



SAFETY DATA SHEET

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	MgNH ₄ PO ₄ ·6H ₂ O
	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	
	Company Identification	Ostara Nutrient Recovery Technologies Inc. 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

Hazardous Ingredient(s)	CAS No.	%W/W
Magnesium Ammonium Phosphate Hexahydrate	13478-16-5	>97

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	Ensure adequate ventilation. Ensure suitable personal protection during removal of spillages. Avoid generation of dust. Avoid breathing dust.
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. Keep away from heat and direct sunlight.
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/PERSONAL PROTECTION

8.1 Control parameters Occupational Exposure Limits

SUBSTANCE	CAS No.	LTEL (8 hr TWA ppm)	LTEL (8 hr TWA mg/m ³)	STEL (ppm)	STEL (mg/m ³)	Note
None						

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

Crystal Green®
10. SECTION 10: STABILITY AND REACTIVITY

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

11. SECTION 11: TOXICOLOGICAL INFORMATION

11.1	Information on toxicological effects	
	Acute toxicity	Low acute toxicity.
	Skin corrosion/irritation	Not classified.
	Serious eye damage/irritation	Not classified.
	Respiratory or skin sensitization	Not classified.
	Germ cell mutagenicity	There is no evidence of mutagenic potential.
	Carcinogenicity	No evidence of carcinogenicity.
	Reproductive toxicity	Not classified.
	STOT - single exposure	Not classified.
	STOT - repeated exposure	Not classified.
	Aspiration hazard	None anticipated.
11.2	Other information	None.

12. SECTION 12: ECOLOGICAL INFORMATION

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

13. SECTION 13: DISPOSAL CONSIDERATIONS

13.1	Waste treatment methods	Dispose at suitable refuse site.
13.2	Additional Information	Disposal should be in accordance with local, state or national legislation.
	US RCRA Hazard Class	Not listed.

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.



Crystal Green®

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.

NFPA		HMIS	
Health	0	Health	0
Fire	0	Flammability	0
Instability	0	Physical hazards	0

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.

Disclaimers

Information contained in this publication or as otherwise supplied to Users is believed to be accurate and is given in good faith, but it is for the Users to satisfy themselves of the suitability of the product for their own particular purpose.

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