

# 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.

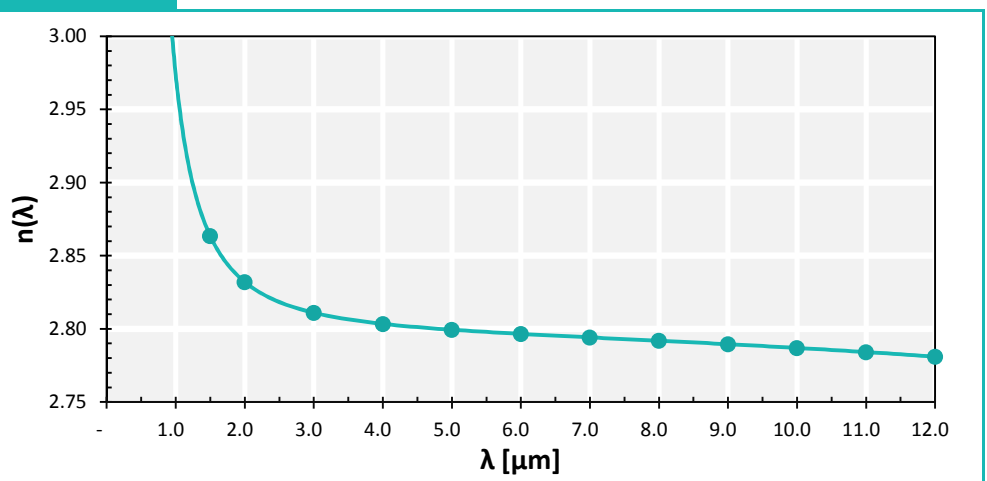


Typical delivery in form of blanks:

- ∅ 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)

<b>A</b>	4.8854
<b>B<sub>1</sub></b>	2.9345
<b>C<sub>1</sub></b>	0.5084
<b>B<sub>2</sub></b>	0.5738
<b>C<sub>2</sub></b>	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 <sub>λ</sub>
4.00	153
10.00	164

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

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

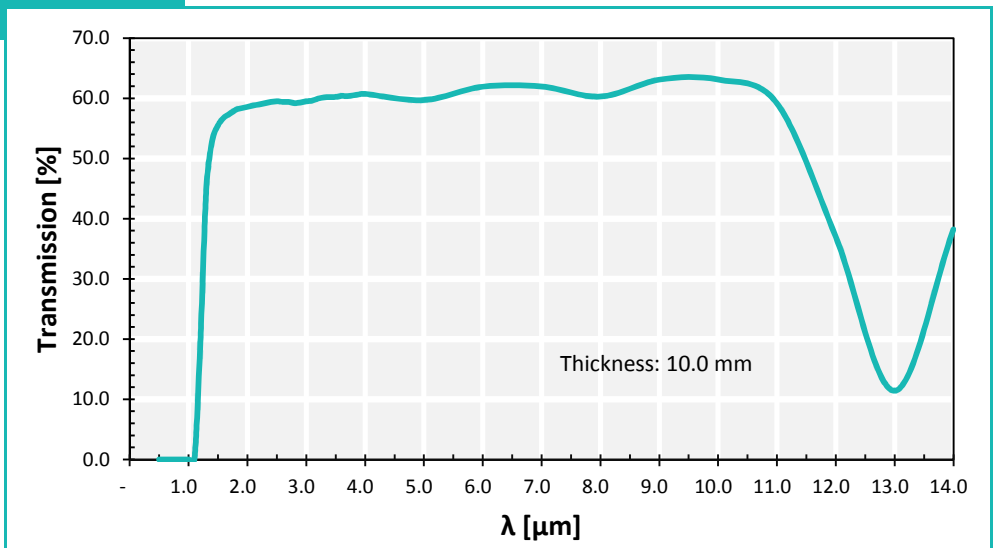
## Thermo-Optical Coefficient (@ 20°C)

λ [μm]	dn/dT [×10 <sup>-6</sup> /K]
3.40	105.2
10.60	102.7

# VITRON IG-3 – discover the Original

## Transmission

$\lambda$ [ $\mu\text{m}$ ]	$T(\lambda)$ [%]
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

	$\text{Ge}_{30}\text{As}_{13}\text{Se}_{32}\text{Te}_{25}$	
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

**VITRON**  
Spezialwerkstoffe GmbH  
Maua  
Am Naßtal 5  
D-07751 Jena

Phone: +49-(0)3641-2 88 1-30  
Fax: +49-(0)3641-2 88 1-55  
Email: kontakt@vitron.de  
Internet: www.vitron.de

**VITRON**  
Your Material Specialist