Are You Using The Right Sample Container?

The role that sample containers play in the field of research is changing. These days research laboratories, whether it be for clinical trials, QA/AC pharmaceuticals, drugs manufacturers, forensic research or environmental testing, are no longer looking for just a container. They are increasingly aware of the effect that the choice of container can have on their test results. To help them with the challenges they are facing, they are looking for companies who can also act as a technical support resource.

The Challenges

Research laboratories are facing the same challenges as other industries. They are required to increase their productivity and reduce their costs whilst maintaining the volume of tests and quality of the test results.

It is no longer satisfactory for a supplier to just provide a container. It is crucial to supply the right container for the right application. Laboratories are looking for suppliers who become true 'partners' and who recognise the need for new and innovative solutions to meet the growing need for higher standards of purity. Laboratories not only require diversity of the products on offer but also flexibility with regard to the ordering process. And, above all, they are looking for expertise to help them with the sourcing of contaminant-free containers for their particular environment.

Each specific critical environment has its own particular requirements. In the past researchers took responsibility for the cleaning of their containers. In their fight to reduce the number of 'faulty' test results and to increase their efficiency, researchers realise container cleaning is one area they should be focussing on to achieve their goal. They are continuously on the look-out for ready-to-use, contaminant-free containers. However, there is not one container that suits every application. A container which is 'clean' to one user may not be so to another. 'Clean' is determined by the application, by the results that are expected.

Solutions

It is crucial that container manufacturers and suppliers share the concerns of the researchers and recognise that laboratories need products and services that fully meet their requirements and expectations. It is vital that they are specialists and are capable of examining the application for which the container will be used. The answer may lie in either a ready-to-use, pre-cleaned container or in a custom cleaned container, and depends entirely on which cleaning process best suits a laboratory's particular requirements.

There are a number of standard and custom processes as well as surface modification processes that can be used to ensure that the container supplied is the right one for a specific application and is ready-to-use.

Standard and Custom Processes

This includes low particle cleaning, depyrogenation and chemical cleaning for trace analysis.

- Particulate cleaning is recommended for numerous applications in the pharmaceutical, biotech, medical, semiconductor industries, and anywhere where clean rooms or controlled environments are utilised.
- Depyrogenation is particularly suited for use with injectable or parenteral drugs, lyophilisation, final packaging prior to drug delivery, stability studies and clinical trials.
- Chemical cleaning is based on the user's choice of a combination of several different cleaning methods for removal of trace inorganic, trace organic, volatile organic or total organic residues.

Surface modification processes

This type of process is particularly suitable for use in biotech/ pharmaceutical and analytical applications. It includes silanisation, siliconisation and silane treatment.

- Silananised containers have been treated to neutralise active sites in glassware. The process allows materials to remain stable and prevents them from reacting with the glass surface. It also prevents the components of the glass from leaching into the sample. Silanised containers are particularly suited for use with proteins, assays of blood serum and pharmacological examination and analysis of therapeutic drugs.
- Siliconised products are physically coated with a medical-grade silicone emulsion to prevent sample material from reacting with the glass. They can be used in the same applications as silanised containers.
- Silane treated containers are particularly useful in quantitative analysis or for the storing of materials. The silylating agent ties up the glass surface, thus making it less reactive. Valuable personnel time is saved and waste costs are minimised.

Cutting Edge Cleaning Technology

Other cleaning requirements can be met through custom cleaning services. Below is a brief overview of the kind of processes involved and the applications they serve.

Custom Cleaning Processes

Process	Application
TOC process	Validation of water systems, equipment validations, cleaning validations, and monitoring low levels of organic contaminates in numerous applications
Irradiation	Injectable or parenteral drugs, lyophilisation, final packaging prior to drug delivery, stability studies, clinical trials
Sterile foil-wrap	Injectable or parenteral drugs, stability studies, clinical trials
USP Purified water and WFI rinses	Various cleanroom applications in the pharmaceutical, biotech, medical, and semiconductor industries
Steam sterilisation	Injectable or parenteral drugs, lyophilisation, final packaging prior to drug delivery, stability studies
Nuclease-free	DNA or RNA

Non-Standard Containers

Many laboratories are working with non-standard containers. What are the choices available to them? Should they change the tools they are using and the way in which they carry out their research? The answer is 'no'. The same standard and custom processes, surface modification processes and custom cleaning processes can be applied to non-standard containers. The issues to consider here are whether the service includes the cleaning of closures or other component parts, flexibility (small or large quantities with scale-up planning), full customisation (cleaning, packaging and certification), the state of the cleanroom facilities, traceability, and the range of containers for which the service is offered.

