| ChemicalName | MineralName | ChemicalFormula | MeltingPoin | CrystalSystem | CrystalClass | SpaceGroup | UnitCellA | UnitCellB | UnitCellC | MolecularWeigh | FormulaUnits | FrequentCrystalSurfaces | Twinning | MohsHardness | Density | Cleavage | FractureTenacity | Color | Streak | Transparenc | Lustre | OpticalChar | RefractiveIndex | Birefringenc | Pleochroism | Doping | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Adular | Adular | (K,Na)(Si7Al)4O8 | | monoklin | | C2/m | | | | | | | | 6 - 6,5 | | | | | | | | | | | | | |
| Albit | Albit | Na[AlSi3O8] | | triklin | | C1 | 8,13 | 12,79 | 7,15 | | Z=4/8 | | | | | | | | | | | | | | | | |
| Aluminium Hydroxide | Gibbsite | Al(OH)3 | | monoclinic | monoclinic-prismatic (2/m) | P2_1/m | 8.64 | 5.07 | 9.72 | | Z=8 | {001}, {101}, {110} | on {001}, rare on {100}, {110} | 2.5 - 3.5 | 2.3 - 2.4 | perfect on (001) | uneven | colorless, white, gray, green, blue | white | transparent to translucent | vitreous, pearly, dull | biaxial (+) | nα=1.568-1.570; nβ=1.568-1.570; nΥ=1.586-1.587 | 0.018 | | | |
| Aluminium Hydroxy Flouro Silicate | Topaz | Al2[(F,OH)2SiO4] | | orthorhombic | orthorhombic-dipyramidal (2/m 2/m 2/m) | Pbnm | 4.65 | 8.80 | 8.40 | | Z=4 | | | 8 | 3.5 - 3.6 | perfect on (001) | uneven to conchoidal | yellowish brown (common), blau, violett, red, colorless | white | transparent to translucent | vitreous | biaxial (+) | nα=1.606-1.629; nβ=1.609-1.631; nΥ=1.616-1.638 | 0.010 | weak | | |
| Aluminium Oxid Ti3+ doped | Ti:Sapphire | Al2O3:Ti3+ | 2040 | hexagonal | | | 4.758 | 4.758 | 12.991 | | | | | 9 | | | | | | | | | n=1.76 at 800 nm | | | | |
| Aluminium Oxide | Aluminium Oxide, Sapphire, Corundum | α Al2O3 | 2052 | hexagonal, rhomboedric | | | 4.758 | 4.758 | 12.991; a : c = 1 : 2.734 | | | | twinfree | 9 | 3.98 | | | colourless | | | | | nd=1.8336 (at 265 nm); nd = 1.58638 (at 5.6 mm\ | | | | |
| Aluminium Oxy Hydroxide | Diaspore | AlO(OH) | | orthorhombic | orthorhombic-dipyramidal (2/m 2/m 2/m) | Pbnm | 4.40 | 9.42 | 2.84 | 59,97 | Z=4 | | twinning on {021} or pseudohexagonal aggregates | 6.5 - 7 | 3.3 -3.5 | perfect on {010}, distinct on {100} and indistinct {100} | conchoidal | white, pale gray, colorless, greenish gray, brown, pale yellow, pink, purple | white | transparent to translucent | vitreous, pearly | biaxial (+) | nα=1.682-1.706; nβ=1.705-1.725; nΥ=1.730-1.752 | 0.048 | strong | | |
| Aluminium Silicate | Andalusite | Al2SiO5 | | orthorhombic | orthorhombic-dipyramidal (2/m 2/m 2/m) | Pnnm | 7.78 | 7.92 | 5.57 | 162,03 | Z=4 | {110}, {001} | rare on {101} | 6.5 - 7.5 | 3.13 - 3.16 | perfect on {110} | brittle to subconchoidal | pink, violet, yellow, green, white, gray | white | transparent to nearly opaque | vitreous | biaxial (-) | nα=1.629-1.640; nβ=1.633-1.644; nΥ=1.638-1.650 | 0.009 - 0.010 | strongly trichroic | | |
| Andesin | Andesin | (Na,Ca)(Si7Al)4O8 | | triklin | | P1 | | | | | | | | | | | | | | | | | | | | | |
| Anorthit | Anorthit | Ca(Al2Si2O8) | | triklin | | P1 | | | | | | | | | | | | | | | | | | | | | |
| Antimonite | Antimonite | Sb2S3 | | Orthorhombic | | Pbnm | 11,229 | 11,31 | 3,8389 | | Z=4 | | Rare | 2 | 4,625 g·cm-3 | Perfect and easy on {010}; imperfect on {100} and {110} | Highly flexible but not elastic; slightly sectile | Lead-gray, tarnishing blackish or iridescent; in polished section, white | Similar to color | | Splendent on fresh crystals surfaces, otherwise metallic | | | | | | Anisotropism: Strong |
| Arsen Sulfide | Orpiment | As2S3 | 300 - 325 | monoclinic | monoclinic-prismatic (2/m) | P2_1/n | 11.48 | 9.58 | 4.26 | 246,06 | Z=4 | {100}, {010}, {301}, {110}, {011}, {210} | | 1.5 - 2 | 3.49 | perfect on {010}, imperfect on {100} | sectile | yellow to golden or brownish-yellow | pale lemon-yellow | transparent | resinous, pearly on cleavage surfaces | biaxial (-) | nα=2.400; nβ=2.810; nΥ=3.020 | 0.620 | strong | | |
| Barium Bismuthate | Barium Bismuthate | BaBiO3 | | monoclinic | | C2m | 6.235 | 6.235 | 6.288 | | | | | | 7.58 | | | | | | | | | | | | |
| Barium Calcium Titanate | | Ba0,77Ca0,23TiO3 | | | | | | | | 241.27 | | | | | | | | | | | | | | | | | |
| Barium Flourid | Barium Flourid | BaF2 | 1386 | cubic | | | 6,20 | 6,20 | 6,20 | 175.3368 | | | | | 4.89 | (111) cleavage plane | | black to brown | | | | | n0=1.6654; ne=1.4898 at 509 nm | | | | CaF2 type structure, application as scintillation material / correction part in lens systems; radiation resistant, susceptible to thermal shock laser damage threshold: 27.5 GW/cm^2 at 3.8 μm, 75 ns pulse length |
| Barium Sulfate | Baryte | BaSO4 | 1580 | orthorhombic | orthorhombic-dipyramidal (2/m 2/m 2/m) | Pnma | 8.88 | 5.46 | 7.16 | 233,38 | Z=4 | | | 3 - 3.5 | 4.48 | perfect on {001} and {210}, imperfect on {010} | brittle, uneven | colorless, white, light blue shaded, yellow, gray, brown | white | transparent to opaque | vitreous, pearly | biaxial (+) | nα=1.634-1.637; nβ=1.636-1.638; nΥ=1.646-1.648 | 0.012 | colorless | | fluorescent, phosphorescent |
| Barium Titanate | Barium Titanate | BaTiO3 | 1618 | tetragonal | 4/m (10 °C < T < 132 °C) | | 3.99 | 3.99 | 4.04 (at 26 °C) | | | | | 4.5 | 6.06 (at 26 °C) | | | | | | | | n0=2.4912 (515 nm), 2.4160 (633 nm), 2.3681 (800 nm); ne=2.4247 (515 nm), 2.3630 (633 nm), 2.3235 (800 nm) | | | | |
| Barium Titanate Ce doped | | BaTiO3:Ce | | | | | | | | | | | | | | | | | | | | | | | | | |
| Barium Titanate Nb doped - 1500ppm | Barium Titanate Nb doped - 1500ppm | BaTiO3:Nb - 1500ppm | | | | | | | | | | | | | | | | | | | | | | | | | |
| Barium Zirconate | | BaZrO3 | 2600 | cubic | m3m | Pm3m | 4,193 | 4,193 | 4,193 | | | | | | | | | | | | | | | | | | |
| Beryllium Aluminate | Alexandrite (Laser) | BeAl2O4:Cr3+ | 1870 | orthorhombic | | Pnma | 5.47 | 9.39 | 4.42 | 126.97 | | | | 8.5 | 3.79 | | | green (for daylight), red (for artificial lightning) | | | | biaxial | ng=1.753; nm=1.747; np=1.744 | | | 0.3 - 1.0 | |
| Beryllium Aluminate | Chrysoberyll | BeAl2O4 | | orthorhombic | | D16 2h Pmcn | 5,48 | 4,43 | 9,41 | | | | | 7.5 | 3.74 | | | | | | | | | | | | |
| Beryllium Aluminium Silicate | Beryll | Be3Al2(SiO3)6 | | hexagonal | dihexagonal-dipyramidal (6/m 2/m 2/m) | P6/mcc | 9.23 | 9.23 | 9.19 | 537,48 | Z=2 | {10-10}, {0001}, {11-20} | rare | 7.5 - 8 | 2.63 - 2.8 | imperfect on {0001} | uneven to conchoidal, brittle | blue, green, yellow, rose, red, white, colorless | white | transparent to translucent | vitreous to resinous | uniaxial (-) | nω=1.564-1.595; nε=1.568-1.602 | 0.004 - 0.007 | weak to distinct | | |
| Beryllium Aluminium Silicate Cr doped | Emerald | Be3Al2(SiO3)6:Cr | | hexagonal | P6/mcc6/m 2/m 2/m) – dihexagonal diovramidal | | 9,21 | | 9,19 | 537,50 | Z=2 | (0001), (10-10), (11-20) | | 7,5-8,0 | | | | green | white | | | | nε = 1.568–1.602 nω = 1.564–1.595 | δ = 0.0040–0.0070 | | Cr | |
| Beta-Barium Borate | | β-BaB2O4 | 1095 ± 5 | trigonal | | 3c | 12.532 | 12.532 | 12.717 | | Z=6 | | | 4 | 3.85 | | | | | transparency range 189 - 3500 nm | | | ne=1.5452, n0=1.6551 (at 1064 nm); ne=1.5555, n0=1.6749 (at 532 nm); ne=1.6146, n0=1.7571 (at 266 nm) | | | | |
