

## Physical Properties of Selected Optical Materials at Room Temperature (300 K)

Material	Density [g/cm <sup>3</sup> ]	Optical band gap [eV]	Index of refraction at 589.3 nm	IEP (PZC) [pH units]
AlN	3.23	6.2	2.1	
Al <sub>2</sub> O <sub>3</sub> (alpha)	3.98	8.7	1.76	7.0 - 8.0
Al <sub>2</sub> O <sub>3</sub> (gamma)	2.9	7.3	1.77	8.0 - 9.0
Al <sub>2</sub> SiO <sub>5</sub> (sillimanite)	3.24	9.1	1.65, 1.65, 1.67	
BaBr <sub>2</sub>	4.78	4.1		
BaI <sub>2</sub>	5.15	3.9		
BaMgAl <sub>10</sub> O <sub>17</sub>	3.8	6.5		9.5
BaSO <sub>4</sub>	4.5	6.0	1.64	3.3
BaSi <sub>2</sub> N <sub>2</sub> O <sub>2</sub>	4.53	4.6	1.90	
BaTiO <sub>3</sub>	6.02	3.2	2.4	
Bi <sub>4</sub> Ge <sub>3</sub> O <sub>12</sub>	7.12	5.0	2.109	
Bi <sub>2</sub> W <sub>2</sub> O <sub>9</sub>	8.83	2.8		
Ca <sub>3</sub> Sc <sub>2</sub> Si <sub>3</sub> O <sub>12</sub>	3.51	5.6	1.9	
CaAlSiN <sub>3</sub>	3.79	4.3	2.17	
CaCO <sub>3</sub> (calcite)	2.71	6.0	1.486, 1.658	
CaF <sub>2</sub>	3.18	10.0	1.434	
CaHPO <sub>4</sub>	2.93		1.61	
CaI <sub>2</sub>	4.0	3.5		
CaS	2.5	5.8	2.137	
CaMoO <sub>4</sub>	4.35	3.4		
CaWO <sub>4</sub>	6.06	4.1	1.920, 1.936	
CdO	8.15	2.5		
CdS	4.82	2.42		
CdSe	5.82	1.74		
CdTe	5.85	1.56		
Ce <sub>2</sub> O <sub>3</sub>	6.87	2.4		
CeO <sub>2</sub>	7.22	2.8		7.5
Cr <sub>2</sub> O <sub>3</sub>	5.21			8.4
Diamond	3.51	5.4	2.42	
Dy <sub>2</sub> O <sub>3</sub>	7.80	4.9	1.976	
EuO	8.21	1.1		
Eu <sub>2</sub> O <sub>3</sub>	7.40			
$\alpha$ -Fe <sub>2</sub> O <sub>3</sub> (hematite)	5.3	1.9	2.91, 3.19	8.4 - 8.5
GaN	6.15	3.39	2.4	
Gd <sub>2</sub> O <sub>3</sub>	7.4	5.4	1.8	
Gd <sub>2</sub> SiO <sub>5</sub>	6.7	6.5	1.81	
Ho <sub>2</sub> O <sub>3</sub>	8.4	5.2	1.963	
InN	6.81	1.89	2.8	
KLaMo <sub>2</sub> O <sub>8</sub>		4.2		
KNbO <sub>3</sub>	4.62			
La <sub>2</sub> O <sub>3</sub>	6.54	5.5		10.0 - 10.5
La <sub>2</sub> Hf <sub>2</sub> O <sub>7</sub>	7.8	4.8		
LaAlO <sub>3</sub>	6.51	6.2		
LaBr <sub>3</sub>	5.08	4.5		
LaPO <sub>4</sub>	5.2	8.6	1.79	5.0 - 6.8

LiNbO <sub>3</sub>	4.65	4.0	2.30, 2.21	
Lu <sub>2</sub> O <sub>3</sub>	9.4	5.5	1.93	
Lu <sub>2</sub> SiO <sub>5</sub>	7.40	6.4		
Lu <sub>3</sub> Al <sub>5</sub> O <sub>12</sub>	6.67	6.3	1.84	
MgAl <sub>2</sub> O <sub>4</sub>	3.55	6.6	1.72	
MgO	3.58	7.7	1.74	9.8 - 12.7
MgS	2.66	5.3		
LuBO <sub>3</sub> (calcite)	6.87	6.4		
LuBO <sub>3</sub> (vaterite)	7.42	7.0		
LuPO <sub>4</sub>	6.53	8.7		
NaCl	2.16	8.6	1.544	
Nd <sub>2</sub> O <sub>3</sub>	7.24	4.4	1.8	
Pr <sub>2</sub> O <sub>3</sub>	7.33	4.7		
Pr <sub>2</sub> O <sub>3</sub>	7.06	3.9		
Si <sub>3</sub> N <sub>4</sub>	3.2	5.0	2.0 – 2.1	
SiO <sub>2</sub> (crystalline)	2.68	8.4	1.54	1.7 - 3.5
SiO <sub>2</sub> (amorphous, glass)	2.2	8.4	1.46	1.7 - 3.5
Sm <sub>2</sub> O <sub>3</sub>	8.35	5.0	1.984	
SnO <sub>2</sub>	6.85	3.6	2.006, 2.097	4.5
SrBr <sub>2</sub>	4.21	4.0		
SrI <sub>2</sub>	4.55	3.7		
SrS	3.7	4.8	2.107	
SrTiO <sub>3</sub>	4.81	3.3	2.41	
TiO <sub>2</sub> (rutile)	4.2	3.2	2.61 – 2.90	3.5
TiO <sub>2</sub> (anatase)	3.8	3.5	2.55	6.5
WO <sub>3</sub>	3.36	2.7	2.2	0.2 - 0.5
Yb <sub>2</sub> O <sub>3</sub>	9.2	5.2		9.7
Y <sub>2</sub> O <sub>3</sub>	5.0	5.6	1.90	9.1
YAlO <sub>3</sub>	5.55		1.90	
Y <sub>3</sub> Al <sub>5</sub> O <sub>12</sub>	4.55	7.7	1.83	
Y <sub>3</sub> Ga <sub>5</sub> O <sub>12</sub>		6.6	5.79	
Y <sub>2</sub> O <sub>2</sub> S	4.46	4.8		
YBO <sub>3</sub> (vaterite)	5.1	7.0	1.7 - 1.8	8.5
YPO <sub>4</sub>	4.8	8.6	1.72, 1.82	3.0 - 6.0
YVO <sub>4</sub>	4.22	3.8	2.006	
Y <sub>2</sub> SiO <sub>5</sub>	4.8	6.2		3.0 – 5.0
ZnO	5.6	3.3	2.01	8.7 - 10.3
ZnS (wurtzite)	4.09	3.8	2.356, 2.378	
ZnS (sphalerite)	4.0	3.8	2.369	
Zn <sub>2</sub> SiO <sub>4</sub> (willemite)	4.1		1.691, 1.791	
ZrO <sub>2</sub>	5.6	5.4	2.13, 2.19	6.5
ZrSiO <sub>4</sub>	4.66	6.5	2.173	