

The following list contains the Material Safety Data Sheets you requested. Please scroll down to view the requested MSDS(s).

<u>Product</u>	<u>MSDS</u>	<u>Distributor</u>	<u>Format</u>	<u>Language</u>	<u>Quantity</u>
2952400	31425	Hach Company	ROWGHS	English	1
2952400	2962266	Hach Company	ROWGHS	English	1

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Total Enclosures: 2

World Headquarters  
Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

MSDS No: M00215

# SAFETY DATA SHEET

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Potassium Hydroxide Pellets

**Catalog Number:** 31425

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M00215

**Chemical Name:** Potassium hydroxide

**CAS Number:** 1310-58-3

**Additional CAS No. (for hydrated forms):** -  
26288-25-5 (monohydrate)

**Chemical Formula:** KOH

**Chemical Family:** Inorganic Base

**Intended Use:** Laboratory Reagent

## 2. HAZARDS IDENTIFICATION

**GHS Classification:**

**Hazard categories:** Corrosive to Metals: Met. Corr. 1 Acute Toxicity: Acute Tox. 4-Orl Skin Corrosion/Irritation:  
Skin Corr. 1A .

**GHS Label Elements:**

DANGER



**Hazard statements:** May be corrosive to metals. Harmful if swallowed. Causes severe skin burns and eye damage. .

**Precautionary statements:** Do not breathe dust/fume/gas/mist/vapours/spray. . Wear eye protection. IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician. IF SWALLOWED: rinse mouth. Do NOT induce vomiting. IF INHALED: Remove victim/person to fresh air and keep at rest in a position comfortable for breathing. Absorb spillage to prevent material damage. .

**HMIS:**

**Health:** 3

**Flammability:** 0

**Reactivity:** 1

**Protective Equipment:** X - See protective equipment, Section 8.

**NFPA:**

**Health:** 3

**Flammability:** 0

**Reactivity:** 1

**Symbol:** Not applicable

**WHMIS Hazard Classification:** Class E - Corrosive material Class D, Division 1, Subdivision B - Toxic material (immediate effects)

**WHMIS Symbols:** Corrosive Acute Poison

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### 3. COMPOSITION / INFORMATION ON INGREDIENTS

*Hazardous Components according to GHS:*

**Potassium Hydroxide**

**CAS Number:** 1310-58-3

**Chemical Formula:** KOH

**GHS Classification:** Acute Tox. 4 - Or1, H302; Skin Corr. 1A, H314; Met Corr. 1, H290; Aquatic Acute 3, H402

**Percent Range (Trade Secret):** 100.0

**Percent Range Units:** weight / weight

**PEL:** 15 mg/m<sup>3</sup> as inhalable dust; 5 mg/m<sup>3</sup> as respirable dust

**TLV:** 10 mg/m<sup>3</sup> as inhalable dust; 3 mg/m<sup>3</sup> as respirable dust

**WHMIS Symbols:** Corrosive/Acute Poison

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### 4. FIRST AID MEASURES

**General Information:** In the event of exposure, show this Material Safety Data Sheet and label (where possible) to a doctor.

**Advice to doctor:** Treat symptomatically.

**Eye Contact:** Immediately flush eyes with water for 15 minutes. Call physician.

**Skin Contact (First Aid):** Remove contaminated clothing. Call physician immediately. Wash skin with plenty of water for 15 minutes.

**Inhalation:** Remove to fresh air. Give artificial respiration if necessary. Call physician.

**Ingestion (First Aid):** Do not induce vomiting. Give 1-2 glasses of water. Call physician immediately. Never give anything by mouth to an unconscious person.

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### 5. FIRE FIGHTING MEASURES

**Flammable Properties:** Not Flammable, but reacts with most metals to form flammable hydrogen gas. During a fire, corrosive and toxic gases may be generated by thermal decomposition.

**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

**Extinguishing Media:** Use media appropriate to surrounding fire conditions

**Extinguishing Media NOT To Be Used:** Not applicable

**Fire / Explosion Hazards:** Contact with metals gives off hydrogen gas which is flammable

**Hazardous Combustion Products:** This material will not burn.

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### 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Notice:**

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance. Outside of the US, only persons properly qualified according to state or local regulations should respond to a spill involving chemicals.

**Containment Technique:** Stop spilled material from being released to the environment.

**Clean-up Technique:** If permitted by regulation, Scoop up spilled material into a large beaker and dissolve with water. Adjust to a pH between 6 and 9 with an acid, such as sulfuric or citric. Flush reacted material to the drain with a large excess of water. Decontaminate the area of the spill with a soap solution. Otherwise, Pick up spill for disposal and place in a closed container. Dispose of in accordance with local, state and federal regulations or laws.

