CLARIANT

Healthcare Packaging
PROTECTION AGAINST MOISTURE & OXYGEN

what is precious to you?

By providing protection, shelf life extension and market differentiation, Clariant's technologies help maintain your product's value and brand equity.

Healthcare Packaging

Satisfying the demands inherent in healthcare applications requires a strong commitment to quality, good manufacturing practices and innovation.

Clariant Healthcare Packaging specializes in active materials, functional design and innovative plastic processing. With this expertise, we create and manufacture controlled atmosphere packaging, effectively combining sorbents with innovative features.

Our packaging technologies protect pharmaceuticals, nutraceuticals and diagnostics from moisture and oxygen, the two major pathways to degradation.

As part of Clariant, we are able to leverage the group's collective competencies and resources to customize solutions that meet specific customer needs.

GLOBAL FOOTPRINT

Clariant Healthcare Packaging's worldwide network provides supply contingency and global project management.

Full System Integration **FUNCTIONAL PACKAGING SOLUTIONS**

When a healthcare product requires safety, stability and branding, Clariant can design a packaging solution to meet market and regulatory requirements by creatively combining active components with advanced functionalities.

PACKAGE FEATURES

1 Integrated desiccant closure
2 Squeeze-and-turn for child resistance
3 Tamper evident ring
4 Bi-injected ergonomic grip
5 Printing, laser marking and anti-counterfeiting measures
6 Multilayer injection for oxygen, moisture and UV barriers
7 Oxygen scavenger
8 Logo embossing
9 Odor adsorption or aroma enhancer
10 Flow limiter for sanitary dispensing
11 RF canister label for electronic article surveillance
12 EQ-Can® for humidity regulation
13 Advanced Desiccant Polymer insert for humidity adsorption (ADP®)

THINKING AS A SYSTEM

Clariant customers can protect their drugs by considering all components of a system:

- The *container* as a passive barrier to protect against moisture, oxygen, UV and breakage
- The *active agents* such as desiccants and oxygen scavengers
- The *drug properties and conditions of use*, such as drug packaging, storage conditions and repeated openings during product use

Active Component Platforms
CUSTOMIZABLE SORBENT SYSTEMS

Clariant manufactures a full range of sorbent systems – desiccants, oxygen scavengers, odor adsorbers – to maintain optimal protection for healthcare products. Specifically calibrated package conditions can be achieved by customizing the active agents within standard platforms.

PACKAGE FEATURES

1 Oxygen-scavenging agents
2 Humidity-adsorbing agents
3 Humidity control agents (EQ-PAK®)
4 Aroma-releasing agents
5 Odor-adsorbing agents

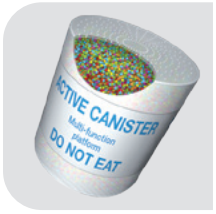
SORBENTS

- Silica gel
- Bentonite
- Molecular sieve
- Activated carbon
- Oxygen scavenger
- Other sorbents

SHELF LIFE SIMULATION

Clariant can optimize the development process by using predictive simulation and real-time testing tools. The program considers all relevant parameters of the protection system including permeation, packaging materials and anticipated conditions of use.

ACTIVE COMPONENTS



Customized Sorbents
- Customizable sorbent mixes – desiccation with oxygen scavenging
- Equilibrium sorbents for precise humidity control

Canisters & Capsules
- Rigid desiccants and oxygen absorbers designed for high-speed automatic insertion
- Multiple standard sizes: ¼ g to 4 g

Packets
- Individually cut or Continu-Strip® hole-punch packets for accurate insertion
- Multiple standard sizes: ¼ g to 10 g

Desiccant Bags
- Moisture protection for bulk pharmaceuticals and other healthcare products
- Multiple standard sizes

Active & Barrier Polymer Systems **MULTILAYER PROTECTIVE PACKAGING**

PACKAGE FEATURES

1 Black layer for UV barrier
2 Desiccant polymer layer for humidity adsorption
3 Moisture and oxygen EVOH barrier layer
4 Advanced Desiccant Polymer (ADP®) insert for protection against moisture

A package is more than just a container. Active sorbent materials or high-barrier copolymers can be integrated within a full container-closure system to thoroughly encapsulate and preserve healthcare products.

EXPERTISE

- Polymers and active agents compounding
- Multilayer extrusion blow molding
- Bi-injection molding
- Assembly
- Customer line integration

QUALITY BY DESIGN

Clariant's quality-by-design and six sigma approach keeps the customer at the center of the decision-making process, ensuring 100% adherence to product functions, attributes, quality and design elements.

ACTIVE & BARRIER SYSTEMS

Desiccant Stoppers & Printed Tubes

- Ideal for effervescents, lozenges and tablets
- Stoppers available with desiccant, tamper evidence, spiral compensator, hinge cap or hot stamping.

Integrated Desiccant Closure (IDC®)

- All relevant functionalities integrated into one container-closure system
- Built-in desiccant, tamper evidence, child resistance and ergonomics

Oxy-Guard® Barrier Bottles

- 6-layer extrusion blow-molded (EBM) bottle providing high barrier to oxygen and moisture
- Barrier based on Ethylene Vinyl Alcohol (EVOH) copolymer

Advanced Desiccant Polymer (ADP®)

- Desiccant embedded directly into plastic offers limitless, dust-free configurations
- Conducive to multiple polymers and molding processes

Tubairless®

- Airless system specifically designed for medicated creams, ointments, gels, and pastes
- Consistent dispensing, no air-intake or product flow back, maintains its original shape

CLARIANT INTERNATIONAL LTD
HEALTHCARE PACKAGING
— BL MEDICAL SPECIALTIES

Europe
Phone: +33 141 76 2000
healthpack.eu@clariant.com

Americas
Phone: +1 909 825 1793
healthpack@clariant.com

Australia
Phone: +61 247 321 421
healthpack.au@clariant.com

Asia
Phone: +86 (0) 21 6218 9556
healthpack.as@clariant.com

India
Phone: +91 22 2207 5133
healthpack.in@clariant.com

WWW.CLARIANT.COM/HEALTHPACK

This information corresponds to the present state of our knowledge and is intended as a general description of our products and their possible applications. Clariant makes no warranties, express or implied, as to the information's accuracy, adequacy, sufficiency or freedom from defect and assumes no liability in connection with any use of this information. Any user of this product is responsible for determining the suitability of Clariant's products for its particular application. * Nothing included in this information waives any of Clariant's General Terms and Conditions of Sale, which control unless it agrees otherwise in writing. Any existing intellectual/industrial property rights must be observed. Due to possible changes in our products and applicable national and international regulations and laws, the status of our products could change. Material Safety Data Sheets providing safety precautions, that should be observed when handling or storing Clariant products, are available upon request and are provided in compliance with applicable law. You should obtain and review the applicable Material Safety Data Sheet information before handling any of these products. For additional information, please contact Clariant.® Trademark of Clariant registered in numerous countries.

* For sales to customers located within the United States and Canada the following applies in addition: NO EXPRESS OR IMPLIED WARRANTY IS MADE OF THE MERCHANTABILITY, SUITABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE OF ANY PRODUCT OR SERVICE.

© 2014 Clariant International AG, Rothausstrasse 61, 4132 Muttenz, Schweiz.
® Product and service marks protected by Clariant.
Tubairless® registered in many countries and owned by Pumpart.