1. SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier
- Product identifier: Crystal Green®
- Chemical Name: Struvite, Magnesium Ammonium Phosphate Hexahydrate.
- Chemical Formula: MgNH₄PO₄·6H₂O
- Trade Name: Crystal Green®
- CAS No.: 13478-16-5

1.2 Recommended use of the chemical and restrictions on use
- Identified Use(s): Slow release fertilizer.
- Uses Advised Against: None known.

1.3 Supplier’s details
  Suite 690- 1199 West Pender St
  Vancouver, BC,
  V6E 2R1, Canada
- Telephone: (604) 408-6697
- E-mail: abritton@ostara.com

1.4 Emergency Phone No.
- (604) 408-6697

2. SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
- Not classified as dangerous for supply/use.

2.2 Label elements
- Hazard Pictogram(s): None.
- Signal Word(s): None.
- Hazard Statement(s): None.
- Precautionary Statement(s): None.

2.3 Other hazards
- Dust may have irritant effect on skin, eyes and air passages.

2.4 Additional Information
- None.

3. SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

<table>
<thead>
<tr>
<th>Hazardous Ingredient(s)</th>
<th>CAS No.</th>
<th>%W/W</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnesium Ammonium Phosphate Hexahydrate</td>
<td>13478-16-5</td>
<td>&gt;97</td>
</tr>
</tbody>
</table>

3.2 Additional Information
- None.
4. SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

Inhalation
If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.

Skin Contact
After contact with skin, wash immediately with plenty of soap and water.

Eye Contact
First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.

Ingestion
If swallowed, rinse mouth with water (only if the person is conscious).

4.2 Most important symptoms and effects, both acute and delayed

Dust may have irritant effect on skin, eyes and air passages.

4.3 Indication of any immediate medical attention and special treatment needed

Unlikely to be required but if necessary treat symptomatically.

5. SECTION 5: FIRE-FIGHTING MEASURES

5.1 Extinguishing Media

Suitable Extinguishing Media
As appropriate for surrounding fire.

Unsuitable Extinguishing Media
None known.

5.2 Special hazards arising from the substance or mixture

Toxic fumes may be produced in a fire.
Decomposition products: Nitrogen oxides, Magnesium oxides, Phosphorus oxides.

5.3 Advice for fire-fighters

Fire fighters should wear complete protective clothing including self-contained breathing apparatus. Keep containers cool by spraying with water if exposed to fire.

6. SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures


6.2 Environmental precautions

Do not allow to enter drains, sewers or waterways.

6.3 Methods and material for containment and cleaning up

Sweep spilled substances into containers if appropriate moisten first to prevent dusting. Use vacuum equipment for collecting spilt materials, where practicable. Transfer to a container for disposal.

6.4 Reference to other sections

See Also Section 8, 13.

7. SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Provide adequate ventilation. Avoid generation of dust. Avoid breathing dust. Wear suitable gloves. Wash hands thoroughly after handling.

7.2 Conditions for safe storage, including any incompatibilities

Keep container tightly closed and in a well-ventilated place.

7.2.1 Storage temperature

<55°C

7.2.2 Storage life

Stable under normal conditions.

7.2.3 Incompatible materials

Strong oxidizing agents.
8. SECTION 8: EXPOSURE CONTROLS/PERSOANAL PROTECTION

8.1 Control parameters
Occupational Exposure Limits

<table>
<thead>
<tr>
<th>SUBSTANCE</th>
<th>CAS No.</th>
<th>LTEL (8 hr TWA ppm)</th>
<th>LTEL (8 hr TWA mg/m³)</th>
<th>STEL (ppm)</th>
<th>STEL (mg/m³)</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8.2 Appropriate engineering controls

8.3 Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection
Not normally required. Wear protective eyewear (goggles, face shield, or safety glasses).

Skin protection
Not normally required. Wear suitable gloves if prolonged skin contact is likely.

Respiratory protection
Normally no personal respiratory protection is necessary. An approved dust mask should be worn if dust is generated during processing or handling. A suitable dust mask or dust respirator with filter type P (EN143 or EN405) may be appropriate.

Thermal hazards
Not applicable.

9. SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance
Powder/Pellets (up to 5mm diameter).

Odor
Musty/Ammonia (when damp or heated above 55°C).

Odor Threshold
Not established.

pH
Not applicable.

Melting Point/Freezing Point
Not available.

Initial boiling point and boiling range
Not available.

Flash point
Not available.

Evaporation Rate
Not applicable.

Flammability (solid, gas)
Non-flammable.

Upper/lower flammability or explosive limits
Not applicable.

Vapor pressure
Not applicable.

Vapor density
Not applicable.

Relative density
1.7

Bulk Density
1 g/ml

Solubility(ies)
Insoluble in water.

Partition coefficient: n-octanol/water
Not applicable.

Auto-ignition temperature
Not available.

Decomposition Temperature
>55°C

Viscosity
Not applicable.

Explosive properties
Not explosive.