**Evacuation Procedure:** Evacuate local area (15 foot radius or as directed by your facility's emergency response plan) when: any quantity is spilled. If conditions warrant, increase the size of the evacuation.

**DOT Emergency Response Guide Number:** 154

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### 7. HANDLING AND STORAGE

**Handling:** Avoid contact with eyes skin clothing Do not breathe dust. Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.

**Storage:** Protect from: heat moisture Store away from: acids / acid fumes. metals

*Flammability Class:* Not applicable

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## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**Engineering Controls:** Maintain adequate ventilation to keep vapor level below TWA for chemicals in this product. Maintain general industrial hygiene practices when using this product.

**Personal Protective Equipment:**

**Eye Protection:** safety glasses with top and side shields

**Skin Protection:** disposable latex gloves In the EU, the selected gloves must satisfy the specifications of EU Directive 89/686/EEC and standard EN 374 derived from it. lab coat

**Inhalation Protection:** adequate ventilation

**Precautionary Measures:** Avoid contact with: eyes skin clothing Do not breathe: dust Wash thoroughly after handling. Protect from: heat moisture

**TLV:** 10 mg/m<sup>3</sup> as inhalable dust; 3 mg/m<sup>3</sup> as respirable dust

**PEL:** 15 mg/m<sup>3</sup> as inhalable dust; 5 mg/m<sup>3</sup> as respirable dust

**For Occupational Exposure Limits (OEL) for ingredients, see section 3 - Composition/Information on Ingredients.:**

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Appearance:** White pellets

**Physical State:** Solid

**Molecular Weight:** 56.1

**Odor:** Irritating

**Odor Threshold:** Not determined

**pH:** of a 0.1 M solution = 13.5

**Metal Corrosivity:**

**Corrosivity Classification:** Classified as corrosive to metals.

**Steel:** Not determined

**Aluminum:** Not determined

**Specific Gravity/ Relative Density (water = 1; air =1):** 2.044

**Viscosity:** Not applicable

**Solubility:**

**Water:** Soluble

**Acid:** Reacts violently

**Other:** Soluble in alcohol, glycerol

**Partition Coefficient (n-octanol / water):** Not determined

**Coefficient of Water / Oil:** Not determined

**Melting Point:** 360 °C 680 °F

**Decomposition Temperature:** Not applicable

**Boiling Point:** Not applicable

**Vapor Pressure:** 1 mm @ 719 °C (1326.2 °F)

**Vapor Density (air = 1):** Not applicable

**Evaporation Rate (water = 1):** Not applicable

**Volatile Organic Compounds Content:** Not applicable

**Flammable Properties:** Not Flammable, but reacts with most metals to form flammable hydrogen gas. During a fire, corrosive and toxic gases may be generated by thermal decomposition.

**Flash Point:** Not applicable

**Method:** Not applicable

**Flammability Limits:**

**Lower Explosion Limits:** Not applicable

**Upper Explosion Limits:** Not applicable

**Autoignition Temperature:** Not applicable

**Explosive Properties:**

Not classified according to GHS criteria.

**Oxidizing Properties:**

Not classified according to GHS criteria.

**Reactivity Properties:**

Not classified as self-reactive, pyrophoric, self-heating or emitting flammable gases in contact with water according to GHS criteria.

**Gas under Pressure:**

Not classified according to GHS criteria.

Not applicable

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## 10. STABILITY AND REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.

**Mechanical Impact:** None reported

**Static Discharge:** None reported.

**Reactivity / Incompatibility:** May react violently in contact with: acids Incompatible with: alcohols metals combustible materials organic peroxides

**Hazardous Decomposition:** Contact with metals may release flammable hydrogen gas.

**Conditions to Avoid:** Excess moisture

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## 11. TOXICOLOGICAL INFORMATION

**Toxicokinetics, Metabolism and Distribution:** Summary of findings reported in the literature follow.

K+ starts to be toxic at levels > 200-250mg/L. It's concentration is regulated by renal excretion/reabsorption. The impact of the OH- on blood pH is regulated by the bicarbonate buffer system, respiration and renal compensation.

