

Spreading the Word

In the last few years, requirements concerning primary packaging for the pharmaceutical market – and especially for the biotechnology market – have changed regarding inertness and cleanliness of container closure systems. To meet global market requirements, West Pharmaceutical Services offers alternative packaging materials and solutions that promote cleanliness. In this issue of *The Source*, we introduce our validated washing process, Westar® RS. We also present a superior plastic material, Resin CZ®, that West and Daikyo Seiko, Ltd., West's Japanese partner, offer for vials and prefillable syringes.

With more than 80 years' experience, West is the source for parenteral packaging components, technical support and analytical laboratory services. West applies its knowledge of pharmaceutical packaging and regulatory-driven laboratory testing to help biopharmaceutical companies avoid the risks in new product development and get to market without undue delay. If you would like to receive previous issues of *The Source*, please go to the online archive at westthesource-eu.com. Call us or send an email and we'll add you to the mailing list.



Westar RS Components help Meet Stringent Regulatory Requirements

Requirements from the industry and the United States Food and Drug Administration (FDA) regarding the preparation of parenteral packaging components have become more stringent in recent years. Westar RS packaging components were developed to provide a high-performance solution for biopharmaceutical manufacturers who are looking to reduce costs related to capital expenditures and validation studies. With Westar RS stoppers and syringe pistons, West performs many of the component preparation steps; the components are delivered in bags that can be introduced directly into sterilizers.

Component Testing

Westar RS components have been tested and certified to meet specified bioburden, bacterial endotoxin, particulate and, if applicable, silicone oil levels.

Bioburden: Testing for bioburden is essential in assessing whether the sterilization process is adequate. An unvalidated level of bioburden on stoppers raises questions about the assurance level of the validation of the stopper sterilization process.

Endotoxin: Maintaining microbiologically clean components after they are washed is critical for preventing contamination during storage, shipping and handling.

Particulate matter: Particulate on stoppers can be transferred to packaged drug products, causing particles in the drug that can lead to end-of-the-line rejects and could cause major problems for complex protein and peptide drugs.

Silicone oil (when applied): Variability in the level of silicone oil on stoppers can result in erratic line performance and line stoppages. Levels that are too high can result in particulate in liquid drug products or cause hazing upon reconstitution of lyophilized drug products.

During the development of the Westar process, West performed Statistical Process Control (SPC) studies to identify that family of variation (load to load, within load, day-to-day, etc.) and designed the process to reduce the variability of the silicone level on processed stoppers.

Process and Specifications

The process validation data demonstrate that the Westar RS process is capable of reducing the endotoxin content by at least 3 logs.

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Westar RS Components (continued from front page)

Before the washing process, all Westar products are handled in a class 100.000 clean room (ISO 8) where they are also loaded into the washer. After washing, the components are unloaded and packed in a class 100 clean room (ISO 5).

Westar RS components meet the following product specifications:

- Bacterial endotoxin levels of $\leq 0,25$ Endotoxin Units (EU)/ mL

- Bioburden level of ≤ 5 Colony Forming Units (CFU) per 100cm² surface area
- Particulate matter content $\leq 3,4$ PCI (Proved Clean Index)
- Specified silicone level when applied

West has site-specific Drug Master Files with the FDA for the Westar process performed at its plants in Le Nouvion (France), Eschweiler (Germany), Jurong (Singapore) and Jersey Shore (U.S.).

Packaging

The standard packaging for Westar stoppers is a sterilizable bag in combination with an outer clipped polyethylene bag. For syringe plungers, the standard packaging is an inner plus an outer polyethylene bag. Customers may request an isolator bag or other packaging combinations to fit their requirements.

Plastic Packaging Solutions for Vials and Prefilled Syringes

One of the important considerations for biopharmaceutical drug packaging is the material composition of the drug vial or syringe. For liquid and lyophilized drug products, the choice is usually between glass and cyclic polyolefin based plastic vials or syringes.

Glass products for pharmaceutical use are generally produced from Type I borosilicate tubing glass, which provides outstanding chemical durability. It is particularly suited to pharmaceutical products that require long-lasting, constant characteristics. These vials and syringes provide hydrolytic resistance in conformance with the current USP and Ph.Eur. Their inert surface minimizes interactions between the drug product and the container system.

Plastic material made from cyclic olefin polymers have glass-like transparency and is ideal for biopharmaceutical packaging systems. Daikyo's cyclic polyolefin polymer, Resin CZ, is the preferred vial and syringe

material for drugs where glass breakage is a concern and silicone interaction is minimized when used with FluroTec® laminated stoppers and syringe pistons. Resin CZ products, manufactured in clean rooms by Daikyo in Japan, are 100 percent vision inspected and hold tight dimensional tolerances and visual attributes.

Resin CZ passes all major compendia including the physicochemical and biological tests of the USP and JP. It also meets physicochemical tests for Ph. Eur. for polyolefins.

Resin CZ provides the following benefits:

- Durable and break-resistant
- Highly transparent
- Excellent low temperature characteristics
- Very low in extractable ions
- Lower adsorption of biopharmaceuticals compared to glass
- Compatible to a wide pH range
- Autoclavable

- Silicone free system using FluroTec pistons

The conical vial design promotes complete drug removal, reducing product waste and disposal concerns. Resin CZ vials are designed for readily available stoppers and seals, which helps biotech companies easily select the right closure system. By selecting Resin CZ syringes with FluroTec® laminated pistons, biotech companies can market their drug product in a packaging system without silicone.

Daikyo Resin CZ vials are available in 13mm, 20mm and 32mm neck sizes and in volumes ranging from 0,5mL to 100mL, in addition to 1 liter bottle for bulk chemicals. Resin CZ prefillable syringes are available from 0.5mL to 150mL.

To discuss the most appropriate container closure system for your drug product, call Claudia Petersen +49-(0) 2403-769-269 or send a mail to claudia.petersen@westpharma.com.

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3689 • 10/06