

## All Diatomaceous Earth is not the same.

Diatomaceous Earth packaged under our FOSSIL SHELL FLOUR® label comes from an extremely pure fresh water deposit of fossilized diatoms Aulacoseira from a deposit created in the Miocene epoch. Why is this diatom so special? Its shell is made of amorphous silica. Its shape and hardness in the fossilized form are important to how it works. Its hardness keeps it from dissolving in liquid. The diatom's tubular shape and holes along the diatom's wall allow it to absorb moisture, hence its use as an anti-caking agent. The tubular shape of the diatom gives it more surface area than other shaped diatoms. This means it has a greater absorptive capacity with the holes that open to the center and improved mixing and flow of animal feed. FOSSIL SHELL FLOUR® does not swell, does not absorb nutrients and poses no long term hazard when used as an anti-caking agent in your animal's feed. Fossil Shell Flour ® consists of 89% (and sometimes more) Silicon Dioxide plus 28 trace minerals. FOSSIL SHELL FLOUR® is almost pure white when dry and appears light tan when wet. Other diatomaceous earth deposits often contain an excess of a particular mineral such as iron or a high percentage of clay giving it a darker color or other colors completely.

Why fresh water vs. salt water Diatomaceous Earth?

Fresh water deposits like ours have a consistent diatom presence. Their fossilized shells have maintained their tubular shape. This shape and strength of the fossil shell is critical to its effectiveness. Our deposit has 89 - 95 percent amorphous silica content. This deposit is also more consistent in its purity of other elements that have settled in it. A fresh water deposit is confined to the runoff water of its surrounding environment. A fresh water deposit in the mountains, such as ours, formed when snow was pure and its run off provided the water source these diatoms lived in. Salt water deposits contain a mix of types of diatoms of different shapes. Their fossilized shells are fragile and break easily. This renders them ineffective for our purposes. The salt water deposits are less predictable in their sediments due to their open environment.

## What's the difference between amorphous and crystalline silica?

Amorphous silica is silica in its natural occurring state. It is a trace mineral every mammal on the planet needs to live. Diatoms are found in all water sources and it the main food for aquatic life. It becomes crystalline when it is exposed to extreme heat by commercial manufacturing means and minute amounts through natural extreme heat when close to volcanic activity. The type of diatomaceous earth used in swimming pool, and other, filtration systems is crystalline silica that has been heated to make it crystalline. Crystalline silica is extremely dangerous when inhaled or ingested. It is not biodegradable. Perma-Guard Diatomaceous Earth contains less than one half of 1% of crystalline silica and is considered GRAS (generally regarded as safe). The FDA considers the safe levels of crystalline silica as 3% or less. Naturally occurring crystalline silica is found in all water sources and the dirt blowing in the air during dust storms.

## *Agricultural Use for Diatomaceous Earth for Animals*

Reasons to use a pure Fresh water DE such as Fossil Shell Flour. It comes from a known proven source. The company has the experience to discuss your specific needs and questions. It is 85 to 89 % amorphous silica in the form that is the most useful for animals. Below are some of the questions and answers that are common concerning cattle, chickens, goats, pigs, and other livestock.

## Feeding Chickens or Other Fowl

Advantages of feeding Perma-Guard Fossil Shell Flour Diatomaceous earth at the rate of 0.75% to 1% of rations. Replace 0.75% to 1% of the feed with Fossil Shell Flour.

1. FSF is an anti caking agent that is added to chicken feed to:
  - A. Protect the grain from mold.
  - B. Improves feed conversion for improved absorption of nutrients.
  - C. Cleans the gut and is also known to kill parasites in the gut.
  - D. The high 85-89% silica content (a trace mineral necessary for all cellular function) protects and improves the health and viability of the birds. Birds as they gain weight are able to support their weight on their legs and feet. Silica in DE strengthens tendons joints and bones.
  - F. Feces and urine will have less odor and attract less flies.
  - E. Eggs in layer operations have stronger shells and are higher quality eggs.

Perma-Guard FSF is a very pure DE which is mined from a freshwater deposit of amorphous silica content of 85-89%. The tubular diatom type of fossil and the way it is milled is critical to its function.