| Biotite | Biotite | K(Mg,Fe,Mn)3[(OH,F)2|(Al,Fe,Ti)Si3O10] | | monoclinic (pseudo-hexagonal) | monoclinic-prismatic (2/m) | C2/m | 5.31 | 9.23 | 10.18 | | Z=2 | | common on {310}, less common on {001} | 2.5 - 3 | 2.7 - 3.3 | perfect on {001} | brittle to flexible, elastic, micaceous | dark brown, greenish brown, blackish brown, yellow, white | white | transparent to translucent to opaque | vitreous to pearly | biaxial (-) | nα=1.565-1.625; nβ=1.605-1.675; nΥ=1.605-1.675 | 0.030 - 0.070 | strong | | |
| Bismuth Germanate | BGO | Bi12GeO20 | 900 | cubic | | | 10,143 | 10,143 | 10,143 | | | | | 4.5 | 9.2 | none | | | | transparency range 470 - 7500 nm | | | n=2.55 (at 633 nm) | | | | |
| Bismuth ortho Silicate | BSO | Bi12SiO20 | 930 | cubic | | | 10,28699 | 10,28699 | 10,28699 | | | | | 4.5 | 9.2 | | | | | transparency range 450 - 7500 nm | | | n=2.54 (at 633 nm) | | | | |
| Bismuth Vanadinate | | BiVO4 | | monoclinic | | | 5,09 | 5,15 | 11,66 | | | | | | | | | | | | | | | | | | |
| Bournonite | Bournonite | PbCu [SbS2] | 1200 | | | | 8.16 | 8.71 | 7.81 | | | | twinnfree | 9 | 5.8 | | | metallic silver | | | | | | | | | |
| Brucite | Brucite | $Mg(OH)_2$ | | | Hexagonal scalenohedral (3m) H-M symbol: (3 2/m) | | | | | | | | | | | | | | | | | | | | | | |
| Bvtownite | Bvtownite | An70-An90 | | trigonal triklin | | I1 | | | | | | | | 2.5 to 3 | | Perfect on {0001} | Irregular, sectile | White, pale green, blue, gray; honey-yellow to brownish red | White | Transparent | Vitreous to pearly | Uniaxial (+) | nω = 1.56–1.59 nε = 1.58–1.60 | 0,02 | | | Pyroelectric |
| Cadmium Selenide | Cadmium Selenide | CdSe | | hexagonal | | | 4.2985 | 4.2985 | 7.0150 | | | (0001), (1120), (1-100), (11-20) | | | | | | | | | | | | | | | |
| Cadmium Sulfide | Cadmium Sulfide | CdS | | hexagonal | | | 4.1369 | 4.1369 | 6.7161 | | | (0001\. (11-20). (1-100\. | | | | | | | | | | | | | | | |
| Cadmium Telluride | Cadmium Telluride | CdTe | | cubic (Zinkblende) | | | 6,48 | 6,48 | 6,48 | | | | | 45 g/mm² (Knoop hardness) | 5.85 | | | | | max. transmittance at l=7-12 μm: 66% | | | n=2.69 (at l=10.6 μm) | | | | |
| Cadmium Tungstate | Cadmium Tungstate | CdWO4 | 1325 | monoclinic | | P2c | 5,991 | 5,104 | 5,199 | | | | | | 7,9 | on (010) | | | | | | | n=2.25 | | | | |
| Caesium Iodide | | CsI | 626 | cubic | | Pm3m | 4,57 | 4,57 | 4,57 | | | | | 212,40 | 4,51 | | | | | | | | | | | | |
| Calcium Aluminium Silicate (Zeolite) | Scolecite | (CaAl2Si3O10)*3H2O | | monoclinic | monoclinic-domatic (m) | Cc | 18.51 | 18.97 | 6.53 | | Z=8 | {010}, {110}, {111} | on [001] pseudorhomohedral contact- and penetration twinning, on {010} lamellar | 5 - 5.5 | ~2.3 | perfect on {110} and {1-10} | uneven, brittle | colorless to white, pink, salmon, red or green | white | transparent to translucent | vitreous, silky when fibrous | biaxial (-) | nα=1.507-1.513; nβ=1.516-1.520; nΥ=1.517-1.521 | 0.010 | | | pyroelectric and piezoelectric |
| Calcium Carbonate Aragonite type | Aragonite | CaCO3 | | orthorhombic | orthorhombic-dipyramidal (2/m 2/m 2/m) | Pmcn | 4.96 | 7.97 | 5.74 | 100,08 | Z=4 | | often on {110} cyclically and polysynthetic parallel to {100} | 3.5 - 4 | 2.94 | imperfect on {110} and {011}, indistinct on {010} | brittle, conchoidal | white, red, yellow, orange, green, purple, gray, blue, brown | white | translucent to transparent | vitreous, resinous on fracture and cleavage surfaces | biaxial (-) | nα=1.529-1.530; nβ=1.680-1.682; nΥ=1.685-1.686 | 0.156 | none | | |
| Calcium Carbonate Calcite type | Calcite | CaCO3 | | trigonal | 3 2/m | R3c | 4,99 | | 17,06 | 100,09 | | {1010}, {0001}, {0112}, {0221} | twins (0001), (0112), (1011) | 3 | 2,6-2,8 | (1011) | perfect | colorless | white transparent | transparent | | | n=1,658 | 0,174 | | | |
| Calcium Fluoride | Fluorit | CaF2 | 1423 | cubic | O5h | Fm3m | 5.46 | 5.46 | 5.46 | 78.07 | Z=4 | (100\. (111) | twinfree | 4 | 3.18 | perfect (111) | | colorless | | | | | nd=1.4338 | | | | |
| Calcium Magnesium Carbonate | Dolomite | CaMg(CO3)2 | | trigonal | trigonal-rhombohedral (-3) | R-3 | 4.8012(1) | 4.8012(1) | 16.002 | 184,38 | Z=3 | surfaces often saddle-shaped curved | common as simple contact twins | 3.5 - 4 | 2.87 | perfect on {10-11}, rhombohedral cleavage | conchoidal | white, gray to pink | white | transparent to translucent | vitreous to pearly | uniaxial (-) | nω=1.678-1.681; nε=1.500 | 0.179-0.181 | none | | |
| Calcium Neodym Aluminate | | CaNdAlO4 | 1860 | | | | 3.685 | 3.685 | 12.12 | | | | twinfree | | 5.527 | | | violet | | | | | | | | | |
| Calcium Oxide | | CaO | 2580 | cubic | | Fm3m | 4.881 | 4.881 | 4.881 | 56,08 | | (100) | twinfree | | 3,37 | perfect (100) | | colorless | white | transparent | | | 1,8396 | | | | |
| Calcium Phosphate | Apatite | Ca5(PO4)3(F,Cl,OH) | | hexagonal | hexagonal-dipyramidal (6/m) | P6_3/m | 9.38 | 9.38 | 6.86 | 689,67 | Z=2 | {10-10}, {0001}, {10-11} | | 5 | 3.2 | indistinct | brittle to conchoidal | usually green, colorless, yellow, blue, violet, pink, brown | white | transparent to translucent | vitreous to subresinous | uniaxial (-) | nω=1.631-1.675; nε=1.627-1.669 | 0.004 - 0.014 | weak to very weak | | |
| Calcium Sulfate | Gypsum | Ca(SO4)*2H2O | | monoclinic | monoclinic-prismatic (2/m) | A2/a | 6.52 | 15.18 | 6.29 | | Z=4 | {010} | very common on {001}, contact twins | 2 | 2.3 - 2.4 | perfect on {010}, distinct on {100} | flexible, inelastic, conchoidal on {100}, splintery parallel to [100] | colorless to white, yellow, tan, blue, pink, brown, reddish brown, gray | white | transparent to translucent | vitreous to silky, pearly, waxy | biaxial (+) | nα=1.519-1.521; nβ=1.522-1.523; nΥ=1.529-1.530 | 0.010 | none | | |
| Calcium Titanate | Perowskite | CaTiO3 | | cubic | | Pm3m | 3,80 | 3,80 | 3,80 | | | | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Calcium Tungstate | | CaWO4 | 1620 | tetragonal | | I4 | 5,25 | 5,25 | 11,40 | 287,93 | | | | 4.5–5 | 6,06 g·cm−3 | | | | | | | | | | |
| Calcium Tungstate Europium doped | Calcium Tungstate Europium doped | CaWO4:Eu | 1620 | tetragonal | | I4 | 5,25 | 5,25 | 11,40 | 287,93 | | | | 4.5–5 | 6,06 g·cm−3 | | | | | | | | | | |
| Cerium Oxide | Cerdioxide | CeO2 | 2400 | cubic | | Fm-3m | 5.411 | 5.411 | 5.411 | | | (001), (111), (110) | twinnfree | 7 | 7.215 | | | | | | | | | | |
| Cerium Oxide Calcium dooed | | CeO2:Ca | | | | | | | | | | | | | | | | | | | | | | | |
| Chalcosine | Chalcosine | Cu2S | | monoclinic | | P21/c (Nr. 14 | 15,25 | 11,88 | 13,49 β = 116,3° | | Z = 48 | | | 2,5 - 3 | 5,5 - 5,8 | {110}, {010}, {001}, {111}, {112}, {113}, {023} | | lead gray, steel gray, matt black | dark gray | opaque | | | | | |
| Chrome Oxide | Chrome Oxide | Cr2O3 | 2435 | hexagonal/trigonal | | D3d6/ R-3c | 4.96 | 4.96 | 13.60 | | Z=6 | | | 9 | 5.22 | (11-20) | hard | light to dark green, fine crystals | greenish | transparent | | | | | |
| Clinozoisite | Clinozoisite | Ca2Al3(Si2O7)(SiO4)O(OH) | | monoclinic | monoclinic-prismatic (2/m) | P2_1/m | 8.88 | 5.58 | 10.16 | | Z=2 | {100}, {111}, {001} | lamellar on {100}, rare | 6.5 - 7 | 3.2 - 3.4 | perfect on {001} | uneven | colorless, gray, green, light yellowish | grayish, white | transparent to translucent | vitreous | biaxial (+) | nα=1.670-1.718; nβ=1.670-1.725; nΥ=1.690-1.734 | 0.004 - 0.015 | if containing small quantities of Fe(3+) moderate |
| Cobalt Aluminate | | CoAl2O4 | 1955 | cubic | | | 8,0968 | 8,0968 | 8,0968 | | | | | | 4.5 | | | | | | | | | | |
