SAFETY DATA SHEET

1. IDENTIFICATION

Product identifier
Product Name NitraVer®5 Nitrate Reagent

Other means of identification
Product Code(s) 1403599

Safety data sheet number M00050

UN/ID no UN3288

Synonyms

Recommended use of the chemical and restrictions on use
Recommended Use Laboratory reagent. 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 - Oral	Category 4
Acute toxicity - Inhalation (Dusts/Mists)	Category 3
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2A
Skin sensitization	Category 1
Germ cell mutagenicity	Category 2
Carcinogenicity	Category 1B
Reproductive toxicity	Category 2
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
H302 - Harmful if swallowed
H331 - Toxic if inhaled
H315 - Causes skin irritation
H319 - Causes serious eye irritation
H317 - May cause an allergic skin reaction
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
P264 - Wash face, hands and any exposed skin thoroughly after handling
P270 - Do not eat, drink or smoke when using this product
P271 - Use only outdoors or in a well-ventilated area
P272 - Contaminated work clothing should not be allowed out of the workplace
P280 - Wear protective gloves
P260 - Do not breathe dust/fume/gas/mist/vapors/spray
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
P337 + P313 - If eye irritation persists: Get medical advice/attention
P302 + P352 - IF ON SKIN: Wash with plenty of soap and water
P362 - Take off contaminated clothing and wash before reuse
P333 + P313 - If skin irritation or rash occurs: Get medical advice/attention
P301 + P312 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
P330 - Rinse mouth
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
Not applicable

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 #
Sodium sulfate	7757-82-6	30 - 40%	-
Phosphoric acid, potassium salt (1:1)	7778-77-0	10 - 20%	-
Benzenesulfonic acid, 4-amino-	121-57-3	10 - 20%	-
Benzoic acid, 2,5-dihydroxy-	490-79-9	5 - 10%	-
Cadmium	7440-43-9	5 - 10%	-
Copper, [propanedioato(2-)-O,O]-	7268-92-0	0.1 - 1%	-
2-Propenamide, homopolymer	9003-05-8	<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. May cause allergic skin reaction. Repeated contact may cause allergic reactions in very susceptible persons.

Eye contact In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Remove contact lenses, if present and easy to do. Continue rinsing. Immediate medical attention is required.

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. May cause an allergic skin reaction. Consult a physician if necessary.

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 Causes sensitization.

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. In the event of fire and/or explosion do not breathe fumes. May cause sensitization in susceptible persons. Thermal

decomposition can lead to release of irritating and toxic gases and vapors.

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

Protective equipment and precautions for firefighters
Wear self-contained breathing apparatus and protective suit.

Special protective equipment for fire-fighters
Wear self-contained breathing apparatus and protective suit

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. Do not flush into surface water or sanitary sewer system. 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. Keep containers tightly closed in a cool, well-ventilated place.

Flammability class Not applicable

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines .

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Cadmium 5 - 10%	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
Copper, [propanedioato(2-)-O,O]- 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 5 - 10%	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
Copper, [propanedioato(2-)-O,O]- 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 5 - 10%	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
Copper, [propanedioato(2-)-O,O]- 0.1 - 1%	NDF	TWA: 1 mg/m³	NDF	NDF	TWA: 1 mg/m³

Chemical Name	Quebec OEL	Saskatchewan OEL	Yukon OEL
Cadmium 5 - 10%	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**	Gray
Odor	Odorless	**Odor threshold**	No data available

Property	Values	Remarks • Method
Molecular weight	No data available	
pH	2.7	5% Solution
Melting point/freezing point	175 °C / 347 °F	
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)	2.13	
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
Slightly soluble	> 0.1 mg/L	25 °C / 77 °F

Solubility in other solvents

Chemical Name	Solubility classification	Solubility	Solubility Temperature
Acid	Slightly soluble	> 0.1 mg/L	25 °C / 77 °F

Other Information

Metal Corrosivity Not classified as corrosive to metal according to GHS criteria

Steel Corrosion Rate 1.02 mm/yr / 0.04 in/yr

Aluminum Corrosion Rate 0.28 mm/yr / 0.01 in/yr

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. Carbon dioxide. Phosphorus oxides. Carbon monoxide. Sulfur oxides.

