

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]	$\nu(\lambda)$	$\nu(\lambda)$	$\nu(\lambda)$	$\nu(\lambda)$	$\nu(\lambda)$	$\nu(\lambda)$	$\nu(\lambda)$	$\nu(\lambda)$	$\nu(\lambda)$	$\nu(\lambda)$
4.00	177	114	114	114	103	220	-	-	-	-
10.00	58	23	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]	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	43	400	156	-	-	-	-
10.00	61	41	41	41	-	-	-	-	-	-
density	5.3 g/cm ³	4.1 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	6.5x10 ⁻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	0.5 J/gK	0.3 J/gK	0.7 J/gK	-	-	-	-
thermal conductivity	18 W/mK	27 W/mK	27 W/mK	17 W/mK	59 W/mK	150 W/mK	-	-	-	-
melting point	1525 °C	1765 °C	1765 °C	1765 °C	938 °C	1414 °C	-	-	-	-
Young's modulus	67 GPa	88 GPa	88 GPa	74 GPa	156 GPa	1187 GPa	-	-	-	-
modulus of rupture	55 MPa	69 MPa	69 MPa	103 MPa	73 MPa	-	-	-	-	-