Crystal Green®

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	$MgNH_4PO_4$-$6H_2O$
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/m³)	STEL (ppm)	STEL (mg/m³)	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

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.

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.
Ostara Nutrient Recovery Technologies Inc. gives no warranty as to the fitness of the product for any particular purpose and any implied warranty or condition (statutory or otherwise) is excluded except to the extent that exclusion is prevented by law. Ostara Nutrient Recovery Technologies Inc. accepts no liability for loss or damage (other than that arising from death or personal injury caused by defective product, if proved), resulting from reliance on this information. Freedom under Patents, Copyright and Designs cannot be assumed.

Material Safety Data Sheet
Ammonium chloride

ACC# 01170

Section 1 - Chemical Product and Company Identification

MSDS Name: Ammonium chloride
Catalog Numbers: AC123340000, AC123340010, AC123340250, AC199970000, AC199970010, AC199975000, AC393180000, AC393180010, AC393180050, AC393182500, AC423280000, AC423280010, AC423285000, A649-3, A649-500, A661-10, A661-3, A661-500, A687-10, A687-100, A687-212, A687-500
Synonyms: Ammonium Chloratum; Ammonium Chloridum; Ammonium Muriate; Sal Ammonia; Salmiac.
Company Identification:
Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410
For information, call: 201-796-7100
Emergency Number: 201-796-7100
For CHEMTREC assistance, call: 800-424-9300
For International CHEMTREC assistance, call: 703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
12125-02-9	Ammonium chloride	>99	235-186-4

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: colorless or white crystalline powder.
Warning! Harmful if swallowed. Causes eye irritation. Hygroscopic (absorbs moisture from the air).
Target Organs: Gastrointestinal system, eyes.

Potential Health Effects
Eye: Causes eye irritation.
Skin: May cause skin irritation. May be harmful if absorbed through the skin.
Ingestion: Harmful if swallowed. May cause irritation of the digestive tract. May cause systemic toxicity with acidosis.
Inhalation: If heated, dust or fume may cause respiratory tract irritation. May be harmful if inhaled. Ammonium chloride fume may cause an asthma-like allergy. Future exposure may cause asthma attacks with shortness of breath, wheezing, coughing, and/or chest tightness.
Chronic: Prolonged or repeated skin contact may cause dermatitis.

Section 4 - First Aid Measures

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
Skin: Get medical aid. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Ingestion: Do not induce vomiting. Get medical aid immediately. Call a poison control center.
Inhalation: Remove from exposure and move to fresh air immediately. If breathing is difficult, give oxygen. Get medical aid. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Substance is noncombustible.
Extinguishing Media: Substance is noncombustible; use agent most appropriate to extinguish surrounding fire.
Flash Point: Not available.
Autoignition Temperature: Not available.
Explosion Limits, Lower: Not available.
Upper: Not available.
NFPA Rating: (estimated) Health: 2; Flammability: 0; Instability: 1

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal container. Avoid generating dusty conditions. Provide ventilation. Do not let this chemical enter the environment.

Section 7 - Handling and Storage

Handling: Use with adequate ventilation. Minimize dust generation and accumulation. Do not get in eyes, on skin, or on clothing. Do not ingest or inhale.
Storage: Store in a cool, dry place. Store in a tightly closed container.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.
Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Ammonium chloride	10 mg/m3 TWA (fume); 20 mg/m3 STEL (fume)	10 mg/m3 TWA (fume)	none listed

OSHA Vacated PELs: Ammonium chloride: 10 mg/m3 TWA
Personal Protective Equipment
Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin: Wear appropriate protective gloves to prevent skin exposure.
Clothing: Wear appropriate protective clothing to prevent skin exposure.
Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Crystalline powder
Appearance: colorless or white
Odor: odorless
pH: 5.0 (10% sol at 25C)
Vapor Pressure: 1 mm Hg @ 160.4C
Vapor Density: Not available.
Evaporation Rate: Negligible.
Viscosity: Not available.
Boiling Point: 520 deg C
Freezing/Melting Point:328 deg C
Decomposition Temperature: Not available.
Solubility: 39.6% at 176F.
Specific Gravity/Density:1.53 (Water=1)
Molecular Formula:NH4Cl
Molecular Weight:53.49

Section 10 - Stability and Reactivity

Chemical Stability: Hygroscopic: absorbs moisture or water from the air.
Conditions to Avoid: Incompatible materials, excess heat, exposure to moist air or water.
Incompatibilities with Other Materials: Acids, bases, silver salts, bromine trifluoride, nitrates, potassium chlorates, carbonates, bromine pentafluoride, lead salts.
Hazardous Decomposition Products: Carbon monoxide, carbon dioxide, ammonia and hydrochloric acid fumes.
Hazardous Polymerization: May occur.