**Toxicologically Synergistic Products:** None reported

**Acute Toxicity:** Route Data Given Below

Oral Rat LD50 = 273 mg/kg; Oral Rat LD50 = 365 mg/Kg; Oral rat LD50 = 1250 mg/Kg

**Specific Target Organ Toxicity - Single Exposure (STOT-SE):** Based on classification principles, the classification criteria are not met. Respiratory Tract

**Specific Target Organ Toxicity - Repeat Exposure (STOT-RE):** Based on classification principles, the classification criteria are not met.

**Skin Corrosion/Irritation:** Corrosive to skin.

Skin Human 50mg/24H SEVERE; Skin rabbit 50mg/24H SEVERE; Skin guinea pig 50mg/24H SEVERE

**Eye Damage:** Corrosive to eyes.

Eye rabbit 1mg/24H SEVERE

**Sensitization:** Based on classification principles, the classification criteria are not met.

Guinea pig, intracutaneous test. Not sensitizing

**CMR Effects/Properties (carcinogenic, mutagenic or toxic to reproduction):** Summary of findings reported in the literature follow.

Mutagenicity: Ames test, Escherichia coli, negative

IARC Listed: No

NTP Listed: No

O.S.H.A. Listed: No

**Symptoms/Effects:**

**Ingestion:** Harmful Causes: severe burns vomiting abdominal pain Can cause: death

**Inhalation:** Causes: severe burns sneezing coughing discomfort Can cause: death

**Skin Absorption:** None Reported

**Chronic Effects:** None reported

**Medical Conditions Aggravated:** Pre-existing: Eye conditions Skin conditions Respiratory conditions

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## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:** 96 hr Gambusia affinis LC50 = 80 mg/L

Do not place in landfill. Recycle appropriately. Do not release into the environment. Mobility in soil: Highly mobile No bioaccumulation potential. Rapidly biodegradable.

CEPA Categorization: Persistent Not Bioaccumulative Not inherently toxic to aquatic organisms

**Ingredient Ecological Information:** --

Not applicable

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## 13. DISPOSAL CONSIDERATIONS

**EPA Waste ID Number:** D002

**Special Instructions (Disposal):** If permitted by regulation, Dilute to 3 to 5 times the volume with cold water. Adjust to a pH between 6 and 9 with an acid, such as sulfuric or citric. Open cold water tap completely, slowly pour the reacted material to the drain. Flush system with plenty of water. Otherwise, Dispose of material in an E.P.A. approved hazardous waste facility.

**Empty Containers:** Rinse three times with an appropriate solvent. Rinsate from empty containers may contain sufficient product to require disposal as hazardous waste. Dispose of empty container as normal trash.

**NOTICE (Disposal):** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information. In Europe: Chemical and analysis solutions must be disposed of in compliance with the respective national regulations. Product packaging must be disposed of in compliance with the country-specific regulations or must be passed to a packaging return system.

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## 14. TRANSPORT INFORMATION

### **D.O.T.:**

**D.O.T. Proper Shipping Name:** Potassium Hydroxide, Solid

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**Hazard Class:** 8

**Subsidiary Risk:** NA

**ID Number:** UN1813

**Packing Group:** II

### **T.D.G.:**

**Proper Shipping Name:** Potassium Hydroxide, Solid

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**Hazard Class:** 8

**Subsidiary Risk:** NA

**UN Number/PIN:** 1813

**Packing Group:** II

### **I.C.A.O.:**

**I.C.A.O. Proper Shipping Name:** Potassium Hydroxide, Solid

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**Hazard Class:** 8

**Subsidiary Risk:** NA

**ID Number:** UN1813

**Packing Group:** II

### **I.M.O.:**

**Proper Shipping Name:** Potassium Hydroxide, Solid

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**Hazard Class:** 8

**Subsidiary Risk:** NA

**ID Number:** UN1813

**Packing Group:** II

**Additional Information:** There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is NOT in a set or kit, the classification given above applies. If the item IS part of a set or kit, the classification would change to the following: UN3316 Chemical Kit, Class 9, PG II or III. If the item is not regulated, the Chemical Kit classification does not apply.

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## 15. REGULATORY INFORMATION

### **U.S. Federal Regulations:**

**O.S.H.A.:** This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

### **E.P.A.:**

**S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):** Immediate (Acute) Health Hazard

**S.A.R.A. Title III Section 313 (40 CFR 372):** This product does NOT contain any chemical subject to the reporting requirements of Section 313 of Title III of SARA.

