SAFETY DATA SHEET

1. IDENTIFICATION

Product identifier
Product Name NitraVer ® 6 Nitrate Reagent

Other means of identification
Product Code(s) 1411999

Safety data sheet number M00061

UN/ID no UN3288

Synonyms

Recommended use of the chemical and restrictions on use
Recommended Use Determination of nitrate.
Uses advised against None.
Restrictions on use None.

Details of the supplier of the safety data sheet

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

Emergency telephone number
(303) 623-5716 - 24 Hour Service (515)232-2533 - 8am - 4pm CST

2. HAZARDS IDENTIFICATION

Classification

Regulatory Status
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute toxicity - Inhalation (Dusts/Mists)	Category 3
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 1
Germ cell mutagenicity	Category 2
Carcinogenicity	Category 1B
Reproductive toxicity	Category 2
Specific target organ toxicity (single exposure)	Category 3
Specific target organ toxicity (repeated exposure)	Category 1
Aquatic Acute Toxicity	Category 1
Chronic aquatic toxicity	Category 1

Hazards not otherwise classified (HNOC)
Not applicable

Label elements

Signal word - Danger

Hazard statements
H315 - Causes skin irritation
H318 - Causes serious eye damage
H331 - Toxic if inhaled
H335 - May cause respiratory irritation
H341 - Suspected of causing genetic defects
H350 - May cause cancer
H361 - Suspected of damaging fertility or the unborn child
H372 - Causes damage to organs through prolonged or repeated exposure
H410 - Very toxic to aquatic life with long lasting effects

Precautionary statements
P201 - Obtain special instructions before use
P202 - Do not handle until all safety precautions have been read and understood
P281 - Use personal protective equipment as required
P271 - Use only outdoors or in a well-ventilated area
P264 - Wash face, hands and any exposed skin thoroughly after handling
P260 - Do not breathe dust/fume/gas/mist/vapors/spray
P270 - Do not eat, drink or smoke when using this product
P273 - Avoid release to the environment
P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
P311 - Call a POISON CENTER or doctor/physician
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P310 - Immediately call a POISON CENTER or doctor/physician
P302 + P352 - IF ON SKIN: Wash with plenty of soap and water
P332 + P313 - If skin irritation occurs: Get medical advice/attention
P362 - Take off contaminated clothing and wash before reuse
P391 - Collect spillage
P405 - Store locked up
P403 + P233 - Store in a well-ventilated place. Keep container tightly closed
P501 - Dispose of contents/ container to an approved waste disposal plant

Other Information
May be harmful if swallowed

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance
Not applicable

Mixture

Synonyms .

Percent ranges are used where confidential product information is applicable.

Chemical Name	CAS No	Percent Range	HMRIC #
(+)-Tartaric acid	87-69-4	30 - 40%	-
Sodium sulfate	7757-82-6	20 - 30%	-
Glycine, N,N-1,2-cyclohexanediylbis[N-(carboxymethyl)-, trisodium salt	36679-96-6	5 - 10%	-
Cadmium	7440-43-9	3 - 7%	-
Cuprate(2-), [[N,N-1,2-cyclohexanediylbis[N-(carboxymethyl)glycinato]](4-)-N,N,O,O,O N,ON]-, [OC-6-21-(trans)]-	19332-78-6	0.1 - 1%	-
Ethanaminium, N,N,N-trimethyl-2-[(2-methyl-1-oxo-2-propenyl)oxy]-, chloride, polymer with 2-propenamide	35429-19-7	<0.1%	-

4. FIRST AID MEASURES

Description of first aid measures

General advice See section 8 for PPE that may be required during handling. Do not breathe dust/fume/gas/mist/vapors/spray. Do not get in eyes, on skin, or on clothing. In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible). If no local exhaust use approved fume hood or self-contained breathing apparatus. IF exposed: Call a POISON CENTER or doctor/physician. Immediate medical attention is required. Remove from exposure, lie down. IF IN EYES: Flush eyes for at least 15 minutes. IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. May cause skin irritation.

Eye contact IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician immediately.

Skin contact IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Immediately flush skin with plenty of water for at least 15 (30 or 60) minutes. Immediate medical attention is required. Call a physician immediately. Removal of solidified molten material from skin requires medical assistance. In case of contact with Hydrogen fluoride, anhydrous (UN1052), flush skin and eyes with water for 5 minutes; then, for skin exposures rub on a calcium/jelly combination; for eyes flush with a water/calcium solution for 15 minutes. Remove and isolate contaminated clothing and shoes. Wash contaminated clothing before reuse.

Inhalation IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a physician immediately.

Ingestion IF SWALLOWED: Rinse Mouth. Call a physician immediately.

Self-protection of the first aider First aider: Pay attention to self-protection. Use personal protective equipment as required. Avoid contact with skin, eyes or clothing. Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

Most important symptoms and effects, both acute and delayed

Symptoms See Section 11: TOXICOLOGICAL INFORMATION.

Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media Caution: Use of water spray when fighting fire may be inefficient.

Flammable properties
Substance does not burn.

Specific hazards arising from the chemical
None reported.

Hazardous combustion products Cadmium oxide. Sulfur oxides. Carbon monoxide, Carbon dioxide.

Protective equipment and precautions for firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

U.S. 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.

EC Notice Only persons properly qualified to respond to an emergency involving hazardous substances should respond to a spill involving chemicals. See Section 13, Special Instructions for disposal assistance.

WHMIS Notice Only persons properly qualified to respond to an emergency involving hazardous substances should respond to a spill involving chemicals. See Section 13, Special Instructions for disposal assistance.

Personal precautions, protective equipment and emergency procedures

Personal precautions Evacuate personnel to safe areas. Do not touch or walk through spilled material. Ventilate affected area. Use personal protective equipment as required.

For emergency responders Use personal protection recommended in Section 8.

Environmental precautions

Environmental precautions Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. See Section 12 for additional ecological information.

Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so. Cover with plastic sheet to prevent spreading.

Methods for cleaning up Take up mechanically, placing in appropriate containers for disposal. Clean contaminated surface thoroughly. Dispose of in accordance with local, state and federal regulations or laws.

Emergency Response Guide Number 151

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling Use personal protective equipment as required. Avoid contact with skin, eyes or clothing. Do not breathe dust/fume/gas/mist/vapors/spray.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep container tightly closed in a dry and well-ventilated place. Keep out of the reach of children.

Flammability class Not applicable

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines .

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Cadmium 3 - 7%	TWA: 0.01 mg/m³ TWA: 0.002 mg/m³	TWA: 0.1 mg/m³ TWA: 0.2 mg/m³ TWA: 5 µg/m³ (vacated) STEL: 0.3 ppm Ceiling: 0.3 mg/m³ Ceiling: 0.6 mg/m³	IDLH: 9 mg/m³ dust IDLH: 9 mg/m³ Cd dust and fume
Cuprate(2-), [[N,N-1,2-cyclohexanediylbis[N-(carboxymethyl)glycinato]](4-)-N,N,O,O,ON,ON]-, [OC-6-21-(trans)]- 0.1 - 1%	TWA: 1 mg/m³	NDF	IDLH: 100 mg/m³ Cu dust and mist TWA: 1 mg/m³ Cu dust and mist

Chemical Name	Alberta OEL	British Columbia OEL	Manitoba OEL	New Brunswick OEL	New Foundland & Labrador OEL
Cadmium 3 - 7%	TWA: 0.01 mg/m³ TWA: 0.002 mg/m³	TWA: 0.01 mg/m³ TWA: 0.002 mg/m³	TWA: 0.002 mg/m³ TWA: 0.01 mg/m³	TWA: 0.01 mg/m³ TWA: 0.002 mg/m³	TWA: 0.002 mg/m³ TWA: 0.01 mg/m³
Cuprate(2-), [[N,N-1,2-cyclohexanediylbis[N-(carboxymethyl)glycinato]](4-)-N,N,O,O,ON,ON]-, [OC-6-21-(trans)]- 0.1 - 1%	NDF	NDF	TWA: 1 mg/m³	NDF	TWA: 1 mg/m³

Chemical Name	Northwest Territories OEL	Nova Scotia OEL	Nunavut OEL	Ontario TWA	Prince Edward Island OEL
Cadmium 3 - 7%	TWA: 0.01 mg/m³ TWA: 0.002 mg/m³ STEL: 0.03 mg/m³ STEL: 0.006 mg/m³	TWA: 0.002 mg/m³ TWA: 0.01 mg/m³	TWA: 0.01 mg/m³ TWA: 0.002 mg/m³ STEL: 0.03 mg/m³ STEL: 0.006 mg/m³	TWA: 0.01 mg/m³ TWA: 0.002 mg/m³	TWA: 0.002 mg/m³ TWA: 0.01 mg/m³
Cuprate(2-), [[N,N-1,2-cyclohexanediylbis[N-(carboxymethyl)glycinato]](4-)-N,N,O,O,ON,ON]-, [OC-6-21-(trans)]- 0.1 - 1%	NDF	TWA: 1 mg/m³	NDF	NDF	TWA: 1 mg/m³

Chemical Name	Quebec OEL	Saskatchewan OEL	Yukon OEL
Cadmium 3 - 7%	TWA: 0.025 mg/m³	TWA: 0.01 mg/m³ TWA: 0.002 mg/m³ STEL: 0.03 mg/m³ STEL: 0.006 mg/m³	STEL: 0.15 mg/m³ TWA: 0.05 mg/m³

Other Information Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992).

Legend See section 16 for terms and abbreviations

Appropriate engineering controls

Engineering Controls If no local exhaust use approved fume hood or self-contained breathing apparatus
Showers
Eyewash stations

Individual protection measures, such as personal protective equipment

Eye/face protection Wear tight sealing safety goggles and/or face protection shield. Avoid contact with eyes.

