

## 1. Product and Company Identification

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Product Name Chitosan Powder  
Part Number RXSOL-70-3896-345

### Company Details:

RX MARINE INTERNATIONAL  
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## 2. Composition / Information on ingredients

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| Chemical Name | Cas No    | EC No     | Whight | Formula              |
|---------------|-----------|-----------|--------|----------------------|
| Chitosan      | 9012-76-4 | 618-480-0 |        | $C_{12}H_{24}N_2O_9$ |

## 3. Hazards Identification

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|                                            |                                                                                                                                                                                                                                                                                                 |
|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Signal Word                                | Danger                                                                                                                                                                                                                                                                                          |
| Hazard Statements                          | H300 + H310 Fatal if swallowed or in contact with skin.                                                                                                                                                                                                                                         |
| Precautionary statements                   | P262 Do not get in eyes, on skin, or on clothing. P280 Wear protective gloves/ protective clothing. P301 + P310 + P330 IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth. P302 + P352 + P310 IF ON SKIN: Wash with plenty of water. Immediately call a POISON CENTER/ doctor. |
| Classification of the substance or mixture | Not a hazardous substance or mixture according to Regulation (EC) No 1272/2008.                                                                                                                                                                                                                 |
| Supplemental Hazard Statements             | None                                                                                                                                                                                                                                                                                            |
| Other hazards                              | This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.                                                                                              |

## 4. First Aid Measures

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|                |                                                                                                         |
|----------------|---------------------------------------------------------------------------------------------------------|
| General advice | Consult a physician. Show this material safety data sheet to the doctor in attendance.                  |
| If inhaled     | fresh air                                                                                               |
| Eye Contact    | After eye contact: rinse out with plenty of water. Remove contact lenses.                               |
| Swallowed      | After swallowing: make victim drink water (two glasses at most). Consult doctor if feeling unwell.      |
| Skin Contact   | In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. |
| Inhalation     | Remove patient to fresh air, keep warm and at rest and get medical assistance in necessary.             |
| Ingestion      | Rinse mouth with water. Do not induce vomiting. Never give anything by                                  |

Most important symptoms and effects, both acute and delaye

Indication of any immediate medical attention and special treatment needed

mouth to an unconscious person. Call a doctor or Poison Control Center immediately.

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

No data available

## 5. Fire-fighting Measures

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Flammability

Suitable extinguishing media

Unsuitable extinguishing media

Special hazards arising from the substance or mixture

Further information

Hazardous combustion products

Advice for firefighters

Protective Equipment

Specific Hazards Arising from the Chemical

May be combustible at high temperature.

Water Foam Carbon dioxide (CO<sub>2</sub>) Dry powder

For this substance/mixture no limitations of extinguishing agents are given.

Carbon oxides Nitrogen oxides (NO<sub>x</sub>) Combustible Development of hazardous combustion gases or vapours possible in the event of fire.

Suppress (knock down) gases/vapors/mists with a water spray jet.

Fire may cause the evolution of Sulphur oxides, nitrogen oxides.

In the event of fire, wear self-contained breathing apparatus.

Use personal protective equipment.

Has a fire-promoting effect due to the release of oxygen.

Ambient fire may liberate hazardous vapours.

## 6. Accidental Release Measures

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Personal precautions, protective equipment and emergency procedures

Spillage

Personal Protection

Enviromental Precaution

Methods and materials for containment and cleaning

Reference to other sections

Advice for non-emergency personnel: Avoid inhalation of dusts. Evacuate the danger area, observe emergency procedures, consult an expert. For personal protection see section 8.

Oxidizing material. Stop leak if without risk. Avoid contact with a combustible material (wood, paper, oil, clothing...). Keep substance damp using water spray. Do not touch spilled material. Prevent entry into sewers, basements or confined areas dike if needed. Eliminate all ignition sources. Call for assistance on disposal.

Advice for non-emergency personnel: Avoid inhalation of dusts. Evacuate the danger area, observe emergency procedures, consult an expert. Advice for emergency responders: Protective equipment see section 8.

No special precautionary measures necessary.

