

# SCHOTT, your reliable solutions provider in the IR industry

## Infrared Chalcogenide Glass IRG 26

### Product Information

IRG 26 has excellent transmission in the SWIR, MWIR, & LWIR. The Chalcogenide composition of IRG 26 does not contain Germanium (Ge) and therefore offers the broadest transmission of the IR glass series with minimal absorption at 12.5 μm. Physical properties such as low dn/dT and low dispersion enable optical engineers to design color corrected optical systems without thermal defocusing. IRG 26 is optimized for pairing within the family of IR glasses and with other IR materials to support cost effective and high performance optical designs. Furthermore, IRG 26 can be processed by conventional grinding and polishing, single point diamond turning, or molding to support low to high volume component level fabrication.

### Typical Forms of Supply

Typical forms of supply are upon customer request. Maximum sizes up to Ø 95 mm and 150 mm length. For sample parts we would like to offer you the following polished blanks:

- Diameter: 10 to 95 mm
- Thickness: 5 to 30 mm



### Calculation Formula: Refractive index as a function of wavelength and temperature

$$n(\lambda, T) = \sqrt{1 + \frac{B_1 \lambda^2}{\lambda^2 - C_1} + \frac{B_2 \lambda^2}{\lambda^2 - C_2} + \frac{B_3 \lambda^2}{\lambda^2 - C_3}}$$

$$\frac{dn}{dT} = \frac{n^2(\lambda, 22) - 1}{2n(\lambda, 22)} \left[ D_0 + \frac{E_0}{\lambda^2 - \lambda_{TK}^2} \right]$$

### Constants of Dispersion Formulas

B <sub>1</sub>	3.1934
B <sub>2</sub>	3.5854
B <sub>3</sub>	2.2337
C <sub>1</sub>	0.0000
C <sub>2</sub>	0.1852
C <sub>3</sub>	3398.08
D <sub>0</sub>	2.63 · 10 <sup>-5</sup>
E <sub>0</sub>	2.93 · 10 <sup>-5</sup>
λ <sub>TK</sub>	3.15 · 10 <sup>-1</sup>

### Material Properties

Composition	As <sub>40</sub> Se <sub>60</sub>
Density	4.63 g/cm <sup>3</sup>
Thermal Expansion (20 – 100°C)	21.4 · 10 <sup>-6</sup> /K
Specific Heat	0.36 J/(g · K)
Thermal Conductivity	0.24 W/(m · K)
Transition Temperature	185 °C
Hardness (Knoop)	1.04 GPa
Fracture Toughness	0.285 MPa · m <sup>1/2</sup>
Young's Modulus	18.3 GPa
Thermal Change dn/dt	32.2 · 10 <sup>-6</sup> /K (@ 10.6 μm)

Wavelength [μm]	Refractive Index (@ 22 °C)	Δn abs / ΔT [10 <sup>-6</sup> /K] @ 22 °C
0.85	3.0026	–
1.0	2.9316	76.2
1.5	2.8460	49.8
2.0	2.8197	41.7
3.0	2.8015	36.2
4.0	2.7947	34.3
5.0	2.7909	33.4
6.0	2.7882	33.0
7.0	2.7857	32.7
8.0	2.7833	32.5
9.0	2.7808	32.3
10.0	2.7781	32.2
11.0	2.7753	32.1
12.0	2.7722	32.0

