

Disinfection agent

FREEBAC-CLEAROXYL®

IN HORTICULTURE



AQUAMAR
Disinfection Products

Why Freebac-Clearoxyl®?

Freebac-Clearoxyl® is an environmentally friendly disinfection agent that removes both organic and microbiologic contamination. The oxidation process of Freebac-Clearoxyl® destroys the DNA of the micro-organism in a way that it can be effectively removed and no resistance is possible.

Furthermore, it is very effect against biofilm. Freebac-Clearoxyl® contains hydrogen peroxide and a mix of food grade, stabilizing carriers and activators. After this process the product becomes Microencapsulated oxygen. After it has been used in the process there will be only water and oxygen left.

Advantages of Freebac-Clearoxyl®

- Eliminates bacterias and organic contamination (for example biofilm).
- Has a mild and long-lasting effect, because of the start/stop function (up to 110 hours, depending on the amount of pollution).
- When you remove the biofilm, the bacterias do not have nutrition.
- Removes both gram-positive and gram-negative bacteria, fungi, spores and viruses.
- Is no antibiotic. No resistance possible.
- No residues, no rinsing necessary.
- No smell, colour or taste.
- Temperature: 0 - 90°C.
- Active at pH: 3 - 10.
- Contains no metal.

Application

Freebac-Clearoxyl® can be applied in several different ways. Among these are:

- High pressure
- Fog system
- Dipping
- Irrigation
- Spraying

Storage

Freebac-Clearoxyl® needs to be stored in the original packaging, upright in a cool en ventilated space, where the packaging is protected against damage. The product is sold in cans of 24 kg (UN 2014) or barrels of 225 kg (UN 2014).

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Information

The registration number in The Netherlands is: 14368 N
MPS-registrationcode: 777383

Dosing and application:

Disinfecting/cleaning/removing of Biofilm

(prevention of biofilm)

Dosing Freebac in the water system prevents the development of biofilm and removes existing biofilm. **As a result, the fertilizers and the water are distributed precisely across the plants.** Also the pumps are spared because the pressure in the pipes does not increase.

The **prevention** of biofilm can be done by dosing 20 to 50 ml Freebac per 1000 liter water continuously in the driplines, depending on the pollution level of the water / driplines. That is maximum 17 ppm. At the end of the pipeline 3 to 10 ppm should be measured. **Dosing Freebac in the water system will also prevent the spread of all sorts of Pathogens that spread through the water during the cultivation, such as Fusarium, Pythium, Phytophthora, and Pseudomonas.**

The most effective way for this is dosed with the aid **of a dosing pump** (with automatic venting) coupled to a **water meter**. The pump should be installed just at the point where the water goes into the greenhouse.



Adding Freebac via the A or B tank can be used as a temporary solution. Depending on the size of the tank and the dilution with rain / drain water, you can calculate how much you should add. Do not add spores to the tank where Freebac is added. Discuss this with your advisor. When re-using drainwater preferably dose Freebac directly into the irrigation water to be sure that enough Freebac is supplied.

Rinsing during dosing Freebac

If you already have contaminated pipes it is important to clean them in a phased manner. If you release all the biofilm in the pipes at once, this can cause clogging. If your pipes are severely contaminated, you should do a shock treatment or start with 25 ml Freebac per 1000 liters of water so that your pipes get cleaned slowly. You should rinse with the following scheme.

Rinsing during dosing Freebac	
In case of heavy contamination	Daily
In case of contamination	Weekly
After a clean start	Never





Dosing scheme

If you would start dosing Freebac there are **three different options**, depending on the advantages you aim for and/or the costs. The options, and their most important advantages are written down below.

1: Continuous dosing:

- To clean the driplines, and keep them clean.
- Switching on the peroxidase, which helps to strengthen the plant. Effects of this are a decreased amount of illnesses. Which ensures that the plant can focus its energy for the maximum production of fruits or vegetables.
- Extra oxygen for the plant, increasing the possibilities of maximum production.

2: Discontinuous dosing (dosing week one, three, five, and so on) :

- To keep the driplines clean.
- Switching on the peroxidase partially (decreased amount of illnesses).
- In the week of not dosing Freebac, you could add a plant strengthening agent (like BioFirmite) which can not be used in combination with hydrogen peroxide.

3: Use Freebac every day, but only in the last hours (recommended):

- Choose the number of drip sessions to add Freebac to the whole piping system at the end of the day. If the driplines are clean, the following advantage apply:
 - o Keeping the driplines clean.
 - o Acceptable plant strengthening by switching on the peroxidase, which helps to strengthen the plant. Effects of this are a decreased amount of illnesses. Which ensures that the plant can focus its energy for the maximum production of fruits or vegetables.
 - o Extra oxygen for the plant, increasing the possibilities of maximum production.
- If the lines are not clean yet, you could clean them in this way. But it is very important to remove the pollution by rinsing the lines before the first time you start to water the plants.
- During the day, if you are not dosing Freebac, you could add plant strengthening agents, (like BioFirmite) which can not be added in combination with hydrogen peroxide.

Caution: Do never dose less than 25 ml per 1000 liter water. Only add more than 50 ml per 1000 liter after consulting with us. If you want a tailor made advice, please do not hesitate to contact us!

Shocktreatment driplines

(removal of biofilm)

Rinse the water system thoroughly with water. Dose nitric acid in the system with a dosage of 3% At the same time dose Freebac in the system using a dosing pump, dosage: 1 Liter Freebac on every 1000 liters of water. This removes residues of fertilizers and loose biofilms. Leave this one night. Then fill the water system for at least 5 hours with Freebac-Clearoxyl 0.5% dilution. Vent the system during treatment.

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Disinfection empty greenhouse

For application via *High Volume Sprayer* use a 2% Freebac-Clearoxyl solution for glasshouse disinfection. K4 Pulsfog: Nozzle 2.5, capacity 150 liter/per hour. Turn ventilation on while dosing, close screen halfway during application, after application close fully for disinfection of screen.

Low Volume Mistig: Apply a 10% solution. Close vents during application.

Cleaning/Disinfection water drainsilo

Add 50cc - 100cc per 1000 liter silowater.

Cleaning/ disinfecting tables using the rinsing installation

Add 0,5% - 2% Freebac solution to rinsing water

Cleaning/disinfecting (working) surfaces

Add 0,5% - 2% Freebac solution to water.

Crop rotation

Through the above-described applications, Freebac is effectively used against, for example, *Clavibacter michiganensis* (bacterial disease or bacterial cancer) in tomato and Cucumber mosaic virus in cucumber. Freebac-Clearoxyl also helps prevent and suppress *Agrobacterium rhizogenes*, which causes Crazy Roots (excessive root growth).

Tailored advice

We would like to give you tailor-made advice. Factors such as the business type, water system assembly, type of output water, microbiological quality of the water and pipeline maintenance are important for good advice. By this we can determine the required concentration of the agent and frequency of dosing. As well as possible extra measures.



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