

The Benefits of AKVANO® Sprayable Formulation In Bag-On-Valve Technology



In 2015, Aurena Laboratories AB announced a partnership with Lipidor AB to combine Lipidor's proprietary AKVANO® topical formulation technology with bag-on-valve packaging technology. Together, these two technologies offer new innovative product opportunities for customers across the dermatology, wound, burn and skin care industries.

A powerful combination of topical medication and product delivery

Bag-on-valve is already known for its many brand, manufacturer, consumer and environmental benefits:

- Airless packaging without exposure to light and oxygen
- Conveniently works at any angle, allowing comfortable application by the user
- Continuous spray and no rubbing required
- Near 100% product emptying
- Recyclable

However, the bag-on-valve experience is only as good as the product that goes in the can. By combining the superior formulation of Lipidor's AKVANO topical delivery, companies are able to stand out from their competitors with a truly innovative and effective product.

What is AKVANO ?

AKVANO is a novel proprietary lipid-based technology for topical medication and skin care, disinfection and wound care.

How does AKVANO work ?

The direct deposition of lipids makes the sprayable AKVANO principle fundamentally different from traditional formats of ointments and creams. AKVANO consists of lipid components which are dissolved in a volatile, water-free solvent mixture. When this formulation is applied onto the skin, the solvent evaporates and a lipid layer is formed in an immediate interaction with the skin surface, different from other dosage forms.

What are the benefits of AKVANO ?

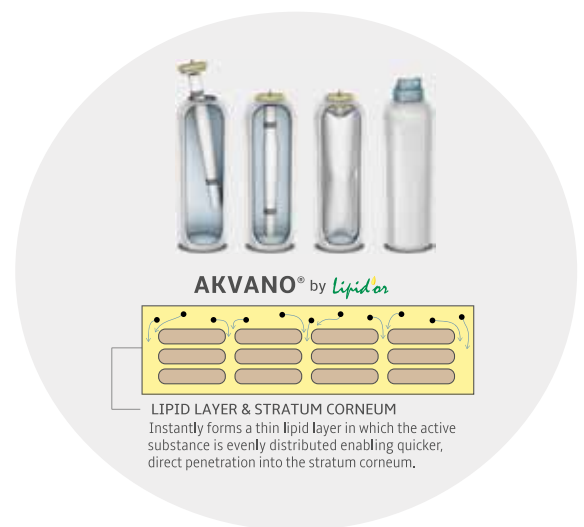
- Effective delivery of active ingredients: Direct deposition of lipids together with active ingredient leads to highly efficient interaction with the skin barrier
- Novel approach: Lipids enables skin barrier reinforcement and many other possibilities for optimizing topical performance
- Improved patient experience: Non-touch, easy to use, quick drying and non-greasy, as well as having a pleasant feeling on the skin
- Favorable product development conditions: Low cost of goods + fast and cost-efficient development of both originator and generic products

How does the end-user benefit from AKVANO ?

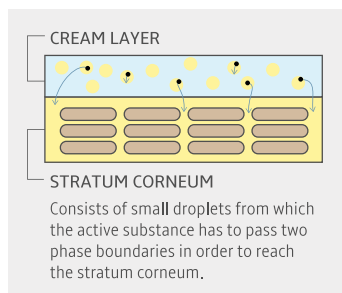
For end-users, the benefit is in the cosmetic qualities and improved convenience. It is for these reasons that AKVANO formulations are likely to be preferred by patients versus traditional ointments and creams.

- Quick and easy to use
- Dries very quickly
- Has a pleasant feeling on the skin
- Non-greasy and non-sticky
- Can be worn comfortably under clothes without staining them
- Invisible once dry
- Allows non-touch application for sensitive skin

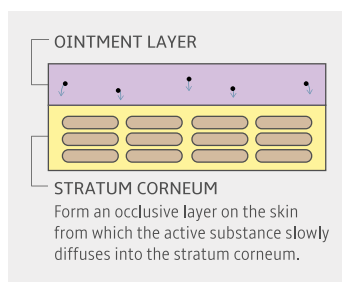
When combined with BOV technology, end-users receive an even greater level of convenience, ease of use and application.



CREAMS



OINTMENTS



WHAT'S THE DIFFERENCE BETWEEN AKVANO AND TRADITIONAL CREAMS AND OINTMENTS?

The stratum corneum consists of a number of layers of dead flattened keratinocytes (corneocytes) in a matrix of lipids. With AKVANO, a lipid layer without phase boundaries to the lipids in stratum corneum is immediately formed after evaporation, and the active substance has a faster track into the skin. When traditional creams and ointments are applied, there is at least one phase boundary between the medicament and the lipid phase of the skin, which the active substance needs to pass in order to enter the stratum corneum.

LEGEND

- CORNEOCYTES
- OINTMENT
- LIPID
- WATER
- ACTIVE SUBSTANCE
- ↓ TRANSPORT OF THE ACTIVE SUBSTANCE INTO THE SKIN

Product opportunities available across many product classifications

AKVANO and bag-on-valve in combination will be available to companies wishing to develop, innovate or improve new and existing products. These products can be regulated in the following categories: biocides, cosmetics, medical devices and pharmaceuticals. Licensing opportunities are available in the following areas, with production beginning at Aurena during 2016:

1. Products with APIs classified as Drugs: *For topical generic APIs (active pharmaceutical ingredient), the combination of AKVANO and BOV offers new benefits as sprayable products compared with other drug delivery systems. To date, 73 active substances, of which 45 are APIs, have been tested successfully in AKVANO.*

Examples of APIs used in prototype pharmaceutical formulations are:

- Antibacterial agents (e.g. fusidin)
- Antifungal agents (e.g. terbinafine)
- Corticosteroids (e.g. betamethasone, hydrocortisone and mometasone)
- NSAIDs (e.g. diclofenac)
- Analgesics (e.g. capsaicin)
- Local anesthetics (e.g. lidocaine)
- Antipsoriatic agents (e.g. calcipotriol)
- Anti-alopecia agents (e.g. minoxidil)
- Anti-acne agents (e.g. adapalene)
- Wound healing agents (e.g. dexpanthenol)
- Steroid hormones (e.g. estradiol)

AKVANO is also an attractive alternative for formulation of NCEs (New Chemical Entity).

2. Products that are Non-Drugs: *Products classified as medical devices, cosmetics or biocides. Aurena and Lipidor are currently working on the development of the following products:*

- AKVANO Foot Spray: Anti-bacterial product for diabetic foot treatment. Ingredients include urea, lactic acid and thyme in combination with the AKVANO base.
- AKVANO Sensitive Skin Spray: A skin barrier restoring/reinforcing spray with effective healing properties.
- AKVANO Emollient Spray: A protective skin moisturizing spray with superior skin feel.
- AKVANO Sesame Oil Nasal Spray 60%. Moisturizing and lubricating oil with superior sprayable properties.
- AKVANO Skin Disinfection Spray: Superior product for sanitizing hands and skin.

Companies looking to innovate a new or existing product with the AKVANO formulation technology are encouraged to contact Aurena Laboratories to discuss the possibilities.

contact@aurenalabs.com

www.aurenalabs.com

**Are you interested in innovating
a new or existing product with the
AKVANO formulation technology?**

Please contact Aurena Laboratories
to discuss the possibilities.

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