Dissolution of Sodium Hydroxide Pellets using a LevMixer® System

**Mixing system:** LevMixer system  
**Mixing biocontainer:** 100 L LevMixer biocontainer  
**Application mixing type:** Powder-liquid

The LevMixer system is a compact single-use mixing system. The heart of this system is a mixing biocontainer incorporating a bottom-mounted levitating impeller designed for powder-liquid and liquid-liquid mixing applications. The impeller is frictionless and generates no particles.

**Introduction**

Powder-liquid mixing is a common requirement in biopharmaceutical processing. In this experiment, a LevMixer system was used to prepare 70 L of a buffer solution typically encountered in bioprocess facilities.

**Experimental**

A 100 L LevMixer mixing biocontainer, fitted with a 16.13 cm diameter, centrally-mounted impeller, was filled with 70 L of water, and mixing speed was set to 214 rpm. Once a vortex had formed, 2.5 kg of sodium hydroxide (NaOH) pellets were added to the mixing biocontainer, resulting in an approximately 35 g/L solution.
Results

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

Conclusions

The LevMixer system is well suited to preparation of buffer solutions such as sodium hydroxide. A powder-liquid mixing biocontainer, which includes a centrally-mounted, large, levitated impeller, is a good choice for such applications. In view of the temperature increase observed, Pall recommends that the impeller be started prior to adding the NaNH; this will reduce the chance of local hotspots that could damage the biocontainer material. The use of a jacketed tank and chiller can be considered too if rapid cooling is desirable.