Section 11 - Toxicological Information

RTECS#:
CAS# 12125-02-9: BP4550000; BP4570000
LD50/LC50:
CAS# 12125-02-9:
Draize test, rabbit, eye: 500 mg/24H Mild;
Draize test, rabbit, eye: 100 mg Severe;
Oral, mouse: LD50 = 1300 mg/kg;
Oral, rat: LD50 = 1650 mg/kg;

Carcinogenicity:
CAS# 12125-02-9: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No information found
Teratogenicity: No information found
Reproductive Effects: No information found
Mutagenicity: Mutagenic effects have occurred in experimental animals.
Neurotoxicity: No information found
Other Studies:

Section 12 - Ecological Information

Ecotoxicity: No data available. No information available.
Environmental: No information available.
Physical: No information available.
Other: Do not empty into drains.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	Not Regulated	Not Regulated
Hazard Class:		
UN Number:		

Packing Group:		

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 12125-02-9 is listed on the TSCA inventory.
Health & Safety Reporting List
None of the chemicals are on the Health & Safety Reporting List.
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
CERCLA Hazardous Substances and corresponding RQs
CAS# 12125-02-9: 5000 lb final RQ; 2270 kg final RQ
SARA Section 302 Extremely Hazardous Substances
None of the chemicals in this product have a TPQ.
SARA Codes
CAS # 12125-02-9: immediate, delayed.
Section 313 No chemicals are reportable under Section 313.
Clean Air Act:
This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
CAS# 12125-02-9 is listed as a Hazardous Substance under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.
OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.
STATE
CAS# 12125-02-9 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations
European Labeling in Accordance with EC Directives
Hazard Symbols:
XN
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
CAS# 12125-02-9 is listed as a Hazardous Substance under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.
OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.
STATE
CAS# 12125-02-9 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations
European Labeling in Accordance with EC Directives
Hazard Symbols:
XN
Risk Phrases:
R 22 Harmful if swallowed.
R 36 Irritating to eyes.

Safety Phrases:
S 22 Do not breathe dust.
S 24/25 Avoid contact with skin and eyes.

WGK (Water Danger/Protection)
CAS# 12125-02-9: 1
Canada - DSL/NDSL
CAS# 12125-02-9 is listed on Canada's DSL List.
Canada - WHMIS
This product has a WHMIS classification of D2B.
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.
Canadian Ingredient Disclosure List
CAS# 12125-02-9 is listed on the Canadian Ingredient Disclosure List.

Section 16 - Additional Information

MSDS Creation Date: 6/15/1999
Revision #11 Date: 2/11/2008

Magnesium

SDS Revision Date: 01/14/2016

1. Identification

1.1. Product identifier

Product Identity	Magnesium; AZ31B
Alternate Names	Magnesium; AZ31B ,MSDS # : 700

1.2. Relevant identified uses of the substance or mixture and uses advised against

Intended use	See Technical Data Sheet.
Application Method	See Technical Data Sheet.

1.3. Details of the supplier of the safety data sheet

Company Name	TW Metals Company, Inc. The Arboretum 760 Constitution Drive Exton PA 19341

Emergency

CHEMTREC (USA)	(800) 424-9300

2. Hazard(s) identification

2.1. Classification of the substance or mixture

Flam. Sol. 1;H228	Flammable solid.
Pyr. Sol. 1;H250	Catches fire spontaneously if exposed to air.
WaterReact. 1;H260	In contact with water releases flammable gases which may ignite spontaneously.

2.2. Label elements

Using the Toxicity Data listed in section 11 and 12 the product is labeled as follows.

Danger

H228 Flammable solid.

H250 Catches fire spontaneously if exposed to air.
H260 In contact with water releases flammable gases which may ignite spontaneously.

