Preparation of a 160 L 50 g/L Salt Solution using a Pall® Magnetic Mixer

Mixing system: Pall Magnetic Mixer
Mixing biocontainer: 200 L Mixer vessel
Application mixing type: Powder-liquid

The Pall Magnetic Mixer is a compact single-use mixing system. The heart of this system is a mixing biocontainer 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 high powder loads in large liquid volumes.

Introduction

Powder-liquid mixing is a common requirement in biopharmaceutical processing. In order to maximize mixing efficiency for powder-liquid applications, the Magnetic Mixer is available with a 16.13 cm (6.35 inch) impeller.

In this experiment, a Magnetic Mixer was used to prepare a quantity of a highly concentrated salt solution.

Experimental

A 200 L Magnetic Mixer mixing biocontainer was filled with 160 L of water, and mixing speed was set to 180 rpm. A single 8 kg addition of sodium chloride (NaCl) powder was made to the mixing biocontainer, resulting in an approximately 50 g/L solution. The solution homogeneity was monitored via real-time conductivity readings.
Results

Figure 1 shows solution homogeneity in the biocontainer during mixing. After the NaCl powder addition, mixing was found to be complete within approximately 4 minutes.

Figure 1
Solution homogeneity in each biocontainer during mixing

Conclusions

The Pall Magnetic Mixer system is well suited to preparation of high concentration buffer salt solutions. A powder-liquid mixing biocontainer, which includes a large, bearing-mounted magnetic impeller, is a good choice for such applications. Mixing times in the 4 minute range are typical at the tested volume and salt concentration.