Skin and body protection Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Respiratory protection Do not breathe gas/fumes/vapor/spray. If no local exhaust use approved fume hood or self-contained breathing apparatus. Ensure adequate ventilation, especially in confined areas.

General Hygiene Considerations Avoid breathing (dust, vapor, mist, gas). Avoid contact with skin, eyes or clothing. Use personal protective equipment as required. Wear suitable gloves and eye/face protection. Wash face, hands and any exposed skin thoroughly after handling. Do not eat, drink or smoke when using this product. Keep away from food, drink and animal feeding stuffs. Regular cleaning of equipment, work area and clothing is recommended. Handle in accordance with good industrial hygiene and safety practice. Avoid prolonged or repeated contact with skin. Take off all contaminated clothing and wash it before reuse.

Environmental exposure controls
Avoid creating dust. Do not allow into any sewer, on the ground or into any body of water. Local authorities should be advised if significant spillages cannot be contained.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state Solid

Gas Under Pressure Not classified according to GHS criteria

Appearance powder

Color blue
metallic

Odor Odorless

Odor threshold No data available

Property	Values	Remarks • Method
Molecular weight	No data available	
pH	3.4	5% Solution
Melting point/freezing point	No data available	
Boiling point / boiling range	No data available	
Evaporation rate	Not applicable	
Vapor pressure	Not applicable	
Vapor density (air = 1)	Not applicable	

Specific gravity (water = 1 / air = 1)	0.954
Partition Coefficient (n-octanol/water)	No data available
Soil Organic Carbon-Water Partition Coefficient	No data available
Autoignition temperature	No data available
Decomposition temperature	No data available
Dynamic viscosity	Not applicable
Kinematic viscosity	Not applicable

Solubility(ies)

Water solubility

Water solubility classification	Water solubility	Water Solubility Temperature
Soluble	> 1000 mg/L	25 °C / 77 °F

Solubility in other solvents

Chemical Name	Solubility classification	Solubility	Solubility Temperature
None reported	No information available	No data available	No information available

Other Information

Metal Corrosivity	Not classified as corrosive to metal according to GHS criteria
Steel Corrosion Rate	Not applicable
Aluminum Corrosion Rate	Not applicable
Volatile Organic Compounds (VOC) Content	Not applicable.
Bulk density	No data available
Explosive properties	Not classified according to GHS criteria.
Explosion data	Can burn in fire, releasing toxic vapors.
Upper explosion limit	No data available
Lower explosion limit	No data available
Flammable properties	Not classified as flammable according to GHS criteria.
Flammability Limit in Air	
Upper flammability limit:	No data available
Lower flammability limit:	No data available
Flash point	Not applicable
Method	No information available
Oxidizing properties	Not classified according to GHS criteria.

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

10. STABILITY AND REACTIVITY

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

Chemical stability
Stable under recommended storage conditions.

Special dangers of the product
None reported

Possibility of Hazardous Reactions
None under normal processing.

Hazardous polymerization Hazardous polymerization does not occur.

Conditions to avoid
Extremes of temperature and direct sunlight. Incompatible materials.

Incompatible materials
Strong oxidizing agents. Strong acids. Strong bases.

Hazardous Decomposition Products
Cadmium oxide. Sulfur oxides. Carbon dioxide. Carbon monoxide.

Explosive properties
Not classified according to GHS criteria. Can burn in fire, releasing toxic vapors.

Upper explosion limit No data available

Lower explosion limit No data available

Autoignition temperature
No data available

Sensitivity to Static Discharge
None reported

Sensitivity to Mechanical Impact
None reported

11. TOXICOLOGICAL INFORMATION

NIOSH (RTECS) Number None reported

Information on Likely Routes of Exposure

Product Information	Toxic if inhaled. Corrosive to eyes. May cause respiratory irritation. Causes skin irritation. May be harmful if swallowed.
Inhalation	Avoid breathing dust/fume/gas/mist/vapors/spray. Toxic by inhalation. Immediate medical attention is required. Inhalation of

	dust in high concentration may cause irritation of respiratory system. May cause irritation of respiratory tract.
Eye contact	Corrosive to the eyes and may cause severe damage including blindness. Corrosive to eyes.
Skin contact	Causes skin irritation.
Ingestion	May be harmful if swallowed. Ingestion may cause irritation to mucous membranes.
Aggravated Medical Conditions	Skin disorders. Eye disorders. Respiratory disorders.
Toxicologically synergistic products	None known.
Toxicokinetics, metabolism and distribution	No information available.

