Stalosan®
Hygiene Solutions

# Stalosan® hygiene powder products

VILOFOSS®

# Stalosan - a standard for livestock biosecurity

**Stalosan F is well-known worldwide for its high efficacy profile, proven through several independent laboratory studies and farm trials. Therefore, Stalosan F has become a product of choice when farmers are faced with uncontrollable infection levels in resting areas and subsequently poor animal performance.**

The technology of Stalosan F is based on high-priced quality ingredients and approved active biocides. We also offer Stalosan Basic and Stalosan Dry in order to supply farmers with low-cost drying agents. Stalosan Basic and Stalosan Dry provide extra value compared to limestone-based products, and they follow the basic chemistry of Stalosan F in terms of absorbing moisture, lowering the pH-value and breaking down harmful waste products. The product line also includes "Stalosan Green" which can be used in organic livestock production.

## LOW PH-VALUE IN RESTING AREAS IS CRUCIAL FOR THE ANIMAL DEFENCE SYSTEM AGAINST INFECTION

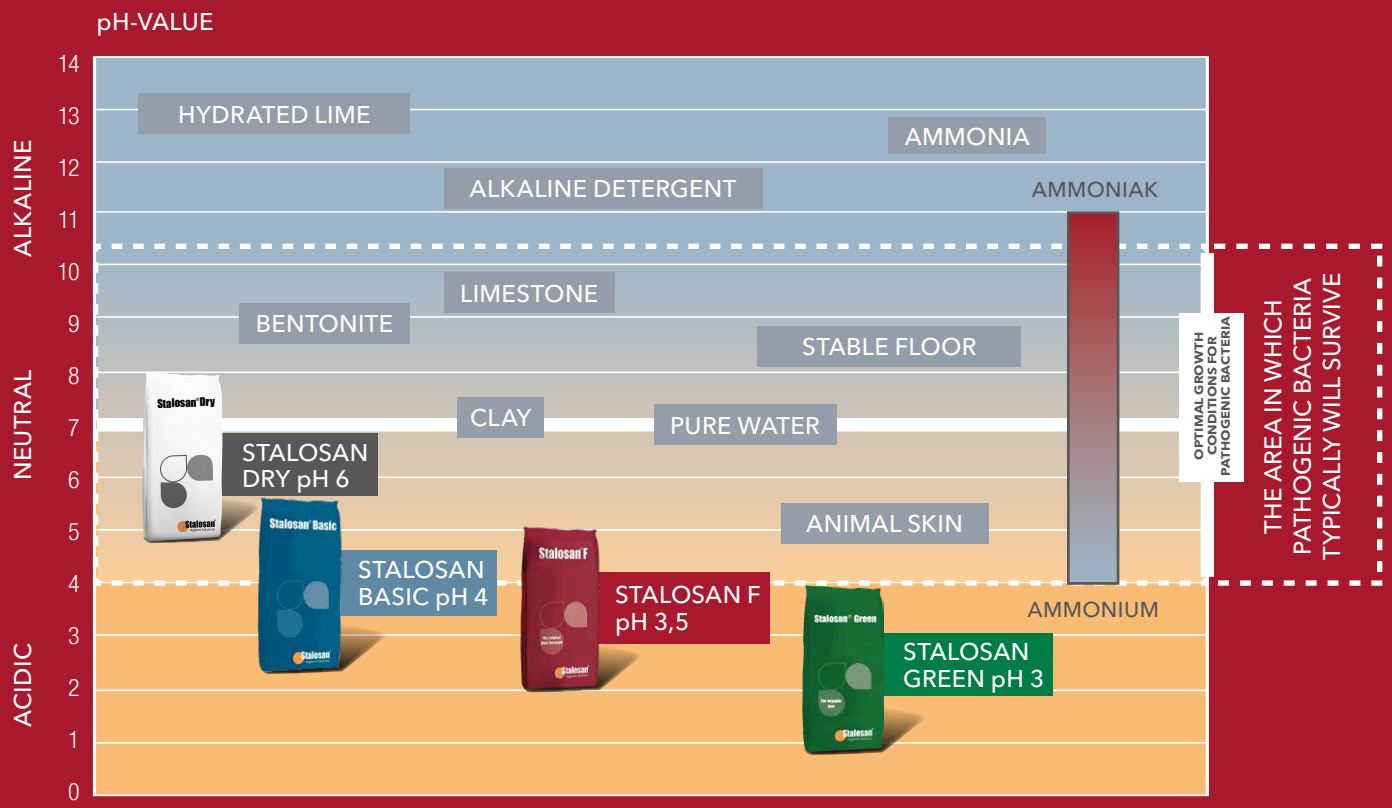
In general, pathogenic bacteria perform poorly in acidic environments. The animal's protection mechanism is to excrete a sticky acidic substance (sebum) that covers the skin, leading to an inhibition of harmful bacteria. Therefore it is regarded an important first line defence against disease causing bacteria.


