

Material Properties of Chalcogenide Glass

Sr. No.	Glass	IRG 22	IRG 24	IRG 25	IRG 26	IRG 27
1	Composition	$\text{Ge}_{33}\text{As}_{12}\text{Se}_{55}$	$\text{Ge}_{10}\text{As}_{40}\text{Se}_{50}$	$\text{Ge}_{28}\text{Sb}_{12}\text{Se}_{60}$	$\text{As}_{40}\text{Se}_{60}$	As_2S_3
2	Density	4.41 gm/cm ³	4.47 gm/cm ³	4.66 gm/cm ³	4.63 gm/cm ³	3.20 gm/cm ³
3	Thermal Expansion (20-100 °C)	$12.5 \times 10^{-6}/\text{K}$	$20.0 \times 10^{-6}/\text{K}$	$14.0 \times 10^{-6}/\text{K}$	$21.4 \times 10^{-6}/\text{K}$	$22.5 \times 10^{-6}/\text{K}$
4	Transition Temperature	368 °C	225 °C	285 °C	185 °C	197 °C
5	Thermal Change dN/dT	$94.8 \times 10^{-6}/\text{K}$ (1 μm)	$46.0 \times 10^{-6}/\text{K}$ (1 μm)	$79.2 \times 10^{-6}/\text{K}$ (1 μm)	$76.2 \times 10^{-6}/\text{K}$ (1 μm)	$15.6 \times 10^{-6}/\text{K}$ (1 μm)
		$67.7 \times 10^{-6}/\text{K}$ (5 μm)	$21.1 \times 10^{-6}/\text{K}$ (5 μm)	$62.0 \times 10^{-6}/\text{K}$ (5 μm)	$33.4 \times 10^{-6}/\text{K}$ (5 μm)	$-3.2 \times 10^{-6}/\text{K}$ (5 μm)
		$67.1 \times 10^{-6}/\text{K}$ (10 μm)	$20.3 \times 10^{-6}/\text{K}$ (10 μm)	$61.1 \times 10^{-6}/\text{K}$ (10 μm)	$32.2 \times 10^{-6}/\text{K}$ (10.6 μm)	$-3.7 \times 10^{-6}/\text{K}$ (10.6 μm)
6	Refractive Index	2.5971 (1 μm)	2.7249 (1 μm)	2.7284 (1 μm)	2.9316 (1 μm)	2.4841 (1 μm)
		2.5104 (5 μm)	2.6192 (5 μm)	2.6183 (5 μm)	2.7909 (5 μm)	2.4129 (5 μm)
		2.4968 (10 μm)	2.6090 (10 μm)	2.6030 (10 μm)	2.7781 (10 μm)	2.3873 (10 μm)