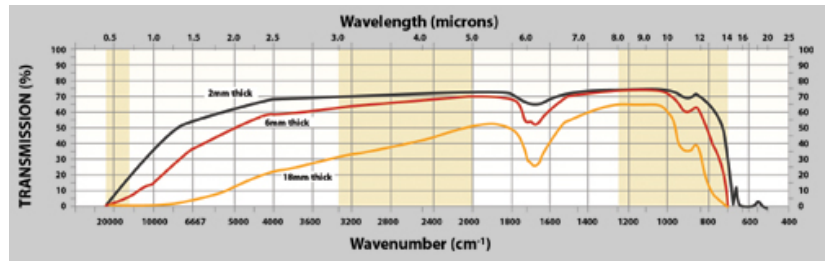


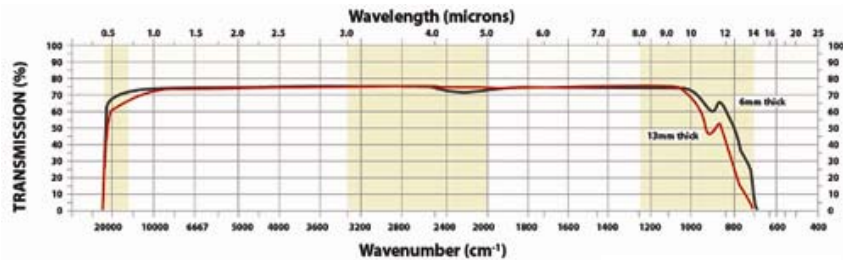
## Zinc Sulfide CVD ZnS & Multispectral ZnS

### OVERVIEW

Produced using the Chemical Vapor Deposition (CVD) process, Phoenix Infrared provides both multispectral (visible through 3-5 and 8-12 IR ranges) zinc sulfide and regular zinc sulfide. Phoenix Infrared personnel have over 30 years experience with zinc sulfide. Zinc sulfide displays a high level of index of refraction homogeneity and offers imaging uniformity across the 8-12 micron waveband. Zinc sulfide also transmits in the mid-wave IR region, but with higher absorption and scatter as the wavelength increases.

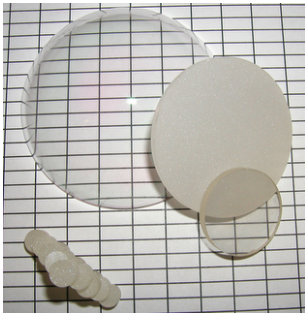


Regular ZnS



Multispectral ZnS

### PRODUCTS



For optics producers, we offer SMTY blanks in diameters ranging from 5.5mm to 305mm and thicknesses from 1mm to 15mm. Phoenix Infrared can also offer shaped parts –generated, polished, & coated. We can provide lenses, domes, and other optical components according to customer specifications and drawings. ZnS is also an ideal evaporative source material. Phoenix Infrared supplies ZnS in lump sizes (2-20mm).

### SPECIFICATIONS

Chemical Properties	ZnS	MS ZnS
Density	4.08 g/cm <sup>3</sup>	4.09 g/cm <sup>3</sup>
Hardness (Vickers 200 gm load)	230	150-160
Flexural Strength	102 MPa	70 MPa
Young's Modulus	73 GPa	65 GPa
Grain size	2-6 microns	20-50 microns
Dielectric Constant (35 GHz 25 °C)	8.30	8.393
Loss Tangent	0.0025	0.0025

Optical Properties	ZnS	MS ZnS
Max Transmittance 1 μm	73.3%	73.3%
10 μm	75.3%	75.3%
Absorption Coefficient	(x 10 <sup>-3</sup> cm <sup>-1</sup> )	
1.3 μm	20	0.61
2.7 μm	7	1.10
3.8 μm	23	0.56
9.3 μm	79	11.0
10.6 μm	240	200.0
Thermo-optic Coefficient (dn/dT) @293K	x 10 <sup>-5</sup> K <sup>-1</sup>	
0.63 μm	6.4	5.4
1.15 μm	5.0	4.2
3.39 μm	4.6	4.6
10.6 μm	4.6	6.6

Wave-length μm	Refractive Index ZnS	Refractive Index MS ZnS
1	2.288	2.292
2	2.265	2.265
3	2.257	2.257
4	2.252	2.252
5	2.246	2.246
6	2.240	2.240
7	2.232	2.232
8	2.223	2.223
9	2.212	2.212
10	2.200	2.200
11	2.186	2.186
12	2.170	2.170
13	2.152	2.141
14	2.130	2.130