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**302 (EHS) TPQ (40 CFR 355):** Not applicable

**304 CERCLA RQ (40 CFR 302.4):** Potassium hydroxide 1000 lbs.

**304 EHS RQ (40 CFR 355):** Not applicable

**Clean Water Act (40 CFR 116.4):** Potassium hydroxide - RQ 1000 lbs.

**RCRA:** Contains RCRA regulated substances. See Section 13, EPA Waste ID Number.

### **State Regulations:**

**California Prop. 65:** No Prop. 65 listed chemicals are present in this product.

**Identification of Prop. 65 Ingredient(s):** --

**California Perchlorate Rule CCR Title 22 Chap 33:** Not applicable

**Trade Secret Registry:** Not applicable  
**National Inventories:**  
**U.S. Inventory Status:** TSCA Listed: Yes  
**CAS Number:** 1310-58-3  
**Canadian Inventory Status:** DSL Listed: Yes  
**EEC Inventory Status:** EINECS Listed: Yes  
**Australian Inventory (AICS) Status:** Listed  
**New Zealand Inventory (NZIoC) Status:** Listed  
**Korean Inventory (KECI) Status:** Listed  
**Japan (ENCs) Inventory Status:** Listed  
**China (PRC) Inventory (MEP) Status:** Listed

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## 16. OTHER INFORMATION

**References:** In-house information. NIOSH Registry of Toxic Effects of Chemical Substances, 1985-86. Cincinnati: U.S. Department of Health and Human Services, April, 1987. Gosselin, R. E. et al. Clinical Toxicology of Commercial Products, 5th Ed. Baltimore: The Williams and Wilkins Co., 1984. Technical Judgment. Vendor Information. Fire Protection Guide on Hazardous Materials, 10th Ed. Quincy, MA: National Fire Protection Fire Protection Guide on Hazardous Materials, 10th Ed. Quincy, MA: National Fire Protection Association, 1991. The Merck Index, 11th Ed. Rahway, New Jersey: Merck and Co., Inc., 1989. Sax, N. Irving. Dangerous Properties of Industrial Materials, 7th Ed. New York: Van Nostrand Reinhold Co., 1989. Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992. UNEP, (2001), OECD SIDS Potassium Hydroxide CAS No. 1310-58-3

**Complete Text of H phrases referred to in Section 3:** H290 May be corrosive to metals. H302 Harmful if swallowed. H314 Causes severe skin burns and eye damage. .

**Revision Summary:** . Substantial revision to comply with EU Reg 1272/2008, Reg 1907/2006 and UN GHS (ST/SG/AC.10/36/Add.3).

**Date of MSDS Preparation:**

**Day:** 10

**Month:** September

**Year:** 2014

**MSDS Prepared:** MSDS prepared by Product Compliance Department extension 3350

**CCOHS Evaluation Note:** It is offered under exemption from WHMIS labeling as specified in the Controlled Products Regulation (CPR) Section 17. It is offered under the interim policy that was established by Health Canada permitting use of GHS-formatted safety data sheets in Canada prior to revision of CPR to GHS. This product has been classified and labeled in accordance with the requirements of GHS (ST/SG/AC.10/36/Add.3). This SDS has been prepared in accordance with the requirements of GHS (ST/SG/AC.10/36/Add.3).

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**Legend:**

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

**USER RESPONSIBILITY:** Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

**THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.**

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Hach Company  
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Loveland, CO USA 80539  
(970) 669-3050

MSDS No: M02681

# SAFETY DATA SHEET

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## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Respirometric BOD Nutrient Buffer Pillows  
**Catalog Number:** 2962266

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M02681  
**Chemical Name:** Not Applicable  
**CAS Number:** Not applicable  
**Additional CAS No. (for hydrated forms):** Not applicable  
**Chemical Formula:** Not Applicable  
**Chemical Family:** Not applicable  
**Intended Use:** Determination of biochemical oxygen demand

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## 2. HAZARDS IDENTIFICATION

**GHS Classification:**  
**Hazard categories:** Not applicable  
**GHS Label Elements:**  
Not applicable

**Hazard statements:** Not applicable  
**Precautionary statements:** Not applicable

**HMIS:**  
**Health:** 1  
**Flammability:** 0  
**Reactivity:** 0  
**Protective Equipment:** X - See protective equipment, Section 8.

