



Application Note

USD 3051

High Viscosity Mixing with a Pall® Wand Mixer

Mixing system: Pall Wand Mixer

Mixing biocontainer: 200 L Mixer biocontainer

Application mixing type: Liquid-liquid

The Pall Wand Mixer is a compact and non-invasive single-use mixing system. The heart of this system is a mixing biocontainer incorporating an innovative top-mounted impeller capable of providing efficient mixing for powder-liquid and liquid-liquid mixing applications. The impeller comprises a rotating wand inside an inert polymer sleeve, and is designed to ensure low particle shedding and total containment while serving effectively in a wide variety of mixing tasks.

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 Wand Mixer was used to perform liquid-liquid mixing in a highly viscous matrix – high fructose corn syrup 90% at a viscosity of 1200 centipoise.

Experimental

A 200 L Wand Mixer mixing biocontainer was filled with 200 L of ADM Cornsweet♦ 90 high fructose corn syrup (HFCS90), and mixing speed was set to 250 rpm. A 60 mL aliquot of dilute sodium hydroxide solution (8 M 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 biocontainer.

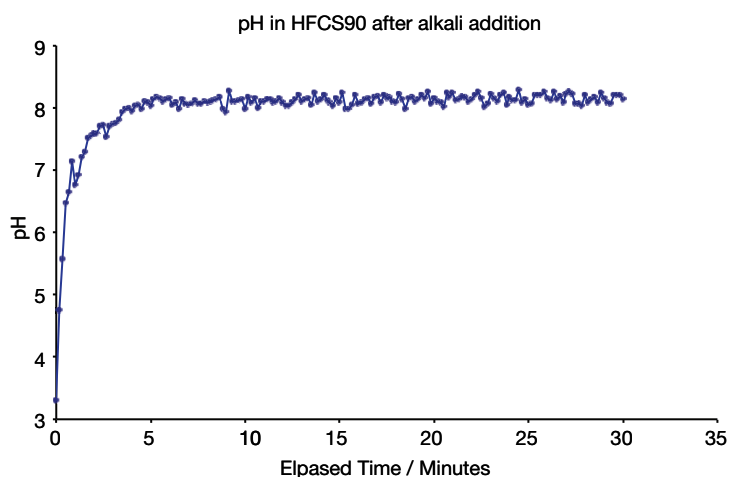


Results

Figure 1 shows solution homogeneity in the biocontainer during mixing. After the NaOH addition, mixing was found to be complete within approximately 5 minutes.

Figure 1

Shows solution homogeneity in the biocontainer during mixing



Conclusions

The Pall Wand Mixer can perform effectively at viscosity up to 1200 cP. For mixing applications <200 L maximum volume, the 5 minute mixing time in this experiment makes the Pall Wand Mixer an excellent choice when high-viscosity liquid-liquid mixing is the primary intended purpose.



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