Oxidizing properties
Not oxidizing.

9.2 Other information

Molecular weight
245 Atomic Mass Unit
## 10. SECTION 10: STABILITY AND REACTIVITY

<table>
<thead>
<tr>
<th>10.1 Reactivity</th>
<th>Stable under normal conditions.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.2 Chemical stability</td>
<td>Stable under normal conditions.</td>
</tr>
<tr>
<td>10.3 Possibility of hazardous reactions</td>
<td>Stable under normal conditions.</td>
</tr>
<tr>
<td>10.4 Conditions to avoid</td>
<td>Heat and direct sunlight.</td>
</tr>
<tr>
<td>10.5 Incompatible materials</td>
<td>Strong oxidizing agents.</td>
</tr>
<tr>
<td>10.6 Hazardous decomposition product(s)</td>
<td>Nitrogen oxides, Magnesium oxides, Phosphorus oxides.</td>
</tr>
</tbody>
</table>

## 11. SECTION 11: TOXICOLOGICAL INFORMATION

<table>
<thead>
<tr>
<th>11.1 Information on toxicological effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
</tr>
<tr>
<td>Serious eye damage/irritation</td>
</tr>
<tr>
<td>Respiratory or skin sensitization</td>
</tr>
<tr>
<td>Germ cell mutagenicity</td>
</tr>
<tr>
<td>Carcinogenicity</td>
</tr>
<tr>
<td>Reproductive toxicity</td>
</tr>
<tr>
<td>STOT - single exposure</td>
</tr>
<tr>
<td>STOT - repeated exposure</td>
</tr>
<tr>
<td>Aspiration hazard</td>
</tr>
<tr>
<td>11.2 Other information</td>
</tr>
</tbody>
</table>

## 12. SECTION 12: ECOCLOGICAL INFORMATION

<table>
<thead>
<tr>
<th>12.1 Toxicity</th>
<th>Low toxicity to aquatic organisms.</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.2 Persistence and degradability</td>
<td>There is evidence of degradation in soil. Not persistent.</td>
</tr>
<tr>
<td>12.3 Bioaccumulative potential</td>
<td>The substance has no potential for bioaccumulation.</td>
</tr>
<tr>
<td>12.4 Mobility in soil</td>
<td>Insoluble in water. The substance is predicted to have low mobility in soil.</td>
</tr>
<tr>
<td>12.5 Other adverse effects</td>
<td>None known.</td>
</tr>
</tbody>
</table>

## 13. SECTION 13: DISPOSAL CONSIDERATIONS

<table>
<thead>
<tr>
<th>13.1 Waste treatment methods</th>
<th>Dispose at suitable refuse site.</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.2 Additional Information</td>
<td>Disposal should be in accordance with local, state or national legislation.</td>
</tr>
<tr>
<td></td>
<td>US RCRA Hazard Class</td>
</tr>
<tr>
<td></td>
<td>Not listed.</td>
</tr>
</tbody>
</table>

## 14. SECTION 14: TRANSPORT INFORMATION

**D.O.T. Classification**

Not classified as dangerous for transport.

| 14.1 UN number                  | Not applicable. |
| 14.2 Proper Shipping Name       | Not applicable. |
| 14.3 Transport hazard class(es) | Not applicable. |
| 14.4 Packing group              | Not applicable. |
| 14.5 Environmental hazards      | Not applicable. |
| 14.6 Special precautions for user | Not applicable. |
| 14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code | Not applicable. |
15. **SECTION 15: REGULATORY INFORMATION**

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1 USA
- OSHA: Not listed.
- State Right to Know Lists: Not listed.
- TSCA: Not listed.
- Title III Consolidated List of Lists: Not listed.
- Proposition 65 (California): Not listed.
- OSPAR List of Chemicals for Priority Action: Not listed.

15.1.2 Canada
- WHMIS – Ingredient Disclosure List: Not listed.
- Domestic Substances List (DSL): Not listed.
- List of Challenge Substances: Not listed.
- Priority Substances List: Not listed.
- Toxic Substances List: Not listed.
- National Pollutant Release Inventory (NPRI) Substance Lists: Not listed.

16. **SECTION 16: OTHER INFORMATION**

The following sections contain revisions or new statements: 1-16.

<table>
<thead>
<tr>
<th>NFPA</th>
<th>HMIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>0</td>
</tr>
<tr>
<td>Fire</td>
<td>0</td>
</tr>
<tr>
<td>Instability</td>
<td>0</td>
</tr>
</tbody>
</table>

**LEGEND**
- LTEL: Long Term Exposure Limit
- STEL: Short Term Exposure Limit
- STOT: Specific Target Organ Toxicity
- OSHA: Occupational Safety and Health Administration
- TSCA: Toxic Substances Control Act
- NFPA: National Fire Protection Association
- HMIS: Hazardous Material Information System
- WHMIS: Workplace Hazardous Materials Information System

**Additional Information (Canada)**
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the Material Safety Data Sheet contains all of the information required by the Controlled Products Regulations.

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