

ZINC SULPHIDE (ZnS)

Refrac Index (n) vs Wavelength (λ)			
λ (μm)	IR Grade Index	λ (μm)	Multispectral Index
0.42	2.516	0.40	2.5451
0.50	2.419	0.50	2.4127
0.62	2.355	0.64	2.3473
0.70	2.332	0.70	2.3307
0.82	2.310	0.85	2.3065
0.90	2.301	0.89	2.3018
1.00	2.292	1.01	2.2916
2.20	2.263	2.05	2.2644
3.00	2.257	3.00	2.2577
4.20	2.251	4.00	2.2523
5.00	2.246	5.00	2.2466
6.20	2.238	8.00	2.2233
7.00	2.232	9.00	2.2129
8.20	2.221	10.00	2.2008
9.00	2.212	11.25	2.1831
10.20	2.198	12.00	2.1710
11.0	2.186	13.00	2.1525
12.20	2.167		
13.00	2.152		
14.20	2.126		
15.00	2.106		
16.20	2.072		
17.00	2.045		

Optical Properties	IR Grade	Multispectral Grade
Refractive Index Inhomogeneity @ 0.6328μm	< 100 x 10 ⁻⁶	< 20 x 10 ⁻⁶
Thermal co-efficient of Refractive Index @ 10.6μm	4.1 x 10 ⁻⁵ /°C	5.4 x 10 ⁻⁵ /°C
Bulk Absorption Coefficient @ 10.6μm	≤ 0.24 /cm	≤ 0.20 /cm
Thermal Properties		
Thermal Linear Expansion	6.8 x 10 ⁻⁶ /°C @ 20°C	6.5 x 10 ⁻⁶ /°C @ 20°C
Thermal Conductivity	0.167W/cm/°C @ 20°C	0.27W/cm/°C @ 20°C
Specific Heat	0.469 J/g/°C	0.527 J/g/°C
Mechanical Properties		
Density	4.08 g/cc	4.09 g/cc
Knoop Hardness	210-240 kg/mm ²	150-160 kg/mm ²
Young Modulus	74.5GPa	85.5 Gpa
Poisson's Ratio	0.27	0.27
Rupture Modulus	103.4 MPa	68.9 Mpa
Fracture Toughness	0.8 x 10 ⁶ N/m ^{3/2}	1.0 x 10 ⁶ N/m ^{3/2}

