

## IR 抛光硒化锌(ZnSe)窗片 0.6-21.0um (圆形 30.0X2.0mm)



### 产品描述

ZnSe 在红外元器件窗片透镜以及光谱分析 ATR 棱镜领域有着广泛的应用。硒化锌(Zinc Selenide)对于 CO<sub>2</sub> 激光器的元器件也是一种良好的选择。在二氧化碳激光器工作的波段 10.6 microns 附近有着良好的透射率。硒化锌材料是一种黄色透明的多晶材料, 结晶颗粒大小约为 70 μm, 透光范围 0.5-15 μm。由化学气相沉积(CVD)方法合成的基本不存在杂质吸收, 散射损失低。由于对 10.6 μm 波长光的吸收很小, 因此成为制作高功率 CO<sub>2</sub> 激光器系统中光学器件的材料。此外在其整个透光波段内, 也是在不同光学系统中所普遍使用的材料。

### 产品型号

ZNSEP30-2

### 应用领域

用于激光

医学

天文学

红外夜视等领域中



## 核心参数

| 工作波长       | 折射率                          | 规格尺寸       |
|------------|------------------------------|------------|
| 0.6-21.0um | 2.4028 at 10.6 $\mu\text{m}$ | 30.0X2.0mm |

## 详细参数

|                      |                                                                     |
|----------------------|---------------------------------------------------------------------|
| 透射波段范围：              | 0.6 to 21.0 $\mu\text{m}$                                           |
| 折射率：                 | 2.4028 at 10.6 $\mu\text{m}$                                        |
| 反射损耗：                | 29.1% at 10.6 $\mu\text{m}$ (2 surfaces)                            |
| 吸收系数：                | 0.0005 $\text{cm}^{-1}$ at 10.6 $\mu\text{m}$                       |
| 吸收峰：                 | 45.7 $\mu\text{m}$                                                  |
| dn/dT：               | $+61 \times 10^{-6}/^{\circ}\text{C}$ at 10.6 $\mu\text{m}$ at 298K |
| dn/du = 0：           | 5.5 $\mu\text{m}$                                                   |
| 密度：                  | 5.27 g/cc                                                           |
| 熔点：                  | 1525 $^{\circ}\text{C}$ (see notes below)                           |
| 导热系数：                | 18 $\text{W m}^{-1} \text{K}^{-1}$ at 298K                          |
| 热膨胀：                 | $7.1 \times 10^{-6}/^{\circ}\text{C}$ at 273K                       |
| 硬度：                  | Knoop 120 with 50g indenter                                         |
| 比热容量：                | 339 $\text{J Kg}^{-1}\text{K}^{-1}$                                 |
| Dielectric Constant： | n/a                                                                 |
| Youngs Modulus (E)：  | 67.2 GPa                                                            |
| Shear Modulus (G)：   | n/a                                                                 |

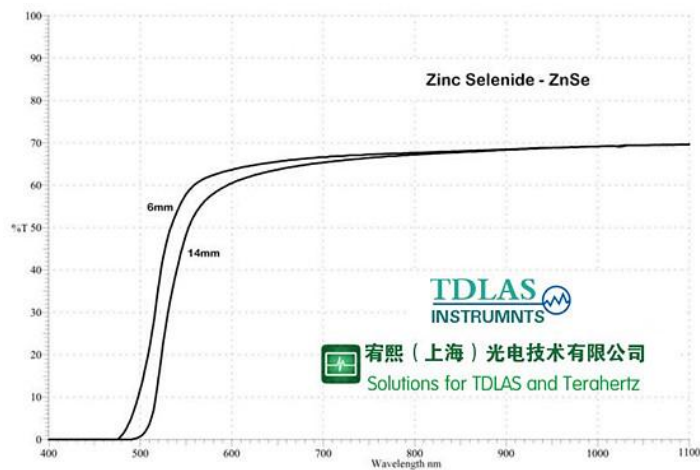
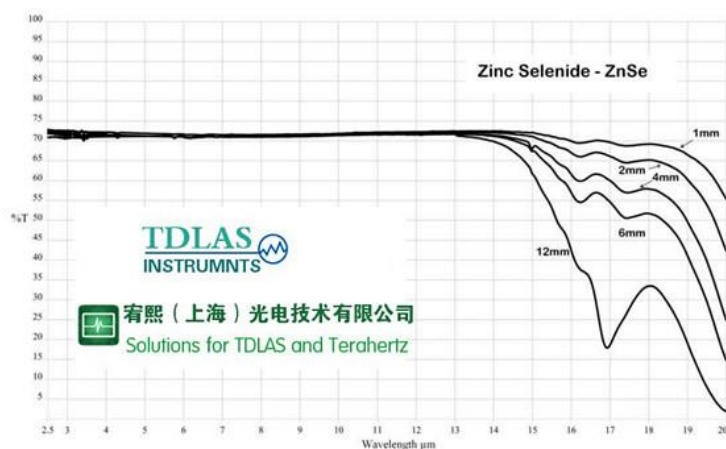


