

Newmix® - Levtech® Application note

Mixing in a partially filled Newmix Q-mix™ bag with Pad-Drive™

Mixing system: Newmix®- Levtech® Pad-Drive™ 50 system

Mixing bag: 25L Q-Mix™ bag (US Pat.No. 7,249,880)

Mixing type: Solid-liquid

The Newmix-Levtech Pad-Drive system is a scalable and non-invasive single-use mixing system. The heart of this mixer is an innovative top-mounted mixing paddle that allows effective and uniform mixing in demanding applications, such as preparation of contained high-solids solutions or mixing of high-viscosity liquids.

Introduction

Mixing bags for Pad-Drive mixers are available in capacities of 25L, 50L, 200L, 500L and 1000L. However, it is often necessary for users to mix in bags that are only partially filled. This experiment demonstrates how solid-liquid mixing can be performed effectively in as little as 16% of the bag capacity.

In this experiment, a Pad-Drive 50 was used to prepare various volumes of salt solution. After a baseline experiment at full bag capacity, a series of mixing experiments were performed using progressively smaller volumes of liquid in the same size bag until incomplete mixing was encountered.



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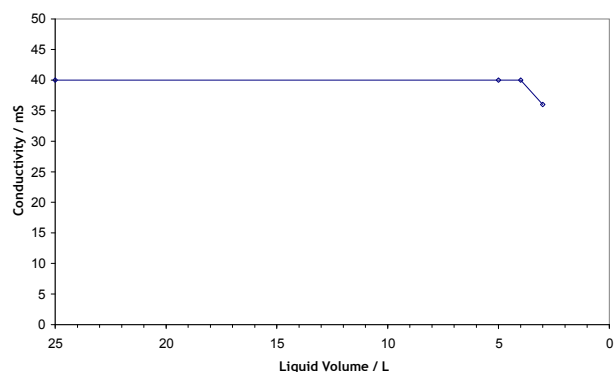
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Experimental

DI water and sodium chloride were mixed in a full-to-capacity 25L Q-Mix bag, making a 25g/L NaCl solution. Once uniformly mixed, the conductivity of the solutions was measured. This conductivity (40mS) was taken to represent the conductivity of a fully and uniformly mixed solution of this concentration.

A fresh 25L Q-Mix bag was then filled with 5L of DI water and 125g of sodium chloride, and mixed under identical mixing conditions. This was repeated at 4L/100g and at 3L/75g. In each case, the conductivity of the solution was measured at the end of the mixing cycle.



Mixing efficiency in 25L Q-Mix bag

Results

As can be seen from the accompanying chart, mixing was complete and uniform down to 4L, or only 16% of the bag capacity. Below this level, efficient mixing of solid and liquid can not be relied upon in a Q-Mix bag. However, as the mixing paddle does still cause significant movement of the liquid, smaller volumes are still workable for liquid-liquid mixing.

Conclusions

The paddle mixing action of the Newmix-Levtech Pad-Drive system is capable of effective solid-liquid mixing, even in volumes as low as 16% of bag capacity.