

PWC-1[®]

POND
WATER
CLARIFIER

Improve water quality
and inhibit pathogens

WHAT IS IT?

PWC-1® is a completely natural biological product designed to improve water quality and inhibit pathogens in commercial aquariums. **PWC-1**® contains 18 species of beneficial microorganisms that have not been genetically modified from the genus *Acinetobacter*, *Bacillus*, *Citrobacter*, *Enterococcus*, *Nitratiductor*, *Pseudomonas* and *Pseudoxanthomonas*. It is an effective means to restore and

maintain water bodies that have become turbid and that support the overgrowth of algae in healthy and balanced aquatic ecosystems. **PWC-1**® microorganisms were isolated and subjected to various stress factors, therefore they are very robust and can colonize in aqueous environments of any commercial aquarium.

USES AND APPLICATIONS

WELLS



LAGOONS AND LAKES



PONDS



TANKS



AQUARIUMS



WATER BODIES

HOW DOES IT WORK?

INHIBITION OF ALGAE OVERPOPULATION

Accumulation of nutrients, such as nitrogen and phosphate compounds, can cause overpopulation of algae (*Cyanobacteria*), causing turbidity in water and growth of algae on aquarium walls and other hard surfaces. Algae bloom (rapid reproduction) when nutrient levels increase at speeds higher than those that can be metabolized by background bacteria.

PWC-1[®] degrades and reduces nutrients in water by depriving the cyanobacteria of them, preventing their blooming and thus resulting in greater water clarity.



DECREASED SUSPENDED SOLIDS

Deterioration of organic material and aquatic debris can also cause turbidity.

PWC-1[®] microorganisms metabolize the suspended organic particles in the water and accelerate the digestion of decomposing organic and inorganic material. The microbial attack of decomposing organic material will cause the bacteria to bind to the suspended particles, thus increasing their weight, which leads to sedimentation, i.e. the particles will fall to the bottom as they are digested and allowed to be eliminated of the water through the filtration system. These filtered organic particles, as well as other organic sludges, will ultimately be metabolized to harmless CO₂.

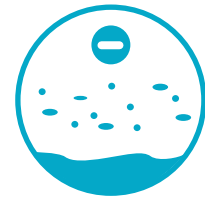
The result will be the reduction of turbidity.



DECREASE OF DISSOLVED SOLIDS

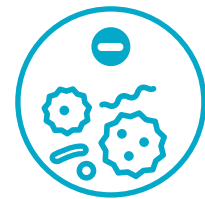
Dissolved solids can also cause turbidity in the water. Many of these dissolved solids are removed by direct metabolism while others change the electrical state of the inorganic suspended particles which renders the soluble substances insoluble becoming insoluble causing them to precipitate and be removed from the system by filtration and / or sedimentation.

Sludge will also be reduced. This process will slow down due to poor oxygen conditions in the sludge.



ELIMINATION OF PATHOGENS

In addition to maintaining good water quality, **PWC-1**[®] greatly reduces the mortality of species in aquariums by suppressing pathogens. This elimination of pathogens is done through competitive exclusion, which is a process in which beneficial microbes in **PWC-1**[®] compete for niche environments in the system (space and nutrients), once established beneficial microbial populations, no pathogens can be established. In addition, **PWC-1**[®] microbes produce biologically active compounds that inhibit or kill pathogens. An example of this would be the production of beta-lactams. Beta-lactams are the building blocks of a large group of antibiotics called cephalosporins. Beta-lactams and other biologically active compounds produced by **PWC-1**[®] will suppress gram-positive and gram-negative bacteria, as well as cyanobacteria and certain parasites.



WHAT ARE THE BENEFITS?

- It consumes excess nutrients and eliminates the accumulation of organic waste.
- Eliminates the formation and accumulation of organic sludge.
- Eliminates ammonia and hydrogen sulfide (**H₂S**) and odors associated with these compounds.
- Eliminate nitrites, nitrates and reduce biological oxygen demand (**BOD**).
- Significantly reduces water turbidity, acting on total dissolved solids (**TDS**) and total suspended solids (**TSS**).
- Reduces or eliminates phosphate
- Restores and improves water quality.
- Reduces the presence of floating algae (including filamentous green algae) through competitive inhibition of nutrients.
- It is completely safe for fish, crustaceans and other aquatic vertebrates.
- Can be used in fresh and salt water.
- Continued use of PWC will help maintain a healthy aquatic ecosystem and greatly reduce stress on animals living there.

HOW IT IS APPLIED?

DOSAGE

The amount of **PWC-1**[®] used to treat a commercial aquarium is primarily a function of total gallons of water in the system, biological load and temperature.

However, systems using ozone and / or UV sterilization generally require higher doses. Liventia staff will work with each customer to determine the amount of **PWC-1**[®] required for each system.

GENERAL INSTRUCTIONS

INITIAL DOSE

Use 1 gallon of **PWC-1**[®] for every 5,000 to 20,000 gallons of system water.

DOSE OF MAINTENANCE

Use one gallon of **PWC**[™] per month for every 10,000 to 60,000 gallons of water in the system. Maintenance treatments should begin two weeks after the initial dose.

The monthly dose can be divided into daily or weekly doses. In general, using the monthly dose in several weekly doses helps to keep the **PWC**[™] microbial population more stable.



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