Product Acute Toxicity Data

Oral Exposure Route No data available

Dermal Exposure Route No data available

Inhalation (Dust/Mist) Exposure Route No data available

Inhalation (Vapor) Exposure Route No data available

Inhalation (Gas) Exposure Route No data available

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (oral)	3,263.00 mg/kg
ATEmix (inhalation-dust/mist)	0.87 mg/L

Ingredient Acute Toxicity Data

Oral Exposure Route If available, see data below

Chemical Name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Cadmium (3 - 7%) CAS#: 7440-43-9	Rat LD_{50}	225 mg/kg	None reported	None reported	GESTIS (Information System on Hazardous Substances of the German Social Accident Insurance)
Chemical Name	**Endpoint type**	**Reported dose**	**Exposure time**	**Toxicological effects**	**Key literature references and sources for data**
Sodium sulfate (20 - 30%) CAS#: 7757-82-6	Mouse LD_{50}	5989 mg/kg	None reported	None reported	IUCLID (The International Uniform Chemical Information Database)
Chemical Name	**Endpoint type**	**Reported dose**	**Exposure time**	**Toxicological effects**	**Key literature references and sources for data**
Cadmium (3 - 7%) CAS#: 7440-43-9	Mouse TD_{Lo}	8 mg/kg	None reported	**Musculoskeletal** Osteoporosis	RTECS (Registry of Toxic Effects of Chemical Substances)

Dermal Exposure Route No data available

Inhalation (Dust/Mist) Exposure Route If available, see data below

Chemical Name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Cadmium (3 - 7%) CAS#: 7440-43-9	Rat LC_{50}	0.0125 mg/L	4 hours	None reported	ERMA (New Zealands Environmental Risk Management Authority)
Chemical Name	**Endpoint type**	**Reported dose**	**Exposure time**	**Toxicological effects**	**Key literature references and sources for data**
Cadmium (3 - 7%)	Human LD_{Lo}	0.468 mg/L	4 hours	**Vascular** Thromobosis distant from	RTECS (Registry of Toxic Effects of Chemical

CAS#: 7440-43-9				injection site	Substances)

Inhalation (Vapor) Exposure Route No data available

Inhalation (Gas) Exposure Route No data available

Product Skin Corrosion/Irritation Data
No data available.

Ingredient Skin Corrosion/Irritation Data
If available, see data below

Chemical Name	Test method	Species	Reported dose	Exposure time	Results	Key literature references and sources for data
(+)-Tartaric acid (30 - 40%) CAS#: 87-69-4	Existing human experience	Human	None reported	None reported	Skin irritant	Vendor SDS
Sodium sulfate (20 - 30%) CAS#: 7757-82-6	Standard Draize Test	Rabbit	500 mg	4 hours	Not corrosive or irritating to skin	ECHA (The European Chemicals Agency)
Chemical Name	**Test method**	**Species**	**Reported dose**	**Exposure time**	**Results**	**Key literature references and sources for data**
Sodium sulfate (20 - 30%) CAS#: 7757-82-6	Open Irritation Test	Guinea pig	100 mg	5 days	Not corrosive or irritating to skin	ECHA (The European Chemicals Agency)

Product Serious Eye Damage/Eye Irritation Data
No data available.

Ingredient Eye Damage/Eye Irritation Data
If available, see data below

Chemical Name	Test method	Species	Reported dose	Exposure time	Results	Key literature references and sources for data
(+)-Tartaric acid (30 - 40%) CAS#: 87-69-4	Existing human experience	Human	None reported	None reported	Corrosive to eyes	Vendor SDS
Sodium sulfate (20 - 30%) CAS#: 7757-82-6	Standard Draize Test	Rabbit	90 mg	24 hours	Not corrosive or irritating to eyes	ECHA (The European Chemicals Agency)

Sensitization Information

Product Sensitization Data

Skin Sensitization Exposure Route No data available.

Respiratory Sensitization Exposure Route No data available.

Ingredient Sensitization Data

Skin Sensitization Exposure Route If available, see data below.

Chemical Name	Test method	Species	Results	Key literature references and sources for data
(+)-Tartaric acid (30 - 40%)	None reported	Guinea pig	Not confirmed to be a skin sensitizer	Vendor SDS

CAS#: 87-69-4				
Sodium sulfate (20 - 30%) CAS#: 7757-82-6	OECD Test No. 406: Skin Sensitization	Guinea pig	Not confirmed to be a skin sensitizer	HSDB (Hazardous Substances Data Bank)

Respiratory Sensitization Exposure Route If available, see data below.

Chronic Toxicity Information

Product Repeat Dose Toxicity Data

Oral Exposure Route No data available.

Dermal Exposure Route No data available.

Inhalation (Dust/Mist) Exposure Route No data available.

Inhalation (Vapor) Exposure Route No data available.

Inhalation (Gas) Exposure Route No data available.

