Conforms to HCS 2012 - United States

Compliant SDS for GHS - Canada WHMIS 2015

SAFETY DATA SHEET

PreCede Cereal

RESTORE THE BALANCE

Section 1. Identification

GHS product identifier : PreCede Cereal

Product code : Not available.

Other means of identification : Not available.

Product type : Liquid.

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

Identified uses
Liquid Fertilizer.

Supplier's details :
ATP Nutrition Ltd
190 Agri Park Road
Oak Bluff, MB
R4G 0A5
Tel: 204-287-2023
Fax: 204-487-0027
Email: info@atpnutrition.ca
Web site: www.atpag.com

Emergency telephone number (with hours of operation) : For emergencies only. Call CHEMTREC: 1-800-424-9300 / +1 703-527-3887. (24/7)

Section 2. Hazard(s) identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture :
SKIN CORROSION/IRRITATION - Category 1
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
RESPIRATORY SENSITIZATION - Category 1
SKIN SENSITIZATION - Category 1
CARCINOGENICITY - Category 1
TOXIC TO REPRODUCTION (Unborn child) - Category 1
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2

GHS label elements

Hazard pictograms :

Signal word : Danger

Section 2. Hazard(s) identification

Hazard statements : H314 - Causes severe skin burns and eye damage.
H317 - May cause an allergic skin reaction.
H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H350 - May cause cancer.
H360D - May damage the unborn child.
H373 - May cause damage to organs through prolonged or repeated exposure. (brain)

Precautionary statements

Prevention : P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.
P280 - Wear protective gloves, protective clothing and eye or face protection.
P284 - Wear respiratory protection.
P260 - Do not breathe vapor.
P264 - Wash thoroughly after handling.
P272 - Contaminated work clothing should not be allowed out of the workplace.

Response : P308 + P313 - IF exposed or concerned: Get medical advice or attention.
P304 + P340, P310 - IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or doctor.
P342 + P311 - If experiencing respiratory symptoms: Call a POISON CENTER or doctor.
P301 + P310, P330, P331 - IF SWALLOWED: Immediately call a POISON CENTER or doctor. Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353, P310 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. Immediately call a POISON CENTER or doctor.
P363 - Wash contaminated clothing before reuse.
P302 + P352 - IF ON SKIN: Wash with plenty of water.
P333 + P313 - If skin irritation or rash occurs: Get medical advice or attention.
P305 + P351 + P338, P310 - 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.

Storage : P405 - Store locked up.

Disposal : P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified (US) : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Other means of identification : Not available.

Ingredient name	% (w/w)	CAS number
Zinc sulfate monohydrate	7 - 13	7446-19-7
Manganese(II) sulfate monohydrate	3 - 7	10034-96-5
Trizinc bis(orthophosphate)	1 - 5	7779-90-0
Citric acid	1 - 5	77-92-9
Urea	1 - 5	57-13-6
Manganese hydrogen phosphate	1 - 5	51349-94-1
Phosphoric acid	0.5 - 1.5	7664-38-2
Disodium tetraborate decahydrate	0.1 - 1	1303-96-4
Nickel dichloride	0.1 - 1	7718-54-9

Section 3. Composition/information on ingredients

United States: The exact percentage (concentration) in the composition has been withheld as a trade secret in accordance with paragraph (i) of §1910.1200.
Canada: The exact percentage (concentration) in the composition has been withheld as a trade secret in accordance with the amended HPR as of April 2018.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 20 minutes. Chemical burns must be treated promptly by a physician.

Inhalation : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours. In the event of any complaints or symptoms, avoid further exposure.

Skin contact : Get medical attention immediately. Call a poison center or physician. Wash with plenty of soap and water. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 20 minutes. Chemical burns must be treated promptly by a physician. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Skin contact : Causes severe burns. May cause an allergic skin reaction.

