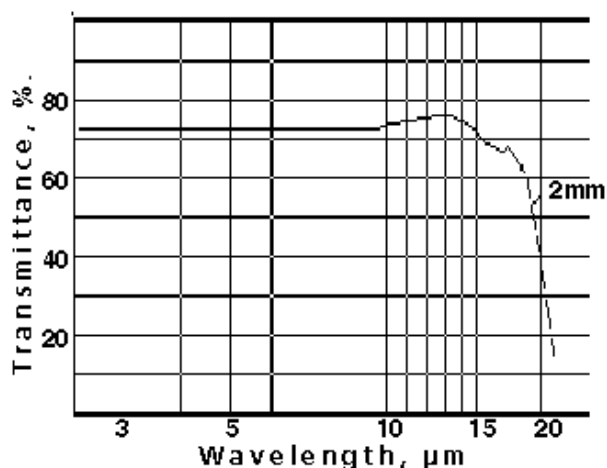


## Zinc Selenide (ZnSe)



Zinc Selenide is used for optical windows, lenses, mirrors and prisms particularly for infrared applications. The transmission range is 0.5 μm - 22 μm. Used for high power CO<sub>2</sub>-laser optics at 10.6 microns. Zinc Selenide is produced by synthesis from zinc vapor and H<sub>2</sub>Se gas, forming as sheets on graphite susceptors. It is microcrystalline in structure, the grain size being controlled to produce maximum strength. Single crystal ZnSe is also available.

### OPTICAL PROPERTIES

Transmission Range	0.6 to 21.0 microns
Refractive Index	2.4028 at 10 microns
Reflection Loss	31.11% at 10.6 μm (2 surfaces)
Index of Absorption	0.0005 cm <sup>-1</sup> at 10.6 microns
Reststrahlen Peak	45.7 microns
dN/dT	+61 x 10 <sup>-6</sup> /°C at 10.6μm at 298K
dN/dμ = 0	5.5μm

### PHYSICAL PROPERTIES

Density	5.27 g/cm <sup>3</sup>
Melting Point	1525°C (dissociates about 700°C)
Thermal Conductivity	18 Wm <sup>-1</sup> K <sup>-1</sup> at 298K
Thermal Expansion	7.1 x 10 <sup>-6</sup> /°C at 273K
Hardness	Knoop 120 with 50g indenter
Specific Heat Capacity	339 J kg <sup>-1</sup> K <sup>-1</sup>
Young's Modulus (E)	67.2 GPa
Bulk Modulus (K)	40 GPa
Apparent Elastic Limit	55.1 MPa (8,000psi)
Poisson Ratio	0.28

### CHEMICAL PROPERTIES

Solubility	0.001 g/100g water
Molecular Weight	144.33
Class/Structure	HIP polycrystalline cubic, ZnS, F43m

<b>Wavelength, μm</b>	2.75	5.00	7.50	9.50	11.0	12.5	13.5
<b>Refractive Index</b>	2.44	2.43	2.42	2.41	2.40	2.39	2.38
<b>Wavelength, μm</b>	15.0	16.0	16.9	17.8	18.6	19.3	20.0
<b>Refractive Index</b>	2.37	2.36	2.35	2.34	2.33	2.32	2.31