|                          |                                      |
|--------------------------|--------------------------------------|
| Bulk Modulus (K) :       | 40 GPa                               |
| 弹性系数 :                   | Not Available                        |
| Apparent Elastic Limit : | 55.1 MPa (8000 psi)                  |
| 泊松比 :                    | 0.28                                 |
| Solubility :             | 0.001g/100g water                    |
| Molecular Weight :       | 144.33                               |
| Class/Structure :        | HIP polycrystalline cubic, ZnS, F43m |

### 折射率:(No = Ordinary Ray)

| μm   | No     | μm   | No     | μm   | No     |
|------|--------|------|--------|------|--------|
| 0.54 | 2.6754 | 0.58 | 2.6312 | 0.62 | 2.5994 |
| 0.66 | 2.5755 | 0.7  | 2.5568 | 0.74 | 2.5418 |
| 0.78 | 2.5295 | 0.82 | 2.5193 | 0.86 | 2.5107 |
| 0.90 | 2.5034 | 0.94 | 2.4971 | 0.98 | 2.4916 |
| 1.0  | 2.4892 | 1.4  | 2.4609 | 1.8  | 2.4496 |
| 2.2  | 2.4437 | 2.6  | 2.4401 | 3.0  | 2.4376 |
| 3.4  | 2.4356 | 3.8  | 2.4339 | 4.2  | 2.4324 |
| 4.6  | 2.4309 | 5.0  | 2.4295 | 5.4  | 2.4281 |
| 5.8  | 2.4266 | 6.2  | 2.4251 | 6.6  | 2.4235 |
| 7.0  | 2.4218 | 7.4  | 2.4201 | 7.8  | 2.4183 |

|      |        |      |        |      |        |
|------|--------|------|--------|------|--------|
| 8.2  | 2.4163 | 8.6  | 2.4143 | 9.0  | 2.4122 |
| 9.4  | 2.4100 | 9.8  | 2.4077 | 10.2 | 2.4053 |
| 10.6 | 2.4028 | 11.0 | 2.4001 | 11.4 | 2.3974 |
| 11.8 | 2.3945 | 12.2 | 2.3915 | 12.6 | 2.3883 |
| 13.0 | 2.3850 | 13.4 | 2.3816 | 13.8 | 2.3781 |
| 14.2 | 2.3744 | 14.6 | 2.3705 | 15.0 | 2.3665 |
| 15.4 | 2.3623 | 15.8 | 2.3579 | 16.2 | 2.3534 |
| 16.6 | 2.3487 | 17.0 | 2.3438 | 17.4 | 2.3387 |
| 17.8 | 2.3333 | 18.2 | 2.3278 |      |        |