Ingestion : No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
pain
watering
redness

Section 4. First aid measures

Inhalation : Adverse symptoms may include the following:
wheezing and breathing difficulties
asthma
reduced fetal weight
increase in fetal deaths
skeletal malformations

Skin contact : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur
reduced fetal weight
increase in fetal deaths
skeletal malformations

Ingestion : Adverse symptoms may include the following:
stomach pains
reduced fetal weight
increase in fetal deaths
skeletal malformations

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
sulfur oxides
phosphorus oxides
metal oxide/oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Section 5. Fire-fighting measures

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). The spilled material may be neutralized with sodium carbonate, sodium bicarbonate or sodium hydroxide. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems or asthma, allergies or chronic or recurrent respiratory disease should not be employed in any process in which this product is used. Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Keep away from alkalis. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. See also Section 8 for additional information on hygiene measures.

Section 7. Handling and storage

Conditions for safe storage, including any incompatibilities : Do not store below the following temperature: 10°C (50°F). Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Separate from alkalis. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

United States

Occupational exposure limits

Ingredient name	Exposure limits
Zinc sulfate monohydrate	None.
Manganese(II) sulfate monohydrate	**NIOSH REL (United States, 10/2016).** TWA: 1 mg/m³, (as Mn) 10 hours. Form: Fume STEL: 3 mg/m³, (as Mn) 15 minutes. Form: Fume **ACGIH TLV (United States, 3/2020).** TWA: 0.1 mg/m³, (as Mn) 8 hours. Form: Inhalable fraction TWA: 0.02 mg/m³, (as Mn) 8 hours. Form: Respirable fraction **OSHA PEL (United States, 5/2018).** CEIL: 5 mg/m³, (as Mn)
Trizinc bis(orthophosphate)	None.
Citric acid	None.
Urea	**AIHA WEEL (United States, 7/2020).** TWA: 10 mg/m³ 8 hours.
Manganese hydrogen phosphate	**NIOSH REL (United States, 10/2016).** TWA: 1 mg/m³, (as Mn) 10 hours. Form: Fume STEL: 3 mg/m³, (as Mn) 15 minutes. Form: Fume **ACGIH TLV (United States, 3/2020).** TWA: 0.1 mg/m³, (as Mn) 8 hours. Form: Inhalable fraction TWA: 0.02 mg/m³, (as Mn) 8 hours. Form: Respirable fraction **OSHA PEL (United States, 5/2018).** CEIL: 5 mg/m³, (as Mn)
Phosphoric acid	**ACGIH TLV (United States, 3/2020).** TWA: 1 mg/m³ 8 hours. STEL: 3 mg/m³ 15 minutes. **NIOSH REL (United States, 10/2016).** TWA: 1 mg/m³ 10 hours. STEL: 3 mg/m³ 15 minutes. **OSHA PEL (United States, 5/2018).** TWA: 1 mg/m³ 8 hours.
Disodium tetraborate decahydrate	**NIOSH REL (United States, 10/2016).** TWA: 5 mg/m³ 10 hours.

Section 8. Exposure controls/personal protection

	ACGIH TLV (United States, 3/2020). TWA: 2 mg/m³ 8 hours. Form: Inhalable fraction STEL: 6 mg/m³ 15 minutes. Form: Inhalable fraction
Nickel dichloride	**ACGIH TLV (United States, 3/2020).** TWA: 0.1 mg/m³, (as Ni) 8 hours. Form: Inhalable fraction **NIOSH REL (United States, 10/2016).** TWA: 0.015 mg/m³, (as Ni) 10 hours. **OSHA PEL (United States, 5/2018).** TWA: 1 mg/m³, (as Ni) 8 hours.

