

VITRON IG-4 – discover the Original

Our glass IG-4 features excellent transmittance and low thermal change in refractive index and dispersion.

IG-4 is ideal for applications in combination with other IR material for color corrected designs and infrared optical systems without thermal defocusing in the 2-12 μm spectrum.

Molding, classical polishing or Single-Point-Diamond-Machining permits the production of optical components with flat, spherical and/or aspherical shaped surfaces for the Infra-Red and Optoelectronics industries.

Antireflection coatings further improve transmission by reducing the reflection at the air-glass interfaces.

VITRON currently produces 5 different types of Chalcogenide Glass that are applicable to optics and optoelectronics system design.

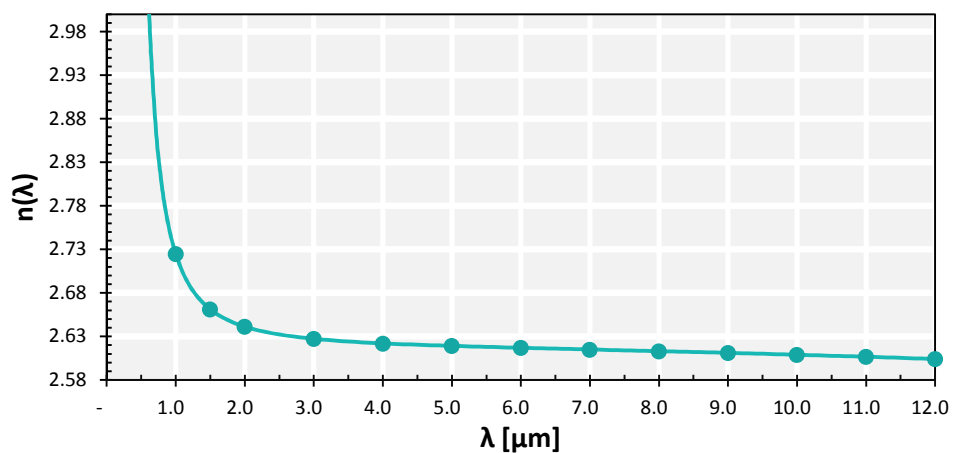


Typical delivery in form of blanks:

∅	5 – 150 mm
□	5 – 100 mm
ct	0.8 – 150 mm

Index of Refraction (@ 20°C)

λ [μm]	n(λ)
1.00	2.7249
1.50	2.6612
2.00	2.6413
3.00	2.6274
4.00	2.6220
5.00	2.6192
6.00	2.6169
7.00	2.6150
8.00	2.6131
9.00	2.6112
10.00	2.6091
11.00	2.6066
12.00	2.6041



Sellmeier-Coefficients (@ 20°C)

A	3.8110
B₁	3.0416
C₁	0.3981
B₂	0.8634
C₂	42.5165

$$n^2(\lambda) = A + \frac{B_1 \lambda^2}{\lambda^2 - C_1^2} + \frac{B_2 \lambda^2}{\lambda^2 - C_2^2}$$

Dispersion (@ 20°C)

λ [μm]	v _λ
4.00	198
10.00	179

$$v_4 = \frac{n_4 - 1}{n_3 - n_5}$$

$$v_{10} = \frac{n_{10} - 1}{n_8 - n_{12}}$$

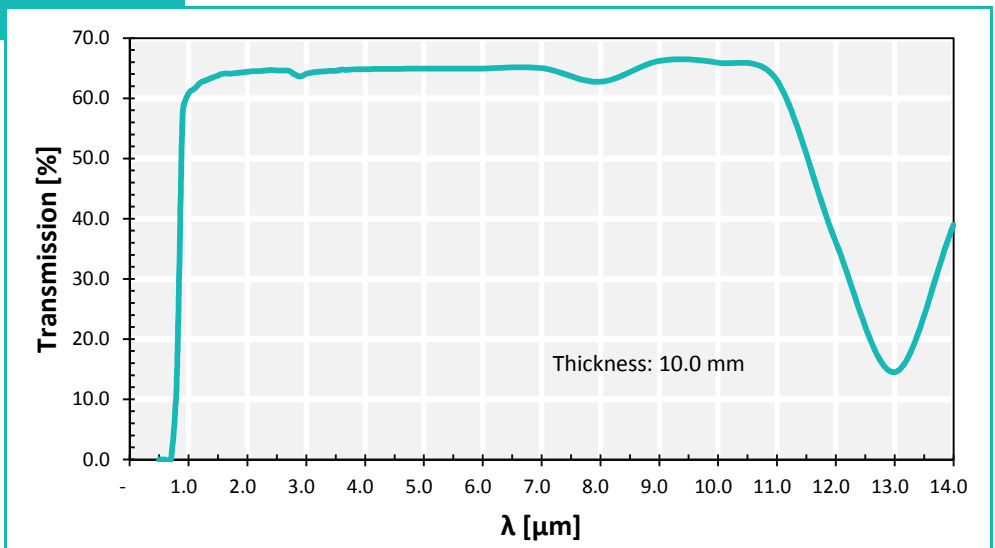
Thermo-Optical Coefficient (@ 20°C)

λ [μm]	dn/dT [×10 ⁻⁶ /K]
3.40	23.0
10.60	19.9

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Transmission

λ [μm]	$T(\lambda)$ [%]
1.00	60.8
1.50	63.8
2.00	64.4
3.00	62.5
4.00	63.6
5.00	64.1
6.00	64.5
7.00	65.0
8.00	62.7
9.00	66.2
10.00	65.9
11.00	63.0
12.00	36.1
13.00	14.5
14.00	38.9



Material Properties

	$\text{Ge}_{10}\text{As}_{40}\text{Se}_{50}$	
Composition		
Density	4.47	$\text{g}\cdot\text{cm}^{-3}$
Thermal Expansion (20°C – 100°C)	20.4	$\times 10^{-6} \text{K}^{-1}$
Specific Heat Capacity	0.37	$\text{J}\cdot\text{g}^{-1}\cdot\text{K}^{-1}$
Thermal Conductivity	0.18	$\text{W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$
Transition Temperature	225	°C
Softening Point	310	°C
Young's Modulus	20.5	GPa
Modulus of Rupture	18	MPa
Shear Modulus	8.5	GPa
Hardness (Knoop)	1.12	GPa

Chemical Properties

The VITRON chalcogenid glasses are insoluble in water. Under normal circumstances, no reactions are observed between glass and organic solvents.

Typical Forms of Supply

Our chalcogenid glasses are fine-annealed with 3.75 K/h. Variability of the index of refraction: between charges $\leq 10^{-3}$
within a charge $\leq 10^{-4}$

Semi-finished: Boules, Blanks in disk and rectangular shapes, Rods
Other shapes by customer request

Optical components: Windows, Lenses, Prisms and other optical parts according to customer specification
AR/AR coatings on customer request

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VITRON
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