

Product Information

Phosphate Buffered Saline System

Catalog Number **PBS1**

Store at Room Temperature

Product Description

The Phosphate Buffered Saline System is designed to allow preparation of Phosphate Buffered Saline (PBS) at various pH and ionic strength.

The system includes the following reagents:

1 M Potassium Phosphate (monobasic) (KH_2PO_4 , Catalog Number P8709)	1 Liter
1 M Potassium Phosphate (dibasic) (K_2HPO_4 , Catalog Number P8584)	1 Liter
5 M NaCl Sodium Chloride (NaCl, Catalog Number S6546)	1 Liter

All reagents are prepared with water purified to a resistivity of $\geq 10 \text{ M}\Omega\text{-cm}$ and $0.2 \mu\text{m}$ filtered.

Table 1 can be used as a guide for 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 the pH. The volumes indicated on the right side of Table 1 can be used as a guide in the preparation of 50 mM phosphate buffered saline. Sodium chloride lowers the pH ~ 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, buffer 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 ~ 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 ~ 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.

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Storage/Stability

Store the buffers at room temperature.

References

1. Bates, R.G., in Determination of pH – theory and practice, Wiley and Sons, (New York, NY: 1964).
2. Bates, R.G., Revised Standard Values for pH Measurements from 0-95pC. J. Res. N. L. Bur. Stds., 66A, 179-184 (1962).

Table 1.
Phosphate Buffer Formulation Guide

pH	1 Liter of 0.05 M Phosphate Buffer (25 °C)		1 Liter of 0.05 M Phosphate Buffer/0.15 M NaCl (25 °C)		
	1 M KH ₂ PO ₄ (P8706) (ml)	1 M K ₂ HPO ₄ (P8584) (ml)	1 M KH ₂ PO ₄ (P8706) (ml)	1 M K ₂ HPO ₄ (P8584) (ml)	5 M NaCl (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 - For a 50 mM phosphate buffer pH 7.1, mix 18.4 mL of P8709 and 31.6 mL of P8584, and dilute to one liter with water. Confirm that the desired pH has been obtained.

Sigma brand products are sold through Sigma-Aldrich, Inc.

Sigma-Aldrich, Inc. warrants that its products conform to the information contained in this and other Sigma-Aldrich publications. Purchaser must determine the suitability of the product(s) for their particular use. Additional terms and conditions may apply. Please see reverse side of the invoice or packing slip.