Canada

Occupational exposure limits

Ingredient name	Exposure limits
Manganese(II) sulfate monohydrate	**CA British Columbia Provincial (Canada, 1/2020).** TWA: 0.02 mg/m³, (as Mn) 8 hours. Form: Respirable TWA: 0.2 mg/m³, (as Mn, Total) 8 hours. **CA Quebec Provincial (Canada, 7/2019).** TWAEV: 0.2 mg/m³, (as Mn) 8 hours. Form: Total dust. **CA Alberta Provincial (Canada, 6/2018).** 8 hrs OEL: 0.2 mg/m³, (as Mn) 8 hours. **CA Ontario Provincial (Canada, 6/2019).** TWA: 0.2 mg/m³, (as Mn) 8 hours. **CA Saskatchewan Provincial (Canada, 7/2013).** STEL: 0.6 mg/m³, (measured as Mn) 15 minutes. TWA: 0.2 mg/m³, (measured as Mn) 8 hours.
Urea	**AIHA WEEL (United States, 7/2020).** TWA: 10 mg/m³ 8 hours.
Manganese hydrogen phosphate	**CA British Columbia Provincial (Canada, 1/2020).** TWA: 0.02 mg/m³, (as Mn) 8 hours. Form: Respirable TWA: 0.2 mg/m³, (as Mn, Total) 8 hours. **CA Quebec Provincial (Canada, 7/2019).** TWAEV: 0.2 mg/m³, (as Mn) 8 hours. Form: Total dust **CA Alberta Provincial (Canada, 6/2018).** 8 hrs OEL: 0.2 mg/m³, (as Mn) 8 hours. **CA Ontario Provincial (Canada, 6/2019).** TWA: 0.2 mg/m³, (as Mn) 8 hours. **CA Saskatchewan Provincial (Canada, 7/2013).** STEL: 0.6 mg/m³, (measured as Mn) 15 minutes. TWA: 0.2 mg/m³, (measured as Mn) 8 hours.
Phosphoric acid	**CA Alberta Provincial (Canada, 6/2018).** 15 min OEL: 3 mg/m³ 15 minutes.

Section 8. Exposure controls/personal protection

	8 hrs OEL: 1 mg/m³ 8 hours. **CA British Columbia Provincial (Canada, 1/2020).** TWA: 1 mg/m³ 8 hours. STEL: 3 mg/m³ 15 minutes. **CA Ontario Provincial (Canada, 6/2019).** TWA: 1 mg/m³ 8 hours. STEL: 3 mg/m³ 15 minutes. **CA Quebec Provincial (Canada, 7/2019).** TWAEV: 1 mg/m³ 8 hours. STEV: 3 mg/m³ 15 minutes. **CA Saskatchewan Provincial (Canada, 7/2013).** STEL: 3 mg/m³ 15 minutes. TWA: 1 mg/m³ 8 hours.
Disodium tetraborate decahydrate	**CA British Columbia Provincial (Canada, 1/2020).** TWA: 2 mg/m³ 8 hours. Form: Inhalable STEL: 6 mg/m³ 15 minutes. Form: Inhalable **CA Saskatchewan Provincial (Canada, 7/2013).** STEL: 6 mg/m³ 15 minutes. Form: Inhalable fraction TWA: 2 mg/m³ 8 hours. Form: Inhalable fraction **CA Ontario Provincial (Canada, 6/2019).** TWA: 2 mg/m³ 8 hours. Form: Inhalable particulate matter. STEL: 6 mg/m³ 15 minutes. Form: Inhalable particulate matter. **CA Alberta Provincial (Canada, 6/2018).** 8 hrs OEL: 1 mg/m³ 8 hours. 15 min OEL: 3 ppm 15 minutes. **CA Quebec Provincial (Canada, 7/2019).** TWAEV: 5 mg/m³ 8 hours.
Nickel dichloride	**CA Saskatchewan Provincial (Canada, 7/2013).** STEL: 0.3 mg/m³, (measured as Ni) 15 minutes. Form: Inhalable fraction TWA: 0.1 mg/m³, (measured as Ni) 8 hours. Form: Inhalable fraction **CA Ontario Provincial (Canada, 6/2019).** TWA: 0.1 mg/m³, (as Ni) 8 hours. Form: Inhalable particulate matter. **CA Alberta Provincial (Canada, 6/2018).** 8 hrs OEL: 0.1 mg/m³, (as Ni) 8 hours. **CA British Columbia Provincial (Canada, 1/2020).** TWA: 0.05 mg/m³, (as Ni) 8 hours. **CA Quebec Provincial (Canada, 7/2019).** TWAEV: 0.1 mg/m³, (as Ni) 8 hours.