[Prevention]:

P210 Keep away from heat / sparks / open flames / hot surfaces - No smoking.
P222 Do not allow contact with air.
P223 Keep away from any possible contact with water, because of violent reaction and possible flash fire.
P231+232 Handle under inert gas. Protect from moisture.
P240 Ground / bond container and receiving equipment.
P241 Use explosion-proof electrical / ventilating / light / equipment.
P280 Wear protective gloves / eye protection / face protection.
[Response]:

P335+334 Brush off loose particles from skin. Immerse in cool water / wrap in wet bandages.
P370+378 In case of fire: Use extinguishing media listed in section 5 of SDS for extinction.
[Storage]:

P402+404 Store in a dry place. Store in a closed container.
P422 Store contents under ...
[Disposal]:

P501 Dispose of contents / container in accordance with local / national regulations.

3. Composition/information on ingredients

This product contains the following substances that present a hazard within the meaning of the relevant State and Federal Hazardous Substances regulations.

Ingredient/Chemical Designations	Weight %	GHS Classification	Notes
Magnesium **CAS Number: 0007439-95-4**	**75 - 100**	**WaterReact. 1;H260** **Pyr. Sol. 1;H250**	**[1]**
Aluminum (Al) **CAS Number: 0007429-90-5**	**1 - 5**	**Flam. Sol. 1;H228** **WaterReact. 2;H261**	**[1][2]**

In accordance with paragraph (i) of §1910.1200, the specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.
[1] Substance classified with a health or environmental hazard.
[2] Substance with a workplace exposure limit.
[3] PBT-substance or vPvB-substance.
*The full texts of the phrases are shown in Section 16.

4. First aid measures

4.1. Description of first aid measures

General	In all cases of doubt, or when symptoms persist, seek medical attention. Never give anything by mouth to an unconscious person.
Inhalation	Remove to fresh air, keep patient warm and at rest. If breathing is irregular or stopped, give artificial respiration. If unconscious place in the recovery position and obtain immediate medical attention. Give nothing by mouth.
Eyes	Irrigate copiously with clean water for at least 15 minutes, holding the eyelids apart and seek medical attention.
Skin	Remove contaminated clothing. Wash skin thoroughly with soap and water or use a recognized skin cleanser.
Ingestion	If swallowed obtain immediate medical attention. Keep at rest. Do NOT induce vomiting.

4.2. Most important symptoms and effects, both acute and delayed

Overview

Magnesium alloys in their solid state present no inhalation, ingestion or contact health hazard. However, inhaling dusts, fumes or mists which may be generated during certain manufacturing procedures (melting, welding, sawing. brazing. grinding and machining) may be hazardous to your health. Particulates / dusts may also be irritating to the unprotected skin or eyes.

ACUTE EFFECTS: Excessive exposure to dusts / fumes may cause irritation of eyes, nose or throat. Inhalation of dusts / fumes may result in metal fume fever (metallic taste in mouth, dryness and irritation of throat, chills and fever).

CHRONIC EFFECTS: Prolonged inhalation of fumes or dusts may cause a variety of adverse health effects to the respiratory system, including (but not necessarily limited to) lesions of the mucous membrane, bronchitis, pneumonia and cancers fo the nasal cavity and respiratory tract.

POTENTIAL HEALTH EFFECTS/MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Any pre-existing chronic respiratory condition (asthma, chronic bronchitis, emphysema).

ROUTES OF ENTRY: Inhalation (dusts / fumes / mists), Contact with Skin and Eyes (dusts / mists), Ingestion (dusts).

See section 2 for further details.

5. Fire-fighting measures

5.1. Extinguishing media

Smother burning magnesium by covering with an extinguishing powder approved for use on magnesium fires such as G1, MET-LX, etc. Consult national fire protection association standards for other extinguishing media which may be applicable to certain

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition: Hydrogen gas.

Keep away from heat / sparks / open flames / hot surfaces - No smoking.

Do not allow contact with air.

Keep away from any possible contact with water, because of violent reaction and possible flash fire.

Handle under inert gas. Protect from moisture.

Ground / bond container and receiving equipment.

Use explosion-proof electrical / ventilating / light / equipment.

5.3. Advice for fire-fighters

When heated in air to a temperature near its melting point, Magnesium alloys ignite and burn with a white flame. Use of water on burning magnesium will produce hydrogen gas and may cause and explosion.

