Bacta-Pur®

Start-up & Maintenance of Fish & Seafood Holding Tanks © 2011

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ECOPROBIOTICS®, of the Bacta-Pur® System, are beneficial communities of natural bacteria, which have been on earth for millions of years and have been selected for their synergistic ability to biodegrade pollutants and to improve water quality. ECOPROBIOTICS® increase biodiversity. Just as people take probiotic yogurt for its' ability to assure the presence of the optimal community for digestion and immunity, ECOPROBIOTICS® improve ecosystem health. EVERY PRODUCTION of Bacta-Pur® products is analyzed and cleared for shipment ONLY after passing all performance tests and being CERTIFIED PATHOGEN FREE using techniques from the food industry. ECOPROBIOTICS® are purely natural and beneficial; they NEVER contain added chemicals such as surfactants, emulsifiers or enzymes…, nor do they contain genetically modified (GMO) or deliberately mutated organisms. ECOPROBIOTICS® are safe and beneficial. Bacta-Pur® microorganisms are not subject to TOSCA (USEPA) and are listed on the DSL of Environment Canada.

Background

Maintaining optimal water quality within live holding tanks is important for two reasons:

- it keeps the fish/seafood alive, healthy and better tasting, which brings the best market value
- it maintains the holding tank in an attractive condition, preventing the consumer from being turned off by the appearance of murky or dirty water.

Turbocharge biofilters with Bacta-Pur®!!

Bacta-Pur® N3000 for holding tanks has been developed to solve the common symptoms associated with live holding systems.

- start biofilters rapidly
- bring ammonia and nitrite to safe levels
- stabilize filter performance when experiencing fluctuating loads
- maintain an attractive display

Bacta-Pur® N3000 contains a balanced community of beneficial and natural microorganisms, nitrifiers and heterotrophs, that can be used with freshwater and marine holding systems.

Requirements for Efficient Biological Filtration

Biological filters are typically used to control ammonia and nitrite, in aquaculture and fish/seafood holding systems. The following information will provide the basics about factors affecting biological filters: the biological community, the water physico-chemistry and the physical design.

Biological Community — Control of ammonia and nitrite in biological filters is accomplished by nitrifying bacteria (*Nitrosomonas* and *Nitrobacter*). Nitrifying bacteria are quite sensitive to environmental conditions; this is particularly true for *Nitrobacter*. The active area of the biological filter should be dark, as light is inhibitory to the beneficial nitrifiers. Excess organic material, such

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as waste materials can be inhibitory as well, therefore, a balanced population of heterotrophic bacteria is essential to control levels of soluble organic pollutants.

Water Physico-Chemistry — Ammonia and nitrite are only sources of nitrogen for the bacteria. Other nutrients including carbon, phosphorus and trace elements are also essential. Carbon must be inorganic and is measured as carbonate alkalinity. Sodium bicarbonate (baking soda) is commonly used to add carbonate alkalinity. Water with more than 100 mg carbonate alkalinity/L is normally adequate; lack of carbonate alkalinity will stop nitrification. The alkalinity provides pH buffering. The optimal pH for nitrification is near 8.0. Values outside of 6.0 - 8.5 can be expected to reduce nitrification efficiency. *Nitrosomonas* produces acid during its growth; the pH must be monitored and adjusted.

The optimal temperature for nitrification is about 30°C; the rate can be expected to be cut in half for every decrease of 10°C. For this reason, the dose rates for cold water systems have been adjusted to help overcome this temperature effect. Nitrifying bacteria require adequate oxygen as well - aeration is important.

Physical Design — The role of all biological filters (trickle filters, RBCs or fluidized beds *etc.*) is to provide a home for the microorganisms. More surface area allows for the development of larger bacterial populations. A well designed biofilter should be virtually self-cleaning and contain appropriate types of biofilter media.

Water flow patterns are very important. An adequate flow is essential to assure that the pollution or food reaches the bacteria. The bacteria use only the nutrients near them, sufficient water movement is essential for good growth and performance. All water should be physically filtered or clarified to remove solids before the biological filter; these solids should be removed from the system as quickly as possible. Inadequate water flow combined with solids accumulation can lead to anoxic (no oxygen) zones that can result in the synthesis of ammonia and nitrite even in the biofilter.

Treatment with the Bacta-Pur® System

Dose Rates

Starting a Biological Filter — Add 100 mL Bacta-Pur® N3000 / 1000 L (4 oz Bacta-Pur® N3000 / 250 gal) of tank water. Continue additions of half this dose daily until filter activity has stabilized. **Small cold water systems, such as for lobster tanks, should have additions of 100 mL Bacta-Pur® N3000 / 200 L of tank water L (4 oz Bacta-Pur® N3000 / 50 gal) daily until filter activity has stabilized.**

Maintaining a Biological Filter — Add weekly 100 mL Bacta-Pur® N3000 / 1000 L (4 oz Bacta-Pur® N3000 / 250 gal) of tank water. **Small cold water systems, such as for lobster tanks, should have weekly additions of 100 mL Bacta-Pur® N3000 / 200 L of tank water L (4 oz Bacta-Pur® N3000 / 50 gal).**

All water sterilization equipment should be turned off during start-up of a biological filter.

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