

Table 3. pH variation of acetonitrile-aqueous buffer mixtures.
$${}^s\text{pH} = {}^w\text{pH} + m_{\text{pH}} \phi_{\text{MeCN}}$$

| Buffering system | Aqueous concentration | ${}^w\text{pH}$ | m_{pH} | ${}^s\text{pH}$ at MeCN volume fraction of | | | | | | |
|--------------------------|--------------------------|--------------------------|-----------------|--|------|------|------|------|------|------|
| | | | | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | |
| Acetic acid | 0.01 mol·L ⁻¹ | 3.50 | 1.64 | 3.66 | 3.83 | 3.99 | 4.16 | 4.32 | 4.48 | |
| | | 4.00 | 2.26 | 4.23 | 4.45 | 4.68 | 4.90 | 5.13 | 5.36 | |
| | | 4.50 | 2.28 | 4.73 | 4.96 | 5.18 | 5.41 | 5.64 | 5.87 | |
| | | 5.00 | 2.28 | 5.23 | 5.46 | 5.68 | 5.91 | 6.14 | 6.37 | |
| | | 5.50 | 2.28 | 5.73 | 5.96 | 6.18 | 6.41 | 6.64 | 6.87 | |
| | | 6.00 | 2.28 | 6.23 | 6.46 | 6.68 | 6.91 | 7.14 | 7.37 | |
| | 0.05 mol·L ⁻¹ | 3.50 | 2.23 | 3.72 | 3.95 | 4.17 | 4.39 | 4.62 | 4.84 | |
| | | 4.00 | 2.28 | 4.23 | 4.46 | 4.68 | 4.91 | 5.14 | 5.37 | |
| | | 4.50 | 2.28 | 4.73 | 4.96 | 5.18 | 5.41 | 5.64 | 5.87 | |
| | | 5.00 | 2.28 | 5.23 | 5.46 | 5.68 | 5.91 | 6.14 | 6.37 | |
| | | 5.50 | 2.28 | 5.73 | 5.96 | 6.18 | 6.41 | 6.64 | 6.87 | |
| | | 6.00 | 2.28 | 6.23 | 6.46 | 6.68 | 6.91 | 7.14 | 7.37 | |
| | Citric acid | 0.01 mol·L ⁻¹ | 2.50 | 0.48 | 2.55 | 2.60 | 2.64 | 2.69 | 2.74 | 2.79 |
| | | | 3.00 | 1.15 | 3.12 | 3.23 | 3.35 | 3.46 | 3.58 | 3.69 |
| 3.50 | | | 1.38 | 3.64 | 3.78 | 3.91 | 4.05 | 4.19 | 4.33 | |
| 4.00 | | | 1.56 | 4.16 | 4.31 | 4.47 | 4.62 | 4.78 | 4.94 | |
| 4.50 | | | 1.67 | 4.67 | 4.83 | 5.00 | 5.17 | 5.34 | 5.50 | |
| 5.00 | | | 1.75 | 5.18 | 5.35 | 5.53 | 5.70 | 5.88 | 6.05 | |
| 5.50 | | | 1.91 | 5.69 | 5.88 | 6.07 | 6.26 | 6.46 | 6.65 | |
| 6.00 | | | 1.98 | 6.20 | 6.40 | 6.59 | 6.79 | 6.99 | 7.19 | |
| 6.50 | | | 1.99 | 6.70 | 6.90 | 7.10 | 7.30 | 7.50 | 7.69 | |
| 0.05 mol·L ⁻¹ | | 7.00 | 1.99 | 7.20 | 7.40 | 7.60 | 7.80 | 8.00 | 8.19 | |
| | | 7.50 | 1.99 | 7.70 | 7.90 | 8.10 | 8.30 | 8.50 | 8.69 | |
| | | 2.50 | 1.16 | 2.62 | 2.73 | 2.85 | 2.96 | 3.08 | 3.20 | |
| | | 3.00 | 1.43 | 3.14 | 3.29 | 3.43 | 3.57 | 3.72 | 3.86 | |
| | | 3.50 | 1.49 | 3.65 | 3.80 | 3.95 | 4.10 | 4.25 | 4.39 | |
| | | 4.00 | 1.60 | 4.16 | 4.32 | 4.48 | 4.64 | 4.80 | 4.96 | |
| | | 4.50 | 1.65 | 4.67 | 4.83 | 5.00 | 5.16 | 5.33 | 5.49 | |
| | | 5.00 | 1.75 | 5.18 | 5.35 | 5.53 | 5.70 | 5.88 | 6.05 | |
| | | 5.50 | 1.86 | 5.69 | 5.87 | 6.06 | 6.24 | 6.43 | 6.62 | |
| 6.00 | 1.88 | 6.19 | 6.38 | 6.56 | 6.75 | 6.94 | 7.13 | | | |
| 6.50 | 1.88 | 6.69 | 6.88 | 7.06 | 7.25 | 7.44 | 7.63 | | | |
| 7.00 | 1.88 | 7.19 | 7.38 | 7.56 | 7.75 | 7.94 | 8.13 | | | |
| 7.50 | 1.88 | 7.69 | 7.88 | 8.06 | 8.25 | 8.44 | 8.63 | | | |

