

PBS-1 PHOSPHATE BUFFERED SALINE SYSTEM

The PBS-1 Buffer Preparation System is designed to allow the investigator to conveniently prepare Phosphate Buffered Saline at various pH's and ionic strengths.

The system includes the following reagents:

P8709 Potassium Phosphate (monobasic), 1 M Solution

P8584 Potassium Phosphate (dibasic), 1 M Solution

S6546 Sodium Chloride, 5M solution

All reagents are prepared with water purified to a resistivity of $\geq 10 \text{ M}\Omega$ and 0.2μ filtered. The items listed are available in one or four liter volumes.

The table on the reverse side of this card can be used as a guide in the preparation of phosphate buffers. The ratios of P8709 and P8584 listed are specific for 50 mM buffers at the designated pH. Higher concentrations of phosphate or the presence of neutral salts will alter pH. The volumes indicated on the right side of the table can be used as a guide in the preparation of 50 mM phosphate buffered saline. Sodium chloride lowers pH approximately 0.01 pH unit for each 0.01 increase in molality (1).

For phosphate buffers, pH increases with decreasing temperature. Compared with a buffer at 25° C, buffers at 4° C. will be 0.08 higher and a buffer at 37° C will be 0.025 lower. The concentration of phosphate also influences pH. The dilution value for phosphate, defined as the change of pH of a buffer when diluted with an equivalent volume of water is 0.08 (2). Therefore, a 25 mM phosphate buffer prepared with half of the volumes of P8709 and P8584 indicated on the table for a specific pH, would be approx. 0.08 pH units higher than the expected pH. Likewise, a 100 mM buffer prepared with double the P8709 and P8584, would result in a pH approx. 0.08 lower.

Due to the variety of factors that influence pH, it is strongly suggested that the pH of the prepared buffer be measured prior to use and adjusted, if necessary.

1. Bates, R.G. (1964) "Determination of pH - theory and practice" Wiley and Sons, New York, London, Sydney.
2. Bates, R.G. (1962) "Revised Standard Values for pH Measurements from 0-95p C. J. Res. Nat. Bur. Stds. 66A: 179-184.

PHOSPHATE BUFFER FORMULATION GUIDE

1 Liter			1 liter		
0.05M Phosphate Buffer (25°C)			0.05 M Phosphate Buffer/0.15M NaCl (25°C)		
pH	P8709 (ml)	P8584 (ml)	P8709 (ml)	P8584 (ml)	S6546 (ml)
6.6	32.0	18.0	26.6	23.4	30
6.7	29.8	20.2	23.7	26.3	30
6.8	26.5	23.5	20.9	29.1	30
6.9	24.0	26.0	18.1	31.9	30
7.0	21.1	28.9	15.6	34.4	30
7.1	18.4	31.6	13.2	36.8	30
7.2	16.8	34.2	11.1	38.9	30
7.3	13.4	36.6	9.2	40.8	30
7.4	11.2	38.8	7.6	42.4	30
7.5	9.4	40.6	6.3	43.7	30
7.6	7.8	42.2	5.1	44.9	30

EXAMPLE:

If a 50 mM phosphate buffer pH 7.1 is desired, the investigator should mix 18.4 mL of P8709, 31.6 mL of P8584 and dilute to one liter with water. Confirm that the desired pH has been obtained.