

Comparing Mix Efficiency at 200L & 500L on a Magnetic Mixer

Mixing system: Newmix®- Levtech® Magnetic Mixer

Mixing bag: 200L & 500L 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"), centrally-located impeller. However, in this study, to present a "worse case" scenario, the less efficient, smaller (4.95") impeller was used in the off-center position.

In this experiment, a Magnetic Mixer was used to prepare a salt solution at two different working volumes (200L and 500L) and the mixing performance was compared.



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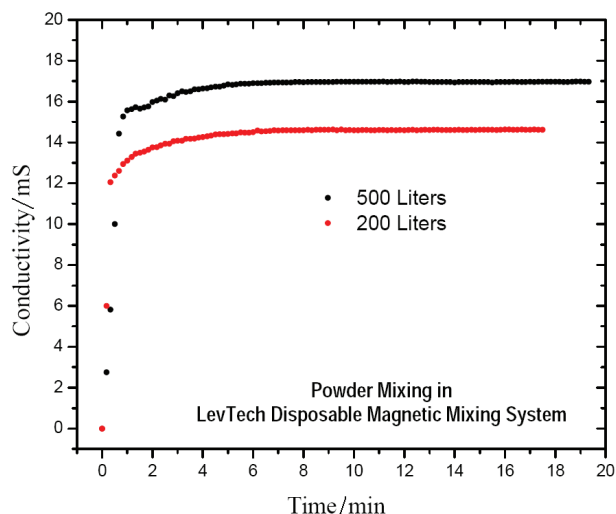
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Application note XA402E 0903rev2

Experimental

First, a 200L Magnetic Mixer mixing bag was filled with ~200L of water, and mixing speed was set to 330rpm. A single 1.5kg addition of sodium chloride (NaCl) powder was made to the mixing bag, and the solution homogeneity was monitored via real-time conductivity readings.

The experiment was then repeated in a 500L Magnetic mixer mixing bag; this time 500L of water and 4.4kg of NaCl were used.



Results

The accompanying chart shows solution homogeneity in each bag during mixing. After the NaCl powder addition, mixing was found to be complete within approximately 6-7 minutes, with comparable mixing times at the 200L and 500L scales. At no time during the mixing cycle did the impeller stall or hesitate.

Conclusions

The Newmix-Levtech Magnetic Mixer system is well suited to preparation of large volumes of buffer salt solutions. Even when the less efficient off-center/small impeller combination is used, mixing is completed very quickly.

There is little difference between mix times at the 200L and 500L scales. Mixing times in the 6-7 minute range are typical at the tested volumes and salt concentrations.