

Zinc Sulfide – ZnS and ZnS-MS

Product Information

Polycrystalline ZnS is produced by a Chemical Vapor Deposition process (CVD). Polycrystalline Zinc Sulfide is for both military and industrial applications. It is available in large sizes and custom shapes and formats. These may include windows, domes, or lens blanks.

Two grades of ZnS are available:

Regular (FLIR) grade Zinc Sulfide is a polycrystalline optical material with high performance in fracture strength and hardness. ZnS is often used in the 8-12µm region. Its resistance to rain and particle erosion coupled with its lower relative cost provide ZnS with an edge over ZnS-MS and ZnSe in many applications, such as IR windows for military systems.

MultiSpectral (Clear) grade Zinc Sulfide is ZnS treated after growth with a hot isostatic process to eliminate microscopic voids and defects which occur in the regular grade material. This processing results in a clear material. ZnS-MS is commonly used in applications across the visible to infrared region from 0.45 - 12µm.



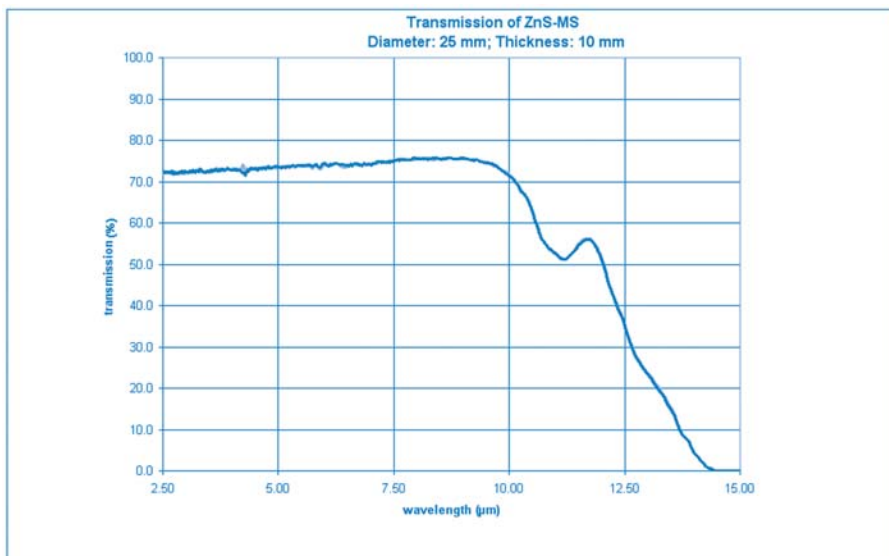
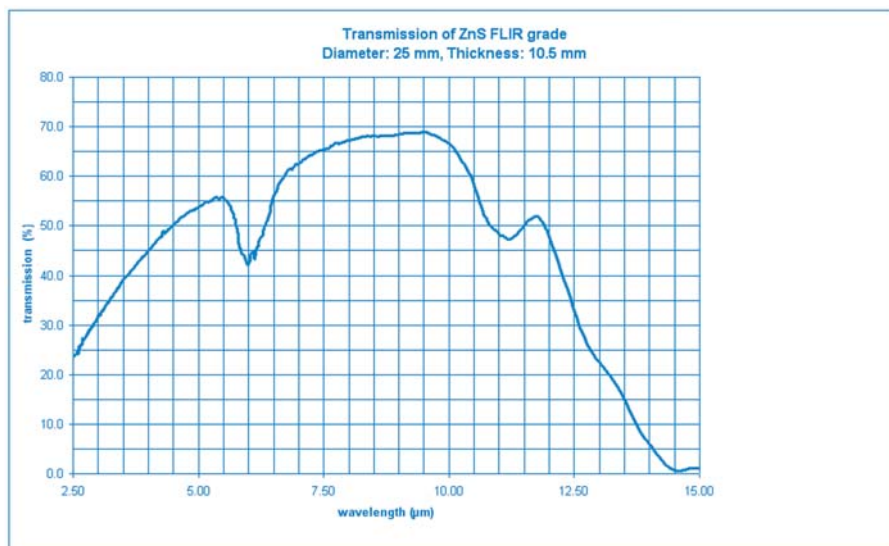
Material Properties

Optical Properties	FLIR	MultiSp
Bulk Absorption Coefficient (10.6 µm)	<0.24	<0.20
Thermal Change dn/dT x 10 ⁻⁶ .66µm	41	54
Refractive Index Inhomogeneity	<100 10.6µm	<20 .66µm
Thermal Properties		
Thermal Conductivity (20°C) W/mK	16.7	27.2
Specific Heat J/gK	0.469	0.527
Thermal Expansion (20°C) x 10 ⁻⁶ /K	6.8	6.5
Mechanical Properties		
Rupture Modulus MPa	103	69
Young's Modulus GPa	74	88
Hardness (Knoop) Kg/mm ²	210-240	150-165
Poisson's Ratio	0.27	0.27
Density g/cm ³	4.08	4.09

Wavelength µm	Index	Transmission	
		FLIR %	MultiSp (6mm)
0.46	2.516	0	65
0.50	2.419	5	67
0.66	2.342	8	69
0.80	2.313	12	71
1.00	2.292	18	72
3.00	2.257	46	72
4.00	2.252	52	73
5.00	2.246	63	73
6.00	2.239	50	72
7.00	2.232	68	74
8.00	2.223	73	74
9.00	2.212	74	75
10.00	2.200	74	75
11.00	2.186	58	58
12.00	2.700	61	61

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Transmission Curves



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