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. Causes skin irritation. Causes serious eye irritation. Harmful if swallowed. Skin sensitizer.
Inhalation	Avoid breathing dust/fume/gas/mist/vapors/spray. Toxic by inhalation. Immediate medical attention is required.
Eye contact	Contact with eyes may cause irritation. Severely irritating to eyes.
Skin contact	Causes skin irritation. May cause sensitization by skin contact.
Ingestion	Harmful if swallowed. Ingestion may cause irritation to mucous membranes.
Aggravated Medical Conditions	Skin disorders. Eye disorders.
Toxicologically synergistic products	None known.
Toxicokinetics, metabolism and distribution	See ingredients information below.

Chemical Name	Toxicokinetics, metabolism and distribution
Benzenesulfonic acid, 4-amino-	The only metabolite found in the urine of rat, rabbits, guinea-pigs is the N-axetylated derivative. In rats and rabbits the compound is only partly metabolized, whereas in guinea-pigs ca. 75% are excreted as N-acetyl

(10 - 20%) CAS#: 121-57-3	derivative.
Benzoic acid, 2,5-dihydroxy- (5 - 10%) CAS#: 490-79-9	Aspirin metabolite.
2-Propenamide, homopolymer (<0.1%) CAS#: 9003-05-8	Polyacrylamide is not toxic; however, unpolymerized acrylamide, which is a neurotoxin, can be present in very small amount in the polymerized acrylamide. Therefore, it is recommended to handle it with caution.

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)	1,470.00 mg/kg
ATEmix (inhalation-dust/mist)	0.51 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
Phosphoric acid, potassium salt (1:1) (10 - 20%) CAS#: 7778-77-0	Mouse LD_{50}	1700 mg/kg	None reported	None reported	IUCLID (The International Uniform Chemical Information Database)
Benzenesulfonic acid, 4-amino- (10 - 20%) CAS#: 121-57-3	Rat LD_{50}	12300 mg/kg	None reported	None reported	IUCLID (The International Uniform Chemical Information Database)
Benzoic acid, 2,5-dihydroxy- (5 - 10%) CAS#: 490-79-9	Rat LD_{50}	800 mg/kg	None reported	None reported	RTECS (Registry of Toxic Effects of Chemical Substances)
Cadmium (5 - 10%) 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 (30 - 40%) CAS#: 7757-82-6	Mouse LD_{50}	5989 mg/kg	None reported	None reported	IUCLID (The International Uniform Chemical Information Database)
Benzoic acid, 2,5-dihydroxy- (5 - 10%) CAS#: 490-79-9	Mouse LD_{50}	4500 mg/kg	None reported	None reported	Vendor SDS
Chemical Name	**Endpoint type**	**Reported dose**	**Exposure time**	**Toxicological effects**	**Key literature references and sources for data**
Cadmium	Mouse	8 mg/kg	None	**Musculoskeletal**	RTECS (Registry of Toxic

(5 - 10%) CAS#: 7440-43-9	TD_{Lo}		reported	Osteoporosis	Effects of Chemical Substances)

Dermal Exposure Route If available, see data below

Chemical Name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Phosphoric acid, potassium salt (1:1) (10 - 20%) CAS#: 7778-77-0	Rabbit LD_{50}	> 4640 mg/kg	None reported	None reported	RTECS (Registry of Toxic Effects of Chemical Substances)

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 (5 - 10%) 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 (5 - 10%) CAS#: 7440-43-9	Human LD_{Lo}	0.468 mg/L	4 hours	**Vascular** Thromobosis distant from injection site	RTECS (Registry of Toxic Effects of Chemical 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
Sodium sulfate (30 - 40%) CAS#: 7757-82-6	Standard Draize Test	Rabbit	500 mg	4 hours	Not corrosive or irritating to skin	ECHA (The European Chemicals Agency)
Benzenesulfonic acid, 4-amino- (10 - 20%) CAS#: 121-57-3	Standard Draize Test	Rabbit	500 mg	24 hours	Mild skin irritant	RTECS (Registry of Toxic Effects of Chemical Substances)
Chemical Name	**Test method**	**Species**	**Reported dose**	**Exposure time**	**Results**	**Key literature references and sources for data**
Sodium sulfate (30 - 40%) 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

