

Newmix® - Levtech® Application note

Mixing High Viscosity with a Pad-Drive™

Mixing system: Newmix®- Levtech® Pad-Drive™ 1000 system

Mixing bag: 200L Q-Mix™ bags
(US Pat.No. 7,249,880)

Mixing type: Liquid-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

High-viscosity materials can present a formidable mixing challenge, yet they also serve to illustrate the relative strengths and weakness of different mixing technologies. In this experiment, a Pad-Drive mixer was used to perform liquid-liquid mixing in a highly viscous matrix - high fructose corn syrup 90% at a viscosity of 1200 centipoise.



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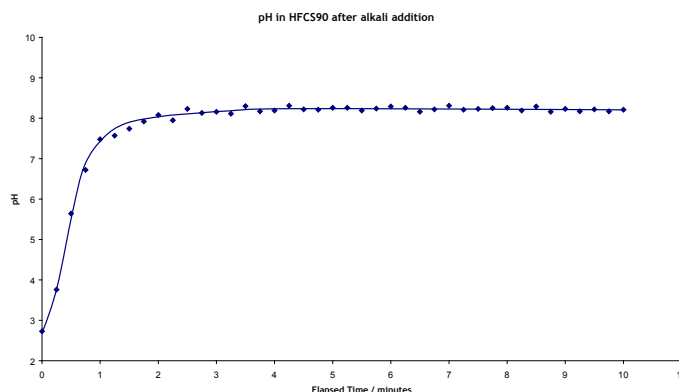
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Experimental

A 200L Q-Mix mixing bag was filled with 200L of ADM Cornsweet®90 high fructose corn syrup (HFCS90), and mixing speed was set to 100rpm. A 60ml aliquot of dilute sodium hydroxide solution (8M NaOH) was then added, via a top-mounted inoculation port, to the surface of the HFCS90. Solution homogeneity was monitored via a pH sensor mounted in the top of the bag.



Results

The accompanying chart shows solution homogeneity in the bag during mixing. After the NaOH addition, mixing was found to be 90% within 60 seconds and complete within approximately 3 minutes.

At no time during the mixing cycle did the impeller stall or hesitate. Video of this experiment is available upon request.

Conclusions

The Newmix-Levtech Pad-Drive mixing system can perform effectively at viscosity up to 1200cP. The 3 minute mixing time in this experiment surpasses the speed of other single-use mixers in the ATMI product portfolio, and makes Pad-Drive an excellent choice when scalable high-viscosity liquid-liquid mixing is the primary intended purpose.