

VITRON IG-3 – discover the Original

Our glass IG-3 features excellent transmittance and low thermal change in refractive index and dispersion.

IG-3 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.

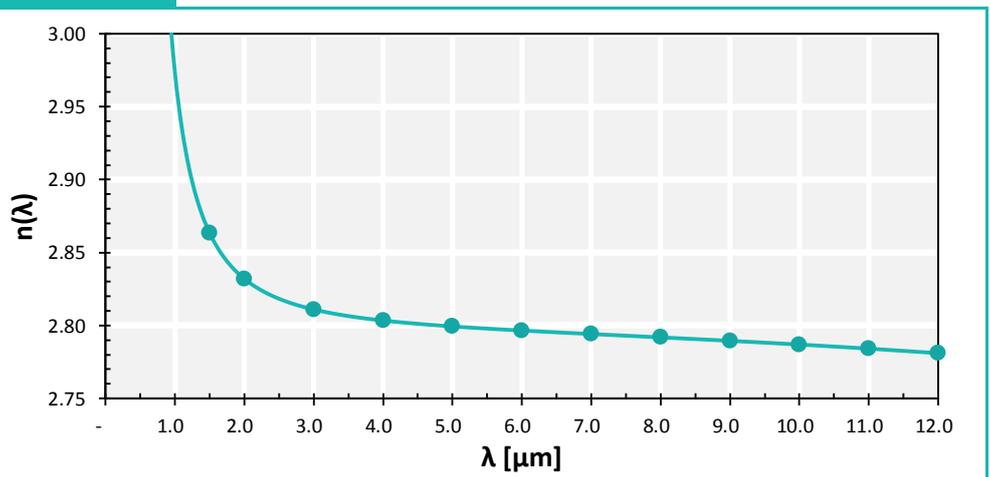


Typical delivery in form of blanks:

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

Index of Refraction (@ 20°C)

λ [μm]	n(λ)
1.00	-
1.50	2.8635
2.00	2.8321
3.00	2.8111
4.00	2.8034
5.00	2.7993
6.00	2.7965
7.00	2.7941
8.00	2.7919
9.00	2.7896
10.00	2.7870
11.00	2.7841
12.00	2.7810



Sellmeier-Coefficients (@ 20°C)

A	4.8854
B₁	2.9345
C₁	0.5084
B₂	0.5738
C₂	32.4062

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

Dispersion (@ 20°C)

λ [μm]	v _λ
4.00	153
10.00	164

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

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

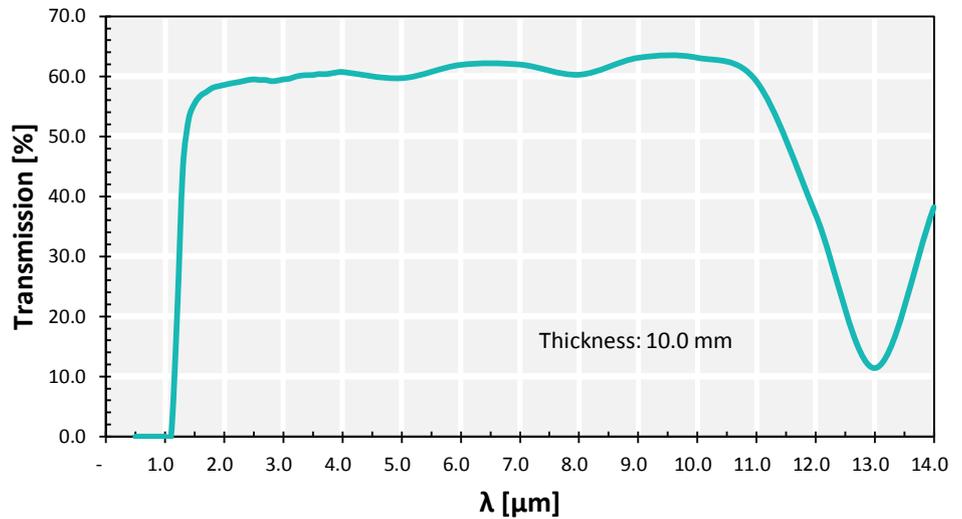
Thermo-Optical Coefficient (@ 20°C)

λ [μm]	dn/dT [x10 ⁻⁶ /K]
3.40	105.2
10.60	102.7

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Transmission

λ [μm]	T(λ) [%]
1.00	-
1.50	55.5
2.00	58.6
3.00	59.5
4.00	60.7
5.00	59.7
6.00	61.9
7.00	62.0
8.00	60.3
9.00	63.1
10.00	63.1
11.00	59.2
12.00	37.0
13.00	11.4
14.00	38.2



Material Properties

Composition	$\text{Ge}_{30}\text{As}_{13}\text{Se}_{32}\text{Te}_{25}$	
Density	4.84	$\text{g}\cdot\text{cm}^{-3}$
Thermal Expansion (20°C – 100°C)	13.4	$\times 10^{-6} \text{K}^{-1}$
Specific Heat Capacity	0.32	$\text{J}\cdot\text{g}^{-1}\cdot\text{K}^{-1}$
Thermal Conductivity	0.22	$\text{W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$
Transition Temperature	275	°C
Softening Point	360	°C
Young's Modulus	22.0	GPa
Modulus of Rupture	18	MPa
Shear Modulus	8.9	GPa
Hardness (Knoop)	1.36	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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