

IR Optics from ZnSe, ZnS, Germanium, Silicium

We offer raw materials in blanks (or other shapes) with requested sizes and orientations as well as completed polished and coated optical elements from these materials. Usually there are customized elements.

	ZnSe	ZnS MS	ZnS FLIR	Ge (optical grade) [111], [100], [110]	Si (optical grade) [111], [100]
refraction, transmission (with Fresnel reflection)					
λ [μm]	n T(λ) [%]	n T(λ) [%]	n T(λ) [%]	n T(λ) [%]	n T(λ) [%]
1.00	2.4892 66.8	2.292 71.5	2.292 0.00	- -	- -
2.00	2.4460 67.8	2.265 72.2	2.265 10.1	- -	3.444 48.6
3.00	2.4376 68.0	2.257 72.4	2.257 36.1	4.0446 40.4	3.426 48.9
4.00	2.4331 68.1	2.252 72.5	2.252 50.3	4.0249 40.6	3.419 49.0
5.00	2.4295 68.2	2.246 72.7	2.246 60.0	4.0152 40.7	3.415 49.1
6.00	2.4259 68.3	2.239 72.8	2.239 55.1	4.0107 40.8	3.413 49.1
7.00	2.4218 68.4	2.232 73.0	2.232 65.3	4.0078 40.8	- -
8.00	2.4173 68.5	2.223 73.2	2.223 71.8	4.0054 40.8	- -
9.00	2.4122 68.6	2.212 73.5	2.212 72.2	4.0045 40.9	- -
10.00	2.4065 68.8	2.200 73.8	2.200 72.1	4.0039 40.9	- -
11.00	2.4001 68.9	2.186 61.5	2.186 57.9	4.0034 40.9	- -
12.00	2.3930 69.1	2.170 61.0	2.170 61.7	4.0029 32.8	- -
dispersion					
λ [μm]	$\nu(\lambda)$	$\nu(\lambda)$	$\nu(\lambda)$	$\nu(\lambda)$	$\nu(\lambda)$
4.00	177	114	114	103	220
10.00	58	23	23	1202	-
thermo-optical coefficient					
λ [μm]	dn/ dT [$\times 10^{-6}$ / K]	dn/ dT [$\times 10^{-6}$ / K]	dn/ dT [$\times 10^{-6}$ / K]	dn/ dT [$\times 10^{-6}$ / K]	dn/ dT [$\times 10^{-6}$ / K]
4.00	62	43	43	400	156
10.00	61	41	41	-	-
density	5.3 g/cm ³	4.1 g/cm ³	4.1 g/cm ³	5.3 g/cm ³	2.3 g/cm ³
CTE	7.1x10 ⁻⁶ /K	6.5x10 ⁻⁶ /K	6.8x10 ⁻⁶ /K	5.7x10 ⁻⁶ /K	2.6x10 ⁻⁶ /K
specific heat capacity	0.3 J/gK	0.5 J/gK	0.5 J/gK	0.3 J/gK	0.7 J/gK
thermal conductivity	18 W/mK	27 W/mK	17 W/mK	59 W/mK	150 W/mK
melting point	1525 °C	1765 °C	1765 °C	938 °C	1414 °C
Young's modulus	67 GPa	88 GPa	74 GPa	156 GPa	1187 GPa
modulus of rupture	55 MPa	69 MPa	103 MPa	73 MPa	-