Wear positive pressure self-contained breathing apparatus.

ERG Guide No. ----

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Put on appropriate personal protective equipment (see section 8).

6.2. Environmental precautions

Do not allow spills to enter drains or waterways.

Use good personal hygiene practices. Wash hands before eating, drinking, smoking or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse.

6.3. Methods and material for containment and cleaning up

No special procedures needed.

7. Handling and storage

7.1. Precautions for safe handling

Minimize activities which may generate dusts, mists or fumes. Keep areas well ventilated. Use suitable equipment to move materials.

See section 2 for further details. - [Prevention]:

7.2. Conditions for safe storage, including any incompatibilities

Handle containers carefully to prevent damage and spillage.

Store products in a dry location. See National Fire Protection Association bulletins - NFPA 480, "Storage, Handling and Processing of Magnesium".

Incompatible materials: Acid, Water. Reacts with acid to form Hydrogen gas. In finely divided form, will react with water or acids to release Hydrogen.

See section 2 for further details. - [Storage]:

7.3. Specific end use(s)

No data available.

8. Exposure controls and personal protection

8.1. Control parameters

Exposure

CAS No.	Ingredient	Source	Value
0007429-90-5	Aluminum (Al)	OSHA	TWA 15 mg/m3 (total) TWA 5 mg/m3 (resp)
		ACGIH	TWA: 1.o mg/m3 Revised 2008,
		NIOSH	TWA 10 mg/m3 (total) TWA 5 mg/m3 (resp)
		Supplier	No Established Limit
0007439-95-4	Magnesium	OSHA	No Established Limit
		ACGIH	No Established Limit
		NIOSH	No Established Limit
		Supplier	No Established Limit

The exposure limits for nuisance dust are: OSHA PEL: 15 mg/m3 (50 mppcf*) TWA, ACGIH 10 mg/m3.

Carcinogen Data

CAS No.	Ingredient	Source	Value
0007429-90-5	Aluminum (Al)	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
0007439-95-4	Magnesium	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;

8.2. Exposure controls

Respiratory In dusty atmospheres use an approved dust respirator.

Eyes Face shields (welding or burning), Safety glasses (cutting or grinding).

Skin Use appropriate protective clothing for the process being performed

Engineering Controls Provide adequate ventilation. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. If these are not sufficient to maintain concentrations of particulates and any vapor below occupational exposure limits suitable respiratory protection must be worn.

Other Work Practices Use good personal hygiene practices. Wash hands before eating, drinking, smoking or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse.

See section 2 for further details. - [Prevention]:

9. Physical and chemical properties

Appearance	Silver Solid
Odor	Odorless
Odor threshold	Not determined
pH	Not Measured
Melting point / freezing point	Not Measured
Initial boiling point and boiling range	NA
Flash Point	Nonflammable
Evaporation rate (Ether = 1)	Not Measured
Flammability (solid, gas)	Solid
Upper/lower flammability or explosive limits	**Lower Explosive Limit:** Not Measured **Upper Explosive Limit:** Not Measured
Vapor pressure (Pa)	NA
Vapor Density	NA
Specific Gravity	1.77
Solubility in Water	Insoluble
Partition coefficient n-octanol/water (Log Kow)	Not Measured
Auto-ignition temperature	NA
Decomposition temperature	Not Measured
Viscosity (cSt)	Not Measured

9.2. Other information

No other relevant information.

10. Stability and reactivity

10.1. Reactivity

Hazardous Polymerization will not occur.

10.2. Chemical stability

Stable under normal circumstances.

10.3. Possibility of hazardous reactions

No data available.

10.4. Conditions to avoid

No data available.

10.5. Incompatible materials

Acid, Water. Reacts with acid to form Hydrogen gas. In finely divided form, will react with water or acids to release Hydrogen.

10.6. Hazardous decomposition products

Hydrogen gas.

11. Toxicological information

Acute toxicity

Ingredient	Oral LD50, mg/kg	Skin LD50, mg/kg	Inhalation Vapor LC50, mg/L/4hr	Inhalation Dust/Mist LC50, mg/L/4hr	Inhalation Gas LC50, ppm
Magnesium - (7439-95-4)	No data available	No data available	No data available	No data available	No data available
Aluminum (Al) - (7429-90-5)	No data available	No data available	No data available	No data available	No data available

Note: When no route specific LD50 data is available for an acute toxin, the converted acute toxicity point estimate was used in the calculation of the product's ATE (Acute Toxicity Estimate).

