

List of Hard and Soft Lewis Acids and Bases

Hard acids (non-metals)	Borderline acids (non-metals)	Soft acids (non-metals)
H^+ , $B(OR)_3$, BF_3 , BCl_3 , RCO^+ , CO_2 , NC^+ , R_3Si^+ , Si^{4+} , RPO_2^+ , $ROPO_2^+$, As^{3+} , RSO_2^+ , $ROSO_2^+$, SO_3 , Se^{3+} , Cl^{7+} , I^{7+} , I^{5+}	BR_3 , R^+ (softer $CH_3^+ > RCH_2^+ > R_2CH^+ >$ $R_3C^+ > vinyl^+ \approx C_6H_5^+ \approx$ $RC \equiv C^+$ harder), $RCHO$, R_2CO , $R_2C=NR$, NO^+ , SO_2	BH_3 , $Ar-Z$, $C=C-Z$, quinones, carbenes, HO^+ , RO^+ , RS^+ , RSe^+ , RTe^+ , Br_2 , Br^+ , I_2 , I^+
Hard acids (metals)	Borderline acids (metals)	Soft acids (metals)
Li^+ , Na^+ , K^+ , $BeMe_2$, Be^{2+} , $RMgX$, Mg^{2+} , Ca^{2+} , Sr^{2+} , $AlCl_3$, $AlMe_3$, AlH_3 , $Al(OR)_3$, Al^{3+} , $GaMe_3$, Ga^{3+} , $InMe_3$, In^{3+} , SnR_3^+ , $SnMe_2^{2+}$, Sn^{2+} , Sc^{3+} , La^{3+} , $Ti(OR)_4$, Ti^{4+} , Zr^{4+} , VO_2^+ , Cr^{3+} , Fe^{3+} , Co^{3+} , Ir^{3+} , Th^{4+} , UO_2^{2+} , Pu^{4+} , Yb^{3+}	GaH_3 , $Sn(OR)_4$, $SnCl_4$, Pb^{2+} , Sb^{3+} , Bi^{3+} , $Sc(OTf)_3$, $ScCl_3$, Fe^{2+} , Co^{2+} , Ni^{2+} , Cu^{2+} , RZn^+ , Zn^{2+} , $Yb(OTf)_3$, $YbCl_3$	Cs^+ , $TlMe_3$, Tl^+ , Tl^{3+} , $Pd(PAr_3)_2$, $Pd(PAr_3)_2^{2+}$, Pd^{2+} , Pt^{2+} , Cu^+ , Ag^+ , Au^+ , CdR^+ , Cd^{2+} , HgR^+ , Hg^+ , Hg^{2+} , M^0
Hard bases	Borderline bases	Soft bases
NH_3 , RNH_2 , R_2N^- , N_2H_4 , H_2O , OH^- , ROH , RO^- , R_2O , RCO_2^- , CO_3^{2-} , NO_3^- , PO_4^{3-} , SO_4^{2-} , ClO_4^- , F^- , Cl^-	AlH_4^- , N_2 , N_3^- , $PhNH_2$, R_3N , C_5H_5N , $R_2C=NR$, NO_2^- , SO_3^{2-} , Br^-	H^- , BH_4^- , R^- (softer $RC \equiv C^- >$ $vinyl^- > R_3C^-$ harder), C_6H_6 , $R_2C=CR_2$, $RC \equiv CR$, CN^- , RNC , CO , PR_3 , $P(OR)_3$, AsR_3 , RS^- , SCN^- , RSH , R_2S , $S_2O_3^{2-}$, RSe^- , I^-