## 特性曲线

型号:ZNSEP25-2AR 的测试数据

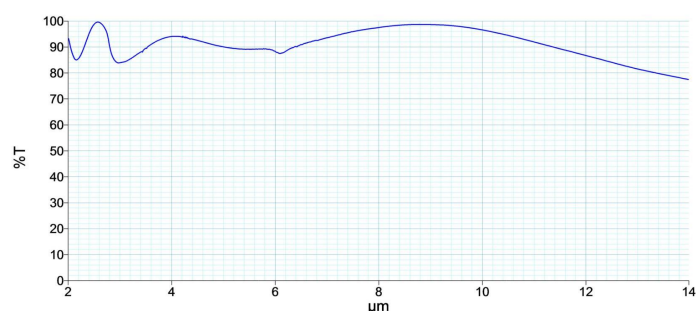
### Sample Details

Sample Name: ZnSe 25-2AR  
Sample Description: 2-14 micron scan test  
Analyst: Administrator  
Creation Date: 13/07/2017 14:07:27  
X-Axis Units:  $\mu\text{m}$   
Y-Axis Units: %T

### Instrument Details

Instrument Model: Frontier FT-IR  
Instrument Serial Number: 97187  
Software Revision: CPU3.2 Main 00.09.9951 07-September-2011 11:49:41  
Number of Scans: 1  
Resolution: 4

### Spectrum



| Name        | Description           |
|-------------|-----------------------|
| ZnSe 25-2AR | 2-14 micron scan test |

## High-Efficiency Anti-Reflective (AR) Coating on Zinc Selenide (ZnSe), 10.6 $\mu\text{m}$

### Application

This coating is designed to give low reflectance, low absorption and high transmittance. Especially useful for high power laser systems or for passive imaging systems.

### Spectral Performance

Transmission when measured on a 3mm thick ZnSe substrate coated on both surfaces with the AR coating.

$T \geq 99.4\%$  at 10.6 $\mu\text{m}$  (typically 99.6%)

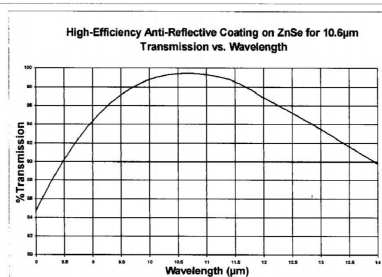
Reflection from a single surface when coated with the AR coating.

$R \leq 0.2\%$  per surface

Absorption for a single surface when coated with the AR coating.

$A \leq 0.1\%$  per surface

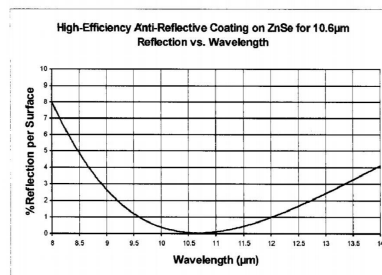
This coating can be designed for similar performance at other CO<sub>2</sub> wavelengths.



### Environmental Performance

This coating is designed to meet durability requirements for the following MIL specifications:

Adhesion: MIL-C-48497, MIL-C-675C  
Humidity: MIL-C-48497, MIL-C-675C  
Moderate Abrasion: MIL-C-48497, MIL-C-675C



## 订购信息

ZnSe 圆形窗片订购信息:

| 订购型号       | 规格 (D×L)      | 应用光谱范围 |
|------------|---------------|--------|
| ZNSEP7-0.5 | 7.0×0.5mm     | IR     |
| ZNSEP7X2   | 7.0×2.0mm     | IR     |
| ZNSEP8-1   | 8.0×1.0mm     | IR     |
| ZNSEP9-2   | 9.0×2.0mm     | IR     |
| ZNSEP10-1  | 10.0×1.0mm    | IR     |
| ZNSEP10-2  | 10.0×2.0mm    | IR     |
| ZNSEP10-2W | 10.0×2.0mm 楔形 | IR     |
| ZNSEP10-3  | 10.0×3.0mm    | IR     |
| ZNSEP10-4  | 10.0×4.0mm    | IR     |
| ZNSEP10-5  | 10.0×5.0mm    | IR     |
| ZNSEP12X1  | 12.0×1.0mm    | IR     |
| ZNSEP12-2  | 12.0×2.0mm    | IR     |
| ZNSEP12-2W | 12.0×2.0mm 楔形 | IR     |
| ZNSEP13-1  | 13.0×1.0mm    | IR     |
| ZNSEP13-2  | 13.0×2.0mm    | IR     |
| ZNSEP13-6  | 13.0×6.0mm    | IR     |
| ZNSEP15X2  | 15.0×2.0mm    | IR     |

