



Application Note

USD 3046

Scalability of the LevMixer® System

Mixing system: LevMixer system

Mixing biocontainer: 50 L – 1000 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 various volumes of a typical buffer salt solution, and the mixing times were compared to demonstrate scalability.



Experimental

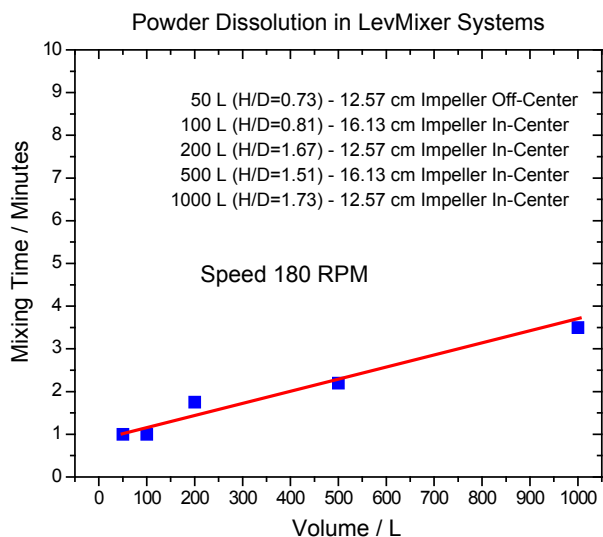
LevMixer mixing biocontainers of 50 L, 100 L, 200 L, 500 L and 1000 L were filled to standard capacity with water, and mixing speed was set to 180 rpm. Each biocontainer was then charged with sufficient sodium chloride powder to make an 8.8 g/L (150 mM) solution. Solution homogeneity was monitored via real-time conductivity readings.

Results

Figure 1 shows mixing time as a function of the biocontainer volume. Mixing times ranged from 60 to 210 seconds, depending on volume. It can be seen that the relationship between working volume and mixing time is a linear one, making for a predictable scalability model.

Figure 1

Mixing time as a function of the biocontainer volume



Conclusions

The LevMixer system is well suited to preparation of buffer salt solutions at scales ranging from 50 L to 1000 L. The predictable relationship between volume and mixing time can simplify the scale-up process.



Life Sciences

Corporate Headquarters

Port Washington, NY, USA
+1.800.717.7255 toll free (USA)
+1.516.484.5400 phone
biopharm@pall.com e-mail

European Headquarters

Fribourg, Switzerland
+41 (0)26 350 53 00 phone
LifeSciences.EU@pall.com e-mail

Asia-Pacific Headquarters

Singapore
+65 6389 6500 phone
sgcustomerservice@pall.com e-mail

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Visit us on the Web at www.pall.com/mixing

E-mail us at allegro@pall.com

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