

# ZEOLITE CLINOPTILOLITE

APPLICATION AS



## FEED ADDITIVE AQUACULTURE

### MULTI-FUNCTIONAL FEED ADDITIVE

**Ammonia Adsorbent:** Ammonia toxicity is one of the main causes of losses in fish hatcheries. The primary source of ammonia in aquaculture systems is fish feed. And it is the principal waste product excreted by fish. Of all the water quality parameters which affect fish, ammonia is the most important after oxygen. In aquaculture systems it can cause direct death, a decrease in production, and increased incidence of many diseases (gill damage, hyperplasia, etc). Zeolite adsorbs toxic ammonia at very high rates, as high as 95%. It decreases the toxicity level of the water.

**Toxin Binder:** Adding Zeolite - Clinoptilolite minimizes the negative effects of the aflatoxins on the feed efficiency ratio, performance and feed consumption. Adding Zeolite at a ratio of 0,5% in weight to the feed adsorbs aflatoxins at a 97% rate. It eases digestion and provides an effective feed consumption.

**Heavy Metal Remover:** Heavy metals can adversely affect body weight, digestive enzymes and lipase. Thanks to its superior cation exchange capacity, Zeolite can adsorb many heavy metals like Ni, Pb, Hg, Cd, Al, As and Cu.

**Anti-caking & Flowability Agent:** Through its ability to adsorb moisture and grease, Zeolite prevents the oxidation and molding that might occur during storage as a result of moisture. It acts as a great pellet binder and anti-caking agent in preparation of the feed. It prevents the liquid oils that are added in order to increase the ration energy, from being released and becoming oxidized during storage.

Zeolite, as a feed additive;

- Increases the feed conversion rate and feed efficiency, thus leading to a beneficial growth response.
- Promotes the growth and the whole body compositions.
- Increases the overall weight of the aquaculture.
- Prevents the negative consequences that mycotoxins normally lead to the occurrence of.
- Decreases the mortality rate.
- Removes mycotoxins and heavy metals.
- Increases the quality of the waste water. Prevents the pollution of river and costal ecosystems due to intensive fish farming.
- Decreases the amount of sea lice and parasite in total (especially tapeworm).

### WHAT DISTINGUISHES ZEOLITE FROM OTHER MYCOTOXIN BINDERS?

While other mycotoxin binders act like a sponge that adsorbs everything including vitamins, amino acids and nutrients together with mycotoxins, Zeolite is a selective polar binder that has a binding affinity and selectivity only for positively-charged ions (cations) such as toxins, ammonia and heavy metals. It has no binding affinity for antibiotics, coccidiostats, vitamins, minerals, amino acids, other nutrients or feed additives.

### HIGH ECONOMIC RETURNS WITH A LOW COST

Zeolite yields high economic benefits with only a little expenditure. It decreases mortality rates. It increases the endurance, quality and shell life of the feed.

Zeolite can be safely substituted for sodium bentonite or other rumen buffering agents.

### AN INNOVATION FROM ROTA: PELLET ZEOLITE

According to the demands of fresh water fish and shrimp farmers in Southeast Asia, Rota Mining developed the pellet zeolite product from its high quality ore. The ingredient is only pure water and high quality zeolite without any further additive. Pellets are activated and hardened at a very high temperature which increases the cation exchange capacity of the product.

Contrary to fish additive application in which zeolite is mixed into the feed, pellet zeolite can be used directly and can be easily pread to the ponds by farmers without generating dust. Pellet stays rigid until it falls to the bottom of the pond, and doesn't blur the water. At the bottom of the pond it turns into powder form again and expands its surface area. Powder zeolite absorbs the toxins, toxic ammonia and heavy metals with a greater efficiency.

**GROWTH AND HEALTH PROMOTER  
AMMONIA & TOXIN BINDER**



# ZEOLITE CLINOPTILOLITE



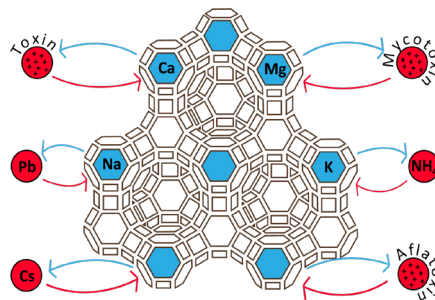
## FEED ADDITIVE

### CONTENT

Zeolite is a crystalline, hydrated aluminosilicate that has an infinite three dimensional structure. Zeolite contains extremely pure Clinoptilolite (92% by mass on average), which is one of the most effective Heulandite type of zeolite. Its highly porous structure (with a porosity reaching 50%) provides an extremely large surface area on which chemical reactions and cation exchanges can take place at a very high degree. It can absorb incredible amounts of water/liquid into its pores. Clinoptilolite has a natural negative ion charge which furnishes it with a tremendously high cation exchange capacity (CEC). Thanks to CEC, it adsorbs and binds ammonium, toxins, mycotoxins and heavy metals like Ni, Pb, Hg and Cd, very efficiently and effectively.

### CATION EXCHANGE CAPACITY

Cation exchange capacity (CEC) is a measure of the amount of cations (positively-charged ions) that a clay can catch. As mycotoxins, toxins, heavy metals and ammonium are all positively charged, they are all easily trapped by cation exchangers.



3

### APPLICATION FOR AQUACULTURE

Add to the feed mixer together with other feed ingredients and mix thoroughly and homogeneously. Compatible with all types of feed ingredients.

Unless your nutritionist does not advise a different rate:

Mix with the animal's daily feed at a rate of 0,5 - 2 % by mass.

### SUITABLE SIZES

0 - 400 micron

0 - 300 micron

0 - 200 micron

0 - 100 micron

0 - 50 micron

Pellet (ask for application)

### ENVIRONMENT-FRIENDLY

100% natural and safe product; produced in accordance with the EU's Feed Additive and Premixes directive and under the strict quality control system and surveillance of FamiQs. Zeolite is not a medicine or nutrient. It can't be used for therapeutic purposes.

Information herein is accurate to the best of our knowledge, but may be subject to change without notice. Suggestions are made without warranty or guarantee of results. Before using, user should determine the suitability of the product for its intended use and user assumes the risk and liability in connection herewith.