



Application Note

USD 3038

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

Mixing system: LevMixer system

Mixing biocontainer: 500 L Mixer biocontainer

Application mixing type: Liquid-liquid

The LevMixer system is a compact and non-invasive single-use mixing system. The heart of this system is a mixing biocontainer incorporating a bottom-mounted levitating impeller designed for powder-liquid and liquid-liquid mixing applications. The impeller is frictionless and generates no particles

Introduction

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

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



Experimental

A 500 L LevMixer mixing biocontainer was filled with 497 L of water, and mixing speed was set to 180 rpm. In total, 3 L of a 25% w/v sodium chloride (NaCl) solution was added to the mixing biocontainer, 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 biocontainer opposite the salt addition location.

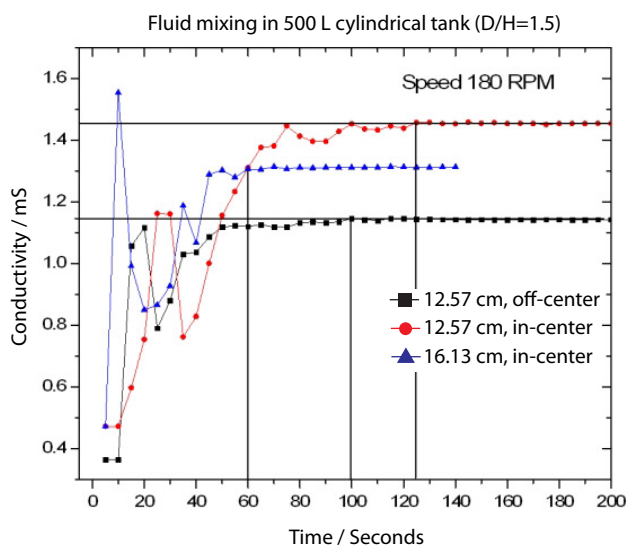
The experiment was repeated with three different impeller size and location combinations:

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

Results

Figure 1 shows solution homogeneity in the biocontainer during mixing. The points at which mixing was complete are indicated by the vertical black lines on the chart. Mixing times ranged from 18-33 seconds.

Figure 1
Solution homogeneity in the biocontainer during mixing



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 LevMixer system is well suited to performing rapid dilution of concentrated aqueous solutions. For this application, at the 500 L scale, the most efficient biocontainer design is one in which a 16.13 cm (6.35 inch) impeller is used.



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