BIOSTAR™ CH

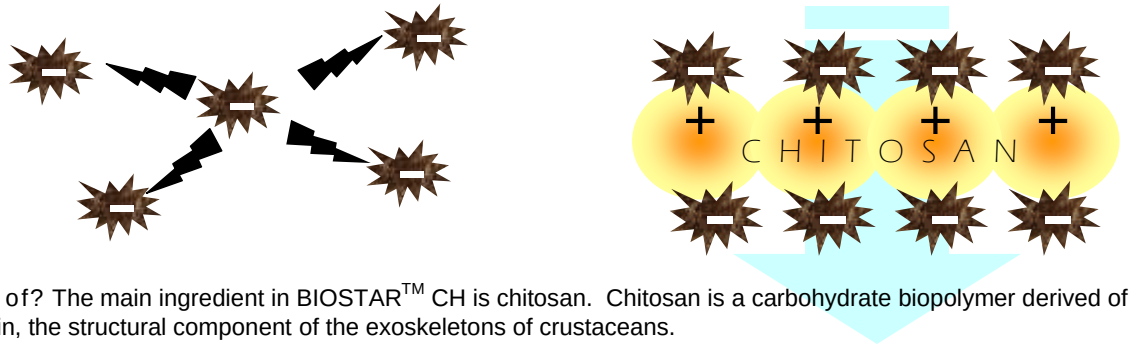
Natural Sediment Flocculant

Q & A

What is a Flocculant? A flocculant is a substance that clarifies polluted water. Specifically, it coagulates, or flocculates particles.

> **flocc´u•late** (fläk´yōō lāt) *v.* ‖L.< *flucculus*, tuft of wool‖ to aggregate single particles into multi-particle aggregates or 'flocs' —flocc´u•la´tion, flocc´u•lant´ *n.*

How does it work? Fine suspended sediment, such as clay, gains a negative charge when it flows in water. In the same way that hair stands on end after it's rubbed on a balloon, the clay particles repel each other and remain suspended for long periods of time. When a flocculant with a positive charge, such as BIOSTAR™ CH is added to the water it creates a larger neutral particle that can settle out of the water with gravity or filter out of the water using standard BMP's.



What is it made of? The main ingredient in BIOSTAR™ CH is chitosan. Chitosan is a carbohydrate biopolymer derived of the polysaccharide chitin, the structural component of the exoskeletons of crustaceans.

How fast does it work? BIOSTAR™ CH flocculates the sediment immediately. The length of time it takes to clarify the entire volume of water to be treated depends on three main variables:
1. Method of application and volume: Enhanced sand filtering is the fastest method whereas gravity settling can take twelve to twenty-four hours to completely settle once the entire volume of water is treated.
2. Beginning turbidity: if the turbidity is extremely high, or unknown, treatment may require multiple applications.
3. pH: BIOSTAR™ CH requires a pH between 6 & 9 for optimum performance. Also, if the water is to be discharged to surface water it is important to neutralize the pH.

How is it used? BIOSTAR™ CH Floc systems can be placed in the path of stormwater flowing to a sediment pond either alone or attached to a velocity reducing device such as a ditch check. They can be placed in the path of turbid water flowing through a trash pump on its way back to the sediment pond, a sand filter unit or a vegetated area.

What happens to the chitosan/sediment? With the aid of naturally occurring enzymes, the chitosan biodegrades leaving the original sediment, carbon dioxide and water.

Poly N-acetyl-D-glucosamine (chitosan)
+ Chitosanase (a natural enzyme)

breaks down to:

Glucosaminyl – Glucosaminide
+ Glucosaminidase (a natural enzyme)

breaks down to:

Glucosamine
+ natural aerobic bacteriologic degradation

breaks down to:

Glucose
+ natural aerobic bacteriologic degradation

breaks down to:

Carbon dioxide and Water

Is chitosan safe for aquatic life? Yes, toxicity tests demonstrate that at recommended treatment doses, chitosan poses no threat to aquatic life. Toxicity data is available upon request as well as Material Safety Data Sheets (MSDS).

Can product be stored?
Yes, chitosan can be stored for one to two years. Liquid should be tightly sealed and stored in a dry, cool area. Floc systems should be dried prior to placement in a plastic bag or bucket and stored in a dry, cool area. Dry Floc bags will re-hydrate when exposed to water and can be re-used until product is exhausted. Squeeze the bag to determine if the gelatin-like product is exhausted.

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