





# Prebona OdorControl Sustainable and long-lasting odor elimination

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## Prebona CompoTech Technology – General Introduction

Prebona CompoTech is a new and patented technology relying on 3 main components

- Amorphous Silica
- Coupling Agent
- Active Ingredient

Thanks to its versatility and via the selection of the right active ingredient, the Prebona CompoTech Technology makes it possible to design solutions with tailored functionality.

### Why Silica?

Silica, when present in water-based colloidal form, is able to build-up a three-dimensional structure on the surfaces it has been applied on.

Thanks to this form and behavior, with 1g of colloidal silica one generates a surface area of 500m<sup>2</sup>.

When active atoms are finally anchored via a coupling agent on the surface of the  $SiO_2$  particles, one obtains a highly active three-dimensional surface that allows tailoring long-lasting application properties thanks to a "catch&release" mechanism.



Prebona products are stable, water-based, colloidal dispersions of functionalised nano-silica particles

### A sustainable manufacturing process

Prebona products are manufactured in Simrishamn, a locality of the south Sweden province Skåne län, at the Baltic Sea.

The Prebona CompoTech Technology only exploits naturally occuring raw materials. During the production, no energy such as pressure or heat is required, which further enhances the sustainable attributes of this technology.

Last but not least, all raw materials are 100% used in the manufacturing process so that no waste water or any other kind of waste is generated.

## Prebona OdorControl – Technology Introduction

### How does Prebona OdorControl work?

Prebona OdorControl is a broadly effective odor eliminator that catalytically decomposes malodors thanks to the activated atoms. Odors comprising nitrogen or sulfur can be almost completely eliminated. Odors such as sweat, animals, urine, smoke and feces can be reduced or even completely eliminated within 10 minutes.

The following diagramme illustrates the odor elimination process - Catch & Relase mechanism



**Step 4:** Prebona OdorControl goes back to step 2 and eliminates further odor molecules

Prebona OdorControl can be applied on surfaces by spraying. Once applied, water evaporates and the silica agglomerates to form a three-dimensional structure. Objects such as textile, wood, metal, stone or mortar can as a result easily be treated with an odor-eliminating layer.

#### There are no limits to the possible applications.

Prebona OdorControl can, for example, also be applied on pads which are in turn placed into refrigerators, home furnishings, wardrobes, shoes and more.

#### How does Prebona OdorControl differentiate from other odor elimination technologies?

The Prebona CompoTech Technology not only differentiates from the currently known technologies by the mechanism of odor elimination but also especially by the consequent long-lasting effect.

The long-lasting mode of action is made possible by the catch & release mechanism. In the case of OdorControl, the odor molecules are "captured" on the activated surface and catalytically decomposed by the activated atoms. The inactivated odor molecules are released from the surface and the active atoms are able to start this process again.

The following table shows the advantages of Prebona OdorControl compared to the currently known methods for odor elimination:

Odor management technology	Odor Reduction	Clean label	Long-lasting activity	Reduces smoke odors
Prebona OdorControl	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
Absorption (Zinc ricinoleate, cyclodextrin)	✓	×	×	✓
Activated carbon	$\checkmark$	$\checkmark$	×	$\checkmark$
Ozon	$\checkmark$	×	×	✓
Enzyme	$\checkmark$	$\checkmark$	×	×
Fragrance	×	×	×	×

## Prebona OdorControl product range

Product name	Appearance	Dry content	Viscosity	рН	Comments
Prebona OdorControl T	Clear slightly blue liquid	5 %	<50 mPa.s	6.5-8.5	Ready-to-use version
Prebona OdorControl TC	Clear slightly blue liquid	5 %	<50 mPa.s	6.5-8.5	Double concentrate version based on active atom. Particularly suitable diluted for use in spray bottles and in applications where the 3D silica layer has to be minimized.

## Prebona OdorControl T – Application results

The effectiveness of Prebona OdorControl T has been tested intensively on textiles and fabrics.

According to ISO17299 (Textiles - determination of deodorant property) Prebona OdorControl T eliminates up to 99% of odors:

# Effect of Prebona OdorControl T against sweat odor (isovaleric acid)

# Effect of Prebona OdorControl T against urine odor (ammonia)

Odor reduction = 99 % according to ISO17299



#### Odor reduction = 98 % according to ISO17299



# Effect of Prebona OdorControl T against sewer smell (hydrogen sulfide)

Odor reduction = 68 % according to ISO17299

# 100 [%] 100 50 0 Odor without Prebona Odor Control T Odor Control T

# Effect of Prebona OdorControl T against smoke (guaiacol)

Odor reduction = 42 % according to internal test method



Below left graphic shows the effect of Prebona OdorControl T, applied on a PES pad, against acetic acid. In this example the effectiveness has been determined by means of gas chromatography. Within 10 minutes the acetic acid odor has been completely eliminated.

# Effect of Prebona OdorControl T against acetic acid over time

4 5 6

Time (minutes)

9

With Prebona

OdorControlT

10

7 8

100%

80%

60%

40%

20%

0%

0

2 3

Without Prebona

OdorControlT

1

Amount of smell [%]

## Odor reduction after treating a fabric with Prebona OdorControl T





The long-lasting performance of this technology has particularly been demonstrated via numerous evaluations on activated pads and on cloths.

Gas chromatography evaluations did prove the long-lasting odour reduction effectiveness of treated fabrics even after 20 wash cycles (right graphic above).

# Prebona OdorControlT – Usage guidelines



## Prebona OdorControl T is effective against:



Prebona OdorControl T can be used preventively or as a trouble shooter.

## Prebona OdorControl T is recommended on following surfaces / in following applications:

**Textiles** woven / nonwoven (sports shirts, pants, socks, shirts, gloves, helmets, carpets, curtains, shoe insoles, textile pads, incontinence pads & mats, dog blankets, car interiors (floor mats, headliners), caravans)

Foam (mattresses, insoles)

Stone (old walls, fire- or odor remediation)

Tiles (next to urinals, public toilets)

Wallpaper

Cat litter

Plastic (waste bins & bags, recyclates)

#### Wall paints

PES filters (room filters, vacuum cleaners)

The catch & release mechanism allows a longer time period (up to several weeks) before renewed application. The long-lasting effectiveness depends on the amount of malodor, the type of odor and the amount of applied Prebona OdorControl T.

Textiles (non woven/woven) treated with Prebona Odor Control T still demonstrate high odor elimination performance even after 20 wash cycles. The effectiveness of the treatment therefore lasts almost half a textile life cycle.

In the case of dark or hard surfaces, care must be taken that the applied amount is not too high. Upon agglomeration of the silica particles white residues can appear which can be difficult to remove. Therefore please check the surfaces before use. Alternatively, Prebona OdorControl TC can be used as a dilutable version.

### Main application methods:



### Usage recommendation:

#### On fabrics :

Pads / Filters

**Textiles** 8 - 11 g/m<sup>2</sup>

#### On other surfaces:

On stone, cat litter, tiles, plastics, etc. please check the appropriate Prebona OdorControl T amount depending on your need and the structure of the surface.

Keep a distance of 50 cm when spraying on surfaces. Avoid excessive wetting. Remove excess material on hard surfaces.

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