Classification	Category	Hazard Description
Acute toxicity (oral)	---	Not Applicable
Acute toxicity (dermal)	---	Not Applicable
Acute toxicity (inhalation)	---	Not Applicable
Skin corrosion/irritation	---	Not Applicable
Serious eye damage/irritation	---	Not Applicable
Respiratory sensitization	---	Not Applicable
Skin sensitization	---	Not Applicable
Germ cell mutagenicity	---	Not Applicable
Carcinogenicity	---	Not Applicable
Reproductive toxicity	---	Not Applicable
STOT-single exposure	---	Not Applicable
STOT-repeated exposure	---	Not Applicable
Aspiration hazard	---	Not Applicable

12. Ecological information

12.1. Toxicity

Toxic to aquatic life

Aquatic Ecotoxicity

Ingredient	96 hr LC50 fish, mg/l	48 hr EC50 crustacea, mg/l	ErC50 algae, mg/l
Magnesium - (7439-95-4)	Not Available	Not Available	Not Available

Aluminum (Al) - (7429-90-5)	Not Available	Not Available	Not Available

12.2. Persistence and degradability

There is no data available on the preparation itself.

12.3. Bioaccumulative potential

Not Measured

12.4. Mobility in soil

No data available.

12.5. Results of PBT and vPvB assessment

This product contains no PBT/vPvB chemicals.

12.6. Other adverse effects

No data available.

13. Disposal considerations

13.1. Waste treatment methods

Observe all federal, state and local regulations when disposing of this substance.

14. Transport information

	DOT (Domestic Surface Transportation)	IMO / IMDG (Ocean Transportation)	ICAO/IATA
14.1. UN number	Not Applicable	Not Regulated	Not Regulated
14.2. UN proper shipping name	Not Regulated	Not Regulated	Not Regulated
14.3. Transport hazard class(es)	**DOT Hazard Class:** Not Applicable	**IMDG:** Not Applicable **Sub Class:** Not Applicable	**Air Class:** Not Applicable
14.4. Packing group	Not Applicable	Not Applicable	Not Applicable

14.5. Environmental hazards

IMDG Marine Pollutant: Yes;

14.6. Special precautions for user

No further information

15. Regulatory information

Regulatory Overview The regulatory data in Section 15 is not intended to be all-inclusive, only selected regulations are represented.

Toxic Substance Control Act (TSCA) All components of this material are either listed or exempt from listing on the TSCA Inventory.

WHMIS Classification F

US EPA Tier II Hazards

Fire: Yes

Sudden Release of Pressure: No

Reactive: Yes

Immediate (Acute): No

Delayed (Chronic): No

EPCRA 311/312 Chemicals and RQs:
To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

EPCRA 302 Extremely Hazardous:
To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

EPCRA 313 Toxic Chemicals:

Aluminum (Al)

Proposition 65 - Carcinogens (>0.0%):
To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Developmental Toxins (>0.0%):
To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Female Repro Toxins (>0.0%):
To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Male Repro Toxins (>0.0%):
To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

New Jersey RTK Substances (>1%):

Aluminum (Al)

Magnesium

Pennsylvania RTK Substances (>1%):

Aluminum (Al)

Magnesium

16. Other information

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects which may be caused by exposure to our products. Customers/users of this product must comply with all applicable health and safety laws, regulations, and orders.

The full text of the phrases appearing in section 3 is:

H228 Flammable solid.

H250 Catches fire spontaneously if exposed to air.

H260 In contact with water releases flammable gases which may ignite spontaneously.

H261 In contact with water releases flammable gases.

The information contained herein is furnished without warranty of any kind. The above information is believed to be correct but does not purport to be all inclusive and should be used only as a guide. Users should make independent determinations of the suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers.

