



Integrity of Single-Use Systems

Regulatory Requirements for Integrity Testing of Single-Use Systems (SUS)

Document Number: RPSCIN_01

Revision Number: 1.00

Date: 16-SEPT-19

Author: P. Evrard

Signature:

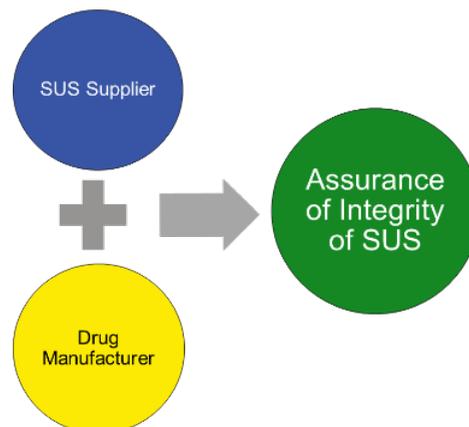
Regulations and Risk Management

Single-use systems (SUS) increasingly implemented in current Good Manufacturing Practices (cGMP) are considered critical from a drug and patient safety perspective. This has led to increased scrutiny from regulatory authorities regarding the assurance of SUS integrity.

Contrary to filters, there are currently no formal regulatory requirements to perform integrity testing of SUS. However, drug manufacturers are expected to perform a risk assessment of the use of SUS in their applications and to define an appropriate risk mitigation strategy. Integrity testing of SUS can, and should, be part of this risk mitigation.

The risk assessment should consider all steps of the life cycle of a SUS, from design and manufacturing at the SUS supplier's site to actual use at the drug manufacturer's site – see Figure 1. Considering steps at both the SUS supplier and drug manufacturer level enables a more pertinent risk analysis.

Figure 1. Schematic flow of inputs into integrity assurance



It is worth highlighting that performing a leak or integrity test on the SUS would only be one element of the risk mitigation strategy to achieve a relevant level of assurance of integrity for the SUS.

There are many other elements contributing to the assurance of integrity, including:

- Quality by design approach for the components and for the assembly of the SUS
- Design of the SUS itself (complexity of the SUS making it more complex to handle, increasing the risk associated to manipulations)
- Supplier's manufacturing practices and controls, for components and SUS assembly, including leak or integrity testing (standard or upon request)
- Packaging methods and validations, transportation validation studies
- Drug manufacturer's practices and controls and associated validations
- Operators' training

References

Here is a short list of noteworthy industry guidance documents and standards related to assurance of integrity of SUS (please note this list is not fully comprehensive of all available documentation on this issue)

- Bio-Process Systems Alliance (BPSA)
 - Technical guide: Design, Control, and Monitoring of Single-Use Systems for Integrity Assurance (July 2017) – <http://bpsalliance.org/technical-guides>
 - Article: Recommended Practices for Assuring Integrity of Single-Use Systems - <https://bioprocessintl.com/manufacturing/single-use/recommended-practices-for-assuring-integrity-of-single-use-systems/>
- ASTM E55.04 (currently under review)
 - WK64337 Best Practices - Integrity Assurance and Testing of Single-Use Systems
 - WK64975 Testing Method – Microbial Ingress Testing on Single-Use Systems
- USP<1207> Sterile Product Packaging - Integrity Evaluation (May 2018)
- PDA Report 27 Pharmaceutical Package Integrity (currently under review)



Corporate Headquarters

Port Washington, NY, USA
+1.800.717.7255 toll free (USA)
+1.516.484.5400 phone

European Headquarters

Fribourg, Switzerland
+41 (0)26 350 53 00 phone

Asia-Pacific Headquarters

Singapore
+65 6389 6500 phone

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

Contact us at www.pall.com/contact

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.

© 2019 Pall Corporation. The Pall logo and Pall 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.

Filtration. Separation. Solution.