ACTIVITY SERIES OF METAL CATIONS AND HALOGEN ANIONS

Activity Series (cations)	
Li	
Rb	
K	Replace H from cold water
Ba	and acids
Sr	
Ca	
Na	

Mg	
Al	
Mn	Replace H from water (steam)
Zn	and acids
Cr	
Fe	
Cd	

Co	
Ni	Replace H from acids
Sn	
Pb	

H_2	
Sb	React with O_2, forming oxides
Bi	
Cu	
Hg	

Ag	
Pt	Fairly unreactive
Au	

Activity Series (anions)
F
Cl
Br
I

Some Common Negative Ions

acetate, $C_2H_3O_2^-$
oxalate, $C_2O_4^{2-}$
tartrate, $C_4H_4O_6^{2-}$
hypochlorite, ClO^-
chlorite, ClO_2^-
chlorate, ClO_3^-
perchlorate, ClO_4^-
cyanide, CN^-
thiocyanate, SCN^-
hydroxide, OH^-
nitrite, NO_2^-
nitrate, NO_3^-
permanganate, MnO_4^-
carbonate, CO_3^{2-}
chromate, CrO_4^{2-}
dichromate, $Cr_2O_7^{2-}$
peroxide, O_2^{2-}
sulfite, SO_3^{2-}
sulfate, SO_4^{2-}
thiosulfate, $S_2O_3^{2-}$
arsenate, AsO_4^{3-}
iodate, IO_3^-
silicate, SiO_3^{2-}
phosphite, PO_3^{3-}
phosphate, PO_4^{3-}

Solubilities in Water

(S = soluble; P = slightly soluble; I = insoluble; D = decomposes in water; — = compound does not exist or is unstable.)

Nonmetal anion → / Metal cation	Acetate, $C_2H_3O_2^-$	Bromide, Br^-	Carbonate, CO_3^{2-}	Chlorate, ClO_3^-	Chloride, Cl^-	Chromate, CrO_4^{2-}	Hydroxide, OH^-	Iodide, I^-	Nitrate, NO_3^-	Oxide, O^{2-}	Oxalate, $C_2O_4^{2-}$	Phosphate, PO_4^{3-}	Silicate, SiO_3^{2-}	Sulfate, SO_4^{2-}	Sulfide, S^{2-}	Sulfite, SO_3^{2-}
Aluminum, Al^{3+}	S	S	—	S	S	—	I	S	S	I	I	I	I	S	D	—
Ammonium, NH_4^+	S	S	S	S	S	S	S	S	S	—	P	S	—	S	S	S
Antimony, Sb^{3+}	—	D	—	—	S	—	—	D	—	P	I	—	—	D	D	—
Arsenic, As^{3+}	—	D	—	—	D	—	—	S	—	P	—	—	—	—	I	—
Barium, Ba^{2+}	S	S	I	S	S	I	S	S	S	S	I	I	—	I	D	I
Bismuth, Bi^{3+}	I	D	—	—	D	—	I	I	D	I	D	I	I	D	I	—
Cadmium, Cd^{2+}	S	S	I	S	S	I	I	S	S	I	I	I	I	S	I	P
Calcium, Ca^{2+}	S	S	I	S	S	S	I	S	S	I	I	I	I	I	P	I
Chromium, Cr^{3+}	S	S(I)*	—	—	I	—	I	S	S	I	S	P	—	S	D	I
Cobalt, Co^{2+}	S	S	I	S	S	I	I	S	S	I	I	I	I	S	I	I
Copper, Cu^{2+}	S	S	I	S	S	—	I	I	S	I	I	I	—	S	I	—
Iron (III), Fe^{3+}	S	S	—	S	S	I	I	S	S	I	S	P	—	S	D	—
Iron (II), Fe^{2+}	S	S	P	S	S	—	I	S	S	I	I	I	I	S	I	I
Lead, Pb^{2+}	S	S	I	S	S	I	I	I	S	I	I	I	I	I	I	I
Magnesium, Mg^{2+}	S	S	P	S	S	S	I	S	S	I	I	I	I	S	D	S
Mercury (II), Hg^{2+}	S	S	—	S	S	P	—	I	S	I	I	—	—	D	I	—
Mercury (I), Hg_2^{2+}	P	I	I	S	I	P	—	P	D	I	I	—	—	I	I	—
Nickel, Ni^{2+}	S	S	I	S	S	I	I	S	S	I	I	I	—	S	I	I
Potassium, K^+	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Silver, Ag^+	P	I	I	S	I	I	—	I	S	I	I	I	—	I	I	I
Sodium, Na^+	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Strontium, Sr^{2+}	S	S	I	S	S	I	I	S	S	I	I	I	I	I	I	I
Zinc, Zn^{2+}	S	S	I	S	S	I	I	S	S	I	I	I	I	S	I	I

* Certain salts occur in two modifications.

SOLUBILITY CHART FOR COMMON IONIC COMPOUNDS