Sodium sulfate (30 - 40%) CAS#: 7757-82-6	Standard Draize Test	Rabbit	90 mg	24 hours	Not corrosive or irritating to eyes	ECHA (The European Chemicals Agency)
Benzenesulfonic acid, 4-amino- (10 - 20%) CAS#: 121-57-3	Standard Draize Test	Rabbit	100 mg	24 hours	Eye irritant	RTECS (Registry of Toxic Effects of Chemical Substances)

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
Sodium sulfate (30 - 40%) CAS#: 7757-82-6	OECD Test No. 406: Skin Sensitization	Guinea pig	Not confirmed to be a skin sensitizer	HSDB (Hazardous Substances Data Bank)
Benzenesulfonic acid, 4-amino- (10 - 20%) CAS#: 121-57-3	OECD Test No. 406: Skin Sensitization	Guinea pig	Confirmed to be a skin sensitizer	IUCLID (The International Uniform Chemical Information Database)

Respiratory Sensitization Exposure Route No data available.

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 (5 - 10%) 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 (5 - 10%) 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
Sodium sulfate	7757-82-6	-	-	-	-
Phosphoric acid, potassium salt (1:1)	7778-77-0	-	-	-	-
Benzenesulfonic acid, 4-amino-	121-57-3	-	-	-	-
Benzoic acid, 2,5-dihydroxy-	490-79-9	-	-	-	-
Cadmium	7440-43-9	A2	Group 1	Known	X
Copper, [propanedioato(2-)-O,O]-	7268-92-0	-	-	-	-
2-Propenamide, homopolymer	9003-05-8	-	-	-	-

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 (5 - 10%) 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
Benzenesulfonic acid, 4-amino- (10 - 20%) CAS#: 121-57-3	Mutation in microorganisms	*Salmonella typhimurium*	None reported	None reported	Negative test result for mutagenicity	IUCLID (The International Uniform Chemical Information Database)
Benzoic acid, 2,5-dihydroxy- (5 - 10%) CAS#: 490-79-9	DNA inhibition	Human lymphocyte	1 mmol/L	None reported	Positive test result for mutagenicity	RTECS (Registry of Toxic Effects of Chemical Substances)
Cadmium (5 - 10%) 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 (5 - 10%) 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 (30 - 40%) 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 (5 - 10%) 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
Sodium sulfate (30 - 40%) CAS#: 7757-82-6	96 hours	None reported	LC_{50}	56 mg/L	IUCLID (The International Uniform Chemical Information Database)
Benzenesulfonic acid, 4-amino- (10 - 20%) CAS#: 121-57-3	96 hours	*Pimephales promelas*	LC_{50}	100.4 mg/L	IUCLID (The International Uniform Chemical Information Database)
Benzoic acid,	96 hours	None reported	LC_{50}	1140 mg/L	Estimation through ECOSARS

