

**Table of Acids with Ka and pKa Values\***
**CLAS**

| Acid   | HA   | A <sup>-</sup>   | Ka   | pKa         | Acid Strength | Conjugate Base Strength |
|--|--|--|--|-------------|---------------|-------------------------|
| Hydroiodic   | HI   | I <sup>-</sup>   | Strong acids completely dissociate in aq solution (Ka > 1, pKa < 1).<br>Conjugate bases of strong acids are ineffective bases.           |             |               |                         |
| Hydrobromic  | HBr  | Br <sup>-</sup>  |  |             |               |                         |
| Perchloric   | HClO <sub>4</sub>  | ClO <sub>4</sub> <sup>-</sup>  |  |             |               |                         |
| Hydrochloric   | HCl  | Cl <sup>-</sup>  |  |             |               |                         |
| Chloric  | HClO <sub>3</sub>  | ClO <sub>3</sub> <sup>-</sup>  |  |             |               |                         |
| Sulfuric (1)   | H <sub>2</sub> SO <sub>4</sub>   | HSO <sub>4</sub> <sup>-</sup>  |  |             |               |                         |
| Nitric   | HNO <sub>3</sub>   | NO <sub>3</sub> <sup>-</sup>   |  |             |               |                         |
| Hydronium ion  | H <sub>3</sub> O <sup>+</sup>  | H <sub>2</sub> O   | 1  | 0.0         |               |                         |
| Iodic  | HIO <sub>3</sub>   | IO <sub>3</sub> <sup>-</sup>   | 1.6 x 10 <sup>-1</sup>   | 0.80        |               |                         |
| Oxalic (1)   | H <sub>2</sub> C <sub>2</sub> O <sub>4</sub>                             | HC <sub>2</sub> O <sub>4</sub> <sup>-</sup>                              | 5.9 x 10 <sup>-2</sup>   | 1.23        |               |                         |
| Sulfurous (1)  | H <sub>2</sub> SO <sub>3</sub>   | HSO <sub>3</sub> <sup>-</sup>  | 1.54 x 10 <sup>-2</sup>  | 1.81        |               |                         |
| Sulfuric (2)   | HSO <sub>4</sub> <sup>-</sup>  | SO <sub>4</sub> <sup>2-</sup>  | 1.2 x 10 <sup>-2</sup>   | 1.92        |               |                         |
| Chlorous   | HClO <sub>2</sub>  | ClO <sub>2</sub> <sup>-</sup>  | 1.1 x 10 <sup>-2</sup>   | 1.96        |               |                         |
| Phosphoric (1)   | H <sub>3</sub> PO <sub>4</sub>   | H <sub>2</sub> PO <sub>4</sub> <sup>-</sup>                              | 7.52 x 10 <sup>-3</sup>  | 2.12        |               |                         |
| Arsenic (1)  | H <sub>3</sub> AsO <sub>4</sub>  | H <sub>2</sub> AsO <sub>4</sub> <sup>-</sup>                             | 5.0 x 10 <sup>-3</sup>   | 2.30        |               |                         |
| Chloroacetic   | CH <sub>2</sub> ClCOOH   | CH <sub>2</sub> ClCOO <sup>-</sup>                                       | 1.4 x 10 <sup>-3</sup>   | 2.85        |               |                         |
| Citric (1)   | H <sub>3</sub> C <sub>6</sub> H <sub>5</sub> O <sub>7</sub>              | H <sub>2</sub> C <sub>6</sub> H <sub>5</sub> O <sub>7</sub> <sup>-</sup> | 8.4 x 10 <sup>-4</sup>   | 3.08        |               |                         |
| Hydrofluoric   | HF   | F <sup>-</sup>   | 7.2 x 10 <sup>-4</sup>   | 3.14        |               |                         |
| Nitrous  | HNO <sub>2</sub>   | NO <sub>2</sub> <sup>-</sup>   | 4.0 x 10 <sup>-4</sup>   | 3.39        |               |                         |
| Formic   | HCOOH  | HCOO <sup>-</sup>  | 1.77 x 10 <sup>-4</sup>  | 3.75        |               |                         |
| Lactic   | HCH <sub>3</sub> H <sub>5</sub> O <sub>3</sub>                           | CH <sub>3</sub> H <sub>5</sub> O <sub>3</sub> <sup>-</sup>               | 1.38 x 10 <sup>-4</sup>  | 3.86        |               |                         |
| Ascorbic (1)   | H <sub>2</sub> C <sub>6</sub> H <sub>6</sub> O <sub>6</sub>              | HC <sub>6</sub> H <sub>6</sub> O <sub>6</sub> <sup>-</sup>               | 7.9 x 10 <sup>-5</sup>   | 4.10        |               |                         |
| Benzoic  | C <sub>6</sub> H <sub>5</sub> COOH                                       | C <sub>6</sub> H <sub>5</sub> COO <sup>-</sup>                           | 6.46 x 10 <sup>-5</sup>  | 4.19        |               |                         |
| Oxalic (2)   | HC <sub>2</sub> O <sub>4</sub> <sup>-</sup>                              | C <sub>2</sub> O <sub>4</sub> <sup>2-</sup>                              | 6.4 x 10 <sup>-5</sup>   | 4.19        |               |                         |
| Hydrazoic  | HN <sub>3</sub>  | N <sub>3</sub> <sup>-</sup>  | 1.9 x 10 <sup>-5</sup>   | 4.72        |               |                         |