|               |                             |    |
|---------------|-----------------------------|----|
| ZNSEP15X3     | 15.0×3.0mm                  | IR |
| ZNSEP17.5-1AR | 17.5×1.0mm AR/AR Coated 增透膜 | IR |
| ZNSEP18-0.5   | 18.5×0.5mm                  | IR |
| ZNSEP18-1     | 18.0×2.0mm                  | IR |
| ZNSEP18-2     | 19.0×1.0mm                  | IR |
| ZNSEP20-1     | 20.0×1.0mm                  | IR |
| ZNSEP20-2     | 20.0×2.0mm                  | IR |
| ZNSEP20-3     | 20.0×3.0mm                  | IR |
| ZNSEP20-5     | 20.0×5.0mm                  | IR |
| ZNSEP22-0.5   | 22.0×0.5mm                  | IR |
| ZNSEP22-1     | 22.0×1.0mm                  | IR |
| ZNSEP25-1     | 25.0×1.0mm                  | IR |
| ZNSEP25-2     | 25.0×2.0mm                  | IR |
| ZNSEP25-2AR   | 25.0×2.0mm AR               | IR |
| ZNSEP25-4     | 25.0×4.0mm                  | IR |
| ZNSEP25-4AR   | 25.0×4.0mm AR               | IR |
| ZNSEP25-5     | 25.0×5.0mm                  | IR |
| ZNSEP25.4-1   | 25.4×1.0mm                  | IR |
| ZNSEP25.4-4   | 25.4×4.0mm                  | IR |
| ZNSEP30-2     | 30.0×2.0mm                  | IR |

|              |               |    |
|--------------|---------------|----|
| ZNSEP30-4 AR | 30.0×4.0mm AR | IR |
| ZNSEP35X1.5  | 35.0×1.5mm    | IR |
| ZNSEP35X2    | 35.0×2.0mm    | IR |
| ZNSEP35X2AR  | 35.0×2.0mm AR | IR |
| ZNSEP38-2    | 38.0×2.0mm    | IR |
| ZNSEP40X2    | 40.0×2.0mm    | IR |
| ZNSEP42-3    | 42.0×3.0mm    | IR |
| ZNSEP50-3    | 50.0×3.0mm    | IR |
| ZNSEP50-3AR  | 50.0×3.0mm AR | IR |
| ZNSEP55-1    | 55.0×1.0mm    | IR |
| ZNSEP55-2    | 55.0×2.0mm    | IR |
| ZNSEP60-3    | 60.0×3.0mm    | IR |
| ZNSEP70-3    | 70.0×3.0mm    | IR |

### ZnSe 方形窗片:

| 订购型号          | 规格 (L×W×H)         | 应用光谱范围 |
|---------------|--------------------|--------|
| ZNSEP20-10-2  | 20.0×10.0×2.0mm    | IR     |
| ZNSEP25-25-1  | 25.0×25.0×1.0mm    | IR     |
| ZNSEP30-30-4  | 30.0×30.0×4.0mm    | IR     |
| ZNSEP38-19-4D | 38.5×19.0×4.0mm 打孔 | IR     |



|               |                    |    |
|---------------|--------------------|----|
| ZNSEP38-19-4  | 38.5×19.0×4.0mm    | IR |
| ZNSEP41-23-4D | 41.0×23.0×4.0mm 打孔 | IR |
| ZNSEP41-23-4  | 41.0×23.0×4.0mm    | IR |