General

Where the use of the right container offers a cost-effective solution to faulty test results and an increase in productivity, there are other areas that will offer you peace of mind and added value to our customers. It is advisable to investigate whether the containers are custody sealed; are they protected from contamination from start to finish? Does the supplier/manufacturer offer full traceability, including long term archival services? And finally, always remember to check that your containers come with a Certificate of Analysis.

The way forward:

- Work with a specialist partner.
- Only use products that meet your requirements.
- Explore the availability of flexible solutions.
- Remember the Certificate of Analysis, custody sealing and full traceability.

AUTHOR DETAILS

Mr Tim Schofield
Director
Sword Scientific Ltd
Pegasus House
Warwick, UK
Email:
t.schofield@sword-scientific.com
Web:
www.sword-scientific.com

Groundbreaking Portable FT-IR Spectrometers

A2 Technologies (USA), introduces the revolutionary Mobility Series of FT-IR spectrometers. Developed for use in the field, these portable, rugged spectrometers are purpose-built to move FT-IR spectroscopy out of the conventional analytical laboratory and closer to the source of the sample. Consisting of three systems, the MLp, the ML and the MLx, the intuitive Mobility series has been designed to survive in rugged environments and be operated with little to no training by the user. This combination of ruggedization and simplicity of use makes it an ideal real-time process monitoring tool for the petrochemical industry, lubrication condition monitoring, food analysis and mining applications.

Featuring an intuitive operating system and easy-to-use sample interface, the rugged and compact design of the A2 Technologies spectrometers provide users with actionable information so that decisions can be made on-the-spot. The Mobility Series FT-IR spectrometers incorporate two new diamond based sampling systems, one utilizing the principle of internal reflection and the other features a completely new type of transmission cell. Between these two diamond-based systems, a broad range of liquids, solids, oils, gels and pastes can be easily analyzed.

A2 Technologies' innovative portable FT-IR spectrometers offer a breakthrough in FT-IR analysis, extending the capabilities of traditional lab-based analyses by delivering accurate and precise information more efficiently. The portability of these analyzers significantly reduces the need to send samples to a remote laboratory, alleviating the problems associated with sample throughput and minimizing bottlenecks. By enabling analytical information to be obtained in real-time, these innovative spectrometers allow for instant results which is highly critical for cost savings, particularly in manufacturing processes.

Reader Reply Card no 106

Improving Holiday Toasts - Using Chemical Analysis Techniques to Ensure Quality of Wine

Most holiday celebrations are not complete without the proverbial toast to the sound of clinking wine glasses. While few revellers consider the time and painstaking processes that go into making the wine they're imbibing, wine makers must be closely attuned to the colour, aroma, taste and overall quality of each sip. The oldest association in the Italian wine industry, the Unione Italiana Vini (Italian Wine Union), includes members from every professional organization involved in the winegrowing supply chain. The Union has developed comprehensive quality standards for the winemaking process and provides a variety services to help ensure high-quality winemaking. As a result it takes all aspects of the wine experience very seriously. It relies not only on experienced wine connoisseurs to ensure the quality of the wine, but also utilizes **Agilent** equipment in an innovative central laboratory system to ensure a high and uniform level of quality, environmental protection and the ongoing integrity of the winemaking tradition.

The central laboratory of the Unione Italiana Vini, located in Verona, Italy, oversees a modern network of six laboratories and four independent laboratories which are all under contract. This system of laboratories provides physical, physico-chemical, and microbiological analysis of the raw materials used in wine making. There are also laboratories focused on related materials, such as natural corks, synthetic stoppers and bottles, a soil and fine analysis laboratory, a laboratory for auxiliary products such as additives, and an innovative new laboratory devoted to chemico-sensory analysis.

Innovations in chemical analysis, gas and liquid chromatography, and mass spectrometry have advanced the study of key components of the wine experience, such colour, taste, and smell, to the point that it has attained the levels of analytical chemistry. As such, Agilent's chemical analysis instrumentation has long been used by the Unione Italiana Vini's operations.

Reader Reply Card no 108

Reliable, Economical Ion Chromatography Supplies

Environmental Express (USA) offers a variety of products for Ion Chromatography including filter vials for Dionex® autosamplers and sample vials with break-caps for Metrohm®-Peak IC systems. Environmental Express is your best choice for single-ion and multi-ion IC standards. Our Cleanup Cartridges for Ion Removal are very popular as well. Our universal 25mm syringe filters come in a variety of membrane types including Nylon, Teflon, Poly-ethe-rsulfone and Polyvinyldifluoride. Syringe filters have a unique design with a greater filtration area for optimal flow rate. For more information, visit our web site home page and click on Ion Chromatography in the Product Links column.

Reader Reply Card no 107

Reader Reply Card no 109