2,5-dihydroxy- (5 - 10%) CAS#: 490-79-9					v1.11 part of the Estimation Programs Interface (EPI) Suite™
Cadmium (5 - 10%) 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 (30 - 40%) CAS#: 7757-82-6	96 hours	*Pimephales promelas*	LC_{50}	7960 mg/L	IUCLID (The International Uniform Chemical Information Database)
Cadmium (5 - 10%) 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**
Sodium sulfate (30 - 40%) CAS#: 7757-82-6	48 Hours	*Daphnia magna*	EC_{50}	3150 mg/L	IUCLID (The International Uniform Chemical Information Database)
Benzenesulfonic acid, 4-amino- (10 - 20%) CAS#: 121-57-3	48 Hours	*Daphnia magna*	EC_{50}	85.66 mg/L	IUCLID (The International Uniform Chemical Information Database)
Benzoic acid, 2,5-dihydroxy- (5 - 10%) CAS#: 490-79-9	48 Hours	None reported	EC_{50}	9811 mg/L	Estimation through ECOSARS v1.11 part of the Estimation Programs Interface (EPI) Suite™
Cadmium (5 - 10%) CAS#: 7440-43-9	48 Hours	None reported	EC_{50}	0.58 mg/L	PEEN (Pan European Ecological Network)
2-Propenamide, homopolymer (<0.1%) CAS#: 9003-05-8	48 Hours	*Daphnia pulex*	LC_{50}	0.08 mg/L	CEPA (Canadian Environmental Protection Agency)
Chemical Name	**Exposure time**	**Species**	**Endpoint type**	**Reported dose**	**Key literature references and sources for data**
Cadmium (5 - 10%) 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**
Benzenesulfonic acid, 4-amino- (10 - 20%) CAS#: 121-57-3	72 Hours	*Scenedesmus subspicatus*	EC_{50}	91 mg/L	IUCLID (The International Uniform Chemical Information Database)
Benzoic acid, 2,5-dihydroxy- (5 - 10%) CAS#: 490-79-9	96 hours	None reported	EC_{50}	388 mg/L	Estimation through ECOSARS v1.11 part of the Estimation Programs Interface (EPI) Suite™
Cadmium (5 - 10%) 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**
Copper, [propanedioato(2-)-O,O]- (0.1 - 1%) CAS#: 7268-92-0	Organic - metal salt	Yes	No	Yes
2-Propenamide, homopolymer (<0.1%) CAS#: 9003-05-8	-	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
Benzoic acid, 2,5-dihydroxy- (5 - 10%) CAS#: 490-79-9	None reported	97.6%	20 days	Readily biodegradable

Bioaccumulation
If available, see ingredient data below.

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
Sodium sulfate (30 - 40%) CAS#: 7757-82-6	log K_{ow} = -3	No information available
Benzoic acid, 2,5-dihydroxy- (5 - 10%) CAS#: 490-79-9	log K_{ow} = 1.74	No information available

Mobility
Mobility in soil: Moderate to low 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 (30 - 40%) CAS#: 7757-82-6	log K_{oc} = -1.4	Estimation through KOCWIN v2.00 part of the Estimation Programs Interface (EPI) Suite™
Benzoic acid, 2,5-dihydroxy- (5 - 10%) CAS#: 490-79-9	log K_{oc} = 1.45	Estimation through KOCWIN v2.00 part of the Estimation Programs Interface (EPI) Suite™

Additional information

Water solubility

Product Information

Water solubility classification	Water solubility	Water Solubility Temperature
Slightly soluble	> 0.1 mg/L	25 °C / 77 °F

Ingredient Information

Chemical Name	Water solubility classification	Water solubility	Water solubility temperature °C	Water solubility temperature °F
Sodium sulfate CAS#: 7757-82-6	Completely soluble	160000 mg/L	20 °C	68 °F
Phosphoric acid, potassium salt (1:1) CAS#: 7778-77-0	Soluble	> 1000 mg/L	25 °C	77 °F
Benzenesulfonic acid, 4-amino- CAS#: 121-57-3	Slightly soluble	10 mg/L	20 °C	68 °F
Benzoic acid, 2,5-dihydroxy- CAS#: 490-79-9	Soluble	5000 mg/L	20 °C	68 °F
Cadmium CAS#: 7440-43-9	Insoluble	< 0.1 mg/L	25 °C	77 °F
Copper, [propanedioato(2-)-O,O]- CAS#: 7268-92-0	Slightly soluble	> 0.1 mg/L	25 °C	77 °F
2-Propenamide, homopolymer CAS#: 9003-05-8	Soluble	> 1000 mg/L	25 °C	77 °F

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

Chemical Name	EU - Endocrine Disrupters Candidate List	EU - Endocrine Disruptors - Evaluated Substances	Endocrine disrupting potential
Benzoic acid, 2,5-dihydroxy- (5 - 10%) CAS#: 490-79-9	Group III Chemical	-	-

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.

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	Complies
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
Copper, [propanedioato(2-)-O,O]- (CAS #: 7268-92-0)	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	-

Copper, [propanedioato(2-)-O,O]- 7268-92-0	-	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
Copper, [propanedioato(2-)-O,O]- 7268-92-0	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** - 2	**Flammability** - 0	**Instability** - 0	**Physical and Chemical Properties** -
HMIS	**Health hazards** - 2	**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
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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.

End of Safety Data Sheet