

# Bring Precision and Predictability to your Active Packaging Processes

## Calculations through Operations<sup>®</sup>

Calculations through Operations<sup>®</sup> is a QbD-based program that takes a holistic approach to determining sorbent requirements by examining the entire development process from design through dispensing. This ensures the decisions made in the upstream developmental stages do not negatively impact processes downstream in the product packaging stages. For example, knowing package dimensions upfront ensures the sorbent type, mass, and fit is optimized by container size and the healthcare product's stability needs.

Calculations through Operations<sup>®</sup> cohesively joins Multisorb Technologies' pseudo-empirical modeling programs with customized intelligent sorbents and industry standard dispensing equipment to deliver a tailor-made, turn-key sorbent solution.

Calculations through Operations<sup>®</sup> enables you to:

- Achieve true Quality by Design (QbD)
- Reduce chemical and physical degradation via the use of sorbents (standard and intelligent desiccants, oxygen absorbers, volatile absorbers)
- Integrate easily with current packaging lines
- Decrease time to market: 6 to 12 months saved on average
- Improve product stability profile

Calculations through Operations<sup>®</sup> provides for a simplified solution that offers design, development, and dispensing of optimized sorbent solutions, resulting in saved time, saved money, and a faster time to market.

**It is critical to incorporate the right sorbent solution early on in the product development process**



## Calculations through Operations<sup>®</sup>

**Save Time, Money, and Get to Market Faster**



[www.multisorb.com](http://www.multisorb.com)

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**Calculations through Operations<sup>®</sup>** provides a simplified, one-stop solution that enhances product stability and extended product shelf life.

## Calculations

Multisorb Technologies uses its SimulSorb™ and SimulOx™ proprietary pseudo-empirical modeling programs to design an optimized sorbent solution for moisture, oxygen, and volatiles management based on parameters specific to your product such as:

- healthcare product degradation profile;
- packaging materials;
- functionality of required sorbent type; and
- required stability profile or shelf life of healthcare product.

SimulSorb™ predicts the equilibrium relative humidity (ERH) in the package or device headspace and healthcare product free moisture level.

SimulOx™ uses a similar approach for the management of oxygen in the package headspace.

SimulSorb™ and SimulOx™ allow Multisorb's scientists to predict the stability outcome of your drug product or medical device using various types of packaging materials and sorbents. These validated models produce an accurate representation of the internal environment of the package throughout the specified shelf life and assist Multisorb's product development scientists in formulating the precise sorbent to optimize your healthcare product's stability profile.

### Selection of Optimized Sorbents

An optimized sorbent solution is determined by the SimulSorb™ or SimulOx™ simulations. And while a traditional desiccant may be needed for applications requiring aggressive moisture removal, more complex healthcare product formulations often require a customized intelligent sorbent formulation to be developed.



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Choosing an optimized sorbent means determining the proper sorbent type and capacity needed to achieve the targeted shelf life of a given drug product or drug/device combination product.

Optimized sorbent solutions can:

- manage moisture by maintaining an optimal ERH and in the packaging headspace and water activity ( $A_w$ ) in the healthcare product;
- reduce or eliminate oxidative degradation in oxygen-sensitive products; and/or
- adsorb hydrocarbons, which can result in undesirable odors.

All sorbent formulations are available in three formats to meet your needs.



For complex and specialized needs, IntelliSorb™ sorbents provide steady-state or multi-functional control of moisture, oxygen, and volatilized organic compounds. IntelliSorb™ is available in Drop-In, Fit-In, and Built-In formats.



StripPax<sup>®</sup> Sorbent Packs



StabilOx<sup>®</sup> Oxygen Absorbing Canisters



Multiform CSF<sup>®</sup> Coated Solid Form Sorbent



PolySorb<sup>®</sup> Sorbent Components

## Operations

Calculations through Operations<sup>®</sup> offers seamless integration of sorbent placement in packaging presentations by combining the benefits of Multisorb's sorbent devices with Multisorb's Active-Pak Automation (APA) series of dispensers.

The APA series of dispensers precisely inserts traditional sorbent or IntelliSorb™ packets or canisters into your product packaging. A variety of systems are available depending on your sorbent needs.

- StripPax<sup>®</sup> System = (StripPax<sup>®</sup> Packets + StripPax<sup>®</sup> Dispensers)
- StabilOx<sup>®</sup> System = (StabilOx<sup>®</sup> Packets + StabilOx<sup>®</sup> Dispensers)
- FreshPax<sup>®</sup> System = (FreshPax<sup>®</sup> Packets + FreshPax<sup>®</sup> Dispensers)
- ...and more.

Multisorb's APA series of sorbent dispensers are designed for easy integration into a variety of commercial packaging lines including bottling, HFFS/VFFS, pouching machinery, horizontal flow wrapping, and forming (thermoforming & cold forming) machinery.

Features include:

- Multiple speed options (60 to 325 per minute depending on model)
- Proof of insertion
- Precision cutting of StripPax<sup>®</sup>, StabilOx<sup>®</sup>, FreshPax<sup>®</sup> Packets
- FIFO controls
- Full packet count reconciliation
- User friendly interface
- Quick change guides for tool-less product changeover
- Mobility to support multiple product lines
- FDA-compliant materials in contact with canister/packet/SF
- EC compliant designs with CSA registration available
- Optional dry air or inert gas purge for extended exposure time during packaging operations
- Optional splicing station cabinet allows spools to be linked for continuous operation



APA-2000 Packet Dispenser



APA-9000 Canister Dispenser



APA-500 Packet Dispenser