

Product Information

Pharmalytes®

Catalog Number **P1897**

Product Description

CAS Number: 70852-56-1

Synonym: Ampholytes

Ampholytes are low molecular weight synthetic compounds which are used to generate a pH gradient under application of an electric field. At their respective isoelectric points (pI), the compounds have high buffering capacity. Often referred to as carrier ampholytes, these compounds are commonly used in a defined pH range to give selective resolution to mixtures of amphoteric materials such as proteins. Ampholytes may be used as free reagents or in isoelectric focusing (IEF) strips, whereby the carrier ampholytes are immobilized in a gel matrix.¹

Application of voltage across the ampholyte pH gradient causes the amphoteric molecules of interest to migrate to the gradient positions where their net charges are zero. Materials with net positive charge move toward the cathode, and materials with net negative charge migrate toward the anode. The materials become less charged as they traverse the pH gradient until they reach their respective pI values. Substances which diffuse away from their pI immediately acquire charge and return to their isoelectric position. This focuses the materials at their pI values, separated with very small charge differences. The electric field strength determines the degree of resolution, and thus IEF is performed at high voltages (> 1,000 V). When the materials have reached their final isoelectric positions, the system has very little ionic movement, resulting in a low final current (< 1 mA).

Pharmalyte® IEF carrier ampholytes are mixtures of 600-700 different amphoteric compounds within a defined isoelectric point range. Pharmalyte products are synthesized by the co-polymerization of glycine, glycyglycine, various amines and epichlorhydrin. Their molecular weights range from 300 to 600 daltons. Because of the hydrophilic nature of ampholytes, they will not bind to proteins.

Several reports on the use of carrier ampholytes in protein electrophoresis have been published.^{2,3,4,5}

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.

References

1. Righetti, P. G., et al., Isoelectric focusing in immobilized pH gradients. *Methods Enzymol.*, **270**, 235-255 (1996).
2. Gorg, A., et al., Recent developments in two-dimensional gel electrophoresis with immobilized pH gradients: wide pH gradients up to pH 12, longer separation distances and simplified procedures. *Electrophoresis*, **20(4-5)**, 712-717 (1999).
3. Gorg, A., et al., The current state of two-dimensional electrophoresis with immobilized pH gradients. *Electrophoresis*, **21(6)**, 1037-1053 (2000).
4. Zuo, X., and Speicher, D. W., Quantitative evaluation of protein recoveries in two-dimensional electrophoresis with immobilized pH gradients. *Electrophoresis*, **21(14)**, 3035-3047 (2000).
5. Chartogne, A., et al., Capillary electrophoretic separations of proteins using carrier ampholytes. *J. Chromatogr. A*, **959(1-2)**, 289-298 (2002).

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