

Preparing 200L of 10x PBS Buffer Concentrate using a Magnetic Mixer

Mixing system: Newmix®- Levtech® Magnetic Mixer

Mixing bag: 200L M-Mix bag

Mixing type: Powder-liquid

The Newmix-Levtech Magnetic Mixer is a compact and non-invasive single-use mixing system. The heart of this system is a mixing bag incorporating an innovative bottom-mounted magnetically-driven impeller capable of providing efficient high-torque mixing for all powder-liquid and liquid-liquid mixing applications. The impeller rides on a low-friction, inert bearing assembly designed to ensure low particle shedding while allowing mixing of very high powder loads in large liquid volumes. All product-contacting surfaces are 100% disposable.

Introduction

Powder-liquid mixing is a common requirement in biopharma processing. In order to maximize mixing efficiency for powder-liquid applications, the Magnetic Mixer is available with a large (6.35") impeller.

In this experiment, a Magnetic Mixer was used to prepare a quantity of a 10x concentrated solution of phosphate buffered saline (PBS), a buffer that is ubiquitous in downstream bioprocess steps.



Hoegaarden, Belgium - Europe

Phone: +32 (0) 16.76.61.59

Lexington, KY - USA

Phone: 859.263.1135

Minneapolis, MN - USA

Phone: 952.942.0855

www.atmi-lifesciences.com

info@atmi-lifesciences.com

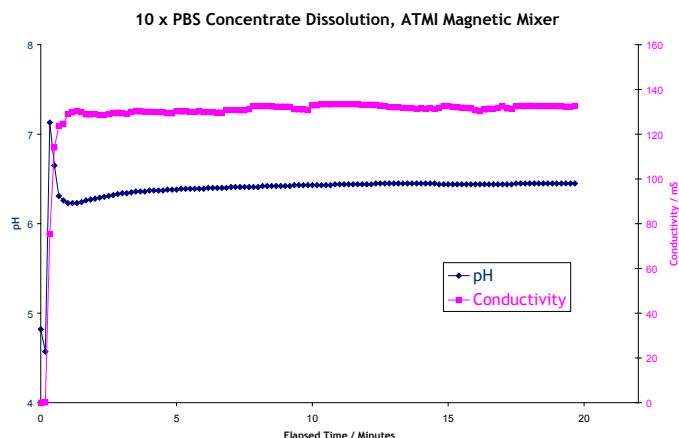
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Application note XA406E 0903rev2

Experimental

A 200L Magnetic Mixer mixing bag was filled with 160L of water, and mixing speed was set to 300rpm. Powder buffer components were added all at once via an ATMI Newsafe™ contained Powder Transfer Bag (cPTB); 16kg NaCl + 0.4kg KCl + 2.88kg Na₂HPO₄·12H₂O + 0.48kg KH₂PO₄. The solution homogeneity was monitored via real-time conductivity and pH readings.



Results

The accompanying chart shows solution homogeneity in the bag during mixing.

After the buffer powder addition, conductivity and pH data indicate that mixing was complete within approximately 10 minutes. At no time during the mixing cycle did the impeller stall or hesitate. A video of this experiment is available upon request.

Conclusions

The Newmix-Levtech Magnetic Mixer system is well suited to preparation of high-concentration buffer solutions. A powder-liquid mixing bag, which includes a large, bearing-mounted magnetic impeller, is a good choice for such applications. Mixing times in the 10 minute range are typical at the tested volume and concentration.