End of Document

Material Safety Data Sheet
Sodium hydroxide, solid

ACC# 21300

Section 1 - Chemical Product and Company Identification

MSDS Name: Sodium hydroxide, solid
Catalog Numbers: BP359-212, BP359-500, S318-1, S318-10, S318-100, S318-10LC, S318-3, S318-3LC, S318-5, S318-50, S318-500, S318-50LC, S320-1, S320-10, S320-3, S320-50, S320-500, S392-12, S392-12LC, S392-212, S392-50, S392SAM1, S392SAM2, S392SAM3, S399-1, S399-212, S399-50, S399-500, S612-3, S612-3500LB, S612-50, S612-500LB, S613-10, S613-3, S613-50, S613-500LB
Synonyms: Caustic soda; Soda lye; Sodium hydrate; Lye.
Company Identification:
Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410
For information, call: 201-796-7100
Emergency Number: 201-796-7100
For CHEMTREC assistance, call: 800-424-9300
For International CHEMTREC assistance, call: 703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
1310-73-2	Sodium hydroxide	95-100	215-185-5
497-19-8	Sodium carbonate	<3.0	207-838-8

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: white solid.
Danger! Causes eye and skin burns. Causes digestive and respiratory tract burns. Hygroscopic (absorbs moisture from the air).
Target Organs: Eyes, skin, mucous membranes.

Potential Health Effects
Eye: Causes eye burns. May cause blindness. May cause chemical conjunctivitis and corneal damage.
Skin: Causes skin burns. May cause deep, penetrating ulcers of the skin.
Ingestion: May cause severe and permanent damage to the digestive tract. Causes gastrointestinal tract burns. May cause perforation of the digestive tract. Causes severe pain, nausea, vomiting, diarrhea, and shock.
Inhalation: Irritation may lead to chemical pneumonitis and pulmonary edema. Causes severe irritation of upper respiratory tract with coughing, burns, breathing difficulty, and possible coma. Causes chemical burns to the respiratory tract.
Chronic: Prolonged or repeated skin contact may cause dermatitis. Effects may be delayed.

Section 4 - First Aid Measures

Eyes: In case of contact, immediately flush eyes with plenty of water for a t least 15 minutes. Get medical aid immediately.
Skin: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid immediately. Wash clothing before reuse.
Ingestion: If swallowed, do NOT induce vomiting. Get medical aid immediately. If victim is fully conscious, give a cupful of water. Never give anything by mouth to an unconscious person.
Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Use water spray to keep fire-exposed containers cool. Use water with caution and in flooding amounts. Contact with moisture or water may generate sufficient heat to ignite nearby combustible materials. Contact with metals may evolve flammable hydrogen gas.
Extinguishing Media: Substance is noncombustible; use agent most appropriate to extinguish surrounding fire. Do NOT get water inside containers.
Flash Point: Not applicable.
Autoignition Temperature: Not applicable.
Explosion Limits, Lower: Not available.
Upper: Not available.
NFPA Rating: (estimated) Health: 3; Flammability: 0; Instability: 1

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal container. Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Provide ventilation. Do not get water on spilled substances or inside containers.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Do not allow water to get into the container because of violent reaction. Minimize dust generation and accumulation. Do not get in eyes, on skin, or on clothing. Keep container tightly closed. Avoid ingestion and inhalation. Discard contaminated shoes. Use only with adequate ventilation.
Storage: Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Keep away from metals. Corrosives area. Keep away from acids. Store protected from moisture. Containers must be tightly closed to prevent the conversion of NaOH to sodium carbonate by the CO2 in air.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.
Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Sodium hydroxide	2 mg/m3 Ceiling	10 mg/m3 IDLH	2 mg/m3 TWA
Sodium carbonate	none listed	none listed	none listed

OSHA Vacated PELs: Sodium hydroxide: No OSHA Vacated PELs are listed for this chemical. Sodium carbonate: No OSHA Vacated PELs are listed for this chemical.
Personal Protective Equipment
Eyes: Wear chemical splash goggles and face shield.
Skin: Wear butyl rubber gloves, apron, and/or clothing.
Clothing: Wear appropriate protective clothing to prevent skin exposure.
Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Solid
Appearance: white
Odor: Odorless
pH: 14 (5% aq soln)
Vapor Pressure: 1 mm Hg @739 deg C
Vapor Density: Not available.
Evaporation Rate: Not available.
Viscosity: Not available.
Boiling Point: 1390 deg C @ 760 mmHg
Freezing/Melting Point:318 deg C
Decomposition Temperature: Not available.
Solubility: Soluble.
Specific Gravity/Density:2.13 g/cm3
Molecular Formula: NaOH
Molecular Weight:40

Section 10 - Stability and Reactivity

Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.
Conditions to Avoid: Moisture, contact with water, exposure to moist air or water, prolonged exposure to air.

