

Dissolved Organic Removal of Various Resin/Carbon Blends



INTRODUCTION

Organic materials accumulate in an aquarium and break down over time, which degrades water quality and leads to poor fish health. The key to limiting cyanobacterial growth is to remove excessive organic matter before it is broken down. Organics are released into the aquarium by fish, invertebrates, plants, algae, and uneaten fish food. Bacterial decomposition of dead plants, aquatic animals, and aquarium foods also increase the level of organic pollutants. Aquarium water is only changed periodically, and between water changes pollution may increase to harmful levels. These pollutants are toxic to fish and invertebrates.

Accumulation of organic pollutants in an aquarium creates a stressful environment. Excess organic pollutants increase Chemical Oxygen Demand (COD), resulting in reduced water quality. Poor water quality ultimately causes the suppression of an animal's immune system leading to disease outbreaks in the aquarium. Organic build-up also limits light penetration into the aquarium, primarily reducing the transmittance of blue light-energy (actinic type-420nm).

AIM

To determine the efficiency of BIO-CHEM ZORB™ on the removal of harmful organics compared to competitors.

METHODS

- Equal volumes of BIO-CHEM ZORB, Competitor X and Competitor Y were added to laboratory filtration columns. Each column was treated with equal amounts of a dissolved organics solution representing typical "aquarium pollution". The volume of removal was measured using a scanning spectrophotometer.
- Equal volumes of BIO-CHEM ZORB, Competitor X and Competitor Y were placed on examination paper. Each product was then separated based on activated carbon and resins. The percentage of each material was recorded.

RESULTS

BIO-CHEM ZORB removes 3.5 times more organics than Competitor X and 4.2 times more organics than Competitor Y. See Chart 1. BIO-CHEM ZORB contains more resin than Competitor X and Competitor Y. See Chart 2.

DISCUSSION

Even though Competitor X contains a significant volume of resin, the organic removal is poor. The effectiveness of the resins in a product is more important than the amount of resin in a product. BIO-CHEM ZORB removed more organics than either competitor. The test data show BIO-CHEM ZORB is vastly superior to its competitors. The blend of activated carbon and resin removes more organics to improve water quality, reduce COD, increase light transmittance and provide a healthier overall aquatic environment.

Chart 1: Amount of Organic Aquarium Pollution Removed

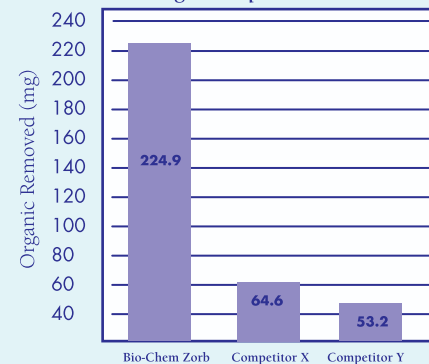
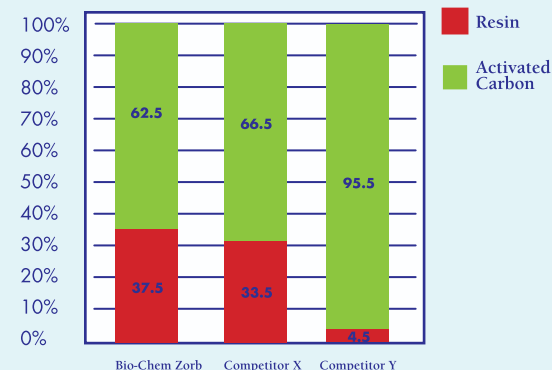


Chart 2: Volume of Resin & Activated Carbon



BEFORE AFTER



The beaker on the left shows accumulated light absorbing aquarium organics. The beaker on the right is the same aquarium water after filtration with BIO-CHEM ZORB.