| acid | | p$K_a$ | base | p$K_b$ |
|---|---|---|---|---|
| $HClO_4$ | perchloric acid | $\sim -7$ | $ClO_4^-$ | $\sim 21$ |
| HCl | hydrogen chloride | $\sim -3$ | $Cl^-$ | $\sim 17$ |
| $H_2SO_4$ | sulfuric acid | $\sim -3$ | $HSO_4^-$ | $\sim 17$ |
| $HNO_3$ | nitric acid | $-1$ | $NO_3^-$ | 15 |
| $H_3O^+$ | hydronium ion | 0 | $H_2O$ | 14 |
| $H_2SO_3$ | sulfurous acid | 1.8 | $HSO_3^-$ | 12.2 |
| $HSO_4^-$ | bisulfate | 1.9 | $SO_4^{2-}$ | 12.1 |
| $H_3PO_4$ | phosphoric acid | 2.12 | $H_2PO_4^-$ | 11.88 |
| $[Fe(H_2O)_6]^{3+}$ | aquo ferric ion | 2.10 | $[Fe(H_2O)_5OH]^{2+}$ | 11.90 |
| HF | hydrofluoric acid | 3.2 | $F^-$ | 10.8 |
| $CH_3COOH$ | acetic acid | 4.7 | $CH_3COO^-$ | 9.3 |
| $[Al(H_2O)_6]^{3+}$ | aquo aluminum ion | 4.9 | $[Al(H_2O)_5OH]^{2+}$ | 9.1 |
| $H_2CO_3$ | total dissolved $CO_2$ [a] | 6.3 | $HCO_3^-$ | 7.7 |
| $H_2S$ | hydrogen sulfide | 7.04 | $HS^-$ | 6.96 |
| $H_2PO_4^-$ | dihydrogen phosphate | 7.2 | $H_2PO_4^{2-}$ | 6.8 |
| $HSO_3^-$ | bisulfite ion | 7.21 | $SO_3^{2-}$ | 6.79 |
| HOCl | hypochlorous acid | 8.0 | $OCl^-$ | 6.0 |
| HCN | hydrogen cyanide | 9.2 | $CN^-$ | 4.8 |
| $H_3BO_4$ | boric acid | 9.30 | $B(OH)_4^-$ | 4.70 |
| $NH_4^+$ | ammonium ion | 9.25 | $NH_3$ | 4.75 |
| $Si(OH)_4$ | *o*-silicic acid | 9.50 | $SiO(OH)_3^-$ | 4.50 |
| $HCO_3^-$ | bicarbonate | 10.33 | $CO_3^{2-}$ | 3.67 |
| $HPO_4^{2-}$ | hydrogen phosphate | 12.32 | $PO_4^{3-}$ | 1.67 |
| $SiO(OH)_3^-$ | silicate | 12.6 | $SiO_2(OH)_2^{2-}$ | 1.4 |
| $H_2O$ | water [b] | 14 | $OH^-$ | 0 |
| $HS^-$ | bisulfide [c] | $\sim 19$ | $S^{2-}$ | $\sim -5$ |
| $NH_3$ | ammonia | $\sim 23$ | $NH_2^-$ | $\sim -9$ |
| $OH^-$ | hydroxide ion | $\sim 24$ | $O^{2-}$ | $\sim -10$ |

[a] The acid $H_2CO_3$ is only a minority species in aqueous carbon dioxide solutions, which contain mainly $CO_{2(aq)}$. The p$K_a$ of 6.3 that is commonly given is calculated on the basis of the total $CO_2$ in the solution. The true p$K_a$ of $H_2CO_3$ is about 3.5.

[b] If water is acting as a *solute*, as it must if the acid strength of $H_2O$ is being compared with that of other very weak acids, then p$K_a \approx 16$ should be used. See *J. Chem. Education* 1990: 67(5) 386-388.

[c] Many tables still give 14 as p$K_2$ for $H_2S$; this is now known to be incorrect.

Table 1: p$K$ values of acids and bases in aqueous solutions at 25 °C