



Application Note

Hydrating Chemically-Defined Media Powder in a Pall® Magnetic Mixer

Mixing system: Pall Magnetic Mixer

Mixing biocontainer: 200 L Mixer biocontainer

Application mixing type: Powder-liquid

Pall Life Sciences offers several single-use mixing technologies that provide varied cost, operational and performance advantages over conventional stainless steel mixing vessels and other single-use mixers. The criteria for selecting the best Pall mixing technology include scale, particle and shear sensitivity, mixing power, physical fit and economic considerations. This application note illustrates how the Pall Magnetic Mixer performs in a demanding real-world application.

Introduction

The Pall Magnetic Mixer is a compact single-use mixing system. The mixing biocontainer incorporates a bottom-mounted magnetically-driven impeller that provides high-torque mixing for powder-liquid and liquid-liquid 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. All product-contacting surfaces are USP Class VI and Animal Derived Component Free (ADCF).

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) centrally-located impeller.

In this experiment a Magnetic Mixer was used to prepare chemically-defined cell culture media solution. The procedure entailed the dissolution of SAFC Ex-Cell♦ CD CHO Fusion Dry Powder Medium, and adjustment of the solution pH using readings from sensors installed in the mixing biocontainer.



Experimental

A 200 L Magnetic Mixer biocontainer was fitted with a pair of calibrated, autoclavable glass pH electrodes via threaded probe ports integral to the biocontainer (see accompanying photograph).

The mixing biocontainer was then filled with ~180 L of water at room temperature, and the impeller mixing speed was set to 300 rpm. The recommended amount of dry media powder (4,018 g) was added through the top of the mixing biocontainer via a 30 L Pall powder bag.

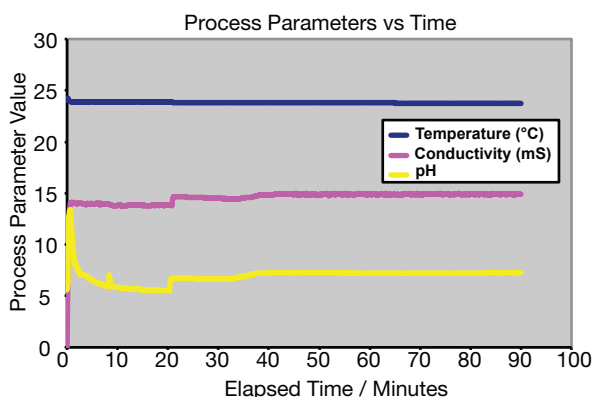
Following the media manufacturer's guidelines, upon 20 minutes of mixing, 250 g of sodium bicarbonate powder was added. After 10 further minutes, the pH was adjusted to ~7.2 by incremental addition of dilute sodium hydroxide or hydrochloric acid solution. The solution was then mixed for an additional 60 minutes. Homogeneity was monitored via real-time conductivity and pH readings.

Results

Figure 1 shows solution homogeneity in the biocontainer during initial mixing. After the media powder addition, mixing was deemed to be complete within approximately 13 minutes. After the bicarbonate addition and pH adjustment, mixing was deemed complete within an additional 7 minutes.

Figure 1

Solution homogeneity in the biocontainer during mixing



Conclusions

The Pall Magnetic Mixer, coupled with a Pall powder bag, is well suited to preparation of chemically-defined cell culture media solution. Media preparation times in the 30-40 minute range appear feasible at the tested volume and medium concentration.



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

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

E-mail us at allegro@pall.com

International Offices

Pall Corporation has offices and plants throughout the world in locations such as: Argentina, Australia, Austria, Belgium, Brazil, Canada, China, France, Germany, India, Indonesia, Ireland, Italy, Japan, Korea, Malaysia, Mexico, the Netherlands, New Zealand, Norway, Poland, Puerto Rico, Russia, Singapore, South Africa, Spain, Sweden, Switzerland, Taiwan, Thailand, the United Kingdom, the United States, and Venezuela. Distributors in all major industrial areas of the world. To locate the Pall office or distributor nearest you, visit www.pall.com/contact.

The information provided in this literature was reviewed for accuracy at the time of publication. Product data may be subject to change without notice. For current information consult your local Pall distributor or contact Pall directly.

© 2015, Pall Corporation. Pall and are trademarks of Pall Corporation. ® indicates a trademark registered in the USA and TM indicates a common law trademark. *Filtration.Separation.Solution.* is a service mark of Pall Corporation. ♦Ex-Cell is a trademark of SAFC Biosciences, Inc.