| Citric (2)   | H <sub>2</sub> C <sub>6</sub> H <sub>5</sub> O <sub>7</sub> <sup>-</sup> | HC <sub>6</sub> H <sub>5</sub> O <sub>7</sub> <sup>2-</sup>              | 1.8 x 10 <sup>-5</sup>   | 4.74        |               |                         |
| Acetic   | CH <sub>3</sub> COOH   | CH <sub>3</sub> COO <sup>-</sup>   | 1.76 x 10 <sup>-5</sup>  | 4.75        |               |                         |
| Propionic  | CH <sub>3</sub> CH <sub>2</sub> COOH                                     | CH <sub>3</sub> CH <sub>2</sub> COO <sup>-</sup>                         | 1.34 x 10 <sup>-5</sup>  | 4.87        |               |                         |
| Pyridinium ion   | C <sub>5</sub> H <sub>4</sub> NH <sup>+</sup>                            | C <sub>5</sub> H <sub>4</sub> N  | 5.6 x 10 <sup>-6</sup>   | 5.25        |               |                         |
| Citric (3)   | HC <sub>6</sub> H <sub>5</sub> O <sub>7</sub> <sup>2-</sup>              | C <sub>6</sub> H <sub>5</sub> O <sub>7</sub> <sup>3-</sup>               | 4.0 x 10 <sup>-6</sup>   | 5.40        |               |                         |
| Carbonic (1)   | H <sub>2</sub> CO <sub>3</sub>   | HCO <sub>3</sub> <sup>-</sup>  | 4.3 x 10 <sup>-7</sup>   | 6.37        |               |                         |
| Sulfurous (2)  | HSO <sub>4</sub> <sup>-</sup>  | SO <sub>4</sub> <sup>2-</sup>  | 1.02 x 10 <sup>-7</sup>  | 6.91        |               |                         |
| Arsenic (2)  | H <sub>2</sub> AsO <sub>4</sub> <sup>-</sup>                             | HAsO <sub>4</sub> <sup>2-</sup>  | 8/9.3 x 10 <sup>-8</sup>   | 7.10/7.03   |               |                         |
| Hydrosulfuric  | H <sub>2</sub> S   | HS <sup>-</sup>  | 1.0 x 10 <sup>-7</sup> /9.1 x 10 <sup>-8</sup>   | 7/7.04      |               |                         |
| Phosphoric (2)   | H <sub>2</sub> PO <sub>4</sub> <sup>-</sup>                              | HPO <sub>4</sub> <sup>2-</sup>   | 6.23 x 10 <sup>-8</sup>  | 7.21        |               |                         |
| Hypochlorous   | HClO   | ClO <sup>-</sup>   | 3.5/3.0 x 10 <sup>-8</sup>   | 7.46/7.53   |               |                         |
| Hypobromous  | HBrO   | BrO <sup>-</sup>   | 2 x 10 <sup>-9</sup>   | 8.70        |               |                         |
| Cyanic   | HCN  | CN <sup>-</sup>  | 6.17 x 10 <sup>-10</sup>   | 9.21        |               |                         |
| Boric (1)  | H <sub>3</sub> BO <sub>3</sub>   | H <sub>2</sub> BO <sub>3</sub> <sup>-</sup>                              | 5.8 x 10 <sup>-10</sup>  | 9.23        |               |                         |
| Ammonium ion   | NH <sub>4</sub> <sup>+</sup>   | NH <sub>3</sub>  | 5.6 x 10 <sup>-10</sup>  | 9.25        |               |                         |
| Phenol   | C <sub>6</sub> H <sub>5</sub> OH   | C <sub>6</sub> H <sub>5</sub> O <sup>-</sup>                             | 1.6 x 10 <sup>-10</sup>  | 9.80        |               |                         |
| Carbonic (2)   | HCO <sub>3</sub> <sup>-</sup>  | CO <sub>3</sub> <sup>2-</sup>  | 4.8 x 10 <sup>-11</sup>  | 10.32       |               |                         |
| Hypoiodous   | HIO  | IO <sup>-</sup>  | 2 x 10 <sup>-11</sup>  | 10.70       |               |                         |
| Arsenic (3)  | HAsO <sub>4</sub> <sup>2-</sup>  | AsO <sub>4</sub> <sup>3-</sup>   | 6.0 x 10 <sup>-10</sup> /3.0 x 10 <sup>-12</sup>   | 9.22/11.53  |               |                         |
| Hydrogen peroxide  | H <sub>2</sub> O <sub>2</sub>  | HO <sub>2</sub> <sup>-</sup>   | 2.4 x 10 <sup>-12</sup>  | 11.62       |               |                         |
| Ascorbic (2)   | HC <sub>6</sub> H <sub>6</sub> O <sub>6</sub> <sup>-</sup>               | C <sub>6</sub> H <sub>6</sub> O <sub>6</sub> <sup>2-</sup>               | 1.6 x 10 <sup>-12</sup>  | 11.80       |               |                         |
| Phosphoric (3)   | HPO <sub>4</sub> <sup>2-</sup>   | PO <sub>4</sub> <sup>3-</sup>  | 4.8/2.2 x 10 <sup>-13</sup>  | 12.32/12.66 |               |                         |
| Water  | H <sub>2</sub> O   | OH <sup>-</sup>  | 1.0 x 10 <sup>-14</sup>  | 14.0        |               |                         |
| Group I metal hydroxides (LiOH, NaOH, etc.)                                  |  |  | Strong bases completely dissociate in aq solution (Kb > 1, pKb < 1).<br>Conjugate acids (cations) of strong bases are ineffective bases. |             |               |                         |
| Group II metal hydroxides (Mg(OH) <sub>2</sub> , Ba(OH) <sub>2</sub> , etc.) |  |  |  |             |               |                         |

\* Compiled from Appendix 5 Chem 1A, B, C Lab Manual and Zumdahl 6<sup>th</sup> Ed. The pKa values for organic acids can be found in Appendix II of Bruice 5<sup>th</sup> Ed.