

## MATERIAL SAFETY DATA SHEET

### 1. Product Name/Identification

Chitosan Malate
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### 2. Composition

Active Ingredient: <b>Chitosan (1% solution)</b>	CAS # 9012-76-4, 6915-15-7, 7732-18-5
Chemical Name(s):	Chitosan, Malic acid, water

### 3. Physical/Chemical Properties

Appearance and Odor:	Clear to pale yellow viscous liquid with no distinguishable odor.
Solubility:	Completely soluble in water. Precipitates at pH > 6.5.
Specific Gravity:	1.0 – 1.1
Boiling Point:	211 degrees F
pH:	3.9 – 4.1

### 4. Toxicological Data

Acute Oral, LD50 (mice)	>16g/kg
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### 5. Fire and Explosion Hazard Data

Flash Point:	n/a
Flammability:	Non-flammable
Unusual Fire and Explosion Hazards:	There is no danger of fire or explosion
Fire Fighting Media:	Use water or foam (not flammable in nature)

### 6. Health Hazards Information

Acute Health Effects – Signs and Symptoms of Exposure, Emergency and First Aid Procedures.	<p>Eye Contact: Chitosan Malate is mildly irritating to eyes. Flush with water for 15 minutes to remove and call a physician.</p> <p>Skin Contact: Chitosan Malate is not hazardous but cleansing the skin after use is advisable.</p> <p>Inhalation: If a large amount of vapor is inhaled remove to fresh air and call a physician.</p> <p>Ingestion: If swallowed, no specific intervention is indicated as the compound is not likely to be hazardous by ingestion. However, consult a physician if necessary.</p>
Potential Chronic Health Effects:	n/a
Carcinogenicity:	n/a

## 7. Personal Protective Equipment

Respiratory Protection:	Not required, neither are local or mechanical exhausts.
Protective Gloves:	Rubber gloves are recommended.
Eye Protection:	Safety glasses are recommended.
Other protective clothing:	Not needed.

## 8. Regulatory

TSCA:	Not listed on the TSCA inventory.
OSHA:	Not considered hazardous.
EPA:	Exempt from EPA code.
SARA Section 302:	Does not have an RQ or TPQ.
SARA Section 313:	Not reportable under Section 313.

## 9. Storage, Handling and Disposal

Storage:	50 – 122 degrees F (10 – 50 degrees C). Solution will freeze at 26 degrees F (minus 3 C). Shelf life is rated at 18 months and must be analyzed past the shelf life for applicable use.
For Spills:	Utilize protective clothing. Absorb with acid absorbent. Clean residue with soap and water.
Waste Disposal Method:	Land disposal of absorbed waste is acceptable as the compound is biodegradable. Follow local, state, and federal regulations.
Work/Hygiene Practices:	Follow normal chemical hygienic and housekeeping practices.

## 10. Transportation Information

DOT Shipping Name:	Chitosan Malate
Technical Shipping Name:	Chitosan Malate
DOT Hazard Class:	Class 55, not regulated
Product RQ (lbs):	None
DOT Label:	None
DOT Placard:	None required
Product Label:	Chitosan Malate

## 11. Stability and Reactivity

Chemical Family:	Natural polysaccharide
Stability:	Stable for up to 18 months from date of manufacture.
Hazardous Polymerization:	Polymerization will not occur.
Incompatibility:	Incompatible with strong oxidants and strong bases.
Decomposition:	Decomposition will not occur.
Instability Conditions:	Stable at normal temperatures and storage conditions.
Decomposition Temperature:	211 degrees F (will boil)
Decomposition Products:	Water and Chitosan Malate salt (clear film).

Reviewed by: Andrew Gregovich – Tidal Vision, October 2016

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