**NFPA:**  
**Health:** 1  
**Flammability:** 0  
**Reactivity:** 0  
**Symbol:** Not applicable  
**WHMIS Hazard Classification:** Not applicable  
**WHMIS Symbols:** Not applicable

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## 3. COMPOSITION / INFORMATION ON INGREDIENTS

**Hazardous Components according to GHS:**  
**Potassium Phosphate, Monobasic**

**CAS Number:** 7778-77-0  
**Chemical Formula:** KH<sub>2</sub>PO<sub>4</sub>  
**GHS Classification:** Acute Tox. 4 - Or1, H302; Eye Irrit. 2, H319  
**Percent Range (Trade Secret):** 1.0 - 5.0  
**Percent Range Units:** weight / weight  
**PEL:** 15 mg/m<sup>3</sup> as total dust; 5 mg/m<sup>3</sup> as respirable dust

*TLV:* 10 mg/m<sup>3</sup> as inhalable fraction; 3 mg/m<sup>3</sup> as respirable fraction

*WHMIS Symbols:* Not applicable

**Ammonium Chloride**

*CAS Number:* 12125-02-9

*Chemical Formula:* NH<sub>4</sub>Cl

*GHS Classification:* Acute Tox. 4-Orl, H302; Skin Irrit. 3, H316; Eye Irrit. 2A, H319; Aq. Acute 2, H401

*Percent Range (Trade Secret):* < 1.0

*Percent Range Units:* weight / weight

*PEL:* 15 mg/m<sup>3</sup> as inhalable dust; 5 mg/m<sup>3</sup> as respirable dust

*TLV:* 10 mg/m<sup>3</sup>

*WHMIS Symbols:* Other Toxic Effects

**Calcium Chloride**

*CAS Number:* 10043-52-4

*Chemical Formula:* CaCl<sub>2</sub>·2H<sub>2</sub>O

*GHS Classification:* Acute Tox. 4-Orl, H302; Acute Tox. 5-Derm, H313; Skin Irrit. 2, H315; Eye Irrit. 2A, H319; STOT Single 3, H335

*Percent Range (Trade Secret):* 0.5 - 1.5

*Percent Range Units:* weight / weight

*PEL:* 15 mg/m<sup>3</sup> as inhalable dust; 5 mg/m<sup>3</sup> as respirable dust

*TLV:* 10 mg/m<sup>3</sup> as inhalable dust; 3 mg/m<sup>3</sup> as respirable dust

*WHMIS Symbols:* Other Toxic Effects

**Ferric Chloride**

*CAS Number:* 7705-08-0

*Chemical Formula:* FeCl<sub>3</sub>·6H<sub>2</sub>O

*GHS Classification:* Met. Corr. 1, H290; Acute Tox. 4-Orl, H302; Acute Tox. 4-Derm, H312; Skin Corr. 1C, H314; Skin Sens. 1, H317; Acute Tox. 4-Inh, H332; STOT Single 3, H335; Aquatic Acute 2, H401

*Percent Range (Trade Secret):* < 0.5

*Percent Range Units:* weight / weight

*PEL:* 1 mg/m<sup>3</sup> (Fe)

*TLV:* 1 mg/m<sup>3</sup> (Fe)

*WHMIS Symbols:* Corrosive

*Hazardous Components according to GHS:* No

**Demineralized Water**

*CAS Number:* 7732-18-5

*Chemical Formula:* H<sub>2</sub>O

*GHS Classification:* Not a dangerous substance according to GHS.

*Percent Range (Trade Secret):* 65.0 - 75.0

*Percent Range Units:* weight / weight

*PEL:* Not established

*TLV:* Not established

*WHMIS Symbols:* Not applicable

**Potassium Phosphate, Dibasic**

*CAS Number:* 7758-11-4

*Chemical Formula:* K<sub>2</sub>HPO<sub>4</sub>

*GHS Classification:* Acute Tox. 5-Orl, H303

*Percent Range (Trade Secret):* 15.0 - 25.0

*Percent Range Units:* weight / weight

*PEL:* 15 mg/m<sup>3</sup> as inhalable dust; 5 mg/m<sup>3</sup> as respirable dust

*TLV:* 10 mg/m<sup>3</sup> as inhalable dust

*WHMIS Symbols:* Not applicable

**Magnesium Sulfate**

**CAS Number:** 7487-88-9  
**Chemical Formula:** MgSO<sub>4</sub>  
**GHS Classification:** Not applicable  
**Percent Range (Trade Secret):** 1.0 - 5.0  
**Percent Range Units:** weight / weight  
**PEL:** 15 mg/m<sup>3</sup> as inhalable dust; 5 mg/m<sup>3</sup> as respirable dust  
**TLV:** 10 mg/m<sup>3</sup> as inhalable dust; 3 mg/m<sup>3</sup> as respirable dust

**WHMIS Symbols:** Not applicable

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#### 4. FIRST AID MEASURES

**General Information:** In the event of exposure, show this Material Safety Data Sheet and label (where possible) to a doctor.

