

DISINFECTION AND ALGAE CONTROL IN THE GREENHOUSE

Although there are a variety of products available to treat plants infected with harmful organisms, prevention of the establishment of these organisms in the greenhouse is a critical component of any integrated pest management (IPM) program. Prevention is the most effective and cheapest form of fighting pathogens. Regular use of disinfectants labeled for greenhouse application can control bacteria, viruses, fungi, and algae before they become established, when they can devastate greenhouse crops.

Due to the wide variety of available disinfectant products, care should be taken to determine which product is best suited for your particular use.

Comparative Usage

Product	EPA Approved Greenhouses	California Approved	Use on Plants	Evaporative Cooler Use	Algaecide
Physan 20™	✓	✓	✓	✓	✓
Bleach	X	X ¹	X	X	X

What is Physan 20?

Physan 20 is a liquid concentrate product, that when mixed with water, creates a multipurpose disinfecting solution. It is a broad range disinfectant, fungicide, virucide, and algaecide which effectively controls a wide variety of pathogens on hard surfaces and plants. Physan 20 is EPA-approved for use in greenhouses, on hard surfaces, lawn and turf grass, seedlings and cut flowers, decorative fountains, pools and birdbaths, and plants.

Disinfecting Inanimate Hard Surfaces	Uses as an Algaecide
Floors, walls, walkways, glass	On hard surfaces
Tables, benches, work areas	In water tanks
Pots, flats, flower buckets	In evaporative coolers
Tools, foot baths	On soil surfaces <i>in the presence of plants</i>

¹ Bleach Decomposition (Sodium Hypochlorite). 2017. Powell Manufacturing and Fabrication Technical Bulletin. http://www.powellfab.com/technical_information/sodium_hypochlorite/decomposition_reason.aspx

Physan 20 vs. Bleach

Product	Dilution Stability	Contact/Kill Time	Safe for Plastic/Metal*	Residual Effectiveness	Clothing Contact
Physan 20™	✓	10 minutes	✓	7-10 days	✓
Bleach	X	30 minutes	X	1 day	X

*>0.5% solution

Advantages of Physan 20

- EPA-approved for use in the greenhouse *and on plants*
- Use dilution is very stable, not affected by temperature, light, or humidity
- 10-minute contact time required to kill pathogens.
- Diluted Physan is safe for use with plastic and metal, *even with repeated applications.*
- Physan provides residual effectiveness – it keeps on killing organisms for 7-10 days
- Does not burn clothing if solution is splashed.

Disadvantages of Bleach

- **NOT** labeled for use as a greenhouse disinfectant by the EPA or at the state level.
- Off-label use can result in fines and citations upon OSHA inspections.
- Use dilutions of bleach are unstable, degrade quickly, and are temperature sensitive
- Length of time required to kill organisms = 30 minutes².
- Degradation of plastic and metal after repeated applications
- Limited residual effectiveness – new use dilutions need to be prepared daily
- Harms clothing with contact even at use dilution levels

Physan 20 Application Rates

Product	Hard Surfaces	Water Tanks	Soil Surfaces with Plants	Evaporative Coolers
Physan 20™	1 T/gal.	1 t/50 gal.	1.5 t/gal.	1 t/15 gal.

T= Tablespoon
t = Teaspoon

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² Morgan, Lynette. 2016. Hydroponic Hygiene. Maximum Yield, Inc.
<https://www.maximumyield.com/hydroponic-hygiene/2/1373>