| Cobalt Iron Spinell | | CoFe2O4 | | cubic | | | 5,96 | 5,97 | 5,98 | | Z=8 | | | | 5.27 | | | | | | | | | | |
| Cobalt Oxide Co2O3 type | Cobalt(II,III)-Oxid | Co3O4 | 895 | cubic | | Fd3m | | | | 240.80 | | | | | 6.07 | | | black | | | | | | | |
| Cobalt Oxide CoO type | Cobalt Oxide CoO type | CoO | 1933 | cubic | | Fm3m | 4.26 | 4.26 | 4.26 | 74.9326 | | | | | 6.44 | | | black | | | | | | | |
| Cobalt Titanate | Cobalt Titanate | CoTiO3 | | tetragonal | | | 5,0648 | 5,0648 | 13,9226 | 154.8 | | | | | 4,98 | | | | | | | | | | |
| Cobalt Titanium Oxide | Cobalt Titan Spinell | Co2TiO4 | | cubic | | | 8,4376 | 8,4376 | 8,4376 | 154.80 | | | | | 5.0 | | | | | | | | | | |
| Copper Hydroxy Carbonate | Azurite | Cu3(CO3)2(OH)2 | | monoclinic | monoclinic-prismatic (2/m) | P2_1/c | 5.01 | 5.85 | 10.35 | 344,65 | Z=2 | | rare on {-101}, {-102}, {001} | 3.5 - 4 | 3.77 | nearly perfect on {011}, distinct on {100}, indistinct on {110} | conchoidal | (azure-)blue, very dark to pale blue, pale blue in transmitted light | light blue | transparent to translucent | vitreous | biaxial (+) | nα=1.730; nβ=1.758; nΥ=1.838 | 0.108 | moderate to strong |
| Copper Iron Sulfide | Chalcopyrite | CuFeS2 | | tetragonal | tetragonal-scalenohedral (-4 2 m) | /-42d | 5.289 | 5.289 | 10.423 | 183,51 | Z=4 | | on {112} and {012} penetration and cyclic twins | 3.5 - 4 | 4.3 | indistinct on {011} and {111} | brittle, uneven, conchoidal | brass yellow | greenish black | opaque | metallic | | | | magnetic on heating |
| Copper Oxide Cu2O type | Cuprite | Cu2O | | cubic | cubic-hexoctahedral (4/m 3 2/m) | | 4.27 | 4.27 | 4.27 | | Z=2 | (001), (100), (110), (111) | none, except from natural defects | 3.5 - 4 | 6.14 | | | dark red to conchoidal red | | transparent to translucent | | | n=2.849 | | visible |
| Copper Oxide CuO type | Tenorite | CuO | 1326 | monoclinic | monoclinic-prismatic (2/m) | C2/c | 4.67 | 3.42 | 5.12 | | Z=4 | | common on {011} (lamellar) | 3.5 - 4 | 6 - 6.5 | poor to indistinct | brittle, flexible and elastic in thin flakes; uneven to conchoidal | steel-gray, iron-gray, black | brownish-black | opaque, thin flakes transparent | metallic to earthy | biaxial (+) | | | distinct |
| Cordierite | Cordierite | Mg2Al3(ALSI5O18) | | orthorhombic | Dipyramidal (mmm) H-M symbol: (2/m 2/m 2/m) | Cccm | 17.079 | 9.730 | 9.356 | | Z = 4 | | Common on {110}, {130}, simple, lamellar, cyclical | 7 - 7,5 | | Fair on {100}, poor on {001} and {010} | Subconchoidal, brittle | Blue, smoky blue, bluish violet; greenish, yellowish brown, gray; colorless to very pale blue in thin section in transmitted light | White | Transparent to translucent | Greasy or vitreous | | nα = 1.527 - 1.560 nβ = 1.532 - 1.574 nΥ = 1.538 - 1.578 Indices increase with Fe content. | | X = pale yellow, green; Y = violet, blue-violet; Z = pale blue |
| CTGS | CTGS | Ca3TaGa3Si2O14 | 1350 | | | | | | | | | | | | | | | | | | | | | | |
| Disprosion Ferrite | Disprosion Ferrite | DyFeO3 | | orthorhombic | | | 5,333 | 5,656 | 7,713 | | | | | | 7,6 | | | | | | | | α = 90°, β = 90°, Υ = 90° | | |
| Dysprosium Scandate | | DyScO3 | ca. 2400 | orthorhombic | | Pnma | 5.44 | 5.71 | 7.89 | | | | | | | | | | | | | | | | |
| Enstatite | Enstatite | Mg2(Si2O6) | | orthorhombic | Dipyramidal (mmm) H-M symbol: (2/m 2/m 2/m) | Pbca | 18,23 | 8,84 | 5,19 | 100.387 | Z = 8 | | Simple and lamellar on {100} | 5 to 6 | | | Uneven, brittle | White, grey, green, yellow or brown - colorless in thin section. | Gray | | Vitreous, pearly on cleavage | Biaxial (+) | nα = 1.650–1.668; nβ = 1.652–1.673; nΥ = 1.659–1.679 | 0.009–0.011 | Pale green to pale orange |
| Forsterite | Forsterite | Mg2SiO4 | 1895 | orthoromic | orthorhombic-dipyramidal (2/m 2/m 2/m) | Pbnm | 4.77 | 10.28 | 6.00 | | Z=4 | | | 7 | 3.217 | good on {001}, clear on {010} | conchoidal to uneven | colorless, grey, white, green, yellowish green to blackish green | white | transparent to translucent | vitreous | biaxial (+) | nα=1..635; nβ=1.651; nΥ=1.670 | 0.033 - 0.042 | |
| Forsterite Chromium doped | Forsterite Chromium doped | Mg2SiO4:Cr | 1890 | orthorhombic | | D16-2h Pmcn | 6,01 | 4,78 | 10,30 | | | | | 7 | 3.22 | | | | | | | | n=1.635 | | |
| Gadolinium Gallium Garnet (GGG) doped | Gadolinium Gallium Garnet (GGG) doped | Gd2Ga5O12 | 1730 | cubic | | | 12.383 | 12.383 | 12.383 | | | (100), (111) | perfect twinning structure | 7.5 | 7.09 | | | colorless | | | vitreous | | n=1.970 | none | none |
| Gadolinium Gallium Garnet (SGGG) Substituted | Gadolinium Gallium Garnet (SGGG) Substituted | Gd3(Mg,Zr) Ga5O12 | 1730 | cubic | | | 12.505 | 12.505 | 12.505 | | | (100), (111) | perfect twinning structure | 7.5 | 7.09 | | | brownish | | | vitreous | | nd=1.9708 at 577 nm; ne=1.9667; nc=1.9577 at 625 nm; ne=1.9567; nc=1.9500 at 2000 nm; ne=1.9567; nc=1.9454 at 5000 nm | | |
| Gadolinium Scandate | | GdScO3 | ca. 2400 | orthorhombic | | Pnma | 5.45 | 5.75 | 7.93 | | | (100), (110), (001) | | | 6.9 | | | yellow | | | | | | | |
| Gallium Arsenide (Semi-conducting (HB/VB)) | Gallium Arsenide | GaAs | 1238 | cubic | | F-43m | 5.6535 | 5.6535 | 5.6535 | 144.65 | | (100) | | | | | | | | | | | | | |
| Gallium Arsenide (Semi-insulating (VB)) | Gallium Arsenide | GaAs | 1238 | cubic | | F-43m | 5.6535 | 5.6535 | 5.6535 | 144.65 | | (100) | | | 5.3176 | | | | | | | | | | |
| Gallium Oxide | Gallium Oxide | Ga2O3 | 1900 | α: Trigonal, hR30, space group = R3c, No. 167 β: Monoclinic, mS20, space group = C2/m, No. 12 | | | | | | 187.444 | Z = 6 / A | | | | 6.44 alpha 5.88 beta | | | | | | | | | | |
| Gallium Phosphide | Gallium Phosphide | GaP, GaP:S GaP:Te | 1477 | cubic (Zinkblende) | | | 5.45 | 5.45 | 5.45 | 100.697 | | | | | 4.138 | | | | | | | | | | |
| Gamma Iron Oxy Hydroxide | Lepidocrodite | Υ-Fe(3+)O(OH) | | orthorhombic | orthorhombic-dipyramidal (2/m 2/m 2/m) | Cmc2_1 | 3.88 | 12.54 | 3.07 | | Z=4 | {010} | | 5 | 4.0 | perfect on {010} | uneven to conchoidal | dark red to reddish brown | reddish to brownish | transparent to opaque | submetallic, silky, adamantine | biaxial (-) | nα=1.940; nβ=2.200; nΥ=2.510 | 0.570 | strong |
| Germanium | Germanium | Ge | 956, 959, 942, 938 | cubic (Diamond) | | | | | | 72.59 | | | | 780 (Knoops hardness) | 5.323 | | | | | | | | n=4.0034 at 9.72 μm; n=4.0028 at 10.6 μm | | |
| Germanium Antimony doped | Germanium Antimony doped | Ge:Sb | 956, 959, 942, 938 | cubic (Diamond) | | | | | | 72.59 | | | | 6 | 5.323 (when liquid (at m.p.): 5.60) | | | | | | | | n=4.0034 at 9.72 μm; n=4.0028 at 10.6 μm | | |
| Germanium Gallium doped | Germanium Gallium doped | Ge:Ga | 956, 959, 942, 938 | cubic (Diamond) | | | | | | 72.59 | | | | 6 | 5.323 (when liquid (at m.p.): 5.60) | | | | | | | | n=4.0034 at 9.72 μm; n=4.0028 at 10.6 μm | | |
| Heulandite | Heulandite | [(Ca,Na)2-3Al3(Al,Si)2Si13O36]*12H2O | | monoclinic | monoclinic-prismatic (2/m) | C2/m | 17.71 | 17.84 | 7.46 | | Z=4 | {010}, {100}, {001}, {20-1}, {110}, {111} | on {100} | 3.5 - 4 | 2.2 | perfect on {010} | subconchoidal to uneven | colorless, white, gray, yellow, rose to red, orange, brown, black | white | transparent to translucent | vitreous, pearly on cleavage planes | biaxial (+) | nα=1.476-1.506; nβ=1.479-1.510; nΥ=1.479-1.170 | 0.003 - 0.011 | |