Section 8. Exposure controls/personal protection

Appropriate engineering controls : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties and safety characteristics

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

Appearance

Physical state : Liquid.

Color : Brown.

Odor : Not available.

Odor threshold : Not available.

pH : 0.5 to 2

Melting point/freezing point : Not available.

Boiling point, initial boiling point, and boiling range : Not available.

Flash point : Not available.

Section 9. Physical and chemical properties and safety characteristics

Evaporation rate : Not available.

Flammability : Not available.

Lower and upper explosion limit/flammability limit : Not available.

Vapor pressure : Not available.

Relative vapor density : Not available.

Relative density : 1.31

Solubility : Soluble in water.

Solubility in water : Soluble.

Miscible with water : Not available.

Partition coefficient: n-octanol/water : Not applicable.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not available.

Flow time (ISO 2431) : Not available.

Particle characteristics

Median particle size : Not applicable.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Citric acid	LD50 Oral	Rat	3 g/kg	-
Urea	LD50 Oral	Rat	8471 mg/kg	-
Disodium tetraborate decahydrate	LD50 Oral	Rat	2660 mg/kg	-
Nickel dichloride	LD50 Oral	Rat	105 mg/kg	-

Irritation/Corrosion

Section 11. Toxicological information

Product/ingredient name	Result	Species	Score	Exposure	Observation
Citric acid	Eyes - Severe irritant Skin - Mild irritant	Rabbit Rabbit	- -	24 hours 750 µg 24 hours 500 mg	- -

Sensitization

There is no data available.

Mutagenicity

There is no data available.

Carcinogenicity

Classification United States

Product/ingredient name	OSHA	IARC	NTP
Nickel dichloride	-	1	Known to be a human carcinogen.

Classification Canada

Product/ingredient name	IARC	NTP	ACGIH
Manganese(II) sulfate monohydrate Manganese hydrogen phosphate Disodium tetraborate decahydrate Nickel dichloride	- - - 1	- - - Known to be a human carcinogen.	A4 A4 A4 A4

Reproductive toxicity

There is no data available.

Teratogenicity

There is no data available.

Specific target organ toxicity (single exposure)

There is no data available.

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
Manganese(II) sulfate monohydrate Manganese hydrogen phosphate Nickel dichloride	Category 2 Category 2 Category 1	- inhalation -	- brain -

Aspiration hazard

There is no data available.

Information on the likely routes of exposure : Routes of entry anticipated: Oral, Dermal, Inhalation.

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Skin contact : Causes severe burns. May cause an allergic skin reaction.

Ingestion : No known significant effects or critical hazards.

Section 11. Toxicological information

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
pain
watering
redness

Inhalation : Adverse symptoms may include the following:
wheezing and breathing difficulties
asthma
reduced fetal weight
increase in fetal deaths
skeletal malformations

Skin contact : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur
reduced fetal weight
increase in fetal deaths
skeletal malformations

Ingestion : Adverse symptoms may include the following:
stomach pains
reduced fetal weight
increase in fetal deaths
skeletal malformations

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : No known significant effects or critical hazards.

Potential delayed effects : No known significant effects or critical hazards.

Long term exposure

Potential immediate effects : No known significant effects or critical hazards.

Potential delayed effects : No known significant effects or critical hazards.

Potential chronic health effects

General : May cause damage to organs through prolonged or repeated exposure. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity : May cause cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity : No known significant effects or critical hazards.

Reproductive toxicity : May damage the unborn child.

