

Appendix G:

Optical Properties of Inorganic Compounds

Compound	Crystal Form	<i>n</i>
Aluminum powder	NA	NA
Aluminum chloride ($\text{AlCl}_3 \cdot 6\text{H}_2\text{O}$)	Col, rhomb, del	1.6
Aluminum oxide (Al_2O_3)	Col, hex	1.768, 1.760
Ammonium chloride (NH_4Cl)	Col, cube	1.642
Ammonium nitrate (NH_4NO_3)	Col, rho, (monocl $>32.1^\circ$)	
Antimony sulfide (Sb_2S_3)	Blk, rho	3.194, 4.064, 4.303
Barium carbonate (BaCO_3)	Wht, rho	1.529, 1.676, 1.677
Barium chlorate [$\text{Ba}(\text{ClO}_3)_2$]	Col, monocl	1.562, 1.577, 1.635
Barium nitrate [$\text{Ba}(\text{NO}_3)_2$]	Col, cub	1.572
Barium perchlorate [$\text{Ba}(\text{ClO}_4)_2$]	Col, hex	1.533
Barium sulfate (BaSO_4)	Wht, rho, (monocl)	1.637, 1.638, 1.649
Calcium carbonate ($\text{CaCO}_3 \cdot 6\text{H}_2\text{O}$)	Col, monocl	1.460, 1.535, 1.545
Chromium trioxide (CrO_3)	Rd, rho, del	
Copper sulfate ($\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$)	Blu, tricl	1.514, 1.537, 1.543
Magnesium powder	NA	NA
Magnesium sulfate (MgSO_4) anhydrous	Col, rho, cr	1.560
Magnesium sulfate ($\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$) (Epsom salts)	Col, rho or monocl	1.433, 1.455, 1.461
Manganous chloride ($\text{MnCl}_2 \cdot 4\text{H}_2\text{O}$)	Rose, monocl, del	
Manganous carbonate (MnCO_3)	Lt brn, rho	
Mercuric chloride (HgCl_2)	Col, rho, or wht pdr	1.859
Palladium chloride (PdCl_2)	Rd, cu need, del	
Palladium sulfate ($\text{PdSO}_4 \cdot 2\text{H}_2\text{O}$)	Rd-brn, cr, del	
Phosphorus oxychloride (POCl_3) or ($\text{P}_2\text{O}_3\text{Cl}_4$)	Col, fum liq	
Phosphorus pentoxide (P_2O_5)	Wht, monocl or pdr, del	
Potassium bicarbonate (KHCO_3)	Col, monocl	1.482
Potassium carbonate (K_2CO_3)	Col, monocl, hygro	1.531

Compound	Crystal Form	<i>n</i>
Potassium chlorate (KClO ₃)	Col, monocl	1.409, 1.517, 1.524
Potassium chromate (K ₂ CrO ₄)	Hel, rho	1.74
Potassium cyanide (KCN)	Col, cub, wh gran	1.410
Potassium dichromate (K ₂ Cr ₂ O ₇)	Red, monocl or tri	1.738
Potassium iodide (KI)	Col or wht, cub	1.677
Potassium nitrate (KNO ₃)	Col, rho or trig	1.335, 1.505, 1.506
Potassium perchlorate (KClO ₄)	Col, rho	1.471, 1.472, 1.476
Sodium acetate (NaC ₂ H ₃ O ₂)	Wht, monocl	1.464
Sodium bicarbonate (NaHCO ₃)	Wht, monocl, pr	1.526
Sodium borohydrate (NaBH ₄)	Wht, cub	1.524
Sodium carbonate (Na ₂ CO ₃)	Wht, monocl	1.405, 1.425, 1.440
Sodium chloride (NaCl)	Wht, cub	1.544
Sodium hydride (NaH)	Silver, need	1.470
Sodium nitrate (NaNO ₃)	Col, trig or rho, bdr	1.587, 1.336
Sodium sulfate (NaSO ₄)	Monocl	1.480
Strontium nitrate [Sr(NO ₃) ₂]	Col, cub	
Sulfur (S)	Yel, rho	1.957
Thorium nitrate [Th(NO ₃) ₄]	Plates, del	
Zinc powder	NA	NA
Zinc chloride (ZnCl ₂)	Wht, hex, del	1.681, 1.713

Abbreviations

Brn	Brown	Col	Colorless	Cub	Cubic
Del	Deliquescent	Hex	Hexagonal	Hygro	Hygroscopic
Monocl	Monoclinic	Need	Needles	Ppl	Purple
Pdr	Powder	Rd	Red	Rho	Rhombic
Tetr	Tetragonal	Trig	Trigonal	Wht	White
Cr	Crystals	Pr	Prisms	Fum	Fuming

Source: From *CRC Handbook of Chemistry and Physics*, 68th ed., CRC Press, Boca Raton, FL.