| Indium Antimonide | Indium Antimonide | InSb | 527 | cubic (Zinkblende) | | | | | | 236.58 | | | | | 5.775 | | | dark grey, metallic | | | | | nD=4.0 | | |
| Indium Arsenide | Indium Arsenide | InAs | 1215 | cubic (Zinkblende) | | | 6.058 | 6.058 | 6.058 | | | | | | 5.66 | | | | | | | | | | |
| Indium Phosphide | Indium Phosphide | InP | 1330 | cubic | | | 5.868 | 5.868 | 5.868 | 145.792 | | (111) | | | 4.81 | | | | | | | | | | |
| Iron Aluminate | | FeAl2O4 | | cubic | | | 8,194 | 8,194 | 8,194 | | | | | | | | | | | | | | | | |
| Iron Carbonate | Siderite | FeCO3 | | trigonal | ditrigonal-scalenohedral (-3 2/m) | R-3c | 4.69 | 4.69 | 15.38 | | Z=6 | | uncommon lamellar on {01-12} | 4 - 4.5 | 3.7 - 3.9 | perfect on {10-11} | uneven to conchoidal | yellow, brown, black | white to bright yellowish | transparent to translucent | vitreous to pearly | uniaxial (-) | nω=1.875; nε=1.633 | 0.242 | |
| Iron Oxide Hematite type | Hematite | Fe2O3 | 1539 - 1569 | trigonal | ditrigonal-scalenohedral (-3 2/m) | R-3c | 5.04 | 5.04 | 13.77 | 159,70 | Z=6 | {10-11}, {10-12}, {0001}, {10-18}, {11-23}, {01-14}, {01-11}, {11-20} | penetration and lamellar on {0001}, {10-12} and {10-12} | 5.5 - 6.5 | 5.2 - 5.3 | none | brittle, in thin flakes elastic, uneven to conchoidal | metallic-gray, dull to bright red | bright red to dark red | opaque | metallic to splendent | uniaxial (-) | nω=3.150-3.220; nε=2.870-2.940 | 0.280 | moderate to strong |
| Iron Oxide Magnetite type | Magnetite | Fe3O4 | | cubic | cubic-hexoctahedral (4/m -3 2/m) | Fd-3m | 8.399 | 8.399 | 8.399 | | Z=8 | {111}, {110}, {100} | penetration twinning on {111} | 5.5 - 6.5 | 5.18 | on {111} | uneven | black | black | opaque, weakly translucent | metallic (weak) | isotropic | n=2.42 | none | |
| Iron Phosphate | Vivianite | Fe3(PO4)2 * 8H2O | | monoclinic | (2/m) | | 10.086 | 13.441 | 4.703 | | Z=2 | | | 1.5 - 2 | 2.68 | perfect on {010} | | pale green | | transparent to translucent | | biaxial (+) | nα=1.579-1.616; nβ=1.602-1.656; nΥ=1.629-1.675 | 0.050 - 0.059 | visible; X=blue, deep blue, indigo-blue; Y=pale yellowish green, pale bluish green, yellow-green; Z=pale yellowish green, olive-yellow |
| Iron Sulfide Cubic | Pyrite | FeS2 | | cubic | cubic-disdodecahedron (2/m -3) | Pa-3 | 5.42 | 5.42 | 5.42 | 87,91 | Z=4 | | penetration and contact twinning | 6 - 6.5 | 4.8 - 5 | indistinct on {001} | brittle, uneven, sometimes conchoidal | pale brass-yellow reflective, tarnishes darker | greenish- to brownish-black | opaque | metallic | | | | paramagnetic |
| Iron Sulfide Hexagonal | Pyrrhothin | FeS | | hexagonal | dihexagonal-dipyramidal (6/m 2/m | P6_3/mmc | 3.44 | 3.44 | 5.88 | ca. 87,91 | Z=2 | | | 3.5 - 4.5 | 4.6 | clear on {0001} and {11-20} | conchoidal, brittle | yellowish brown | gray to black | opaque | metallic | | | | |
| Iron Titanate | Ilmenite | FeTiO3 | | trigonal | trigonal-rhombohedral (-3) | R-3 | 5.09 | 5.09 | 14.09 | | Z=6 | | simple on {0001} lamellar on {10-11} | 5 - 6 | 4.5 - 5 | absent | conchoidal to subconchoidal | iron-black, gray, brownish tint in reflected light | black | opaque | metallic to submetallic | uniaxial (-) | | | moderate to strong |
| Iron Tungstate | Ferberite | FeWO4 | | monoclinic | monoclinic-prismatic (2/m) | P 2/c | 4.76 | 5.68 | 4.92 | 303.69 | Z=2 | | | 4.5 | 7.4 - 7.5 | perfect on {010}, parting on {100} and {102} | | black | | nearly opaque | | biaxial (+) | nα=2.255; nβ=2.305; nΥ=2.414 | 0.1590 | |
| Labradorit | Labradorit | An50-An70 | | triklin | | C1 | | | | | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Langasite | Langasite | La3Ga5SiO14 | 1475 | hexagonal/ trigonal | | *P*321 | 8,1783 | 8,1783 | 5,1014 | | | | | 5.74 | | | | | | | | | | | | |
| Langatate | Langatate | La3Ga5.5Ta0.5O14 | 1450 | hexagonal/ trigonal | | *P*321 | | | | | | | | 6.31 | | | | | | | | | | | | |
| Lanthanum Aluminate | Lanthanum Aluminate | LaAlO3 | 2080 | pseudo-cubic (distorted perovskite structure) | rhombohedral | | 5.357 (3.863) | (3.863) | (3.863) | 213.89 | | {100}, {110}, {111} | | 5.9 | 6.52 | | | | | | | | | | | |
| Lanthanum Beryllate | Lanthanum Beryllate | La2Be2O5 | 1361 | monoclinic | (2m) | | 7.5356 | 7.3476 | 7.4387 | 375.82 | | | | 6.5 | 6.061 | | | | | | | | biaxial | nx=1.9641; ny=1.9974; nz=2.0348 | | |
| Lanthanum Strontium Aluminium Tantalum Oxide | LSAT | (La0.3Sr0.7)(Al0.65Ta0.35)O3 | 2113 | cubic | (m3m) | | 7.737 | 7.737 | 7.737 | | | {100}, {110}, {111} | | 6.5 | 6.64 | | colorless, or light yellow | | | | | | | | | |
| Lead Arseno Chloride | Mimetesite | Pb5(AsO4)3Cl | | hexagonal | hexagonal-dipyramidal (6/m) | *P*6_3/m | 10.211 | 10.211 | 7.418 | 1488,25 | Z=2 | {10-10}, {0001}, {10-11}, {11-21}, {21-31} | rare on {11-22} | 3.8 - 4 | ~7.2 | imperfect on [10-11] | conchoidal, brittle | pale to bright yellow, yellowish brown, yellow-orange, white, colorless | white | transparent to translucent | resinous to diamond-like | uniaxial (-) | nω=2.147; nε=2.128 | 0.019 | weak | |
| Lead Carbonate | Cerrusite | PbCO3 | | orthorhombic | 2/m | Pmcn no. 62 pos. 5 | 5.15 | 8.47 | 6.11 | | Z=4 | {110}, {010}, {021}, {130}, {001} | twinnfreee | 3 - 3,5 | 6,55 | (110), (021) | shell like | colorless | white transparent | transparent | | | na=1,803 nb=2,074 nc=2,076 | 0,273 | | |
| Lead Copper Hydroxy Sulfate | Linarite | PbCu[(OH)2[SO4] | | monoclinic | monoclinic-prismatic (2/m) | *P*2_1/m | 9.81 | 5.65 | 4.70 | | Z=2 | | common on {100}, also {001} | 2.5 | 5.3 - 5.5 | perfect on {100}, imperfect on {001} | conchoidal | deep azure blue | pale blue | transparent to translucent | subadamantine, vitreous | biaxial (-) | nα=1.809; nβ=1.838; nΥ=1.859 | 0.050 | moderate | |
| Lead Phosphoro Chloride | Pyromorphite | Pb5(PO4)3Cl | | hexagonal | hexagonal-dipyramidal (6/m) | *P*6_3/m | 9.97 | 9.97 | 7.32 | 1356,36 | Z=2 | {10-10}, {0001}, {10-11}, {20-21}, {11-21} | rarely on {11-22} | 3.5 - 4 | 6.7 - 7 | imperfect on [10-11] | brittle, uneven to conchoidal | dark green to green, yellow, yellow-orange, reddish-orange, yellow-brown to brown, tan, grayish to colorless | white | transparent to translucent | resinous to subadamantine | uniaxial (-) | nω=2.058; nε=2.048 | 0.010 | weak | |
| Lead Sulfide | Galena | PbS | 1114 | cubic | cubic-hexoctahedral (4/m -3 2/m) | *F*m-3m | 5.94 | 5.94 | 5.94 | | Z=4 | {100}, {111}, {110}, {221} | on {111} | 2.5 - 3 | 7.2 - 7.6 | perfect on {100} | brittle, subconchoidal | lead gray, silvery | lead gray | opaque | metallic | isotropic | | | | |
| Lead Sulphate | Anglesite | PbSO4 | | orthorhombic | 2/m | Pnma no. 62 | 8.47 | 5.39 | 6.94 | | | (210), (211), (101), (001), (111), (011) | twinfree | 2,5-3,0 | 6,38 | (001), (210) | shell like | colorless | white transparent | transparent | | | na=1,878 nb=1,883 nc=1,895 | 0,017 | | |
| Lead Tungstate | Stolzite (Lead tungstate) | PbWO4 | 1123 | tetragonal | tetragonal-dipyramidal (4/m) | *I*4_1/a | 5.50 | 5.50 | 12.12 | | Z=4 | {111}, {101}, {011}, {112}, {001} | | 2.5 - 3 | 8.28 | cleavage plane on {101}, imperfect on {001}, indistinct on {011} | brittle, conchoidal to uneven | reddish-brown, brown, yellowish-gray, smoky-gray, straw-yellow, lemon-yellow, may be green, orange, red | white | translucent to transparent | resinous, subadamantine | uniaxial (-) | nω=2.270; nε=2.180-2.190 | 0.090 | | |
