ChitoVan™ chitosan acetate

ChitoVan chitosan acetate is a powerful, safe and natural water treatment biopolymer that removes suspended sediment and other contaminants from water. ChitoVan is a powerful flocculent and when used with sand filtration, is capable of consistently reducing turbidities by more than 95% to less than 10 NTU. ChitoVan has been used across the U.S. and Canada to clean billions of gallons of water since its introduction in 2006.

GENERAL ACCEPTANCE
Chitosan-Enhanced Sand Filtration construction stormwater treatment with ChitoVan has been thoroughly tested through the Washington Department of Ecology and has been awarded a General Level Use Designation for batch, infiltration and flow-through treatment to ALL receiving waters of the state. (www.ecy.wa.gov)

PRODUCT AVAILABILITY
ChitoVan Chitosan Acetate is a clear viscous solution available in 1% and 1.5% concentrations. Dungeness Environmental offers ChitoVan Chitosan Acetate in 5-gallon buckets, 55-gallon drums and 275-gallon totes.

ChitoVan Chitosan products are available directly through Dungeness Environmental, located in Bothell, WA, or through one of our many nationwide and Canadian distributors. Contact Dungeness Environmental to locate a distributor near you.

WHAT IS CHITOSAN?
Chitosan (shown above) is a natural biopolymer derived from chitin - the structural material found in crustaceans. Chitosan is a long chain polymer and possesses a strong positive charge. Dirt particles typically are negatively charged. Chitosan flocculates (clump together into a large mass) these fine particles causing the sediment to settle thereby clarifying the dirty water. (See before and after treatment below.)

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APPLIEDICATIONS
ChitoVan is a versatile polymer with a wide range of water treatment applications throughout the construction and industrial field.

CONSTRUCTION
- Stormwater Run-off
- Ground Water
- Dewatering
- Dredge Water

INDUSTRIAL
- Urban and Industrial Stormwater Run-off
- Process Water
- Mining
- Agriculture
- Greywater
- Paper Manufacturing
- Food Processing
- Organic Wastes

PRODUCT SPECIFICATIONS
These specifications describe some of the necessary characteristics for ChitoVan solutions which are used in Chitosan-Enhanced Sand Filtration Systems and other applications.

ChitoVan 1% - chitosan acetate
- Viscosity range: 600 cps - 1200 cps (initial production)
- pH: 3.0 to 4.0
- Solids content: 0.9 to 1.1%
- Turbidity: 70 NTU or less

ChitoVan 1.5% - chitosan acetate
- Viscosity: 2000 cps minimum (initial production)
- pH: 3.0 to 4.0
- Solids content: 1.4 to 1.6%
- Turbidity: 100 NTU or less

Aquatic toxicity reports are available on request.

HOW MUCH WATER WILL CHITOVAN TREAT?

<table>
<thead>
<tr>
<th>Chitosan Acetate (lbs.)</th>
<th>Water Treated (gallons)</th>
<th>Dose (mg/l)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.4 (5-gal bucket 1%)</td>
<td>96,000</td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td>48,000</td>
<td>1</td>
</tr>
<tr>
<td>4.6 (55-gal barrel 1%)</td>
<td>1,105,000</td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td>552,000</td>
<td>1</td>
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<tr>
<td></td>
<td>276,000</td>
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<tr>
<td>23 (275-gal tote 1%)</td>
<td>5,525,000</td>
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<tr>
<td></td>
<td>2,762,000</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>1,381,000</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>691,000</td>
<td>4</td>
</tr>
</tbody>
</table>

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