Stalosan® F
The original from Denmark
Stalosan
Hygiene Solutions
Stalosan® Dry
Stalosan® Basi
Stalosan® Green
For organic use
Stalosan
Hygiene Solutions

# The low pH-approach: Effective against pathogens, but gentle to the skin

**FIGURE 1:**

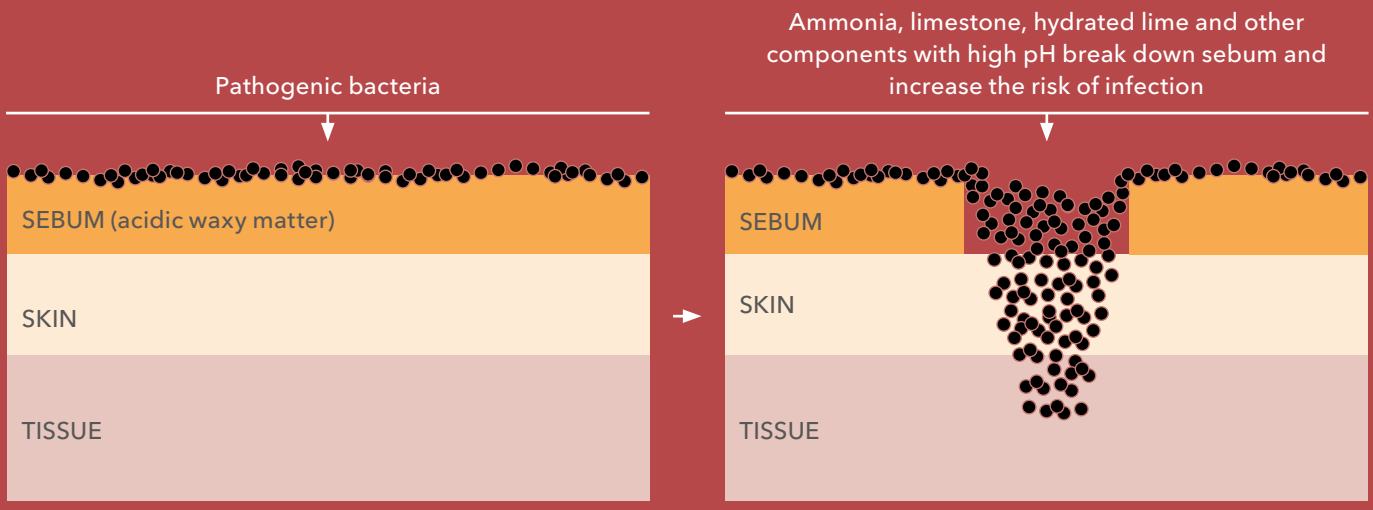
GRAPHIC SCHEME SHOWING THE pH-VALUES OF THE STALOSAN PRODUCTS, LIMESTONE AND OTHER COMMON COMPONENTS IN ANIMAL BUILDINGS




*Ammonia from slurry builds up in the animal environment and generates alkaline conditions with elevated pH-values. This compromises animal skin and mucosal tissue, leading to an increased risk of infection and diseases. Stalosan neutralises ammonia and adjusts the pH-value down to the natural conditions on skin at 4,5-5,5. At this pH level, skin has a high resistance towards infections.*

**FIGURE 2:**

## EFFECT OF ALKALINE PRODUCTS ON THE SKIN




*Sebum consists of wax, fatty acids and beneficial non-pathogenic bacteria. Sebum keeps skin moist and flexible, and possesses antimicrobial activity through acidity, enzyme activity and symbiosis with beneficial bacteria.*

*Ammonia, limestone, hydrated lime and other alkaline products break down sebum on the skin and provokes infection by pathogenic bacteria.*

Ammonia from animal waste products has a pH-value of 13. This creates an alkaline animal environment that breaks down sebum and skin, compromising the animals' defence system and increasing the risk of infection (See figure 2).