Numerical measures of toxicity

Acute toxicity estimates

Section 11. Toxicological information

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
	4814.9	N/A	N/A	N/A	N/A
Zinc sulfate monohydrate	500	N/A	N/A	N/A	N/A
Citric acid	3000	N/A	N/A	N/A	N/A
Urea	8471	N/A	N/A	N/A	N/A
Disodium tetraborate decahydrate	2660	N/A	N/A	N/A	N/A
Nickel dichloride	105	N/A	N/A	3	N/A

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Trizinc bis(orthophosphate)	Acute LC50 90 µg/L Fresh water	Fish - Oncorhynchus mykiss	96 hours
Citric acid	Acute LC50 160000 µg/L Marine water	Crustaceans - Carcinus maenas - Adult	48 hours
Urea	Acute EC50 6573.1 mg/L Fresh water	Crustaceans - Ceriodaphnia dubia - Neonate	48 hours
	Acute EC50 3910000 µg/L Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Chronic NOEC 2 g/L Fresh water	Fish - Heteropneustes fossilis	30 days
Disodium tetraborate decahydrate	Acute EC50 1645 mg/L Fresh water	Crustaceans - Cypris subglobosa	48 hours
Nickel dichloride	Acute EC50 81.5 µg/L Fresh water	Algae - Pseudokirchneriella subcapitata - Exponential growth phase	72 hours
	Acute EC50 210 µg/L Fresh water	Aquatic plants - Lemna minor	96 hours
	Acute EC50 510 µg/L Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 13 µg/L Fresh water	Crustaceans - Ceriodaphnia dubia	48 hours
	Acute LC50 1300 µg/L Fresh water	Fish - Cyprinus carpio - Juvenile (Fledgling, Hatchling, Weanling)	96 hours
	Chronic NOEC 0.01 mg/L Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
	Chronic NOEC 0.5 mg/L Fresh water	Aquatic plants - Lemna minor	4 days
	Chronic NOEC 200 µg/L Fresh water	Daphnia - Daphnia magna	21 days
	Chronic NOEC 466 µg/L Fresh water	Fish - Oncorhynchus mykiss - Embryo	55 days

Persistence and degradability

There is no data available.

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Trizinc bis(orthophosphate)	-	60960	high
Citric acid	-1.8	-	low
Urea	<-1.73	-	low
Nickel dichloride	-	5613	high

Section 12. Ecological information

Mobility in soil

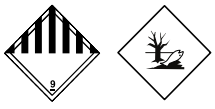
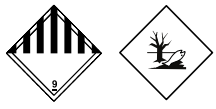
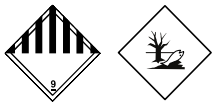
Soil/water partition coefficient (K_{OC}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling empty containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN3082	UN3082	UN3082	UN3082
UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Zinc sulfate monohydrate, Trizinc bis (orthophosphate))	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Zinc sulfate monohydrate, Trizinc bis (orthophosphate))	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Zinc sulfate monohydrate, Trizinc bis (orthophosphate))	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Zinc sulfate monohydrate, Trizinc bis (orthophosphate))
Transport hazard class(es)	9 	9 	9 	9 
Packing group	III	III	III	III
Environmental hazards	Yes.	Yes.	Yes.	Yes.

AERG : 171

DOT (RQ) Details : Nickel dichloride 100 lbs / 45.4 kg

Additional information

TDG Classification : Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.43-2.45 (Class 9), 2.7 (Marine pollutant mark).
Non-bulk packages of this product are not regulated as dangerous goods when transported by road or rail.

IMDG : This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8.

Section 14. Transport information

IATA : This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 5.0.2.4.1, 5.0.2.6.1.1 and 5.0.2.8.

