

AUTOMATIC WATER PRESERVATION WITHOUT DOSING AND MAINTENANCE EFFORT

Silvertex® effectively reduces the growth of germs in stored water through its antibacterial properties. It thus inhibits the formation of biofilm and the resulting microbial contamination, which is often associated with high cleaning/maintenance costs.

The large effective surface area of the Silvertex® material can be optimally flowed through due to the open design of its structure, thereby enabling the self-regulating release of silver ions into the surrounding fluid. Due to its flexible shape, Silvertex® can be inserted into almost any cleaning/maintenance opening.

SILVER AS A PRESERVATIVE

Silver-based products have been used to keep drinking water fresh since Charlemagne. Back then, in the form of silver vessels in which drinking water was kept, nobody knew anything about the specific effects of silver. Today we know that it is the positively charged silver ions that dock onto the microorganisms (e.g. pathogens such as Legionella, E.Coli, etc.) and disrupt the metabolism of the bacteria or lead to cell death in over 30 different mechanisms of action.

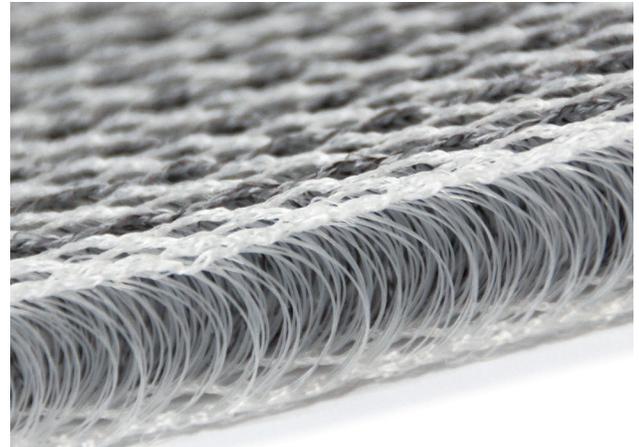
The microbially acting silver ions have a unique long-term effect like no other active ingredient. Products based on chlorine or hydrogen peroxide cannot be bound in water, they evaporate and are therefore not suitable for preservation.

THE MECHANISM OF ACTION

When the metallic (elemental) silver comes into contact with the oxygenated water/fluid, a concentration-dependent amount of Ag^+ ions is formed. These formed Ag^+ ions are solvated by water/fluids, pass into the fluid phase and are carried away. The positively charged Ag ions associate to the negatively polarized membranes of microorganisms.

A large number of chemical reactions develop from this initially electrostatic interaction. These chemical reactions, with over 30 proven mechanisms of action of the silver ions, lead to reactions such as metabolic disorders and structural deformations in the microorganisms, which in turn lead to the inability to reproduce and even cell death:

- ✓ complex formation with DNA/RNA
- ✓ reactions with cytochromes
- ✓ change in membrane permeability
- ✓ blocking of the thiol groups of enzymes
($-SH \rightarrow SAg$, e.g. inhibition of lactose dehydrogenase, glutathione peroxidase)
- ✓ reaction with carboxyl ($-COOH$) and amino (NH_2) groups and much more.



PRODUCT ADVANTAGES

- ✓ effective protection against contamination of (drinking) water and technical fluids
- ✓ has an antimicrobial effect and sustainably reduces the growth of germs in (drinking) water and technical fluids
- ✓ prevents/reduces microbiological growth (biofilm formation)
- ✓ no expenditure energy required
- ✓ self-dosing with long-term effect up to 24 months
- ✓ no maintenance
- ✓ use and functionality of up to 2 years

AREAS OF APPLICATION

- drinking water (according to European standard EN 15030)
- AHU (air handling unit)
- air humidifier
- process water
- fire extinguishing systems
- emergency showers
- apparatus and plant construction
- mobile gastronomy & food trucks
- camping, boating/yachting
- cooling towers
- evaporative cooling systems
- ...and much more

HOW IS THE ACTIVE CONCENTRATION SET?

Only the concentration of free solvated Ag⁺ ions acts as an antimicrobial effective concentration. The concentration of free silver ions in water and aqueous media depends to a large extent on which other substances (ions, complexing agents, etc.) are contained in which concentrations in the respective fluid.

This fact is illustrated using the example of the chloride (Cl⁻) ions contained in practically every natural drinking water, in accordance with the law of mass action:

$$c(\text{Ag}^+) = 1,17 \times 10^{-10} / 1,3c(\text{Cl}^-)$$

If corresponding chloride concentrations (Cl⁻ in [mg/l] or [mmol/l]) are inserted into this relationship, the silver ion concentrations resulting under these concentration conditions are as follows:

Cl ⁻ [mg/l]	Cl ⁻ [mol/l]	Ag ⁺ [107mol/l]	Ag ⁺ [µg/l]
10	0,28	4,67	50
20	0,56	2,33	25
-	-	-	-
60	1,69	0,77	8
-	-	-	-
100	2,82	0,46	5
-	-	-	-
200	5,63	0,23	2,5

That means that e.g., in water with a chloride content of 20 mg/l, the maximum concentration is only 25 µg silver ions/l. It has been proven that one effective concentration >10µg Ag⁺/l with an exposure time of approx. 3 hours causes a kill rate of (4 ... 6) log levels and thus ensures effective long-term protection.

AVAILABLE SIZES

- prefabricated (freely scalable product sizes)
- private label on request

DURABILITY AND SHELF LIFE

Silvertex® has a shelf life of 10 years when stored protected from sunlight. In contact with water/fluids, the shelf life or duration of use depends on the respective application and is usually 12-24 months.

RECOMMENDED ACCESSORIES

Depending on need and application

LABELLING

H410: Very toxic for water organisms with long-term effect.



Signal Word: Attention

Use biocides safely. Always read the label and product information before use.

ADDITIONAL INFORMATION

Manufacturer:
 WM aquatec GmbH & Co.KG
 Uracher Str.22
 73268 Erkenbrechtsweiler
 GERMANY

UFI: FSW0-R00D-N003-E8XU

Active substance: silver (Ag⁺)
 CAS No.: 7440-22-4