Typical powder hygiene agents for resting areas are alkaline with a pH-value between 9 and 13 due to the high content of limestone or hydrated lime (See figure 3). This will compromise the skin defence system even more and is not advisable to use in animal housing.

It is crucial to counteract the high pH-value in animal facilities by using a powder bedding product with a low pH-value.

All Stalosan products are unique in composition by having a high concentration of acidic minerals with low pH-values (See figure 3). The mineral acids prevent the breakdown of skin and protect the animals.

# STALOSAN F
## – THE MULTIFUNCTIONAL BIOCIDE

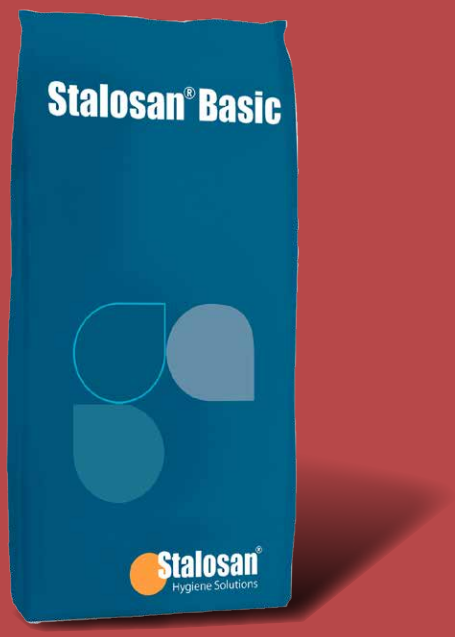
- Stalosan F is a multifunctional biocide that provides ongoing protection against pathogens and harmful waste products during the full animal production cycle.
- Lowers the infection level and controls the negative impact from harmful waste products and elevated pH-values in the barn environment.
- 95% active ingredients, that eliminates pathogens (bacteria, viruses, fungi and parasites).
- Inhibits bacterial enzymes.
- Neutralises harmful waste products such as ammonia and hydrogen sulphide.
- Regains a natural low pH-value in the animal environment and therefore strengthens the animal resistance towards infections.


# STALOSAN DRY
## – MEDIUM AMMONIA AND MOISTURE CONTROL, HIGH ANIMAL COMFORT

- Stalosan Dry is a powerful drying agent.
- The mild acidic profile provides a powerful break down of ammonia
- Stalosan Dry supports animal resistance and welfare.
- Stalosan Dry has a soft structure that gives a high animal comfort in resting areas.
- Can be combined with Stalosan F for increased antimicrobial control.

# STALOSAN BASIC
## – LOW pH-VALUE, HIGH AMMONIA AND MOISTURE CONTROL

- Stalosan Basic is an effective hygiene agent. The combination of low pH-value and strong desiccating properties gives Stalosan Basic a unique efficacy profile.
- The mineral acids in Stalosan Basic prevent the breakdown of sebum and skin and thereby protect the animals.
- Stalosan Basic breaks down harmful waste products, like ammonia, and lowers the PH value in the animals' resting area.




# STALOSAN GREEN
## – FOR ORGANIC USE

- Stalosan Green is a mixture of special active ingredients that imitate the well-documented effect of Stalosan F
- Stalosan Green is an alternative and unique way to improve the health status in animal production
- Lowers ammonia and hydrogen sulphide emissions
- Improves quality and prolongs the durability of bedding
- Regular addition of Stalosan Green stabilises the microbial flora and chemical balance of the litter

**FIGURE 3:**

THE OVERALL GOAL FOR THE USE OF A HYGIENE POWDER PRODUCT IN ANIMAL RESTING AREAS IS THE CONTROL OF HARMFUL WASTE PRODUCTS AND DISEASE CAUSING MICROORGANISMS