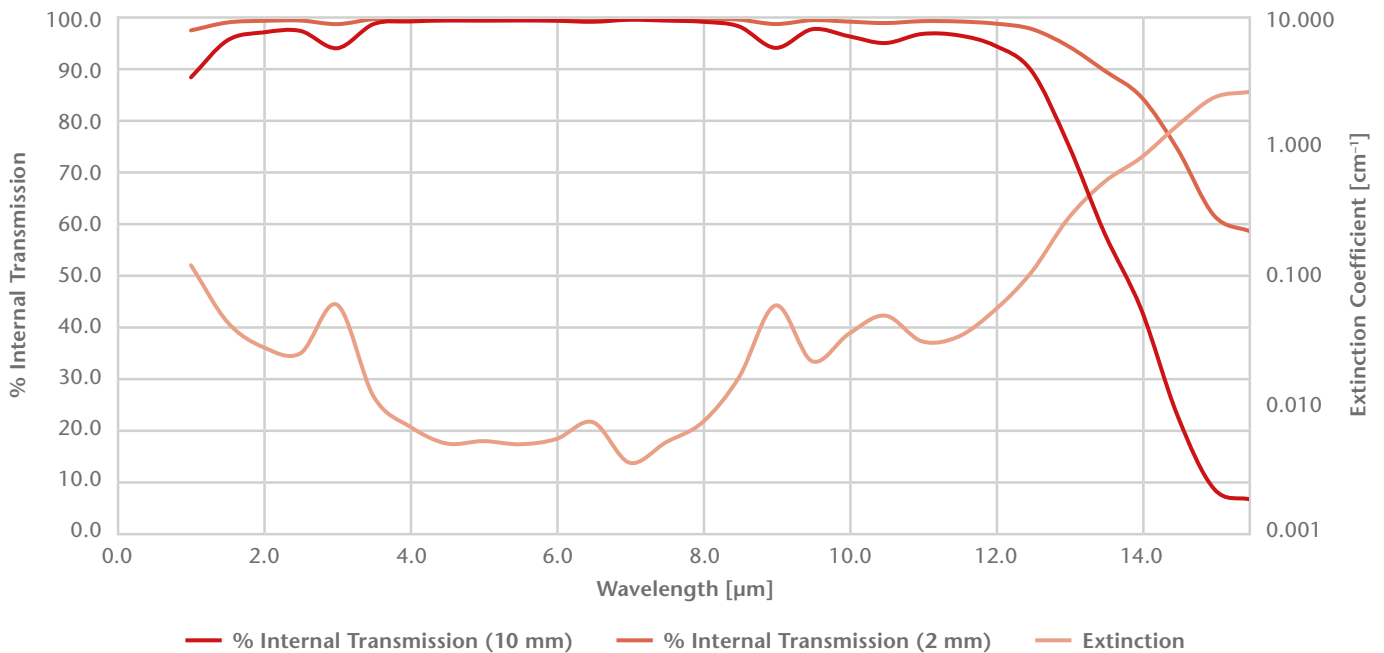
Refractive index tolerance at 10 μm wavelength: ±0.001

\*For more information and questions please contact us

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glass made of ideas

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## IRG 26 Extinction and Internal Transmission



Wavelength [μm]	% Transmission (10 mm)	% Transmission (2 mm)	Extinction [cm <sup>-1</sup> ]
1.0	88.5	97.6	0.122
1.5	95.7	99.1	0.044
2.0	97.2	99.4	0.028
2.5	97.5	99.5	0.026
3.0	94.1	98.8	0.060
3.5	98.8	99.8	0.012
4.0	99.3	99.9	0.007
4.5	99.5	99.9	0.005
5.0	99.5	99.9	0.005
5.5	99.5	99.9	0.005
6.0	99.4	99.9	0.006
6.5	99.3	99.9	0.007
7.0	99.6	99.9	0.004
7.5	99.5	99.9	0.005
8.0	99.3	99.9	0.007

Wavelength [μm]	% Internal Transmission (10 mm)	% Internal Transmission (2 mm)	Extinction [cm <sup>-1</sup> ]
8.5	98.3	99.7	0.017
9.0	94.2	98.8	0.060
9.5	97.8	99.6	0.022
10.0	96.5	99.3	0.036
10.5	95.1	99.0	0.050
11.0	96.9	99.4	0.032
11.5	96.6	99.3	0.034
12.0	94.7	98.9	0.055
12.5	89.8	97.9	0.107
13.0	75.7	94.6	0.278
13.5	58.5	89.8	0.537
14.0	43.8	84.8	0.825
14.5	23.2	74.7	1.461
15.0	9.1	61.9	2.400
15.5	7.0	58.8	2.657

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