approx 0.1mm break-edge<br>
Radius of Curvature 1: 72.78 (test plate)<br>
Radius of Curvature 2: Plano<br>
Centration Not specified<br>
Surface Accuracy Not specified<br>
S/D: 40/20<br>
Coating: None<br>
<table><tr><th colspan="2">Effective Focal length</th></tr><tr><td>121nm</td><td>115mm</td></tr><tr><td>200nm</td><td>172mm</td></tr><tr><td>633nm</td><td>193mm</td></tr><tr><td>2μm</td><td>197mm</td></tr><tr><td>4μm</td><td>208mm</td></tr></table>
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<tr><td>MGF40LE<br>NS235</td><td>40mm Ø</td><td>148.08（±2%）</td><td>235mm @ 121nm</td><td>VUV 平凸</td><td>
MAGNESIUM FLUORIDE PLANO-CONVEX LENS<br>
40mm diameter x 235mm F.L. @121nm<br>
MATERIAL: VUV Grade $MgF_2$<br>
Diameter: 40.0mm (+0/-0.1mm)<br>
Clear Aperture 80% of diameter<br>
Edge thickness: 2.0mm<br>
Centre Thickness: 3.5mm derived<br>
Chamfers: approx 0.1mm break-edge<br>
Radius of Curvature 1: 148.08 (test plate)<br>
Radius of Curvature 2: Plano<br>
Centration Not specified<br>
Surface Accuracy Not specified<br>
S/D: 40/20<br>
Coating: None<br>
<table><tr><th colspan="2">Effective Focal length</th></tr><tr><td>121nm</td><td>235mm</td></tr><tr><td>200nm</td><td>350mm</td></tr><tr><td>633nm</td><td>393mm</td></tr><tr><td>2μm</td><td>402mm</td></tr><tr><td>4μm</td><td>424mm</td></tr></table>
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<tr><td>MGF70LE<br>NS300</td><td>70mm Ø</td><td>188.6（±2%）</td><td>300mm @ 121nm</td><td>VUV 平凸</td><td>
MAGNESIUM FLUORIDE PLANO-CONVEX LENS<br>
70mm diameter x 300mm F.L. @121nm<br>
MATERIAL: VUV Grade $MgF_2$<br>
Diameter: 70mm (+0/-0.1mm)<br>
Clear Aperture 80% of diameter<br>
Edge thickness: 3.0mm<br>
Centre Thickness: 6.5mm<br>
Chamfers: approx 0.1mm break-edge<br>
Radius of Curvature 1: 188.6mm (test plate)<br>
Radius of Curvature 2: Plano<br>
Centration Not specified<br>
Surface Accuracy Not specified<br>
S/D: 40/20<br>
Coating: None<br>
<table><tr><th colspan="2">Effective Focal length</th></tr><tr><td>121nm</td><td>300mm</td></tr><tr><td>200nm</td><td>444mm</td></tr><tr><td>633nm</td><td>501mm</td></tr><tr><td>2μm</td><td>510mm</td></tr><tr><td>4μm</td><td>540mm</td></tr></table>
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