| Lead Vanadium Chloride | Vanadinite | Pb5(VO4)3Cl | | hexagonal | hexagonal-dipyramidal (6/m) | *P*6_3/m | 10.32 | 10.32 | 7.34 | 1416,31 | Z=2 | {0001}, {10-10}, {10-11}, {21-31} | | 3 - 4 | 6.8 - 7.1 | none | uneven, conchoidal | yellow, orange, brown, sometimes red | white to bright yellowish-brown | opaque to transparent or translucent | resinous to adamantine | uniaxial (-) | nω=2.416; nε=2.350 | 0.066 | | |
| Led Molvbdate | Led Molvbdate | PbMoO4 | | tetraoonal | *I*4 /a | | 5.433 | | 12.110 | | | | | | 6.95 | | | | | | | | | | | |
| Lithium Aluminate | | LiAlO2 | 1900 | tetragonal | | | 5.17 | 5.17 | 6.26 | | | | | | 2.62 | | | | | | | | | | | |
| Lithium Aluminium Silicate | Spodumen | LiAl(SiO3)2 | | monoclinic | monoclinic-prismatic (2/m) | *C*2/c | 9.52 | 8.32 | 5.25 | | Z=4 | {100}, {010}, {110} | common on {100} | 6.5 - 7 | 3.1 - 3.2 | perfect on {110} | uneven to conchoidal | colorless to grayish-white, rose to violett, green | white | transparent to translucent | vitreous, pearly on cleavage surfaces | biaxial (+) | nα=1.648-1.661; nβ=1.655-1.670; nΥ=1.662-1.670 | 0.014 - 0.018 | strong | often fluorescent (kunzite) |
| Lithium Ferrite | | LiFe5O8 | | cubic | | | 8,3430 | 8,3430 | 8,3430 | | | | | | | | | | | | | | | | | |
| Lithium Flouride | Lithium Flouride | LiF | 870, 848 | cubic | | | | | | 25.9394 | | | | | 2.63905 | (100) cleavage plane | | | | | | | n=1.37327 at 2.5 &#956: | | | |
| Lithium Gallate | | LiGaO2 | 1600 | orthorhombic | | | 5.406 | 5.012 | 6.379 | | | | | 7.5 | 4.18 | | | | | | | | | | | |
| Lithium Iodate | | LiIO3 | | hexagonal | | | 5,4815 | | 5,1709 | | | | | | | | | | | | | | n0=1.8571; ne=1.7165 (at 1064 nm) | | | |
| Lithium Mica | Lepidolite | K(Li,Al)3(Al,Si,Rb)4O10(F,OH)2 | | monoclinic | monoclinic-prismatic (2/m) | *C*2/m | 5.21 | 8.97 | 20.16 | | Z=2 | | rare, composition plane on {001} | 2.5 - 3 | 2.8 - 2.9 | perfect on {001} | uneven | pink, purple, rose-red, violet-gray, yellowish, white, colorless | white | transparent to translucent | vitreous to pearly | biaxial (-) | nα=1.525-1.548; nβ=1.551-1.580; nΥ=1.554-1.586 | 0.029 - 0.038 | moderate to strong | |
| Lithium Niobate | | LiNbO3 | 1257 | trigonal hexaoonal | (3m) | R3c | 5,592 5.148 | 5,592 | 5,592 13.863 | 147.846 | | | | | 4.65 | | | | | | | | | | | |
| Lithium Tantalate | | LiTaO3 | 1650 | trigonal | (3m) | R3c | 5.154 | 5.154 | 13.781 | | | | | 5.5 | 7.46 | | | | | | | | n0=2.176; ne=2.180 (at 632.8 nm) | | | |
| Lithium Triborate | LBO | LiB2O5 | 834 | orthorhombic | | | 8.4473 | 7.3788 | 5.1395 | | Z=2 | | | 6 | 2.47 | | | | | | | | | | | |
| Lutetium Aluminum Garnet | Lutetium Aluminum Garnet | Al5Lu3O12 | 1980 | cubic | | | | | | 851.81 | | | | | 6.71 | | | | | | | | | | | |
| Lutetium Yttrium Orthosilicate (LYSO) | LYSO | Lu2(1-x)Y2xSiO5 | 2050 | | | | | | | | | | | 5.8 | 7.4 | | | | | | | | 1,82 | | | |
| Magnesium Aluminate | Spinell | MgAl2O4 | 1950 | cubic | | | 8.10 | 8.10 | 8.10 | | | | domaine structure | 8 | 3.61 | | | colourless | | | | | nd=1.727 (at 500 nm) | | | |
| Magnesium Aluminate Co doped | Spinell Co doped | MgAl2O4:Co | 2150 | | | Fd3m | | | | | | | | 8 - 9 | 3.58 | | | | | | | | 1.718-1.75 | | | |
| Magnesium Carbonate | Magnesite | MgCO3 | | trigonal | ditrigonal-scalenohedral (-3 2/m) | *R*-3c | 4.59 | 4.59 | 14.87 | | Z=6 | | | 3.5 - 4.5 | ~3.0 | perfect on [10-11] | conchoidal | colorless, white, yellowish, brownish to black | white | transparent to opaque | vitreous to dull | uniaxial (-) | nω=1.700; nε=1.509 | 0.191 | | |
| Magnesium Flouride | | MgF2 | 1255 | tetraoonal | *P*4 2/mnm | | 4.694 | 4.694 | 3.095 | 62.3018 | | | | 415 (Knoop) | 3.177 | on (110) | | | | | | | nD=1.374 | | | |
| Magnesium Iron Silicate | Olivine | (Mg,Fe)2SiO4 | | orthorhombic | orthorhombic-dipyramidal (2/m 2/m 2/m) | *P*bnm | 6.01 | 4.78 | 10.30 | | Z=4 | {110}, {120} combinated with {021}, {101}, {111} and {010} | | 6.5 - 7 | 3.2 - 4.5 | good on {001}, clear on {010} | brittle to conchoidal | yellow to yellow-green | white | transparent to translucent | vitreous | biaxial (+) | nα=~1.640; nβ=~1.660; nΥ=~1.680 | 0.040 | | |
| Magnesium Oxide | | MgO | 2780 ± 20 | cubic | | | 4.212 | 4.212 | 4.212 | | | {100}, {110}, {111} | twinfree | | 3.585 | | | colorless | | | | | | | | |
| Magnesium Oxide Bor doped, 200ppm | Magnesium Oxide Boron doped, 200ppm | MgO:B, 200ppm | | | | | | | | | | | | | | | | | | | | | | | | |
| Magnesium Oxide Chromium doped, 150-15100ppm | Magnesium Oxide Chromium doped, 150-15100ppm | MgO:Cr, 150-15100ppm | | | | | | | | | | | | | | | | | | | | | | | | |
| Magnesium Oxide Cobalt doped, 1200-9900ppm | Magnesium Oxide Cobalt doped, 1200-9900ppm | MgO:Co, 1200-9900ppm | | | | | | | | | | | | | | | | | | | | | | | | |
| Magnesium Oxide Gadolinium doped, 200ppm | Magnesium Oxide Gadolinium doped, 200ppm | MgO:Gd, 200ppm | | | | | | | | | | | | | | | | | | | | | | | | |
| Magnesium Oxide Iron doped, 300-12900ppm | Magnesium Oxide Iron doped, 300-12900ppm | MgO:Fe, 300-12900ppm | | | | | | | | | | | | | | | | | | | | | | | | |
| Magnesium Oxide Iron/Chromium doped, 500/3500ppm | Magnesium Oxide Iron/Chromium doped, 500/3500ppm | MgO:Fe/Cr, 500/3500ppm | | | | | | | | | | | | | | | | | | | | | | | | |
| Magnesium Oxide Iron/Vanadium doped, 150-300ppm | Magnesium Oxide Iron/Vanadium doped, 150-300ppm | MgO:Fe/V, 150-300ppm | | | | | | | | | | | | | | | | | | | | | | | | |
| Magnesium Oxide Manganese doped, 840-3100ppm | Magnesium Oxide Manganese doped, 840-3100ppm | MgO:Mn, 840-3100ppm | | | | | | | | | | | | | | | | | | | | | | | | |
| Magnesium Oxide Nickel doped, 370-5000ppm | Magnesium Oxide Nickel doped, 370-5000ppm | MgO:Ni, 370-5000ppm | | | | | | | | | | | | | | | | | | | | | | | | |
| Magnesium Oxide Scandium doped, 800ppm | Magnesium Oxide Scandium doped, 800ppm | MgO:Sc, 800ppm | | | | | | | | | | | | | | | | | | | | | | | | |
| Magnesium Oxide Titanium doped, 3000ppm | Magnesium Oxide Titanium doped, 3000ppm | MgO:Ti, 3000ppm | | | | | | | | | | | | | | | | | | | | | | | | |
| Magnesium Oxide Vanadium doped, 450-15000ppm | Magnesium Oxide Vanadium doped, 450-15000ppm | MgO:V, 450-15000ppm | | | | | | | | | | | | | | | | | | | | | | | | |
| Magnesium Silicate | Enstatite | MgSiO3 | | orthorhombic | orthorhombic-dipyramidal (2/m 2/m 2/m) | *P*bca | 18.23 | 8.84 | 5.19 | | Z=8 | {010}, {210}, {311}, {111} | simple or lamellar on {100} | 5 - 6 | ~3.2 | good on {210} | brittle, uneven | colorless, white, gray, yellowish-green, olive, brown | white | translucent to opaque | vitreous | biaxial (+) | nα=1.650-1.668; nβ=1.652-1.673; nΥ=1.659-1.679 | 0.010 | moderate | |
| Mangan Aluminate | | MnAl2O4 | | cubic | | | 8,2104 | 8,2104 | 8,2104 | | | | | | | | | | | | | | | | | |
| Manganese Carbonate | Rhodochrosite | MnCO3 | | trigonal | ditrigonal-scalenohedral (-3 2/m) | R-3c | 4.74 | 4.74 | 15.51 | 114,95 | Z=6 | | on {01-12} (contact and lamellar) | 3.5 - 4.5 | 3.3 - 3.6 | perfect on {10-11} | conchoidal | pink to rose-red, cherry-red, yellow to yellowish gray, brown | white | transparent to translucent | vitreous to pearly | uniaxial (-) | nω=1.814-1.816; nε=1.596 | 0.218 | weak | |