**Advice to doctor:** Treat symptomatically.

**Eye Contact:** Flush eyes with water. Call physician if irritation develops.

**Skin Contact (First Aid):** Wash skin with plenty of water. Call physician if irritation develops. Remove contaminated clothing.

**Inhalation:** Remove to fresh air.

**Ingestion (First Aid):** Give large quantities of water. If you feel unwell, contact a physician. Never give anything by mouth to an unconscious person.

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#### 5. FIRE FIGHTING MEASURES

**Flammable Properties:** Material is not classified as flammable according to GHS criteria. Material will not burn.

**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

**Extinguishing Media:** Use media appropriate to surrounding fire conditions

**Extinguishing Media NOT To Be Used:** Not applicable

**Fire / Explosion Hazards:** This product will not burn or explode. May react violently with: alkali metals strong acids strong bases

**Hazardous Combustion Products:** This material will not burn.

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#### 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Notice:**

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.

**Containment Technique:** Stop spilled material from being released to the environment. Absorb spilled liquid with non-reactive sorbent material. Releases of this material may contaminate the environment.

**Clean-up Technique:** Absorb spilled liquid with non-reactive sorbent material. Sweep up material. Place material in a plastic bag. Decontaminate the area of the spill with a soap solution. If permitted by regulation, Mark bag 'Non-hazardous trash', and dispose of as normal refuse. Otherwise, Dispose of in accordance with local, state and federal regulations or laws.

**Evacuation Procedure:** Evacuate as needed to perform spill clean-up. If conditions warrant, increase the size of the evacuation.

**DOT Emergency Response Guide Number:** Not applicable

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#### 7. HANDLING AND STORAGE

**Handling:** Avoid contact with eyes skin Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.

**Storage:** Keep container tightly closed when not in use. Store in a cool, dry, well-ventilated place. Protect from: heat extreme temperatures freezing Keep away from: acids bases alkali metals

**Flammability Class:** Not applicable

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#### 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**Engineering Controls:** Have an eyewash station nearby. Use general ventilation to minimize exposure to mist, vapor or dust. Maintain general industrial hygiene practices when using this product.

**Personal Protective Equipment:**

**Eye Protection:** safety glasses with top and side shields

**Skin Protection:** nitrile gloves

**Inhalation Protection:** adequate ventilation

**Precautionary Measures:** Avoid contact with: eyes skin Wash thoroughly after handling. Protect from: heat freezing  
Keep away from: alkali metals acids/acid fumes bases

**TLV:** Not established

**PEL:** Not established

**For Occupational Exposure Limits (OEL) for ingredients, see section 3 - Composition/Information on Ingredients.:**

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Appearance:** Turbid yellow liquid

**Physical State:** Liquid

**Molecular Weight:** Not Applicable

**Odor:** Odorless

**Odor Threshold:** Not applicable

**pH:** 6.8 - 7.2

**Metal Corrosivity:**

**Corrosivity Classification:** Not classified as corrosive to metals according to GHS criteria.

**Steel:** Not determined

**Aluminum:** Not determined

**Specific Gravity/ Relative Density (water = 1; air =1):** Not determined

**Viscosity:** Not determined

**Solubility:**

**Water:** Miscible

**Acid:** Reacts with acid

**Other:** Not determined

**Partition Coefficient (n-octanol / water):** Not applicable

**Coefficient of Water / Oil:** Not Applicable

**Melting Point:** ~ -13 °C (~ 8 °F)

**Decomposition Temperature:** Not applicable

**Boiling Point:** ~ 104 °C (~ 219 °F)

**Vapor Pressure:** ~ 16.7 mm Hg (~ 2.17 kPa) at 20 °C (68 °F)

**Vapor Density (air = 1):** 0.63

**Evaporation Rate (water = 1):** ~ 0.82

**Volatile Organic Compounds Content:** Not Applicable

**Flammable Properties:** Material is not classified as flammable according to GHS criteria. Material will not burn.

**Flash Point:** Not Applicable

**Method:** Not applicable

**Flammability Limits:**

**Lower Explosion Limits:** Not Applicable

**Upper Explosion Limits:** Not Applicable

**Autoignition Temperature:** Not Applicable

**Explosive Properties:**

Not classified according to GHS criteria.

**Oxidizing Properties:**

Not classified according to GHS criteria.

**Reactivity Properties:**

Not classified as self-reactive, pyrophoric, self-heating or emitting flammable gases in contact with water according to GHS criteria.

**Gas under Pressure:**

Not classified according to GHS criteria.

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## 10. STABILITY AND REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.

