

Drop-In, Fit-In, & Built-InSM

Sorbent Solutions for Respiratory Drug Delivery Devices

Drop-In, Fit-In, & Built-InSM Sorbent Solutions for Moisture, Oxygen and/or Hydrocarbon Management

Formulation and device technologies for respiratory drug delivery (RDD) are changing rapidly, but physical stability, chemical stability, and accurate dosing remain paramount concerns for pharmaceutical manufacturers and device design engineers.

Manufacturers of HFA aerosol inhalers have the unique challenge of working with a very hygroscopic propellant that not only results in moisture ingress into the dosing chamber, but also into the pressurized primary package. This often results in hydration/crystallization of the drug substance and/or corrosion of sensitive inhaler device components, leading to chemical and physical instability and dosing problems.

Dry Powder Inhaler (DPI) manufacturers often face moisture-induced physical stability problems that can't be resolved via the use of a simple sorbent consisting of silica gel or molecular sieve. Specifically, DPI formulations often require an intelligent moisture management system that balances the common DPI issues of particle agglomeration (too wet) and triboelectrification (too dry) to provide for physical stability, chemical stability, and proper dosing.

Multisorb offers intelligent sorbent solutions designed to manage moisture, oxygen, odors, and/or volatized hydrocarbons to protect RDD drug formulations from degradation and extend shelf life through the supply chain and consumer use. They can be incorporated into drug product packaging and device designs via Multisorb's Drop-In, Fit-In, and/or Built-In solutions.



Drop-In Sorbent Solution

Multisorb's drop-in sorbent solution offers the management of moisture, oxygen, odors, and/or volatized hydrocarbons in secondary packaging for both HFA aerosol and DPI drug/device combination products. A drop-in solution consists of a traditional sorbent in packet or canister form inside a pouch or rigid package.

For example, many manufacturers include a Multisorb StripPax[®] Intelligent Sorbent Packet in the hermetic pouch containing the HFA aerosol inhaler. Another example is the use of StripPax Intelligent Sorbent Packets in similar pouches containing reservoir or pre-measured DPI devices or doses, respectively.



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Built-In Sorbent Solution

Multisorb's built-in integration approach incorporates adsorption properties into the thermoplastic structural components of the device via Multisorb's PolySorb™ Desiccant Thermoplastics, adding multifunctional capabilities to an existing injection molded device part. The approach provides protection for devices specifically engineered for repeat use.

For example, individual components of various RDD devices can be made from PolySorb™ for a moisture management solution that is also invisible to the consumer.

Fit-In Sorbent Solution

An example of Multisorb's fit-in solution is the integration of Multiform CSF® (Coated Solid Form) Sorbents, which are custom manufactured to a particular shape and size to fit into a device, creating an onboard solution. Utilizing compressed intelligent sorbent technology, the Multiform CSF® Sorbent delivers twice the moisture management in the same volume of space as traditional, loose-fill sorbents. This significantly increases the level of protection per unit volume, enhancing the physical and/or chemical stability profile of the formulations inside the device system.

For example, intelligent Multiform CSF® Sorbents are included in many reservoir and integrated pre-measured dose DPI devices for the management of not only the drug/device product's primary stability profile, but also its secondary or consumer-use profile.

Very often, drop-in and fit-in sorbent solutions are used in concert for sensitive DPI formulations for the management of moisture, oxygen, and/or volatilized hydrocarbons

Managing moisture, oxygen, odors, and/or volatilized hydrocarbons are an important part of any RDD device and choosing the right form and integration approach is crucial. The flexibility offered by Multisorb's Drop-In, Fit-In, and Built-In solutions as supported by our SimulSorbSM and SimulOxSM pseudo-empirical modeling services provide customized RDD stability solutions to speed your drug product to market.



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