

# ZnS Data Sheet

## Standard ZnS

Physical Properties		Mechanical Properties	
Grain size, $\mu\text{m}$	2-10	Knoop hardness, $\text{kg}/\text{mm}^2$	200-230
Density, $\text{g}/\text{cm}^3@298\text{K}$	4.09	Flexural strength, MPa	105
Chemical purity	>99.995%	Young's modulus, GPa	77
CTE, $\text{K}^{-1}$ , 373K	$7.0 \times 10^{-6}$	Poisson's ratio	0.29
Thermal conductivity, $\text{W cm}^{-1}\text{K}^{-1}$	0.19	/	/
Optical Properties			
Refractive index @9 $\mu\text{m}$		2.212	
Index of refraction inhomogeneity( $\Delta n/n$ ) @10.6 $\mu\text{m}$		$<1 \times 10^{-4}$	
Thermo-optic coefficient ( $dn/dT$ ) @10.6 $\mu\text{m}$ (298-358K)		$4.1 \times 10^{-5}$	
Bulk absorption coefficient, $\text{cm}^{-1}@10.6 \mu\text{m}$		<0.2	
Transmission			
<p>The graph plots % Transmission on the y-axis (ranging from 10 to 80 in increments of 10) against Wavelength (<math>\mu\text{m}</math>) on the x-axis (ranging from 2 to 14 in increments of 2). The transmission curve starts at approximately 25% at 2 <math>\mu\text{m}</math>, rises to about 65% at 5 <math>\mu\text{m}</math>, exhibits a sharp dip to 50% at 6.2 <math>\mu\text{m}</math>, then rises to a broad peak of about 70% between 8 and 10 <math>\mu\text{m}</math>. It shows a secondary dip to about 60% at 11.5 <math>\mu\text{m}</math> and another peak of about 65% at 12 <math>\mu\text{m}</math>, before declining to approximately 25% at 14 <math>\mu\text{m}</math>.</p>			
Product Specifications			
Shapes	Planner windows, spherical domes and lens		
Maximum size (mm)	For window: $600 \times 500 \times 30$		
	For dome: $\phi 380 \times 15$		
Surface quality	Polishing or AR coating		

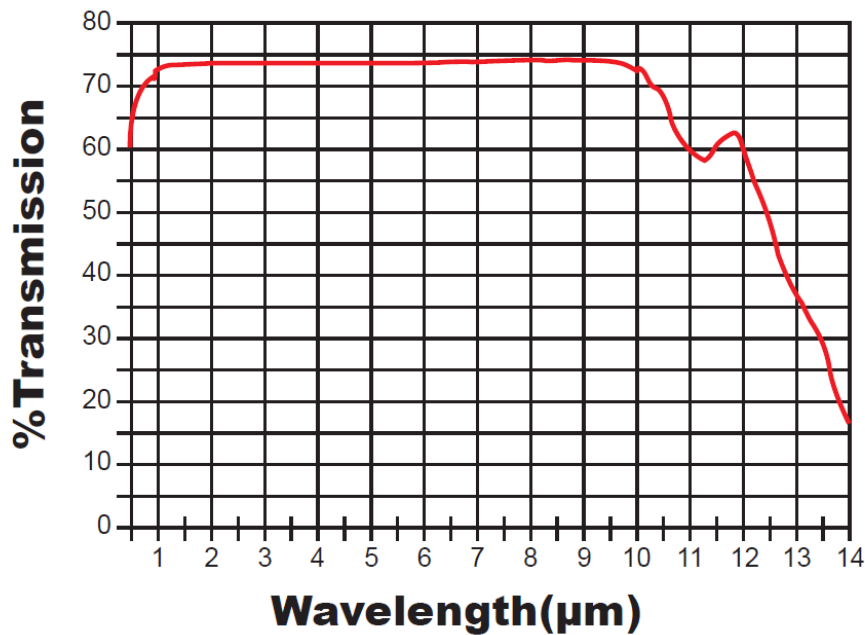
# Multispectral ZnS

Physical Properties		Mechanical Properties	
Grain size, $\mu\text{m}$	20-100	Knoop hardness, $\text{kg}/\text{mm}^2$	160
Density, $\text{g}/\text{cm}^3@298\text{K}$	4.09	Flexural strength, MPa	74
Chemical purity	>99.999%	Young's modulus, GPa	88
CTE, $\text{K}^{-1}$ , 373K	$7.0 \times 10^{-6}$	Poisson's ratio	0.28
Thermal conductivity, $\text{W cm}^{-1} \text{K}^{-1}$	0.27	/	/

## Optical Properties

Refractive index @9 $\mu\text{m}$	2.2129
Index of refraction inhomogeneity( $\Delta n/n$ ) @0.6328 $\mu\text{m}$	$2 \times 10^{-5}$
Thermo-optic coefficient (dn/dT) @3.39 $\mu\text{m}$ (298-358K)	$3.9 \times 10^{-5}$
Bulk absorption coefficient, $\text{cm}^{-1}@10.6 \mu\text{m}$	<0.2

## Transmission



## Product Specifications

Shapes	Planner windows, spherical domes and lens
Maximum size (mm)	For window: $600 \times 500 \times 30$
	For dome: $\phi 380 \times 15$
Surface quality	Polishing or AR coating