ACID FRIENDLY TABLE (i.e. gives names and Keq for acids, but not bases!)

RELATIVE STRENGTHS OF BRØNSTED-LOWRY ACIDS AND BASES

in aqueous solution at room temperature.

STRONG = 100% dissociated in water

Name of Acid	Acid		Base	K_a
Perchloric	$HClO_4$	→	$H^+ + ClO_4^-$	very large
Hydriodic	HI	→	$H^+ + I^-$	very large
Hydrobromic	HBr	→	$H^+ + Br^-$	very large
Hydrochloric	HCl	→	$H^+ + Cl^-$	very large
Nitric	HNO_3	→	$H^+ + NO_3^-$	very large
Sulphuric	H_2SO_4	→	$H^+ + HSO_4^-$	very large
Hydronium Ion	H_3O^+	⇄	$H^+ + H_2O$	1.0
Iodic	HIO_3	⇄	$H^+ + IO_3^-$	1.7×10^{-1}
Oxalic	$H_2C_2O_4$	⇄	$H^+ + HC_2O_4^-$	5.9×10^{-2}
Sulphurous ($SO_2 + H_2O$)	H_2SO_3	⇄	$H^+ + HSO_3^-$	1.5×10^{-2}
Hydrogen sulphate ion	HSO_4^-	⇄	$H^+ + SO_4^{2-}$	1.2×10^{-2}
Phosphoric	H_3PO_4	⇄	$H^+ + H_2PO_4^-$	7.5×10^{-3}
Hexaaquoiron ion, iron(III) ion	$Fe(H_2O)_6^{3+}$	⇄	$H^+ + Fe(H_2O)_5(OH)^{2+}$	6.0×10^{-3}
Citric	$H_3C_6H_5O_7$	⇄	$H^+ + H_2C_6H_5O_7^-$	7.1×10^{-4}
Nitrous	HNO_2	⇄	$H^+ + NO_2^-$	4.6×10^{-4}
Hydrofluoric	HF	⇄	$H^+ + F^-$	3.5×10^{-4}
Methanoic, formic	HCOOH	⇄	$H^+ + HCOO^-$	1.8×10^{-4}
Hexaaquochromium ion, chromium(III) ion	$Cr(H_2O)_6^{3+}$	⇄	$H^+ + Cr(H_2O)_5(OH)^{2+}$	1.5×10^{-4}
Benzoic	C_6H_5COOH	⇄	$H^+ + C_6H_5COO^-$	6.5×10^{-5}
Hydrogen oxalate ion	$HC_2O_4^-$	⇄	$H^+ + C_2O_4^{2-}$	6.4×10^{-5}
Ethanoic, acetic	CH_3COOH	⇄	$H^+ + CH_3COO^-$	1.8×10^{-5}
Dihydrogen citrate ion	$H_2C_6H_5O_7^-$	⇄	$H^+ + HC_6H_5O_7^{2-}$	1.7×10^{-5}
Hexaaquoaluminum ion, aluminum ion	$Al(H_2O)_6^{3+}$	⇄	$H^+ + Al(H_2O)_5(OH)^{2+}$	1.4×10^{-5}
Carbonic ($CO_2 + H_2O$)	H_2CO_3	⇄	$H^+ + HCO_3^-$	4.3×10^{-7}
Monohydrogen citrate ion	$HC_6H_5O_7^{2-}$	⇄	$H^+ + C_6H_5O_7^{3-}$	4.1×10^{-7}
Hydrogen sulphite ion	HSO_3^-	⇄	$H^+ + SO_3^{2-}$	1.0×10^{-7}
Hydrogen sulphide	H_2S	⇄	$H^+ + HS^-$	9.1×10^{-8}
Dihydrogen phosphate ion	$H_2PO_4^-$	⇄	$H^+ + HPO_4^{2-}$	6.2×10^{-8}
Boric	H_3BO_3	⇄	$H^+ + H_2BO_3^-$	7.3×10^{-10}
Ammonium ion	NH_4^+	⇄	$H^+ + NH_3$	5.6×10^{-10}
Hydrocyanic	HCN	⇄	$H^+ + CN^-$	4.9×10^{-10}
Phenol	C_6H_5OH	⇄	$H^+ + C_6H_5O^-$	1.3×10^{-10}
Hydrogen carbonate ion	HCO_3^-	⇄	$H^+ + CO_3^{2-}$	5.6×10^{-11}
Hydrogen peroxide	H_2O_2	⇄	$H^+ + HO_2^-$	2.4×10^{-12}
Monohydrogen phosphate ion	HPO_4^{2-}	⇄	$H^+ + PO_4^{3-}$	2.2×10^{-13}
Water	H_2O	⇄	$H^+ + OH^-$	1.0×10^{-14}
Hydroxide ion	OH^-	←	$H^+ + O^{2-}$	very small
Ammonia	NH_3	←	$H^+ + NH_2^-$	very small

STRENGTH OF ACID: STRONG … WEAK

STRENGTH OF BASE: WEAK … STRONG

Only 6 strong acids!

All behave the same for single proton transfer = Levelling Effect

Indicates STRONG ACID

Spontaneous ∴ no EQm

$k = \frac{[P]}{[R]}$ highly favours products

Strongest acid that can exist in water

Weakest of the weak bases!

WEAK = reversible ⇌ EQm

Weakest of the weak acids

Strongest base in water

strong bases & soluble salts containing OH^- ex. NaOH, KOH, $Sr(OH)_2$

$K < 1$

Indicates favouring of reactants

"Weak"