Incompatibilities with Other Materials: Water, metals, acids, aluminum, zinc, tin, nitromethane, leather, flammable liquids, organic halogens, wool.
Hazardous Decomposition Products: Toxic fumes of sodium oxide.
Hazardous Polymerization: Will not occur.

Section 11 - Toxicological Information

RTECS#:
CAS# 1310-73-2: WB4900000
CAS# 497-19-8: VZ4050000
LD50/LC50:
CAS# 1310-73-2:
Draize test, rabbit, eye: 400 ug Mild;
Draize test, rabbit, eye: 1% Severe;
Draize test, rabbit, eye: 50 ug/24H Severe;
Draize test, rabbit, eye: 1 mg/24H Severe;
Draize test, rabbit, skin: 500 mg/24H Severe;

CAS# 497-19-8:
Draize test, rabbit, eye: 100 mg/24H Moderate;
Draize test, rabbit, eye: 50 mg Severe;
Draize test, rabbit, skin: 500 mg/24H Mild;
Inhalation, mouse: LC50 = 1200 mg/m3/2H;
Inhalation, rat: LC50 = 2300 mg/m3/2H;
Oral, mouse: LD50 = 6600 mg/kg;
Oral, mouse: LD50 = 6600 mg/kg;
Oral, rat: LD50 = 4090 mg/kg;

Carcinogenicity:
CAS# 1310-73-2: Not listed by ACGIH, IARC, NTP, or CA Prop 65.
CAS# 497-19-8: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No information found
Teratogenicity: No information found
Reproductive Effects: No information found
Mutagenicity: See actual entry in RTECS for complete information.
Neurotoxicity: No information found
Other Studies:

Section 12 - Ecological Information

No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	SODIUM HYDROXIDE, SOLID	SODIUM HYDROXIDE SOLID
Hazard Class:	8	8
UN Number:	UN1823	UN1823
Packing Group:	II	II

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 1310-73-2 is listed on the TSCA inventory.
CAS# 497-19-8 is listed on the TSCA inventory.
Health & Safety Reporting List
None of the chemicals are on the Health & Safety Reporting List.
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
CERCLA Hazardous Substances and corresponding RQs
CAS# 1310-73-2: 1000 lb final RQ; 454 kg final RQ
SARA Section 302 Extremely Hazardous Substances
None of the chemicals in this product have a TPQ.
SARA Codes
CAS # 1310-73-2: immediate, reactive.
CAS # 497-19-8: immediate.
Section 313 No chemicals are reportable under Section 313.
Clean Air Act:
This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
CAS# 1310-73-2 is listed as a Hazardous Substance under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.
OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.
STATE
CAS# 1310-73-2 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.
CAS# 497-19-8 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives
Hazard Symbols:
C
Risk Phrases:
R 35 Causes severe burns.

Safety Phrases:
S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S 37/39 Wear suitable gloves and eye/face protection.
S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

WGK (Water Danger/Protection)
CAS# 1310-73-2: 1
CAS# 497-19-8: 1
Canada - DSL/NDSL
CAS# 1310-73-2 is listed on Canada's DSL List.
CAS# 497-19-8 is listed on Canada's DSL List.
Canada - WHMIS
This product has a WHMIS classification of E.
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.
Canadian Ingredient Disclosure List
CAS# 1310-73-2 is listed on the Canadian Ingredient Disclosure List.
CAS# 497-19-8 is listed on the Canadian Ingredient Disclosure List.

Section 16 - Additional Information

MSDS Creation Date: 12/12/1997
Revision #10 Date: 2/15/2008

Material Safety Data Sheet
Water

ACC# 00199

Section 1 - Chemical Product and Company Identification

MSDS Name: Water
Catalog Numbers: AC268300000, AC268300010, AC276010000, AC276010050, AC276010200, AC326650000, AC326650010, AC326650025, AC327390000, AC327390010, AC327390050, AC345470000, AC345470050, AC389390000, AC389390010, AC389390025, AC389400000, AC389400010, AC389400025, AC615150000, 26830-0025, 26830-0040, 61515-0025, NC9271177, NC9533256, W6-1, W6-4
Synonyms:
Company Identification:
Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410
For information, call: 201-796-7100
Emergency Number: 201-796-7100
For CHEMTREC assistance, call: 800-424-9300
For International CHEMTREC assistance, call: 703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
7732-18-5	Water	100	231-791-2

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: water-white liquid.
Expected to be non-hazardous.
Target Organs: None.