Ingredient Repeat Dose Toxicity Data

Oral Exposure Route If available, see data below

Chemical Name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Cadmium (3 - 7%) CAS#: 7440-43-9	Rat TD_{Lo}	37.5 mg/kg	30 days	**Biochemical** Enzyme inhibition, induction, or change in blood or tissue levels (other enzymes) **Blood** Other changes **Kidney, Ureter, or Bladder** Other changes in urine composition	RTECS (Registry of Toxic Effects of Chemical Substances)

Dermal Exposure Route No data available

Inhalation (Dust/Mist) Exposure Route If available, see data below

Chemical Name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Cadmium (3 - 7%) CAS#: 7440-43-9	Man TD_{Lo}	0.000088 mg/L	3139 days	**Kidney, Ureter, or Bladder** Proteinuria	RTECS (Registry of Toxic Effects of Chemical Substances)

Inhalation (Vapor) Exposure Route No data available

Inhalation (Gas) Exposure Route No data available

Chemical Name	CAS No	ACGIH	IARC	NTP	OSHA
(+)-Tartaric acid	87-69-4	-	-	-	-
Sodium sulfate	7757-82-6	-	-	-	-
Glycine, N,N-1,2-cyclohexanediylbis[N-(carboxymethyl)-, trisodium salt	36679-96-6	-	-	-	-
Cadmium	7440-43-9	A2	Group 1	Known	X
Cuprate(2-), [[N,N-1,2-cyclohexanediylb	19332-78-6	-	-	-	-

is[N-(carboxymethyl)glycinato]](4-)-N,N,O,O,ON,ON]-, [OC-6-21-(trans)]-					
Ethanaminium, N,N,N-trimethyl-2-[(2-methyl-1-oxo-2-propenyl)oxy]-, chloride, polymer with 2-propenamide	35429-19-7	-	-	-	-

Legend

ACGIH (American Conference of Governmental Industrial Hygienists)	A2 - Suspected Human Carcinogen
IARC (International Agency for Research on Cancer)	Group 1 - Carcinogenic to Humans
NTP (National Toxicology Program)	Known - Known Carcinogen
OSHA (Occupational Safety and Health Administration of the US Department of Labor)	X - Present

Product Carcinogenicity Data No data available

Oral Exposure Route No data available

Dermal Exposure Route No data available

Inhalation (Dust/Mist) Exposure Route No data available

Inhalation (Vapor) Exposure Route No data available

Inhalation (Gas) Exposure Route No data available

Ingredient Carcinogenicity Data

Oral Exposure Route No data available

Dermal Exposure Route No data available

Inhalation (Dust/Mist) Exposure Route If available, see data below

Chemical Name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Cadmium (3 - 7%) CAS#: 7440-43-9	Human	0.129 mg/L	20 years	**Lungs, Thorax, or Respiration** Tumors	RTECS (Registry of Toxic Effects of Chemical Substances)

Inhalation (Vapor) Exposure Route No data available

Inhalation (Gas) Exposure Route No data available

Product Germ Cell Mutagenicity*invitro*Data
No data available.

Ingredient Germ Cell Mutagenicity*invitro*Data If available, see data below

Chemical Name	Test	Cell Strain	Reported dose	Exposure time	Results	Key literature references and sources for data
(+)-Tartaric acid (30 - 40%) CAS#: 87-69-4	Mutation in microorganisms	*Salmonella typhimurium*	None reported	None reported	Negative test result for mutagenicity	Vendor SDS
Cadmium (3 - 7%) CAS#: 7440-43-9	DNA damage	Human lymphocyte	0.25 mmol/L	1 hours	Positive test result for mutagenicity	RTECS (Registry of Toxic Effects of Chemical

						Substances)
Chemical Name	**Test**	**Cell Strain**	**Reported dose**	**Exposure time**	**Results**	**Key literature references and sources for data**
Cadmium (3 - 7%) CAS#: 7440-43-9	Micronucleus test	Mouse embryo	0.006 mmol/L	None reported	Positive test result for mutagenicity	RTECS (Registry of Toxic Effects of Chemical Substances)

Oral Exposure Route No data available

Dermal Exposure Route No data available

Inhalation (Dust/Mist) Exposure Route No data available

Inhalation (Vapor) Exposure Route No data available

Inhalation (Gas) Exposure Route No data available

Ingredient Germ Cell Mutagenicity*invivo*Data

Oral Exposure Route No data available

Dermal Exposure Route No data available

Inhalation (Dust/Mist) Exposure Route No data available

Inhalation (Vapor) Exposure Route No data available

Inhalation (Gas) Exposure Route No data available

Oral Exposure Route No data available

Dermal Exposure Route No data available

Inhalation (Dust/Mist) Exposure Route No data available

Inhalation (Vapor) Exposure Route No data available

Inhalation (Gas) Exposure Route No data available

Ingredient Reproductive Toxicity Data

Oral Exposure Route If available, see data below

Chemical Name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Sodium sulfate (20 - 30%) CAS#: 7757-82-6	Mouse TD_{Lo}	14000 mg/kg	4 days	**Effects on Newborn** Other neonatal measures or effects	RTECS (Registry of Toxic Effects of Chemical Substances)
Cadmium (3 - 7%) CAS#: 7440-43-9	Rat TD_{Lo}	23 mg/kg	22 days	**Specific Developmental Abnormalities** Blood and lymphatic systems (including spleen and marrow)	RTECS (Registry of Toxic Effects of Chemical Substances)

Dermal Exposure Route No data available

Inhalation (Dust/Mist) Exposure Route No data available

Inhalation (Vapor) Exposure Route No data available

Inhalation (Gas) Exposure Route No data available

12. ECOLOGICAL INFORMATION

Ecotoxicity Very toxic to aquatic life with long lasting effects.