**Mechanical Impact:** None reported

**Static Discharge:** None reported.

**Reactivity / Incompatibility:** Incompatible with: strong acids strong bases alkali metals

**Hazardous Decomposition:** No hazardous decomposition products known.

**Conditions to Avoid:** Extreme temperatures Excessive heat Evaporation Freezing conditions Contact with acid or acid fumes Incompatibles

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## 11. TOXICOLOGICAL INFORMATION

**Toxicokinetics, Metabolism and Distribution:** No information available for mixture.

**Toxicologically Synergistic Products:** None reported

**Acute Toxicity:** Acute Toxicity Estimate (ATE) - Calculated from Ingredient Toxicity Data Route Data Given Below  
Based on classification principles, the classification criteria are not met.

Oral Rat LD50 = 6085 mg/kg

**Specific Target Organ Toxicity - Single Exposure (STOT-SE):** Based on classification principles, the classification criteria are not met.

**Specific Target Organ Toxicity - Repeat Exposure (STOT-RE):** Based on classification principles, the classification criteria are not met.

**Skin Corrosion/Irritation:** Mildly irritating to skin.

**Eye Damage:** Based on classification principles, the classification criteria are not met.

**Sensitization:** Based on classification principles, the classification criteria are not met.

**CMR Effects/Properties (carcinogenic, mutagenic or toxic to reproduction):** Based on classification principles, the classification criteria are not met.

This product does NOT contain any IARC listed chemicals.

This product does NOT contain any NTP listed chemicals.

This product does NOT contain any OSHA listed carcinogens.

**Symptoms/Effects:**

**Ingestion:** May cause: abdominal cramps gastrointestinal disturbances nausea disturb the heart's rhythm paresthesias (tingling or burning sensation) of the hands and feet

**Inhalation:** No effects anticipated

**Skin Absorption:** No effects anticipated

**Chronic Effects:** Chronic overexposure may cause blood changes

**Medical Conditions Aggravated:** Pre-existing: Skin conditions Eye conditions

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## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:** --

No ecological data available for this product. Based on classification principles, not classified as hazardous to the environment. Mobility in soil: Highly mobile

Method Used for Estimation of Aquatic Toxicity of Mixture Summation Method M-factor (Multiplier) for highly toxic ingredients: 1

**Ingredient Ecological Information:** Ammonium Chloride: 96 hr Oncorhynchus mykiss LC50 = 3.98 mg/L; 96 hr Poecilia reticulata LC50 = 7.2 mg/L; 48 hr Daphnia magna LC50 = 161 mg/L

Ferric Chloride: 96 hr Gambusia affinis LC50 = 75.6 mg/L; 96 hr Fish LC50 = 21 mg/L; 48 hr Crustaceans LC50 = 33.4 mg/L; 48 hr Crustaceans LC50 = 12.9 mg/L; 48 hr Crustaceans EC50 = 9.6 mg/L; 48 hr Asellus sp. EC50 = 235.7 mg/L

CEPA Statement: Water, Ferric Chloride, Calcium Chloride, Potassium Phosphate Monobasic, Potassium Phosphate Dibasic, Magnesium Sulfate: Persistent. Not bioaccumulative. Not inherently toxic to aquatic organisms.

CEPA Statement: Ammonium Chloride: Persistent. Not bioaccumulative. Inherently toxic to aquatic organisms.

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## 13. DISPOSAL CONSIDERATIONS

**EPA Waste ID Number:** Not applicable

**Special Instructions (Disposal):** If permitted by regulation, Open cold water tap completely, slowly pour the material to the drain. Allow cold water to run for 5 minutes to completely flush the system. Otherwise, Check with local municipal and state authorities and waste contractors for pertinent local information regarding the proper disposal of chemicals.

**Empty Containers:** Working in a well-ventilated area, Rinse three times with an appropriate solvent. Collect rinsate and dispose of according to local, state or federal regulations. In the US, rinsate from empty containers is classified as hazardous waste and should be disposed of at an E.P. A. approved facility. Rinsate from empty containers may contain sufficient product to require disposal as hazardous waste. Dispose of empty container as normal trash.

**NOTICE (Disposal):** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information. In Europe: Chemical and analysis solutions must be disposed of in compliance with the respective national regulations. Product packaging must be disposed of in compliance with the country-specific regulations or must be passed to a packaging return system.

