

Buffer pKa and pH Range Values

| Buffers | pKa | For preparation of Buffers in the pH range |
|--|----------------|--|
| Hydrochloric Acid - HCl | | 0-2 |
| Nitric Acid - HNO ₃ | | |
| Perchloric Acid - HClO ₄ | | |
| Potassium Chloride - KCl | | 1.1-1.8 |
| Oxalic Acid - C ₂ H ₂ O ₄ | 1.3, 4.3 | 0.3-5.3 |
| Sodium Oxalate - C ₂ Na ₂ O ₄ | | |
| Potassium Tetraxalate | | |
| Maleic Acid - C ₄ H ₄ O ₄ | 1.9, 6.2 | 0.9-2.9, 5.2-7.2 |
| Phosphoric Acid - H ₃ PO ₄ | 2.1, 7.2, 12.4 | 1.1-3.1, 6.2-10.1 |
| Potassium Phosphate, Monobasic - H ₂ KO ₄ P | | |
| Potassium Phosphate, Dibasic - HK ₂ PO ₄ | | |
| Potassium Phosphate, Tribasic - K ₃ PO ₄ | | |
| Sodium Phosphate, Monobasic - H ₂ NaPO ₄ | | |
| Sodium Phosphate, Dibasic - HNa ₂ PO ₄ | | |
| Sodium Phosphate, Tribasic - Na ₃ PO ₄ | | |
| Glycine - C ₂ H ₅ NO ₂ | 2.4, 9.7 | 1.4-3.4, 8.7-10.7 |
| Monochloroacetic Acid - C ₂ H ₃ ClO ₂ | 2.8 | 1.8-3.8 |
| Chloroacetic Acid, Sodium Salt ↑ | | |
| Phthalic Acid - C ₈ H ₆ O ₄ | 2.9, 5.4 | 1.9-6.4 |
| Potassium Biphthalate | | |
| d-Tartaric Acid - C ₄ H ₆ O ₆ | 3.0, 4.4 | 2.0-5.4 |
| Potassium Tartrate - C ₄ H ₄ K ₂ O ₆ | | |
| Citric Acid - C ₆ H ₈ O ₇ | 3.1, 4.8, 6.4 | 2.1-7.4 |
| Potassium Citrate - C ₆ H ₅ K ₃ O ₇ | | |
| Formic Acid - CH ₂ O ₂ | 3.8 | 2.8-4.8 |
| Sodium Formate - CHNaO ₂ | | |

Buffer pKa and pH Range Values Continued

| Buffers | pKa | For preparation of Buffers in the pH Range |
|---|-------------------------|--|
| Succinic Acid – $C_4H_6O_4$ | 4.2, 5.6 | 3.2-6.6 |
| Acetic Acid – $C_2H_4O_2$ | 4.6 | 3.6-5.6 |
| Sodium Acetate – $C_2H_3NaO_2$ | | |
| Ammonium Acetate – $C_2H_7NO_2$ | 4.6(Acetic Acid) | 6-8 |
| | 9.3(Ammonium Hydroxide) | |
| Hexamethylenetetramine – $C_6H_{12}N_4$ | 5.1 | 4.1-6.1 |
| Pyridine – C_5H_5N | 5.2 | 4.2-6.2 |
| (Carbonic Acid) – CH_2O_3 | 6.3, 10.3 | 5.3-7.3, 9.3-11.3 |
| Sodium Bicarbonate – $CHNaO_3$ | | |
| Sodium Carbonate – CNa_2O_3 | | |
| Potassium Bicarbonate – $CHKO_3$ | | |
| Potassium Carbonate – CK_2O_3 | | |
| Ethylenediamine – $C_2H_8N_2$ | 7.4, 10.2 | 6.4-8.4, 9.2-11.2 |
| Imidazole – $C_3H_3N_2$ | 7.5 | 6.5-8.5 |
| Triethanolamine – $C_6H_{15}NO_3$ | 7.8 | 6.8-8.8 |
| TRIS Hydrochloride – $C_4H_{12}ClNO_3$ | | |
| HEPES (4-(2-Hydroxyethyl)-1-piperazineethanesulfonic Acid) – $C_8H_{18}N_2SO_4$ | | |
| 2-Amino-2-methyl-1,2-propanediol. (AMP) – $C_4H_{11}NO$ | 8.8 | 7.8-9.8 |
| Boric Acid – H_3BO_3 | 9.2 | 8.2-10.2 |
| Sodium Borate – $B_4Na_2O_7$ | | |
| Ammonium Hydroxide – H_5NO | 9.3 | 8.3-10.3 |
| Ammonium Chloride – ClH_4N | | |
| Diethylamine – $C_4H_{11}N$ | 11.0 | 10.0-12.0 |
| Calcium Hydroxide – CaO_2H_2 | | 12.4 (sat. soln) |
| Potassium Hydroxide, 45% soln - KHO | | 12-14 |
| Sodium Hydroxide, 50% soln - NaOH | | |