Table 3 (continued)

| Buffering system | Aqueous concentration | w pH | m_{pH} | s pH at MeCN volume fraction of | | | | | |
|------------------|--------------------------|--------|-----------------|-----------------------------------|------|------|------|------|------|
| | | | | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 |
| Phosphoric acid | 0.01 mol·L ⁻¹ | 2.21 | 0.51 | 2.26 | 2.31 | 2.36 | 2.41 | 2.47 | 2.52 |
| | | 3.00 | 1.29 | 3.13 | 3.26 | 3.39 | 3.52 | 3.65 | 3.77 |
| | | 3.50 | 1.34 | 3.63 | 3.77 | 3.90 | 4.04 | 4.17 | 4.30 |
| | | 6.50 | 1.75 | 6.68 | 6.85 | 7.03 | 7.20 | 7.38 | 7.55 |
| | | 7.00 | 1.75 | 7.18 | 7.35 | 7.53 | 7.70 | 7.88 | 8.05 |
| | | 7.50 | 1.75 | 7.68 | 7.85 | 8.03 | 8.20 | 8.38 | 8.55 |
| | | 8.00 | 1.75 | 8.18 | 8.35 | 8.53 | 8.70 | 8.88 | 9.05 |
| | | 8.50 | 1.75 | 8.68 | 8.85 | 9.03 | 9.20 | 9.38 | 9.55 |
| | 0.05 mol·L ⁻¹ | 2.21 | 1.47 | 2.36 | 2.50 | 2.65 | 2.80 | 2.95 | 3.09 |
| | | 3.00 | 1.70 | 3.17 | 3.34 | 3.51 | 3.68 | 3.85 | 4.02 |
| | | 3.50 | 1.71 | 3.67 | 3.84 | 4.01 | 4.18 | 4.36 | 4.53 |
| | | 6.50 | 1.71 | 6.67 | 6.84 | 7.01 | 7.18 | 7.36 | 7.53 |
| | | 7.00 | 1.71 | 7.17 | 7.34 | 7.51 | 7.68 | 7.86 | 8.03 |
| | | 7.50 | 1.71 | 7.67 | 7.84 | 8.01 | 8.18 | 8.36 | 8.53 |
| | | 8.00 | 1.71 | 8.17 | 8.34 | 8.51 | 8.68 | 8.86 | 9.03 |
| | | 8.50 | 1.71 | 8.67 | 8.84 | 9.01 | 9.18 | 9.36 | 9.53 |
| Ammonia | 0.01 mol·L ⁻¹ | 8.00 | -0.60 | 7.94 | 7.88 | 7.82 | 7.76 | 7.70 | 7.64 |
| | | 8.50 | -0.60 | 8.44 | 8.38 | 8.32 | 8.26 | 8.20 | 8.14 |
| | | 9.00 | -0.60 | 8.94 | 8.88 | 8.82 | 8.76 | 8.70 | 8.64 |
| | | 9.50 | -0.60 | 9.44 | 9.38 | 9.32 | 9.26 | 9.20 | 9.14 |
| | | 10.00 | -0.60 | 9.94 | 9.88 | 9.82 | 9.76 | 9.70 | 9.64 |
| | 0.05 mol·L ⁻¹ | 8.00 | -0.60 | 7.94 | 7.88 | 7.82 | 7.76 | 7.70 | 7.64 |
| | | 8.50 | -0.60 | 8.44 | 8.38 | 8.32 | 8.26 | 8.20 | 8.14 |
| | | 9.00 | -0.60 | 8.94 | 8.88 | 8.82 | 8.76 | 8.70 | 8.64 |
| | | 9.50 | -0.60 | 9.44 | 9.38 | 9.32 | 9.26 | 9.20 | 9.14 |
| | | 10.00 | -0.60 | 9.94 | 9.88 | 9.82 | 9.76 | 9.70 | 9.64 |