Observe possible material restrictions (see sections 7 and 10). Take up dry. Dispose of properly. Clean up affected area. Avoid generation of dusts.

For disposal see section 13.

## 7. Handling and Storage

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Advice on protection against fire and explosion

Incompatible materials

Hygiene measures

Advice on safe handling

Conditions for safe storage, including any incompatibilities

Storage conditions

Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

Keep away from alkalis, strong oxidizing agents and metals. Provide containment walls of adequate capacity to hold any accidental spills.

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. For precautions see section 2.2.

For precautions see section 2.2.

Tightly closed. Dry. Keep in a well-ventilated place. Keep locked up or in an area accessible only to qualified or authorized persons. Moisture sensitive.

Tightly closed. Dry.

|                                        |                                                                                                                           |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| Storage class                          | Storage class (TRGS 510): 11: Combustible Solids                                                                          |
| Specific end use(s)                    | Apart from the uses mentioned in section 1.2 no other specific uses are stipulated                                        |
| Advice on general occupational hygiene | Advice on safe handling Observe label precautions. Change contaminated clothing. Wash hands after working with substance. |

## 8. Exposure controls and personal protection

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|                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Exposure controls                 | No specific additional engineering controls are required. Provide good natural or artificial ventilation.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Engineering Control               | Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Eye/face protection               | Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Body Protection                   | Complete suit protecting against chemicals, Flame retardant antistatic protective clothing., The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Skin protection                   | Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. The selected protective gloves have to satisfy the specifications of Regulation (EU) 2016/425 and the standard EN 374 derived from it. Full contact Material: butyl-rubber Minimum layer thickness: 0,3 mm Break through time: 480 min Material tested:Butoject® (KCL 897 / Aldrich Z677647, Size M) Splash contact Material: Chloroprene Minimum layer thickness: 0,6 mm Break through time: 30 min Material tested:Camapren® (KCL 722 / Aldrich Z677493, Size M) data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374 If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the EC approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario. |
| Respiratory protection            | Required when dusts are generated. Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system. Recommended Filter type: Filter type P1 The entrepreneur has to ensure that maintenance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Other Protection Measure          | Handle in accordance with good industrial hygiene and safety practice.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Control of environmental exposure | Prevent further leakage or spillage if safe to do so. Do not let product enter drains.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

## 9. Physical and chemical properties

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|                  |                   |
|------------------|-------------------|
| Physical state   | powder            |
| Colour           | Colorless         |
| Odour            | No data available |
| Odor Threshold   | Not Applicable    |
| pH               | No data available |
| Melting Point    | 102,5 °C          |
| Boiling Point    | 97 °C - lit.      |
| Flash Point      | 6 °C - closed cup |
| Evaporation Rate | Not Applicable    |

|                                              |                           |
|----------------------------------------------|---------------------------|
| Flammability (solid, gas)                    | No data available         |
| Explosive limits                             | No Data Available         |
| Upper/lower flammability or explosive limits | No data available         |
| Autoignition temperature                     | No data available         |
| Decomposition temperature                    | No data available         |
| Vapour pressure                              | No data available         |
| Viscosity                                    | No data available         |
| Density                                      | 1 g/cm <sup>3</sup>       |
| Relative Density                             | No data available         |
| Specific Gravity                             | No data available         |
| Partition coefficient                        | No data available         |
| Explosive properties                         | No data available         |
| Solubility                                   | No data available         |
| Ignition temperature                         | No information available. |
| Particle characteristics                     | No data available         |

## 10. Stability and reactivity

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|                                    |                                                                                                                                                                                           |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reactivity                         | The following applies in general to flammable organic substances and mixtures: in correspondingly fine distribution, when whirled up a dust explosion potential may generally be assumed. |
| Chemical stability                 | The product is chemically stable under standard ambient conditions (room temperature) .                                                                                                   |
| Possibility of hazardous reactions | No data available                                                                                                                                                                         |
| Conditions to avoid                | Heat, flames and sparks.                                                                                                                                                                  |
| Incompatible materials             | Strong oxidizing agents                                                                                                                                                                   |
| Hazardous decomposition products   | In the event of fire: see section 5                                                                                                                                                       |

