

Dilution of 25% Salt Solution at the 500L Scale using a LevMixer™

Mixing system: Newmix®- Levtech® LevMixer™

Mixing bag: 500L L-Mix bag

Mixing type: Liquid-liquid

The Newmix-Levtech LevMixer is a compact and non-invasive single-use mixing system. The heart of this system is a mixing bag incorporating a bottom-mounted levitating impeller designed for powder-liquid and liquid-liquid mixing applications. The impeller is frictionless and generates no particles. All product-contacting surfaces are 100% disposable.

Introduction

Liquid-liquid mixing is a common requirement in biopharma processing. In order to maximize mixing speed for liquid-liquid applications, various impeller sizes and locations are available.

In this experiment, a LevMixer was used to prepare 500L of a dilute salt solution. Three different mixing bag configurations were tested.



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

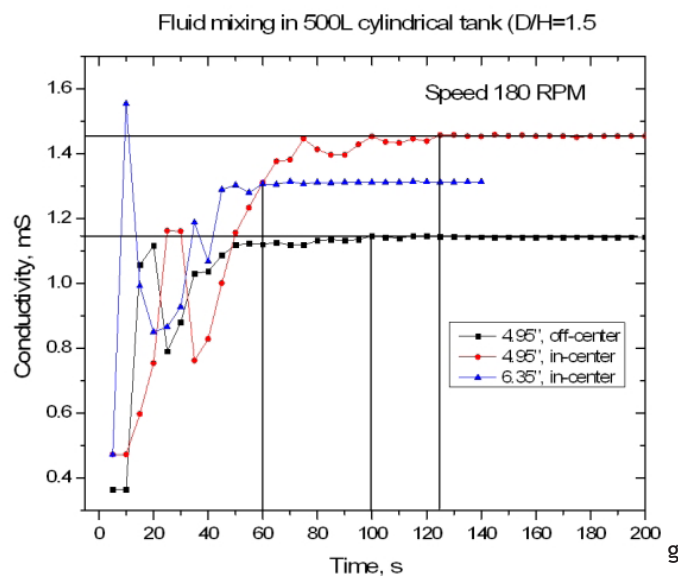
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Application note XA202E 0806rev1

Experimental

A 500L LevMixer mixing bag was filled with 497L of water, and mixing speed was set to 180rpm. In total, 3L of a 25% w/v sodium chloride (NaCl) solution was added to the mixing bag, resulting in a 0.15% w/v solution. The NaCl additions were made as quickly as possible, and solution homogeneity was monitored via real-time conductivity readings at a location in the mixing bag opposite the salt addition location.

The experiment was repeated with three different impeller size and location combinations:

- Large, center-mounted impeller
- Small, center-mounted impeller
- Small, off-center impeller



The points at which mixing was complete are indicated by the vertical black lines on the chart. Mixing times ranged from 60-125 seconds.

Conclusions

The Newmix-Levtech LevMixer system is well suited to performing rapid dilution of concentrated aqueous solutions. For this application, at the 500L scale, the most efficient bag design is one in which a large (6.35" diameter) impeller is used.