

Zinc Sulfide – ZnS and ZnS Clear

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 8-12 μm region. Its resistance to rain and particle erosion coupled with its lower relative cost provide ZnS with an edge over ZnS Clear and ZnSe in many applications, such as IR windows for military systems.

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 Clear is commonly used in multi-spectral applications across the visible to infrared region from 0.4 μm – 12 μm .

Typical Forms of Supply

FLIR grade – available in sizes up to 600 mm x 350 mm x 15 mm

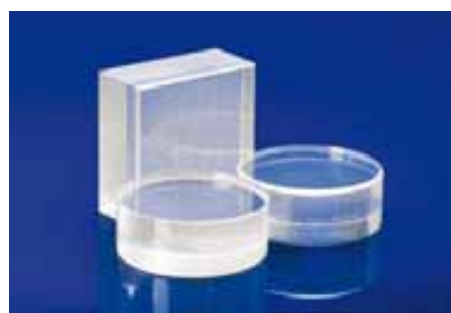
Clear grade – available in sizes up to 350 mm x 350 mm x 15 mm

Both grades – available in sizes up to 200 mm x 200 mm x 25 mm

*Sizes shown are representative. Other sizes/formats may be available, please inquire for specific requirements.

Material Properties

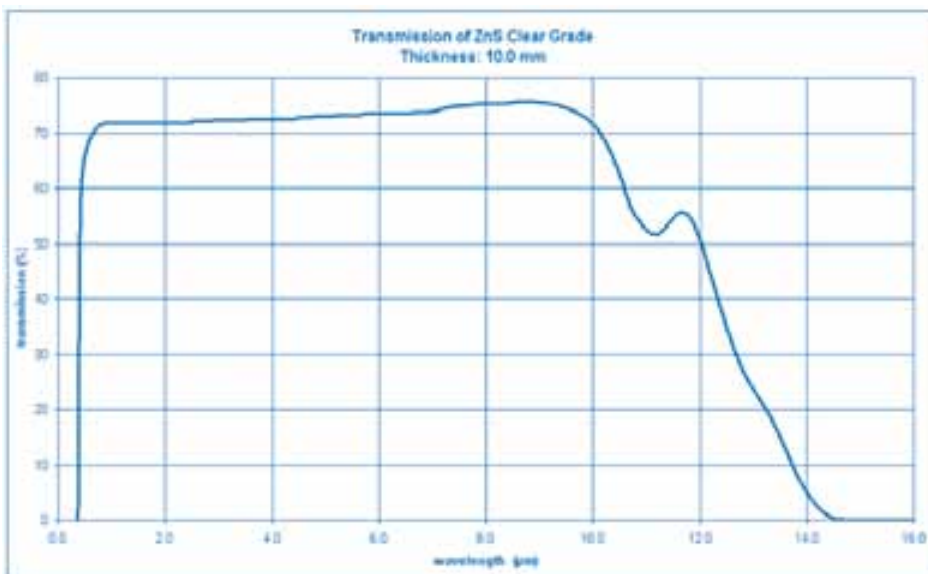
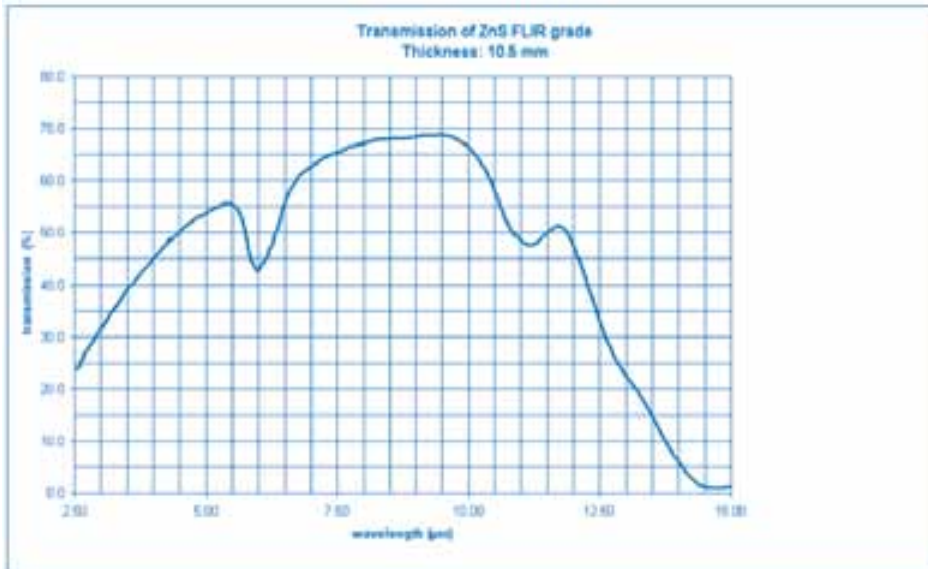
Optical Properties	Grade FLIR	Clear
Bulk Absorption Coefficient (10.6 μm)	< 0.24	< 0.20
Thermal Change $dn/dT \times 10^{-6}$	41 10.6 μm	54 .633 μm
Refractive Index Homogeneity ppm	< 100 10.6 μm	< 20 .633 μm
Thermal Properties		
Thermal Conductivity (20°C) W/mK	16.7	27.2
Specific Heat J/gK	0.469	0.527
Thermal Expansion (20°C) $\times 10^{-6}/K$	6.8	6.5
Mechanical Properties		
Rupture Modulus MPa	103	69
Young's Modulus GPa	74	74
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	Refractive Index n
0.46	2.516
0.50	2.419
0.63	2.352
0.80	2.313
1.00	2.292
3.00	2.257
4.00	2.252
5.00	2.246
6.00	2.239
7.00	2.232
8.00	2.223
9.00	2.212
10.00	2.200
11.00	2.186
12.00	2.170

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Transmission Curves (Typical)



Produced for SCHOTT by VITRON Spezialwerkstoffe GmbH

For more information please contact:

Advanced Optics
SCHOTT AG
Hattenbergstrasse 10
55122 Mainz
Germany

Phone: +49 (0)6131/66-1812
Fax: +49 (0)3641/2888-9047
info.optics@schott.com
www.schott.com/advanced_optics

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