**TABLE 1:**

## EFFECTS OF STALOSAN HYGIENE POWDER PRODUCTS

| EFFECTS | STALOSAN DRY | STALOSAN BASIC | STALOSAN F |
|---|---|---|---|
| Biocidal effect | - | - | ++++ |
| Bacterial enzyme inhibition | - | - | ++++ |
| Ammonia neutralisation | ++ | +++ | ++++ |
| Hydrogen sulphide neutralisation | ++ | ++ | ++++ |
| pH-value | 6 | 4,5 | 3,5 |
| Drying | ++++ | ++++ | ++++ |
| Application dose | 100 g/m² | 50-100 g/m² | 50 g/m² |
| Application rate weekly* | 2 | 1 | 1 |

*Weekly application and dose can be increased in case of elevated moisture level and pathogenic load.

# The antimicrobial activity of Stalosan F and various competitive products in moist conditions using Stapylococcus aureus

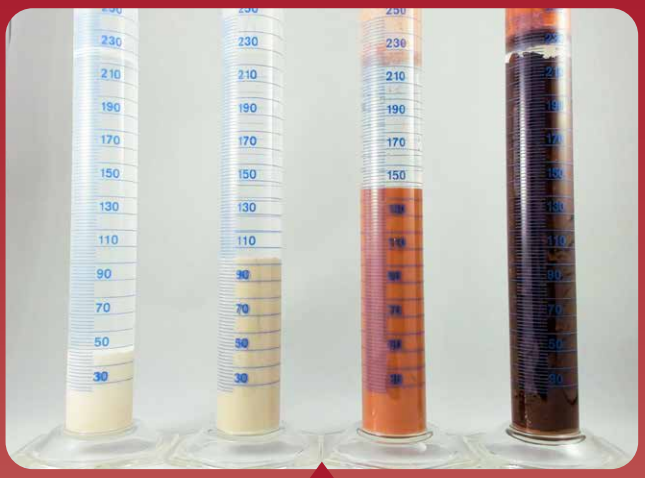
Stalosan F was found to kill 99.45% and inhibit 99.99% of S. aureus within 24.0 hours at ambient temperature. Stalosan-F has shown full antimicrobial activity, in contrast to Staldren, Barn Fresh, Mistral and Stable Boy, that showed no antimicrobial activity.

**TABLE 2:**

(TEST 2) THE AVERAGE PERCENT (%) KILL AND INHIBITION OF *S. AUREUS* AFTER EXPOSURE TO STALOSAN F AND VARIOUS COMPETITIVE PRODUCTS ON 2X2CM PAPER SQUARE CARRIERS AS A FUNCTION OF TIME

| EXPOSURE TIME | PRODUCT NAME | AVG. PERCENT (%) KILL | AVG. PERCENT (%) INHIBITION |
|---|---|---|---|
| 24.0 HRS. | STALOSAN F | 99.45% | 99.9996% |
| | STALDREN | 0% | 88.42% |
| | BARN FRESH | 0% | 95.73% |
| | MISTRAL | 0% | 91.52% |
| | STABLE BOY | 0% | 56.90% |

## AMMONIA IN THE BARN ENVIRONMENT POTENTIATES THE WATER BINDING CAPACITY OF THE STALOSAN PRODUCT



WATER BINDING CAPACITY **WITH** AMMONIA

50 g of product and 200 ml water are added to four test glasses and left for 30 min to precepitate. From left to right, are added lime stone, Stalosan Dry, Stalosan Basic and Stalosan F.

WATER BINDING CAPACITY **WITHOUT** AMMONIA

After precipitation 5 ml of 25% ammonia solution is added. The glasses are shaken and left for precipitation. Stalosan F, that has the highest acidity reacts powerfully with ammonia and water to form a sediment, named ammonium sulphate.

**Vilofoss** is one of the world's most productive, competitive, resource efficient and sustainable agricultural productions. Our knowledge and experience is obtained through work with nutrition for all animal groups in animal production for more than 80 years.

Vilofoss create value-adding solutions for the globally competitive farmer through customized farm mixes for the animal production. In addition to our vitamin- and mineral compounds we have a wide range of supplementary products, e.g. milk replacers for cows and pigs, veterinary products, welfare products, products for disinfection and other unique trouble shooters.

In Vilofoss we focus on being trustworthy, value-creating and ambitious.

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