| Manganese Iron Oxide | Bixbyite | (Mn,Fe)2O3 | | cubic | cubic-diploidal (2/m -3) | *I*a3 | 9.41 | 9.41 | 9.41 | 158,31 | Z=16 | | penetration twinning on {111} | 6 - 6.5 | 4.95 | imperfect on {111} | uneven to conchoidal | black | black | opaque | metallic | isotropic | | | | |
| Manganese Oxide | Manganese Oxide | Mn3O4 | 1,567 | tetragonal | | I41/amd, No. 141 | | | | 228,812 g/mol | | | | | 4,86 | | | | | | | | | | | |
| Manganese Oxide Hausmannite type | Hausmannite | Mn2O3 | | tetragonal | ditetragonal-dipyramidal (4/m 2/m 2/m) | *I*4_1/amd | 5.76 | 5.76 | 9.44 | | Z=4 | | common on {112} | 5.5 | 4.7 - 4.84 | perfect on {001}, indistinct on {112}, {011} | brittle, uneven | brownish black, grayish | dark reddish brown | opaque, transparent on thin edges | submetallic | uniaxial (-) | nω=2.15; nε=2.46 | 0.310 | | |
| Manganese Oxide MnO type | | MnO | 1945 | cubic | | Fm3m | 4.43 | 4.43 | 4.43 | 70.9374 | | | | | 5.43 | | | dark green | | | | | | | | |
| Manganese Sulfide | Hauerite | MnS | | cubic | Diploidal (m3) H-M Symbol: (2/m 3) | Pa3 | 6.107 | | | 119,07 | Z = 4 | | | 4 | | {100} Perfect, {010} Perfect, Perfect on {001} | Uneven to subconchoidal, brittle | Reddish brown or brownish black | Reddish brown | | Metallic-adamantine | Isotropic | n = 2.69 | | | |
| Mecury Sulfide | Cinnabarite | HgS | 580 | trigonal | trigonal-trapezohedral (32) | *P*3_1 21 | 4.15 | 4.15 | 3.26 | 232,66 | Z=3 | {0001}, {10-11} | contact and penetration twins on {0001} | 2 - 2.5 | 8.18 | perfect on {10-10}, prismatic | brittle, sectile, conchoidal to uneven | red to brownish red, lead-gray | scarlet | transparent in thin flakes | adamantine, metallic to dull | uniaxial (+) | nω=2.905; nε=3.256 | 0.351 | | |
| Molybdenium Disulfide | Molybdenite | MoS2 | 1750 | hexagonal | dihexagonal-dipyramidal (6/mmm) | *P*6_3/mmc | 3.16 | 3.16 | 12.32 | 160.07 | Z=2 | | | 1 - 1.5 | 4.7 - 4.8 | perfect on [0001] | lamellae flexible, not elastic | black, lead-silvery gray | bluish gray | nearly opaque, translucent when in thin flakes | metallic | | | | very strong | |
| Muscovit | Muscovit | KAl2[Si0H,F] AlSi3O10] | | monoclinic | | C62h-C2 | 5,19 | 9,04 | 20,08 | | Z=4 | | | | | (001) perfect | | | | | | | | | | |
| Neodym Calacium Aluminate | | NdCaAlO4 | 1850 | tetragonal | | | 3,685 | 3,685 | 12,12 | | | | | | 5,56 | | | purple | | | | | | | | |
| Neodym Gallium Garnet | NGG | Nd2Ga5O12 | 1778 | cubic | | | 12,56 | 12,56 | 12,56 | | | | | | | | | | | | | | | | | |
| Neodymium Aluminate | Neodymium Aluminate | NdAlO3 | 2233 | rhombohedral | | | 5,333 | 5,333 | 12,9292 | 216.87 | | | | | 6.7-7.14 | | | | | | | | | | | |
| Neodymium Scandate | | NdScO3 | ca. 2400 | orthorhombic | | Pnma | 5,609 | 5,840 | 8,084 | | | {100}, {110}, {001} | | | | | | | | | | | | | | |
| Neodymium Gallate | | NdGaO3 | 1605 | orthorhombic | | | 5,426 | 5,496 | 7,707 | | | {110}, {100}, {001} | twinfree | 5.9 | 7.56 | | | dark red to violet | | | | | | | | |
| Nickel Aluminate | | NiAl2O4 | | cubic | | | 8,045 | 8,045 | 8,045 | | | | | | | | | | | | | | | | | |
| Nickel Oxide NiO type | Nickel Oxide NiO type | NiO | 1984 | cubic | cubic-hexoctahedral (4/m -3 2/m) | *F*m-3m | 4.18 | 4.18 | 4.18 | | Z=4 | | | 5.5 | 6.8 | none | uneven | dark pistachio-green | brownish-black | transparent | vitreous | isotropic | n=2.370 | | | very high relief |
| Oligoklas | Oligoklas | An10-An30 | | triklin | | C1 | | | | | | | | | | | | | | | | | | | | |
| Orthoklas / Sanidin | Orthoklas / Sanidin | K(AlSi3O8) | | monoklin | | C2/m | 8,56 | 13,03 | 7,17 | | Z=4 | | | | | | | | | | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oxy Hydroxide Alfa type | Goethite | α-FeO(OH) | | orhorhombic | orthorhombic-dipyramidal (2/m 2/m 2/m) | | 4.65 | 10.02 | 3.04 | | | | | 5 - 5.5 | 3.3 - 3.4 | perfect on {010} | uneven to splintery | | | | | | | | | |
| Phlogopite | Phlogopite | KMg3(AlSi3O10)(F,OH)2 | | monoclinic | monoclinic-prism | C2/m | 3.16 | 3.16 | 12.30 | | Z=2 | {001} | composition twinning | 2 - 2.5 | 2.75 - 2.97 | perfect on (001) (basal) | tough, flexible thin laminae | brownish red, dark brown, yellowish brown, green, white | white | transparent to translucent | pearly, slightly metallic on cleavage surfaces | biaxial (-) | nα=1.530-1.573; nβ=1.557-1.617; nΥ=1.558-1.618 | 0.028-0.045 | | fluorescent |
| Plagioclase | Plagioclase | Na(AlSi3O8) * Ca(Al2Si2O8) | | | | | | | | | | | | | | | | White, gray, bluish white | White | Transparent to translucent | Vitreous | | Albite: nα 1.527, nβ 1.532 nΥ 1.538 Anorthite: nα 1.577 nβ 1.585 nΥ 1.590 | | | |
| Platinum | Platinum | Pt | 1768,3 | triklin face-centered cubic | | | | | | | | | | 6 - 6,5 | 21,45 | | | | | | | | | | | |
| PMN-PT | PMN-PT | $Pb(Mg_{1/3}Nb_{2/3})O_3$–$PbTiO_3$ | | cubic | | | | | | | | | | 7,5 | | | | | | | | | | | 30 | |
| Potassium Bromide | | KBr | 730 | cubic | | Fm3m | 4,740 | 4,740 | 4,740 | 119.002 | | | | 5.9 <110>, 7.0 <100> (Knoop); indenter load 200 g | 2.7533 | on (100) | | | | | | | | | | |
| Potassium Calcium Silicate Aluminate | Stilbite | [Na9-1,Ca0-4(Si27Al9)O72]*28(H2O) | | monoclinic | monoclinic-prismatic (2/m) | C2/m | 13.63 | 18.17 | 11.31 | | Z=4 | | common on {001} (penetration twinning) | 3.5 - 4 | 2.1 - 2.2 | perfect on {010} | uneven to conchoidal | colorless (usually), white, pink | white | transparent to translucent | vitreous, pearly on cleavage surfaces | biaxial (-) | nα=1.484-1.500; nβ=1.492-1.507; nΥ=1.494-1.513 | | | |
| Potassium Chloride | Sylvine | KCl | 776 | cubic | | | 3,14 | 3,14 | 3,14 | 74.551 | | | | 7.2 <110>, 9.3 <100> (Knoop) | 1.989 | on (100) | | | | | | | n=1.488 at 0.6 μm; n=1.454 at 10.6 μm | | | |
| Potassium Dideuterium Di Hydrogen Phosphate | DKDP | KD2PO4 | | tetragonal | (42m) | | | | | | | | | 2.5 | | | | | | | | | | | | |
| Potassium Dihydrogen Phosphate | KDP | KH2PO4 | | tetragonal | (42m) | | | | | | | | | 2.5 | | | | | | | | | | | | |
| Potassium Iodate | | KI | 723 | cubic | | Fm3m | 3,52 | 3,52 | 3,52 | | | | | 166,02 | 3,13 | | | | | | | | | | | |
| Potassium Niobate | Potassium Niobate | KNbO3 | 1100 | orthorhombic | | Amm2 | 5.69 | 3.97 | 5.72 | | | | | 5 | 4.62 | | | | | | | | | | | piezoelectric |
| Potassium Tantalate | | KTaO3 | incongruent melting | cubic | | | 3.989 | 3.989 | 3.989 | 268.04 | | | | | 7.015 | | | | | | | | | | | |
| Potassium Titanyl Phosphate | KTP | KTiPO4 | 1172, inconcongruently | orthorhombic | (mm) | Pna2 | 6.404 | 10.616 | 12.814 | | Z=8 | | | 5 | 3.01 | | | colorless | | | | | nx=1.7377, ny=1.7453, nz=1.8297 (at 1064 nm); nx=1.7780, ny=1.7886, nz=1.8887 (at 532 nm) | | | |
| Praseodymium Scandate | | PrScO3 | ca. 2400 | orthorhombic | | Pnma | | | | | | {100), (110), (001) | | | 6,6 | | | light purple | | | | | | | | |
| Quarz | Quarz | SiO2 | 1700 | trigonal | trigonal-trapezohedral (32) | P3_1 21, P3_2 21 | 4.91 | 4.91 | 5.40 | 60.08 | Z=3 | {10-11}, {01-11}, {10-10} | dauphine law, brazil law, japan law | 7 | 2.65 | none | brittle, conchoidal | colorless, white, all colors possible | white | transparent to opaque | vitreous on prismatic surfaces, resinous on fracture planes | uniaxial (+) | nω=1.543; nε=1.552 | 0.009 | none | |
| Realgar | Realgar | AsS | | | | | | | | | | | | | | Good on {010}; less so on {101}, {100}, {120}, and {110} | Sectile, slightly brittle | | Reddish brown | Transparent | Resinous to greasy | Biaxial (-) | nα = 2.538 nβ = 2.684 nΥ = 2.704 | | | |