Product Ecological Data

Aquatic toxicity

Fish No data available

Crustacea No data available

Algae No data available

Terrestrial toxicity

Soil No data available

Vertebrates No data available

Invertebrates No data available

Ingredient Ecological Data

Aquatic toxicity

Fish If available, see ingredient data below

Chemical Name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
(+)-Tartaric acid (30 - 40%) CAS#: 87-69-4	96 hours	None reported	LC_{50}	150 mg/L	Vendor SDS
Sodium sulfate (20 - 30%) CAS#: 7757-82-6	96 hours	None reported	LC_{50}	56 mg/L	IUCLID (The International Uniform Chemical Information Database)
Glycine, N,N-1,2-cyclohexanediylbis[N-(carboxymethyl)-, trisodium salt (5 - 10%) CAS#: 36679-96-6	96 hours	None reported	LC_{50}	356000 mg/L	Estimation through ECOSARS v1.11 part of the Estimation Programs Interface (EPI) Suite™
Cadmium (3 - 7%) CAS#: 7440-43-9	96 hours	*Morone saxatilis*	LC_{50}	0.019 mg/L	PEEN (Pan European Ecological Network)
Chemical Name	**Exposure time**	**Species**	**Endpoint type**	**Reported dose**	**Key literature references and sources for data**
Sodium sulfate (20 - 30%) CAS#: 7757-82-6	96 hours	*Pimephales promelas*	LC_{50}	7960 mg/L	IUCLID (The International Uniform Chemical Information Database)
Cadmium (3 - 7%) CAS#: 7440-43-9	96 hours	None reported	LC_{50}	7.8 mg/L	PEEN (Pan European Ecological Network)

Crustacea If available, see ingredient data below

Chemical Name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
(+)-Tartaric acid (30 - 40%) CAS#: 87-69-4	48 Hours	*Ceriodaphnia dubia*	EC_{50}	87.26, 46.04 - 165.37 mg/L	ERMA (New Zealands Environmental Risk Management Authority)
Sodium sulfate (20 - 30%)	48 Hours	*Daphnia magna*	EC_{50}	3150 mg/L	IUCLID (The International Uniform Chemical Information

CAS#: 7757-82-6					Database)
Glycine, N,N-1,2-cyclohexanediylbis[N-(carboxymethyl)-, trisodium salt (5 - 10%) CAS#: 36679-96-6	48 Hours	None reported	EC_{50}	26162 mg/L	Estimation through ECOSARS v1.11 part of the Estimation Programs Interface (EPI) Suite™
Cadmium (3 - 7%) CAS#: 7440-43-9	48 Hours	None reported	EC_{50}	0.58 mg/L	PEEN (Pan European Ecological Network)
Chemical Name	**Exposure time**	**Species**	**Endpoint type**	**Reported dose**	**Key literature references and sources for data**
Cadmium (3 - 7%) CAS#: 7440-43-9	96 hours	*Mysidopsis bahia*	LC_{50}	0.0016 mg/L	PEEN (Pan European Ecological Network)

Algae If available, see ingredient data below

Chemical Name	**Exposure time**	**Species**	**Endpoint type**	**Reported dose**	**Key literature references and sources for data**
Glycine, N,N-1,2-cyclohexanediylbis[N-(carboxymethyl)-, trisodium salt (5 - 10%) CAS#: 36679-96-6	96 hours	None reported	EC_{50}	56103 mg/L	Estimation through ECOSARS v1.11 part of the Estimation Programs Interface (EPI) Suite™
Cadmium (3 - 7%) CAS#: 7440-43-9	72 Hours	None reported	EC_{50}	0.132 mg/L	PEEN (Pan European Ecological Network)

Terrestrial toxicity

Soil No data available

Vertebrates No data available

Invertebrates No data available

Other Information

Canadian Environmental Protection Act (CEPA) - Domestic Substances List (DSL): Environmentally Hazardous Substances Categorizations

Chemical Name	**Category**	**Persistent**	**Bioaccumulation**	**Inherently Toxic to Aquatic Organisms**
Ethanaminium, N,N,N-trimethyl-2-[(2-methyl-1-oxo-2-propenyl)oxy]-, chloride, polymer with 2-propenamide (<0.1%) CAS#: 35429-19-7	-	Yes	No	Yes

Persistence and degradability
None known.

Product Biodegradability Data
If available, see ingredient data below.

