

## **Introduction**

ALGONE is a new, organic product developed by the Algone Corporation, using a novel approach for the gentle absorption or elimination of nitrite, of nitrate, of algae, and the reduction of ammonium in fresh and salt water aquariums. ALGONE has been tested in laboratories and in the field over a 3-year period with consistent results. Its performance has been rated uniformly as excellent.

## **Description**

Algone™ is an all-natural product consisting of 100% plant fibers. No chemicals are used or added during the manufacturing process. The packaging material is a paper-based product frequently used in the food processing industry. Paper and ink are FDA approved safe products. All raw materials are subject to extensive quality control procedures before packing and shipping, ensuring consistently high quality and purity for safe use of Algone™ in salt and fresh water aquariums.

## **Application**

Algone™ was designed to fit directly into most power filter or water filtration systems. Placing the pouches in the filter system exposes circulating water to active sites at the plant fibers for nitrate removal and distributes very small but active particles throughout the aquarium, without visually impacting the appearance of the tank. As an alternative, Algone™ can also be placed directly into the water bypassing the filter system. For ammonium reduction, nitrite and nitrate elimination and preventive alga control, one pouch is recommended for the treatment of aquariums with up to 55 Gallons. The first pouch should be replaced after one week. In order to prevent recurrence of nitrite and nitrate build-up and appearance of algae, one pouch has to be used every four weeks. Excessive amounts of nitrate (above 80 ppm), may require an additional treatment after one week before reaching undetectable levels.

Aquariums with existing algae growth can effectively be treated by using only one pouch per 55 Gallons, but replacing it once every 7 days until algae growth has ceased and existing algae begin to disappear due to the lack of nutrients needed for growth. Depending on the degree of contamination this procedure should take usually 4 weeks to complete. Once treatment is complete we recommend the use of Algone™ for future prevention of algae growth as described above.

## **Safety**

One pouch effectively treats water in aquariums holding 15 to 55 gallons of water. Using up to 10 pouches has shown no adverse effect in fish specific parameters of water quality and no signs of fish toxicity. The only known side effect is a change in watercolor from clear to a light brownish yellow color, as a result of severe overdosing.

## **Packaging**

Algone™ is packed in boxes with 4 pouches each, which allows for treatment of up to 220 Gallons. Each box is sealed to assure that Algone™ remains dry and tamper proof. The shelf life of the product, if stored in a dry place is unlimited.

## **Research Results**

Laboratory research (1) revealed that 10 times the recommended amount of plant fibers caused a slight yellow brownish discoloration of the water. These eluted compounds are predominantly organic in nature, as indicated by the increases for CSB (chemical oxygen requirement) and TOC (total organic carbon). The degradation of these organic compounds seems to occur at a normal rate, as indicated by a ratio for BSB (biochemical oxygen requirement) vs. CSB of approximately 1:2. As a result it was concluded that a 10-fold increase of the amount of fibers has no negative effect on water quality.

Inorganic compounds are only a minor component of the material released from Algone™. This is reflected in the small increase of the water's conductivity. Of importance is the observation that nitrate was either utilized or bound almost entirely. Using a fish toxicity test, the usage of Algone™ did not show any toxicity to fish (2).

The qualitative test under conditions of typical use resulted in visible reduction of the growth of algae, without exerting any detectable deleterious effects on the ornamental fish that were exposed to it. At the recommended concentration of 1 pouch of Algone™ for 15 - 55 Gallons of water no coloring of the water could be observed.

The quantitative test for inhibition of algae growth has shown that usage of Algone™ had resulted in a 50% reduction of the number of algae within 8 days. This indicates that under conditions optimal for the growth of algae regarding nutrients, temperature and light etc. the use of Algone™ achieved not only an inhibition of growth of algae but also a reduction of the number of algae. When plotting the values of the Report as a graph, one can see clearly that the inhibitory action shown to be about 50% at day 8 will continue (as long as Algone™ is retained in the aquarium) and, by extrapolation, will reduce the number of algae by day 14 by 80 - 90%. Since Algone™ at 10 times the recommended dose does not adversely effect water quality, one could actually use 4 or 5 pouches as a starter in an aquarium with a heavy load of algae which would increase the inhibitory effect accordingly.

Expert reports are on file with the Algone Corporation.

## Research Summary

- The usage of Algone™ in aquariums has no adverse effect on water quality nor has it any effect on the fish population exposed to it, even when the recommended treatment (dose concentration) is increased 10 times.
- Under typical conditions of use with the recommended treatment one can observe a significant inhibition and a diminution of the growth of algae.
- Quantitative tests have shown that the recommended treatment results in a 50% reduction in the number of algae within 8 days and a 80-90% reduction after two weeks of exposure
- Water quality tests showed a reduction of nitrate from 50.0 mg/l to 0.5 mg/l in only a few days
- In a related study conducted by the North Carolina State University, test results indicated a significant reduction of ammonium.
- A related study conducted by the Iowa State University concluded a significant absorption of hydrogen sulfide.

## Field Trials

Petland Cranberry, TWP, PA

Test Period: June 05, 1997-July 01, 1997

Test Description: One Algone™ pouch was placed into the water filter (aquarium size: 15 gallons) and replaced every week.

Algae growth: monitored visually

Nitrate: Nitrate Test Kit (Wardley)

Results:

Table 1: Nitrate Values

<u>Day</u>	<u>Nitrate Values</u>
<u>June 05, 1997</u>	40 ppm
<u>June 08, 1997</u>	<u>0 ppm</u>
<u>June 12, 1997</u>	<u>0 ppm</u>
<u>June 19, 1997</u>	<u>0 ppm</u>
<u>June 26, 1997</u>	<u>0 ppm</u>
<u>July 01, 1997</u>	<u>0 ppm</u>

Table2:AlgaeGrowth

Day	Observations
June 05, 1997	Algae on walls, rocks and on bottom
June 12, 1997	A decrease of algae is noticeable
June 19, 1997	Algae on walls is disappearing, growth on rocks and bottom has stopped
July 01, 1997	Only some algae remains on the bottom

No water was changed during the test period. Testing was repeated, and the same results were obtained again and again.