| Samarium Scandate | | SmScO3 | ca. 2400 | monoclinic orthorhombic | Prismatic (2/m) | P21/n (no. 14 Pnma | 9.325(3) 5,552 | 13.571(5) 5,813 | 6.587(3) 8,045 | | | {100), (110), (001) | Contact twins on {100} | 1,5-2 | 6,6 | | | 6,6 | | | | | | | | |
| Sapphire (Corundum) | Sapphire (Corundum) | Al2O3 | | trigonal | ditrigonal-scalenohedral (-3 2/m) | R-3c | 4.74 | 4.74 | 12.97 | | Z=6 | | polysynthetic twins common | 9 | 3.9 - 4.1 | none | brittle, uneven to conchoidal | colorless, gray, brown, pink to red, orange, yellow, green, blue, violet, may be color zoned | white | transparent, translucent to opaque | adamantine to vitreous | uniaxial (-) | nω=1.769; nε=1.761 | 0.009 | distinct | luminescent (rare but very strong) |
| Scandium Gallium Garnet | ScGaG | Sc2Ga5O12 | | cubic | | | 12,572 | 12,572 | 12,572 | | | | | | | | | | | | | | | | | |
| Scandium Yttrium Garnet SYGG | Scandium Yttrium Garnet SYGG | ScYGa5O12 | | | | | 12,276 | 12,276 | 12,276 | | | | | | | | | | | | | | | | | |
| Silicon | Silicon | Si | 1420 | cubic | cubic-hexoctahedral (4/m -3 2/m) | Fd-3m | 5,431 | 5,431 | 5,431 | 28.086 | | | | 7 | 2.33 | none | | | | | | | | | | |
| Silicon Antimony doped | Silicon Antimony doped | Si:Sb | 1420 | cubic | cubic-hexoctahedral (4/m -3 2/m) | Fd-3m | 5,431 | 5,431 | 5,431 | 28.086 | | | | | | | | | | | | | | | | |
| Silicon Arsenic doped | Silicon Arsenic doped | Si:As | 1420 | cubic | cubic-hexoctahedral (4/m -3 2/m) | Fd-3m | 5,431 | 5,431 | 5,431 | 28.086 | | | | | | | | | | | | | | | | |
| Silicon Carbide 4H type | | SiC | | hexagonal | | | 3.073 | 3.073 | 15.117 | 40.10 | | | | | | | | | | | | | | | | |
| Silicon Carbide 6H type | Silicon Carbide 6H type | SiC | | | | P6 | 3,081 | 3,081 | 15,120 | | | | | | | | | | | | | | α = 90°, β = 90°, Υ = 120° nω=1.6775; nε=1.6899 (at 185 nm); nω=1.5709; nε=1.5809 (at 325 nm); nω=1.5482; nε=1.5575 (at 508 nm); nω=1.5423; nε=1.5513 (at 644 nm); nω=1.5201; nε=1.5282 (at 2.05 μm); nω=1.4995; nε=1.5070 (at 3.00 μm) | | | |
| Silicon Dioxide | Crystalline Quartz | SiO2 | 1700 | trigonal | trigonal-trapezohedral (32) | P3_121, P3_221 | 4.912 | 4.912 | 5.404 | 60.08 | Z=3 | {10-10}, {01-11}, {10-10} | | 7 | 2.648 | none | conchoidal | all colors possible | white | transparent to opaque | vitreous | uniaxial (+) | | 0.0091 | none | |
| Silicon Phosphor doped | Silicon Phosphor doped | Si:P | 1420 | cubic | cubic-hexoctahedral (4/m -3 2/m) | Fd-3m | 5,431 | 5,431 | 5,431 | 28.086 | | | | | | | | | | | | | | | | |
| Silver Chloride | Silver Chloride | AgCl | 455 | cubic | | Fm3m | 5,5491 | 5,5491 | 5,5491 | | | {100), (110), (111) | | 2-3 | 5.56 | | light | colorless | white | transparent | | | | 2,0668 | | |
| Silver Gallium Selenite | | AgGaSe2 | 851 | tetragonal | | | 5.992 | 5.992 | 10.886 | | | | | | 5.700 | | | | | | | | | | | |
| Silver Gallium Sulfide | | AgGaS2 | 997 | tetragonal | | | 5.756 | 5.756 | 10.301 | | | | | | 4.702 | | | | | | | | | | | |
| Silver Sulfide monoclinic type | Acanthite | Ag2S | 825 | monoclinic | monoclinic-prismatic (2/m) | P2_1/n | 4.23 | 6.93 | 7.86 | 247,8 | Z=4 | | polysynthetic twins on {111} | 2.0 - 2.5 | 7.3 | indistinct | uneven | iron-black | black | opaque | metallic | | | | | |
| Sodium Iodate | | NaI | 662 | cubic | | Fm3m | 6,46 | 6,46 | 6,46 | | | | | 149,92 | 3,67 | | | | | | | | | | | |
| Sodium Bromide | | NaBr | 755 | cubic | | Fm3m | 5,97 | 5,97 | 5,97 | | | | | 1102,91 | 3,2 | | | | | | | | | | | |
| Sodium Chloride | Halite | NaCl | 801 | cubic | | Fm-3m | 5,6404 | 5,6404 | 5,6404 | 58.443 | | | | 15.2 <110>, 18.2 <100>; indenter load 200 g | 2.17 | on (100) | | | | | | | 1.4998 at 9.5 μm | | | |
| Sodium Fluoride | Sodium Fluoride | NaF | 980. 997 | cubic | | Fm-3m | 4.62 | 4.62 | 4.62 | 41.988 | | | | 60 (Knoop) | 2.56 | | | white to greenish | | | | | n=1.325 | | | |
| Strontium Calcium Titanate | | Sr0,98Ca0,02TiO3 | | cubic | | | | | | | | | | | | | | | | | | | | | | |
| Strontium Calcium Titanate | Strontium Calcium Titanate | Sr0,94Ca0,06TiO3 | | cubic | | | | | | | | | | | | | | | | | | | | | | |
| Strontium Calcium Titanate | Strontium Calcium Titanate | Sr0,97Ca0,03TiO3 | | cubic | | | | | | | | | | | | | | | | | | | | | | |
| Strontium Calcium Titanate | Strontium Calcium Titanate | Sr0,99Ca0,01TiO3 | | cubic | | | | | | | | | | | | | | | | | | | | | | |
| Strontium Calcium Titanate | Strontium Calcium Titanate | Sr0,998Ca0,002TiO3 | | cubic | | | | | | | | | | | | | | | | | | | | | | |
| Strontium Calcium Titanate | Strontium Calcium Titanate | Sr0,9975Ca0,0025TiO3 | | cubic | | | | | | | | | | | | | | | | | | | | | | |
| Strontium Fluoride | Strontium Fluoride | SrF2 | | cubic | | | 5.7996 | 5.7996 | 5.7996 | | | | | | | (111) | brittle | colorless | | | | | | | | hygroscopic, CO2 corrosive |
| Strontium Lanthanium Aluminate | | SrLaAlO4 | 1650 | K2NiF4 structure | | | 3.754 | 3.754 | 12.63 | | | {100), (110) | twinfree | 7 | 5.924 | | | yellow | | | | | | | | dielectric |
| Strontium Lanthanium Gallate | | SrLaGaO4 | 1520 | K2NiF4 structure | | | 3.843 | 3.843 | 12.68 | | | {100), (110), (001) | twinfree | NDA | 6.389 | | | yellow, green | | | | | | | | dielectric |
| Strontium Oxide | Strontium Oxide | SrO | 2531 | cubic | cubic-hexoctahedral (4/m -3 2/m) | Fm-3m | 5.159 | 5.159 | 5.159 | | | | | 3 | 4.7 | (100) | brittle | colorless | | | | | | | | hygroscopic, CO2 corrosive |
| Strontium Sulfate | Coelestine | SrSO4 | | orthorhombic | orthorhombic-dipyramidal (2/m 2/m 2/m) | Pnma | 8.36 | 5.35 | 6.85 | 183,68 | Z=4 | {001}, {010}, {011}, {101}, {210} | | 3 - 3.5 | 3.9 | perfect on {001}, indistinct on {210} | brittle, uneven to conchoidal | colorless, white, pale blue, pink, pale green, pale brown, black | white | transparent to translucent | vitreous, pearly on cleavage surfaces | biaxial (+) | nα=1.619-1.622; nβ=1.622-1.624; nΥ=1.630-1.632 | 0.011 | weak | |
| Strontium Titanate | Tausonite | SrTiO3 | 2080 | cubic | hexoctahedral (4/m -3 2/m) | Pm3m | 3.905 | 3.905 | 3.905 | 183,49 | Z=1 | {100), (110), (111), (305) | twinfree | 6 - 6.5 | 5.12 | indistinct | brittle, conchoidal | red to reddish-brown, orange, dark gray | | translucent to opaque | adamantine | isotropic | nc=2.380; nd=2.409; nf=2.488 | | | |
| Tantalum Diselenide 2H | Tantalum Diselenide 2H | TaSe2 | | | | | | | | 338,87 | | | | | 6,7 | | | silver gray | | | | | | | | |
| Tantalum Disulfide 2H | Tantalum Disulfide 2H | TaS2 | | hexagonal | | | 0.331 nm | 0.331 nm | 1.207 nm | | | | | | | | | | | | | | α = β = 90°, Υ = 120° | | | |
| Tellurium Oxide | | TeO2 | 733 | tetragonal | | P 41 2 12 1 | 4,967 | 4,967 | 7,623 | 159.60 | | | | | 6,02 | | | | | | | | nD= 2.24 | | | |
| Terbium Gallium Garnet | TGG | Tb3Ga5O12 | 1725 | cubic | | | 12.355 | 12.355 | 12.355 | | | | | 8 | 7.13 | | | | | | | | n=1.954 at 1064 nm | | | |
| Terbium Manganate | Terbium Manganate | TbMnO3 | | orthorhombic | | Pbnm | 5,316 | 5,831 | | | Z = 4 | | | | 7.58 Mg/cm$^{-3}$ | | | | | | | | | | | |
| Terbium Scandate | | TbScO3 | ca. 2400 | orthorhombic | | Pnma | 5.4543 | 5.7233 | 7.9147 | | | {100), (110), (001) | | | 6,6 | | | green | | | | | | | | |
