Relative Strengths of Acids

IN AQUEOUS SOLUTION AT ROOM TEMPERATURE

All ions are aquated

$$HB \rightleftharpoons H^+(aq) + B^-(aq) \qquad K_A = \frac{[H^+][B^-]}{[HB]}$$

ACID	STRENGTH	REACTION	K_A
perchloric acid	very strong	$HClO_4 \rightarrow H^+ + ClO_4^-$	very large
hydriodic acid	↕	$HI \rightarrow H^+ + I^-$	very large
hydrobromic acid	↕	$HBr \rightarrow H^+ + Br^-$	very large
hydrochloric acid	↕	$HCl \rightarrow H^+ + Cl^-$	very large
nitric acid	↕	$HNO_3 \rightarrow H^+ + NO_3^-$	very large
sulfuric acid	very strong	$H_2SO_4 \rightarrow H^+ + HSO_4^-$	large
oxalic acid	strong	$HOOCCOOH \rightarrow H^+ + HOOCCOO^-$	5.4×10^{-2}
sulfurous acid ($SO_2 + H_2O$)	↕	$H_2SO_3 \rightarrow H^+ + HSO_3^-$	1.7×10^{-2}
hydrogen sulfate ion	↕	$HSO_4^- \rightarrow H^+ + SO_4^{-2}$	1.3×10^{-2}
iosphoric acid	↕	$H_3PO_4 \rightarrow H^+ + H_2PO_4^-$	7.1×10^{-3}
ferric ion	↕	$Fe(H_2O)_6^{+3} \rightarrow H^+ + Fe(H_2O)_5(OH)^{+2}$	6×10^{-3}
hydrogen telluride	strong	$H_2Te \rightarrow H^+ + HTe^-$	2.3×10^{-3}
hydrofluoric acid	weak	$HF \rightarrow H^+ + F^-$	6.7×10^{-4}
nitrous acid	↕	$HNO_2 \rightarrow H^+ + NO_2^-$	5.1×10^{-4}
hydrogen selenide	↕	$H_2Se \rightarrow H^+ + HSe^-$	1.7×10^{-4}
chromic ion	↕	$Cr(H_2O)_6^{+3} \rightarrow H^+ + Cr(H_2O)_5(OH)^{+2}$	10^{-4}
benzoic acid	↕	$C_6H_5COOH \rightarrow H^+ + C_6H_5COO^-$	6.6×10^{-5}
hydrogen oxalate ion	↕	$HOOCCOO^- \rightarrow H^+ + OOCCOO^{-2}$	5.4×10^{-5}
acetic acid	↕	$CH_3COOH \rightarrow H^+ + CH_3COO^-$	1.8×10^{-5}
aluminum ion	↕	$Al(H_2O)_6^{+3} \rightarrow H^+ + Al(H_2O)_5(OH)^{+2}$	10^{-5}
hydrogen telluride ion	↕	$HTe^- \rightarrow H^+ + Te^{-2}$	10^{-5}
carbonic acid ($CO_2 + H_2O$)	↕	$H_2CO_3 \rightarrow H^+ + HCO_3^-$	4.4×10^{-7}
hydrogen sulfide	↕	$H_2S \rightarrow H^+ + HS^-$	1.0×10^{-7}
dihydrogen phosphate ion	↕	$H_2PO_4^- \rightarrow H^+ + HPO_4^{-2}$	6.3×10^{-8}
hydrogen sulfite ion	↕	$HSO_3^- \rightarrow H^+ + SO_3^{-2}$	6.2×10^{-8}
ammonium ion	↕	$NH_4^+ \rightarrow H^+ + NH_3$	5.7×10^{-10}
hydrogen carbonate ion	weak	$HCO_3^- \rightarrow H^+ + CO_3^{-2}$	4.7×10^{-11}
hydrogen peroxide	very weak	$H_2O_2 \rightarrow H^+ + HO_2^-$	2.4×10^{-12}
monohydrogen phosphate ion	↕	$HPO_4^{-2} \rightarrow H^+ + PO_4^{-3}$	4.4×10^{-13}
hydrogen sulfide ion	↕	$HS^- \rightarrow H^+ + S^{-2}$	1.3×10^{-13}
ater	↕	$H_2O \rightarrow H^+ + OH^-$	1.0×10^{-14}
ydroxide ion	↕	$OH^- \rightarrow H^+ + O^{-2}$	$<10^{-30}$
ammonia	very weak	$NH_3 \rightarrow H^+ + NH_2^-$	very small