Potential Health Effects
Eye: Non-irritating to the eyes.
Skin: Non-irritating to the skin.
Ingestion: No hazard expected in normal industrial use.
Inhalation: No hazard expected in normal industrial use.

Section 4 - First Aid Measures

Eyes: No specific treatment is necessary, since this material is not likely to be hazardous.
Skin: No specific treatment is necessary, since this material is not likely to be hazardous.
Ingestion: No specific treatment is necessary, since this material is expected to be non-hazardous.
Inhalation: No specific treatment is necessary since this material is not likely to be hazardous by inhalation.
Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: Material will not burn.
Extinguishing Media: Not available.
Flash Point: Not applicable.
Autoignition Temperature: Not applicable.
Explosion Limits, Lower: Not available.
Upper: Not available.
NFPA Rating: (estimated) Health: 0; Flammability: 0; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container.

Section 7 - Handling and Storage

Handling: No special handling procedures are required.
Storage: No special storage requirements.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: There are no special ventilation requirements.
Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Water	none listed	none listed	none listed

OSHA Vacated PELs: Water: No OSHA Vacated PELs are listed for this chemical.
Personal Protective Equipment
Eyes: Eye protection is not normally required.
Skin: Protective garments not normally required.
Clothing: Protective garments not normally required.
Respirators: Respirator protection is not normally required.

Section 9 - Physical and Chemical Properties

Physical State: Liquid
Appearance: colorless - Clear - water-white
Odor: odorless
pH: Not available.
Vapor Pressure: 17.5 mm Hg @ 20 deg C.
Vapor Density: Not available.
Evaporation Rate: Not available.
Viscosity: 1 cP @ 20C
Boiling Point: 100 deg C
Freezing/Melting Point: Not available.
Decomposition Temperature: Not available.
Solubility: Not available.
Specific Gravity/Density:1.000
Molecular Formula:H2O
Molecular Weight:18.0134

Section 10 - Stability and Reactivity

Chemical Stability: Stable.
Conditions to Avoid: None reported.
Incompatibilities with Other Materials: None.
Hazardous Decomposition Products: None.
Hazardous Polymerization: Will not occur.

Section 11 - Toxicological Information

RTECS#:
CAS# 7732-18-5: ZC0110000
LD50/LC50:
CAS# 7732-18-5:
Oral, rat: LD50 = >90 mL/kg;
.

Carcinogenicity:
CAS# 7732-18-5: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No information found
Teratogenicity: No information found
Reproductive Effects: No information found
Mutagenicity: No information found
Neurotoxicity: No information found
Other Studies:

Section 12 - Ecological Information

Ecotoxicity: No data available. No information available.
Environmental: Nonhazardous to the environment.
Physical: No information available.
Other: No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	NOT REGULATED FOR DOMESTIC TRANSPORT	Not Regulated.
Hazard Class:	XCP	
UN Number:		
Packing Group:		

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 7732-18-5 is listed on the TSCA inventory.
Health & Safety Reporting List
None of the chemicals are on the Health & Safety Reporting List.
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
CERCLA Hazardous Substances and corresponding RQs
None of the chemicals in this material have an RQ.
SARA Section 302 Extremely Hazardous Substances
None of the chemicals in this product have a TPQ.
Section 313 No chemicals are reportable under Section 313.
Clean Air Act:
This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
None of the chemicals in this product are listed as Hazardous Substances under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.
OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.
STATE
CAS# 7732-18-5 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives
Hazard Symbols:
Not available.
Risk Phrases:

Safety Phrases:

WGK (Water Danger/Protection)
CAS# 7732-18-5: No information available.
Canada - DSL/NDSL
CAS# 7732-18-5 is listed on Canada's DSL List.
Canada - WHMIS
not available.
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.
Canadian Ingredient Disclosure List

Section 16 - Additional Information

MSDS Creation Date: 1/08/1999
Revision #5 Date: 1/15/2008