Ingredient Biodegradability Data
Test data reported below

Chemical Name	Test method	Biodegradation	Exposure time	Results
Butanedioic acid, 2,3-dihydroxy-[R-(R*, R*)]-, disodium salt (20 - 30%) CAS#: 868-18-8	None reported	73%	14 days	Readily biodegradable
Glycine, N,N-1,2-cyclohexanediylbis[N-(carboxymethyl)-, trisodium salt (5 - 10%) CAS#: 36679-96-6	None reported	None reported	None reported	Not readily biodegradable

Bioaccumulation
None known.

Product Bioaccumulation Data No data available.

Ingredient Bioaccumulation Data No data available

Additional information

Product Information No data available

Partition Coefficient (n-octanol/water) No data available

Ingredient Information

Chemical Name	Partition Coefficient (n-octanol/water)	Method
(+)-Tartaric acid (30 - 40%) CAS#: 87-69-4	log K_{ow} = -1	Estimation through KOWWIN v1.68 part of the Estimation Programs Interface (EPI) Suite™
Sodium sulfate (20 - 30%) CAS#: 7757-82-6	log K_{ow} = -3	No information available
Glycine, N,N-1,2-cyclohexanediylbis[N-(carboxymethyl)-, trisodium salt (5 - 10%) CAS#: 36679-96-6	log K_{ow} = -11	Estimation through KOWWIN v1.68 part of the Estimation Programs Interface (EPI) Suite™

Mobility
Mobility in soil: Moderate to high mobility. If available, see ingredient data below.

Product Information No data available

Soil Organic Carbon-Water Partition Coefficient No data available

Ingredient Information

Chemical Name	Soil Organic Carbon-Water Partition Coefficient	Method
Sodium sulfate (20 - 30%) CAS#: 7757-82-6	log K_{oc} = -1.4	Estimation through KOCWIN v2.00 part of the Estimation Programs Interface (EPI) Suite™
Glycine,	log K_{oc} = 2.24	Estimation through KOCWIN v2.00 part

N,N-1,2-cyclohexanediylbis[N-(carboxymethyl)-, trisodium salt (5 - 10%) CAS#: 36679-96-6		of the Estimation Programs Interface (EPI) Suite™

Additional information

Water solubility

Product Information

Water solubility classification	Water solubility	Water Solubility Temperature
Soluble	> 1000 mg/L	25 °C / 77 °F

Ingredient Information

Chemical Name	Water solubility classification	Water solubility	Water solubility temperature °C	Water solubility temperature °F
(+)-Tartaric acid CAS#: 87-69-4	Completely soluble	1390000 mg/L	20 °C	68 °F
Sodium sulfate CAS#: 7757-82-6	Completely soluble	160000 mg/L	20 °C	68 °F
Glycine, N,N-1,2-cyclohexanediylbis[N-(carboxymethyl)-, trisodium salt CAS#: 36679-96-6	Soluble	> 1000 mg/L	50 °C	122 °F
Cadmium CAS#: 7440-43-9	Insoluble	< 0.1 mg/L	25 °C	77 °F
Cuprate(2-), [[N,N-1,2-cyclohexanediylbis[N-(carboxymethyl)glycinato]](4-)-N,N,O,O,ON,ON]-, [OC-6-21-(trans)]- CAS#: 19332-78-6	Soluble	> 1000 mg/L	25 °C	77 °F

Other adverse effects
Contains a substance with an endocrine-disrupting potential.

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal of wastes Disposal should be in accordance with applicable regional, national, and local laws and regulations.

Contaminated packaging 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. Dispose of empty container as normal trash. 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 in countries other than the US. Improper disposal or reuse of this container may be dangerous and illegal. Disposal should be in accordance with applicable regional, national, and local laws and regulations.

Chemical Name	RCRA	RCRA - Basis for Listing	RCRA - D Series Wastes	RCRA - U Series Wastes
Cadmium 7440-43-9	-	Included in waste streams: F006, F039, K061, K069, K100	1.0 mg/L regulatory level	-

Special instructions for disposal Dispose of material in an E.P.A. approved hazardous waste facility. Check with local municipal and state authorities and waste contractors for pertinent local information regarding the proper disposal of chemicals.

14. TRANSPORT INFORMATION

DOT

UN/ID no	UN3288
Proper shipping name	Toxic Solid, Inorganic, N.O.S.
DOT Technical Name	(Cadmium mixture)
Hazard Class	6.1
Packing Group	III
Marine pollutant	This product contains a chemical which is listed as a severe marine pollutant according to DOT.
Emergency Response Guide Number	151

TDG

UN/ID no	UN3288
Proper shipping name	Toxic Solid, Inorganic, N.O.S.
TDG Technical Name	(Cadmium mixture)
Hazard Class	6.1
Packing Group	III
Marine pollutant	This product contains a chemical which is listed as a severe marine pollutant according to TDG. Lead compounds.