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## 14. TRANSPORT INFORMATION

### **D.O.T.:**

**D.O.T. Proper Shipping Name:** Not Currently Regulated

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**Hazard Class:** NA

**Subsidiary Risk:** NA

**ID Number:** NA

**Packing Group:** NA

### **T.D.G.:**

**Proper Shipping Name:** Not Currently Regulated

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**Hazard Class:** NA

**Subsidiary Risk:** NA

**UN Number/PIN:** NA

**Packing Group:** NA

### **I.C.A.O.:**

**I.C.A.O. Proper Shipping Name:** Not Currently Regulated

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**Hazard Class:** NA

**Subsidiary Risk:** NA

**ID Number:** NA

**Packing Group:** NA

### **I.M.O.:**

**Proper Shipping Name:** Not Currently Regulated

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**Hazard Class:** NA

**Subsidiary Risk:** NA

**ID Number:** NA

**Packing Group:** NA

**Additional Information:** There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is NOT in a set or kit, the classification given above applies. If the item IS part of a set or kit, the classification would change to the following: UN3316 Chemical Kit, Class 9, PG II or III. If the item is not regulated, the Chemical Kit classification does not apply.

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## 15. REGULATORY INFORMATION

### **U.S. Federal Regulations:**

**O.S.H.A.:** This product does not meet the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

### **E.P.A.:**

**S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):** This product is not hazardous under 29 CFR.1910.1200 and therefore is not covered by Title III under SARA.

**S.A.R.A. Title III Section 313 (40 CFR 372):** This product contains a chemical(s) subject to the reporting requirements of Section 313 of Title III of SARA.

Ammonium Chloride

**302 (EHS) TPQ (40 CFR 355):** Not applicable

**304 CERCLA RQ (40 CFR 302.4):** Ferric chloride 1000 lbs. Ammonium chloride: 5000 lbs.

**304 EHS RQ (40 CFR 355):** Not applicable

**Clean Water Act (40 CFR 116.4):** Ferric chloride - RQ 1000 lbs. Ammonium chloride - RQ 5000 lbs.

**RCRA:** Contains no RCRA regulated substances.

### **State Regulations:**

**California Prop. 65:** No Prop. 65 listed chemicals are present in this product.

**Identification of Prop. 65 Ingredient(s):** None

**California Perchlorate Rule CCR Title 22 Chap 33:** Not applicable

**Trade Secret Registry:** Not applicable

### **National Inventories:**

**U.S. Inventory Status:** All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).

**CAS Number:** Not applicable

**Canadian Inventory Status:** All ingredients of this product are DSL Listed.

**EEC Inventory Status:** All ingredients used to make this product are listed on EINECS / ELINCS.

**Australian Inventory (AICS) Status:** All ingredients are listed.

**New Zealand Inventory (NZIoC) Status:** All components either listed or exempt.

**Korean Inventory (KECI) Status:** All components of this product are either listed, listed as the anhydrous compound or exempt.

**Japan (ENCs) Inventory Status:** All components either listed or exempt.

**China (PRC) Inventory (MEP) Status:** All components either listed or exempt.

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## 16. OTHER INFORMATION

**References:** Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992. Technical Judgment. In-house information. NIOSH Registry of Toxic Effects of Chemical Substances, 1985-86. Cincinnati: U.S. Department of Health and Human Services, April, 1987.

**Complete Text of H phrases referred to in Section 3:** H290 May be corrosive to metals. H302 Harmful if swallowed. H312 Harmful in contact with skin. . H314 Causes severe skin burns and eye damage. H315 Causes skin irritation. H317 May cause an allergic skin reaction. H319 Causes serious eye irritation. H332 Harmful if inhaled. H335 May cause respiratory irritation. H401 Toxic to aquatic life.

**Revision Summary:** Substantially Revised MSDS Substantial revision to comply with EU Reg 1272/2008, Reg 1907/2006 and UN GHS ( ST/SG/AC.10/36/Add.3).

**Date of MSDS Preparation:**

**Day:** 14

**Month:** December

**Year:** 2014

**MSDS Prepared:** MSDS prepared by Product Compliance Department extension 3350

**CCOHS Evaluation Note:** It is offered under exemption from WHMIS labeling as specified in the Controlled Products Regulation (CPR) Section 17. It is offered under the interim policy that was established by Health Canada permitting use of GHS-formatted safety data sheets in Canada prior to revision of CPR to GHS. This product has been classified and labeled in accordance with the requirements of GHS (ST/SG/AC.10/36/Add.3). This SDS has been prepared in accordance with the requirements of GHS (ST/SG/AC.10/36/Add.3).

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### Legend:

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

**USER RESPONSIBILITY:** Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

**THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.**

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