Newmix®- Levtech® Application note

Dissolution of Sodium Hydroxide Pellets using a LevMixer™

Mixing system: Newmix®- Levtech® LevMixer™
Mixing bag: 100L L-Mix bag
Mixing type: Powder-liquid

The Newmix-Levtech LevMixer is a compact and non-invasive single-use mixing system. The heart of this system is a mixing bag incorporating a bottom-mounted levitating impeller designed for powder-liquid and liquid-liquid mixing applications. The impeller is frictionless and generates no particles. All product-contacting surfaces are 100% disposable.

Introduction

Powder-liquid mixing is a common requirement in biopharma processing. In order to maximize mixing speed for powder-liquid applications, various impeller sizes and locations are available.

In this experiment, a LevMixer was used to prepare 70L of a buffer solution typically encountered in bioprocess facilities.

Experimental

A 100L LevMixer mixing bag, fitted with a large (6.35”) centrally-mounted impeller, was filled with 70L of water, and mixing speed was set to 214rpm. Once a vortex had formed, 2.5kg of sodium hydroxide (NaOH) pellets was added to the mixing bag, resulting in an approximately 35g/L solution.

Results

Dissolution was observed visually. After 5 minutes, all of the NaOH pellets were seen to have dissolved. The temperature of the water increased from initial 30°C to 38°C during this experiment.

Conclusions

The Newmix-Levtech LevMixer system is well suited to preparation of buffer solutions such as sodium hydroxide. A powder-liquid mixing bag, which includes a centrally-mounted, large, levitated impeller, is a good choice for such applications. Mixing times in the sub-300 second range are typical at the tested volume and concentration.

In view of the temperature increase observed, ATMI recommends that the impeller be started prior to adding the NaOH; this will reduce the chance of local hotspots that could damage the bag material. The use of a jacketed tank and chiller can be considered to if rapid cooling is desirable.

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