IATA

UN/ID no	UN3288
Proper shipping name	Toxic Solid, Inorganic, N.O.S.
IATA Technical Name	(Cadmium mixture)
Hazard Class	6.1
Packing Group	III
ERG Code	151

IMDG

UN/ID no	UN3288
IMDG Technical Name	(Cadmium mixture)
Hazard Class	6.1
Packing Group	III
Marine pollutant	This material meets the definition of a marine pollutant

Note: No special precautions necessary.

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 reagent set or kit, the classification given above applies.
If the item is part of a reagent set or kit the classification would change to the following:
UN3316 Chemical Kit, Hazard Class 9, Packing Group II or III.
If the item is not regulated, the Chemical Kit classification does not apply.

15. REGULATORY INFORMATION

National Inventories

TSCA	Complies
DSL/NDSL	Complies

TSCA- United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL- Canadian Domestic Substances List/Non-Domestic Substances List

International Inventories

EINECS/ELINCS	Does not comply

ENCS	Does not comply
IECSC	Complies
KECL	Does not comply
PICCS	Does not comply
TCSI	Complies
AICS	Does not comply
NZIoC	Does not comply

EINECS/ELINCS- European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS- Japan Existing and New Chemical Substances
IECSC- China Inventory of Existing Chemical Substances
KECL- Korean Existing and Evaluated Chemical Substances
PICCS- Philippines Inventory of Chemicals and Chemical Substances
TCSI- Taiwan Chemical Substances Inventory
AICS- Australian Inventory of Chemical Substances
NZIoC- New Zealand Inventory of Chemicals

US Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical Name	SARA 313 - Threshold Values %
Cadmium (CAS #: 7440-43-9)	0.1
Cuprate(2-), [[N,N-1,2-cyclohexanediylbis[N-(carboxymethyl)glycinato]](4-)-N,N,O,O,ON,ON]-, [OC-6-21-(trans)]- (CAS #: 19332-78-6)	1.0

SARA 311/312 Hazard Categories

Acute health hazard	Yes
Chronic Health Hazard	Yes
Fire hazard	No
Sudden release of pressure hazard	No
Reactive Hazard	No

CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Cadmium 7440-43-9	-	X	X	-
Cuprate(2-), [[N,N-1,2-cyclohexanediylbis[N-(carboxymethyl)glycinato]](4-)-N,N,O,O,ON,ON]-, [OC-6-21-(trans)]- 19332-78-6	-	X	-	-

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

Chemical Name	Hazardous Substances RQs	CERCLA/SARA RQ	Reportable Quantity (RQ)
Cadmium 7440-43-9	10 lb	-	RQ 10 lb final RQ RQ 4.54 kg final RQ

US State Regulations

California Proposition 65

This product contains the following Proposition 65 chemicals

Chemical Name	California Proposition 65
Cadmium (CAS #: 7440-43-9)	Carcinogen Developmental Male Reproductive

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Sodium sulfate 7757-82-6	-	X	X
Cadmium 7440-43-9	X	X	X
Cuprate(2-), [[N,N-1,2-cyclohexanediylbis[N-(carboxymethyl)glycinato]](4-)-N, N,O,O,ON,ON]-, [OC-6-21-(trans)]- 19332-78-6	X	-	X

U.S. EPA Label Information

EPA Pesticide Registration Number Not applicable

16. OTHER INFORMATION, INCLUDING DATE OF PREPARATION OF THE LAST REVISION

Additional information

Global Automotive Declarable Substance List (GADSL)

Chemical Name	Global Automotive Declarable Substance List Classifications	Global Automotive Declarable Substance List Thersholds
Cadmium 7440-43-9	Declarable Substance (LR) Prohibited Substance (LR)	0.0 % 0.01 % 0.1 % 0 %

Special Comments
None

NFPA and HMIS Classifications

NFPA	**Health hazards** - 3	**Flammability** - 0	**Instability** - 0	**Physical and Chemical Properties** -
HMIS	**Health hazards** - 3	**Flammability** - 0	**Physical Hazards** - 0	**Personal protection** - X - See section 8 for more information

Key or legend to abbreviations and acronyms used in the safety data sheet

NIOSH IDLH	*Immediately Dangerous to Life or Health*
ACGIH	ACGIH (American Conference of Governmental Industrial Hygienists)

NDF	*no data*

Legend - Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
MAC	Maximum Allowable Concentration	Ceiling	Ceiling Limit Value
X	Listed	Vacated	These values have no official status. The only binding levels of contaminants are those listed in the final OSHA PEL. These lists are for reference purposes only. Please note that some reference state regulations of these "liberated" exposure limits in their state regulations.
SKN*	Skin designation	SKN+	Skin sensitization
RSP+	Respiratory sensitization	**	Hazard Designation
C	Carcinogen	R	Reproductive toxicant
M	mutagen		

Prepared By	Hach Product Compliance Department
Issue Date	22-Feb-2017
Revision Date	22-Feb-2017
Revision Note	None

Disclaimer

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.

HACH COMPANY©2016

End of Safety Data Sheet