## 11. Toxicological information

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|                                                  |                                                                                                                                                                                                         |
|--------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Acute toxicity                                   | LD50 Oral - Rat - > 10.000 mg/kg Inhalation: No data available Dermal: No data available                                                                                                                |
| Skin corrosion/irritation                        | No data available                                                                                                                                                                                       |
| Serious eye damage/irritation                    | No data available                                                                                                                                                                                       |
| Respiratory or skin sensitization                | No data available                                                                                                                                                                                       |
| Carcinogenicity                                  | No data available                                                                                                                                                                                       |
| Germ cell mutagenicity                           | No data available                                                                                                                                                                                       |
| Reproductive toxicity                            | No data available                                                                                                                                                                                       |
| Specific target organ toxicity - single exposure | No data available                                                                                                                                                                                       |
| Additional Information                           | RTECS: UF9625000 Lung irritation, Cyanosis, Central nervous system depression To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. |

## 12. Ecological information

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|                                                     |                                                                                                                                       |
|-----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Persistence and degradability                       | No data available                                                                                                                     |
| Toxicity to fish                                    | LC50 - Oncorhynchus mykiss (rainbow trout) - 1,73 mg/l - 96 h                                                                         |
| Toxicity to daphnia and other aquatic invertebrates | EC50 - Daphnia pulex (Water flea) - 13,69 mg/l - 48 h                                                                                 |
| Toxicity                                            | Toxicity to fish LC50 - Pimephales promelas (fathead minnow) - 1.520 mg/l - 96 h                                                      |
| Toxicity to bacteria                                | EC10 - Bacteria - 14 mg/l - 72 h Remarks: (Lit.) EC5 - E.coli - 15.000 mg/l Remarks: (Lit.) (maximum permissible toxic concentration) |

|                                    |                                                                                                                                                                                                                                  |
|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Toxicity to algae                  | Static test ErC50 - Pseudokirchneriella subcapitata (green algae) - 74,35 mg/l - 72 h (OECD Test Guideline 201) Remarks: (in analogy to similar products) The value is given in analogy to the following substances: maleic acid |
| Products Biodegradation            | The methods for determining the biological degradability are not applicable to inorganic substances.                                                                                                                             |
| Mobility in soil                   | No data available                                                                                                                                                                                                                |
| Results of PBT and vPvB assessment | This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.                               |
| Endocrine disrupting properties    | No data available                                                                                                                                                                                                                |
| Other adverse effects              | No data available .                                                                                                                                                                                                              |

### 13. Disposal considerations

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|                        |                                                                                                                                                                                                                                                                                                                                              |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product                | Offer surplus and non-recyclable solutions to a licensed disposal company. Waste material must be disposed of in accordance with the Directive on waste 2008/98/EC as well as other national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself. |
| Contaminated packaging | Dispose of as unused product.                                                                                                                                                                                                                                                                                                                |
| Waste treatment Method | See <a href="http://www.retrologistik.com">www.retrologistik.com</a> for processes regarding the return of chemicals and containers, or contact us there if you have further questions.                                                                                                                                                      |

### 14. Transport information

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|                              |                                                                      |
|------------------------------|----------------------------------------------------------------------|
| UN number                    | ADR/RID: IMDG: IATA:                                                 |
| UN proper shipping name      | ADR/RID: IMDG: IATA:                                                 |
| Transport hazard class(es)   | ADR/RID: IMDG: IATA:                                                 |
| Packaging group              | ADR/RID: IMDG: IATA:                                                 |
| Environmental hazards        | ADR/RID: IMDG: IATA:                                                 |
| Special precautions for user | No data available                                                    |
| Further information          | Not classified as dangerous in the meaning of transport regulations. |

### 15. Regulatory information

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|                                                                                                |                                                                                                  |
|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| Safety, health and environmental regulations/legislation specific for the substance or mixture | This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006. |
| Other regulations                                                                              | Take note of Dir 94/33/EC on the protection of young people at work.                             |
| Chemical Safety Assessment                                                                     | For this product a chemical safety assessment was not carried out                                |

### 16. Other information

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|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Other Information | The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Rx Marine International has been advised of the possibility of such damages. |
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