| Tin Oxide Sphalerite type cubic | Cassiterite | SnO2 | | tetragonal | | | 4.73 | 4.73 | 3.18 | | | {001), (100), (110), (111) | natural defects | 7 | 6.9 | | | dark yellow brownish | | | | | | | | |
| Tin Oxide Wurtzite type hexagonal | Tin Oxide Wurtzite type hexagonal | SnO2 | | Rutile tetragonal | | | 4,737 | | 3,185 | 150,708 | | | | | 6.95 (20 °C) 6.85 (24 °C) | | | | | | | | α = 90°, β = 90°, Υ = 90° | | | |
| Titanium Carbide | Titanium Carbide | TiC | 3,160 | cubic | | Fm3m, No. 225 | | | | 59.89 | | | | | 4.93 | | | | | | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Titanium Dioxide Anatase type | Anatase | TiO2 | | tetragonal | ditetragonal-dipyramidal (4/m 2/m 2/m) | I4_1/amd | 3.74 | 3.74 | 9.39 | 79,86 | Z=4 | often prismatic with {110} and {010} | rare on {112} | 5.5 - 6 | 3.9 | perfect on {001} and {011} | brittle to weakly conchoidal | black, reddish to yellowish brown, dark blue, gray | pale yellowish to white | transparent to opaque | metallic to adamantine | uniaxial (-) | nω=2.561; nε=2.488 | 0.073 | weak | | |
| Titanium Dioxide Brookite type | Brookite | TiO2 | | orthorhomic | dipyramidal (2/m 2/m 2/m) | | 5.4558 | 9.1819 | 5.1429 | 79.88 | Z=8 | | on {120}, uncertain | 5.5 - 6 | 4.08 - 4.18 | poor on {120}, in traces on {001} | | brown, yellowish brown or black | | | | biaxial (+) | nα=2.583; nβ=2.584; nΥ=2.700 | 0.117 | | | |
| Titanium Dioxide Rutile type | Rutile | TiO2 | 1825 | tetragonal | | | 4.593 | 4.593 | 2.959 | | | | Type a) optical grade, grain boundary free; Type h) electronic grade, with domain structure | 6.5 - 7 | 4.26 | | | slight yellow, transparent | white | | | | nd=2.613 (ordinary ray); nd=2.909 (extraordinary ray); (nf - nc)=0.164 (ordinary ray); (nf - nc)=0.207 (extraordinary ray); (nc - n0)=0.296 | | | | |
| Tourmaline | Tourmaline | (Ca,K,Na)(Al,Fe,Li,Mg,Mn)3(Al,Cr,Fe,V)6(BO3)3(Si,Al,B)6O18(OH,F)4 | | trigonal | ditrigonal-pyramidal (3m) | R3m | 15.84 - 16.03 | 15.84 - 16.03 | 7.10 - 7.15 | | Z=3 | | | 7 - 7.5 | 2.82 - 3.32 | indistinct | brittle, uneven, small conchoidal | black (common), colorless to brown, red, orange, yellow, green, blue, violet, pink, can be bi-colored or even tri-colored in between | white | translucent to opaque | vitreous, sometimes resinous | uniaxial (-) | nω=1.635-1.675; nε=1.610-1.650 | 0.018 - 0.040 | moderate to strong | | |
| Tungsten Disulfide | Tungsten Disulfide | WS2 | 1,250 °C (2,280 °F; 1,520 K) decomposes | | | | | | | | | | | | | | | | | | | | | | | | |
| Vanadium(V) Oxide | Vanadium(V) Oxide | V2O5 | 690 | orthorhombic | | Pmmn, No. 5 | 1151 pm | 355.9 pm | 437.1 pm | 247.98 181.8800 | | | | | 7,5 solid 3.357 | | | | | | | | | | | | |
| Yttrium Aluminium Garnet | YAG | Y3Al5O12 | 1940 / 1970 | cubic | | | 12.004 | 12.004 | 12.004 | 593.618 | | (111), (100) | | 8.5 | 4.56 | | | | | | | | n=1.8245 at 0.8 μm; n=1.81523 at 1.06 μm; n=1.8121 at 1.4 μ | | | | |
| Yttrium Aluminium Garnet Chromium doped | Yttrium Aluminium Garnet Chromium doped | Y3Al5O12:Cr4+ | | cubic (Garnet) | | | | | | | | | | 8.5 | 4.56 | | | | | | | | n=1.82 (at 1064 nm) | | | | |
| Yttrium Aluminium Garnet Neodynum doped | YAG:Nd | Y3Al5O12:Nd | 1970 | cubic | | | 12.01 | 12.01 | 12.01 | | | | | 8.5 | 4.5 | | | | | | | | | | | 1 - 2.5 | |
| Yttrium Aluminium Garnet Ytterbium doped | YAG:Yb | Y3Al5O12:Yb | 1970 | cubic | | | 12.01 | 12.01 | 12.01 | | | | | 8.5 | 4.56 | | | | | | | | n=1.82 | | | 5 - 30 | |
| Yttrium Aluminium Perowskite | YAP (YAlO) | YAlO3 | 1875 | trigonal/hexagonal (rhombic) | orthorhombic | Pnma | 5,227 | 5,387 | 7,453 | | | | | 8.6 | 5.35 | | | | | | | | n=1.95 | | | | |
| Yttrium Calcium Oxoborate (YCOB) | YCOB | $YCa_4O(BO_3)_3$ | 1510 | monoclinic | (m) | | 8.08 | 16.02 | 3.53 | | Z=2 | | | 6 - 6.5 | 3.31 | | | | | transparent | | | | | | | |
| Yttrium Ferrite | | YFeO3 | | orthorhombic | -P 2ac 2n | Pmna | | | | | | | | | | | | | | | | | | | | | |
| Yttrium Iron Garnet | YIG | Y3Fe5O12 | 1555 | cubic | | La3d | 12,376 | 12,376 | 12,376 | 737,95 | | (100), (110), (111), (112) | twinnfree | 6,0-7,5 | 5,11 | | shell like | brown to black | white transparent | transparent | | | 2,2 @ 1310 nm α = 90°, β = 90°, Υ = 120° | | | | 1780 Gauss saturation |
| Yttrium Manganate | YIrium Manganate | YMnO3 | | hexagonal | | | 6,233 | 6,233 | 11,589 | 191,842 | | | | | 4,9 | | | | | | | | | | | | |
| Yttrium Orthosilicate | YOS, YSO | Y2SiO5 | 2000 | monoclinic | | C2h - C/m | 12.5013 | 6.7282 | 10.4217 | | | | | | 4.44 | | | | | | | | | | | | |
| Yttrium Oxide | Yttrium Oxide | Y2O3 | | cubic | cubic-diploidal (2/m -3) | Ia -3 | 9.27 | 9.27 | 9.27 | | | | | | 5.01 | | | white | white | | | | | | | | |
| Yttrium Vanadate | | YVO4 | 1810-1940 | tetragonal | | D4h | 7,119 | 7,119 | 6,290 | 593.618 | | (111), (100) | | 8.5 | 4.56 | | | | | | | | n=1.8245 at 0.8 μm; n=1.81523 at 1.06 μm; n=1.8121 at 1.4 μ | | | | |
| Yttrium Vanadate Erbium doped | Yttrium Vanadate Erbium doped | YVO4:Er | | | | | | | | | | | | | | | | | | | | | | | | | |
| Yttrium Vanadate Neodynum doped | | YVO4:Nd | | tetragonal | | D4h -I4/amd | 7.1193 | 7.1193 | 6.2892 | | | | | 4 - 5 | 4.22 | | | | | | | | | | | | |
| Yttrium Vanadate Ytterbium doped | Yttrium Vanadate Ytterbium doped | YVO4:Yb | | | | | | | | | | | | | | | | | | | | | | | | | |
| Zinc Aluminate Zinc Aluminium Spinell | Gahnite | ZnAl2O4 | | cubic | cubic-hexoctahedr | Fd-3m | 8.09 | 8.09 | 8.09 | | Z=8 | {111}, {110}, {211}, occasionally {100} | on {111} | 7.5 - 8 | 4.6 | indistinct | brittle, uneven to conchoidal | blue, green, yellowish brown. | gray to white | translucent to opaque | resinous to vitreous | isotropic | n=1.79-1.80 | | none | | |
| Zinc Ferrite Zinc Iron Spinell type | Franklinite | ZnFe2O4 | | cubic | cubic-hexoctahedral (4/m -3 2/m) | Fd-3m | 8.42 | 8.42 | 8.42 | | Z=8 | {111}, {100}, {110} | on {111} | 6 - 6.5 | 5.07 - 5.22 | on {111} | conchoidal, uneven/irregular | black | reddish brown to black | opaque | metallic to dull | isotropic | n=2.35 | | none | | |
| Zinc Oxide | | ZnO | 1975 | hexagonal | | | 3.252 | 3.252 | 5.213 | | | | | | | | | | | | | | | | | | |
| Zinc Selenide | | ZnSe | | cubic | | | 5.6687 | 5.6687 | 5.6687 | | | (100), (110), (111) | twinfree | | | | | | | | | | | | | | |
| Zinc Sulfide | Sohalerite | ZnS | 1850 | cubic | | | 5.4093 | 5.4093 | 5.4093 | 97.474 | | (100), (110), (111) | | | 4.090 | | | | | | | | nD=2.3677 | | | | |
| Zinc Telluride | | ZnTe | | cubic | | | 6.1034 | 6.1034 | 6.1034 | | | | twinfree | | | | | | | | | | | | | | |
| Zirconium Oxide 1,5mol%Y2O3 | Zirconium Oxide 1,5mol%Y2O3 | ZrO2:1,5mol%Y2O3 | 2,715 | | | | | | | 123.218 | | | | | 5.68 | | | | | | | | 2.13 | | | | |
| Zirconium Oxide 9,5mol%Y2O3 | YSZ | ZrO2:9,5mol%Y2O3 | 2780 | cubic | | | 5.14 | 5.14 | 5.14 | | | (100) | twinfree | 8.7 | 5.9 | | | colorless | | | | | nd=2.15 | | | | |
| Zirconium Silicate | Zircon | ZrSiO4 | 2550 | tetragonal | ditetragonal-dipyramidal (4/m 2/m 2/m) | I4_1/amd | 6.59 | 6.59 | 5.94 | 183,29 | Z=4 | {100}, {110}, {101} | on {101}; polysynthetic twins on {112} (shocked crystals by meteorite impact) | 7.5 | 4.67 | perfect on {110} and {111} | conchoidal to uneven | reddish-brown, yellow, blue, green, gray, colorless | white | transparent to opaque | vitreous to adamantine | uniaxial (+) | nω=1.925-1.961; nε=1.980-2.015 | 0.047 - 0.055 | weak | | radioactive, fluorescent |