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption**: Not determined

Clean Water Act (CWA) 307: Zinc sulfate monohydrate; Trizinc bis(orthophosphate); Nickel dichloride

Clean Water Act (CWA) 311: Zinc sulfate monohydrate; Phosphoric acid; Nickel dichloride

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : SKIN CORROSION/IRRITATION - Category 1
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
RESPIRATORY SENSITIZATION - Category 1
SKIN SENSITIZATION - Category 1
CARCINOGENICITY - Category 1A
TOXIC TO REPRODUCTION (Unborn child) - Category 1B
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2

Composition/information on ingredients

Section 15. Regulatory information

Name	%	Classification
Zinc sulfate monohydrate	≥10 - ≤25	ACUTE TOXICITY (oral) - Category 4 SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
Manganese(II) sulfate monohydrate	≥5 - ≤10	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2
Citric acid	≥1 - ≤3	SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2A
Manganese hydrogen phosphate	≥1 - ≤3	SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2
Phosphoric acid	≥1 - ≤3	SKIN CORROSION/IRRITATION - Category 1B SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
Disodium tetraborate decahydrate	≥0.3 - ≤1	TOXIC TO REPRODUCTION - Category 1B
Nickel dichloride	≥0.3 - <1	ACUTE TOXICITY (oral) - Category 3 ACUTE TOXICITY (inhalation) - Category 3 SKIN CORROSION/IRRITATION - Category 2 RESPIRATORY SENSITIZATION - Category 1 SKIN SENSITIZATION - Category 1 GERM CELL MUTAGENICITY - Category 2 CARCINOGENICITY - Category 1A TOXIC TO REPRODUCTION (Unborn child) - Category 1B SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	Zinc sulfate monohydrate Manganese(II) sulfate monohydrate Trizinc bis(orthophosphate) Manganese hydrogen phosphate Nickel dichloride	7446-19-7 10034-96-5 7779-90-0 51349-94-1 7718-54-9	≥10 - ≤25 ≥5 - ≤10 ≥5 - ≤10 ≥1 - ≤3 ≥0.3 - ≤1
Supplier notification	Zinc sulfate monohydrate Manganese(II) sulfate monohydrate Trizinc bis(orthophosphate) Manganese hydrogen phosphate Nickel dichloride	7446-19-7 10034-96-5 7779-90-0 51349-94-1 7718-54-9	≥10 - ≤25 ≥5 - ≤10 ≥5 - ≤10 ≥1 - ≤3 ≥0.3 - ≤1

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts : The following components are listed: Phosphoric acid

New York : The following components are listed: Phosphoric acid

New Jersey : The following components are listed: Zinc sulfate monohydrate; Trizinc bis (orthophosphate); Phosphoric acid; Nickel dichloride

Pennsylvania : The following components are listed: Zinc sulfate monohydrate; Manganese(II) sulfate monohydrate; Trizinc bis(orthophosphate); Manganese hydrogen phosphate; Phosphoric acid

California Prop. 65

⚠ **WARNING**: This product can expose you to Nickel dichloride, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Section 15. Regulatory information

Ingredient name	No significant risk level	Maximum acceptable dosage level
Nickel dichloride	-	-

Canadian lists

Canadian NPRI : The following components are listed: Zinc sulfate monohydrate; Manganese(II) sulfate monohydrate; Trizinc bis(orthophosphate); Manganese hydrogen phosphate; Phosphoric acid

CEPA Toxic substances : None of the components are listed.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

Canada : Not determined.

United States (TSCA 8b) : Not determined.

Section 16. Other information

Procedure used to derive the classification

Classification	Justification
SKIN CORROSION/IRRITATION - Category 1	On basis of test data
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1	On basis of test data
RESPIRATORY SENSITIZATION - Category 1	Calculation method
SKIN SENSITIZATION - Category 1	Calculation method
CARCINOGENICITY - Category 1	Calculation method
TOXIC TO REPRODUCTION (Unborn child) - Category 1	Calculation method
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2	Calculation method

History

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Prepared by : KMK Regulatory Services Inc.

Section 16. Other information

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
N/A = Not available
SGG = Segregation Group
UN = United Nations

Notice to reader

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