SAFETY DATA SHEET

1. IDENTIFICATION

Product identifier
Product Name NitraVer® 5 Nitrate Reagent

Other means of identification
Product Code(s) 1403499

Safety data sheet number M00049

UN/ID no UN3288

Recommended use of the chemical and restrictions on use
Recommended Use Laboratory reagent. Determination of nitrate.
Uses advised against Consumer use.
Restrictions on use For Laboratory Use Only.

Details of the supplier of the safety data sheet

Manufacturer Address
Hach Company P.O.Box 389 Loveland, CO 80539 USA +1(970) 669-3050

Emergency telephone number
+1(303) 623-5716 - 24 Hour Service +1(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
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
H315 - Causes skin irritation
H317 - May cause an allergic skin reaction
H319 - Causes serious eye irritation
H331 - Toxic if inhaled
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
P271 - Use only outdoors or in a well-ventilated area
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
P403 + P233 - Store in a well-ventilated place. Keep container tightly closed
P405 - Store locked up
P501 - Dispose of contents/ container to an approved waste disposal plant
P302 + P352 - IF ON SKIN: Wash with plenty of soap and water
P362 - Take off contaminated clothing and wash before reuse
P280 - Wear protective gloves/protective clothing/eye protection/face protection
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
P272 - Contaminated work clothing should not be allowed out of the workplace
P333 + P313 - If skin irritation or rash occurs: Get medical advice/attention
P363 - Wash contaminated clothing before reuse
P201 - Obtain special instructions before use
P308 + P313 - IF exposed or concerned: Get medical advice/attention
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
P391 - Collect spillage
P301 + P312 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
P330 - Rinse mouth

Other Hazards Known
Not applicable

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance
Not applicable

Mixture

Chemical Family	Mixture.
Chemical nature	Mixture of organic compounds, Mixture of inorganic salts.

Percent ranges are used where confidential product information is applicable.

Chemical name	CAS No.	Percent Range	HMRIC #
Phosphoric acid, potassium salt (1:1)	7778-77-0	30 - 40%	-
Benzenesulfonic acid, 4-amino-	121-57-3	20 - 30%	-
Benzoic acid, 2,5-dihydroxy-	490-79-9	20 - 30%	-
Cadmium	7440-43-9	3 - 7%	-
Copper, [propanedioato(2-)-O,O]-	7268-92-0	<1%	-
2-Propenamide, homopolymer	9003-05-8	<0.1%	-

4. FIRST AID MEASURES

Description of first aid measures

General advice Show this safety data sheet to the doctor in attendance. IF exposed or concerned: Get medical advice/attention.

Inhalation Remove to fresh air. Get medical attention immediately if symptoms occur. If breathing has stopped, give artificial respiration. Get medical attention immediately. Do not breathe dust. 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. If breathing is difficult, (trained personnel should) give oxygen.

Eye contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists. Do not rub affected area.

Skin contact May cause an allergic skin reaction. In the case of skin irritation or allergic reactions see a physician. Wash off immediately with soap and plenty of water for at least 15 minutes.

Ingestion Do NOT induce vomiting. Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately.

Self-protection of the first aider 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 breathe dust. 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 Itching. Rashes. Hives. Burning sensation. Coughing and/ or wheezing. Difficulty in breathing.

Indication of any immediate medical attention and special treatment needed

Note to physicians May cause sensitization in susceptible persons. 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.

Specific hazards arising from the chemical	Product is or contains a sensitizer. May cause sensitization by skin contact.
Hazardous combustion products	Cadmium oxide. Nitrogen oxides. Sulfur oxides. Phosphorus oxides. Carbon monoxide, Carbon dioxide.
Special protective equipment for fire-fighters	Firefighters should wear self-contained breathing apparatus and full firefighting turnout 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.

Personal precautions, protective equipment and emergency procedures

Personal precautions	Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Avoid generation of dust. Do not breathe dust.
Other Information	Refer to protective measures listed in Sections 7 and 8.

Environmental precautions

Environmental precautions	Prevent further leakage or spillage if safe to do so.

Methods and material for containment and cleaning up

Methods for containment	Prevent further leakage or spillage if safe to do so.
Methods for cleaning up	Pick up and transfer to properly labeled containers.
Prevention of secondary hazards	Clean contaminated objects and areas thoroughly observing environmental regulations.
Reference to other sections	See section 8 for more information. See section 13 for more information.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling	Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. In case of insufficient ventilation, wear suitable respiratory equipment. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse. Remove contaminated clothing and shoes. Do not breathe dust. Avoid generation of dust. Handle product only in closed system or provide appropriate exhaust ventilation.

Conditions for safe storage, including any incompatibilities

Storage Conditions	Keep containers tightly closed in a dry, cool and well-ventilated place. Keep out of the reach of children. Store locked up.
Flammability class	Not applicable

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines

Chemical name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Cadmium CAS#: 7440-43-9	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]- CAS#: 7268-92-0	TWA: 1 mg/m³	NDF	IDLH: 100 mg/m³ Cu dust and mist TWA: 1 mg/m³ Cu dust and mist

Appropriate engineering controls

Engineering Controls Showers
Eyewash stations
Ventilation systems.

Individual protection measures, such as personal protective equipment

Respiratory protection No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

Hand Protection Wear suitable gloves. Impervious gloves.

Eye/face protection Wear safety glasses with side shields (or goggles). If splashes are likely to occur, wear safety glasses with side-shields.

Skin and body protection Wear suitable protective clothing. Long sleeved clothing.

General Hygiene Considerations Do not eat, drink or smoke when using this product. Wash hands before breaks and immediately after handling the product. Wear suitable gloves and eye/face protection. Avoid contact with skin, eyes or clothing. Do not breathe dust. Take off contaminated clothing and wash before reuse. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended.

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

Thermal hazards None under normal processing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state Solid
Appearance powder
Color Gray
Odor Odorless
Odor threshold Not applicable

Property	Values	Remarks • Method
Molecular weight	Not applicable	
pH	2.8	5% Solution

Melting point/freezing point	180 °C / 356 °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)	2.0
Partition Coefficient (n-octanol/water)	log K_{ow} ~ 0.41
Soil Organic Carbon-Water Partition Coefficient	log K_{oc} ~ 0.34
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
Acid	Soluble	> 1000 mg/L	25 °C / 77 °F

Other Information

Metal Corrosivity

Steel Corrosion Rate	Not applicable
Aluminum Corrosion Rate	Not applicable

Volatile Organic Compounds (VOC) Content
Not applicable

Chemical name	CAS No.	Volatile organic compounds (VOC) content	CAA (Clean Air Act)
Phosphoric acid, potassium salt (1:1)	7778-77-0	No data available	-
Benzenesulfonic acid, 4-amino-	121-57-3	No data available	X
Benzoic acid, 2,5-dihydroxy-	490-79-9	No data available	-
Cadmium	7440-43-9	Not applicable	-
Copper, [propanedioato(2-)-O,O]-	7268-92-0	No data available	-
2-Propenamide, homopolymer	9003-05-8	No data available	-

Explosive properties

Upper explosion limit	No data available
Lower explosion limit	No data available

Flammable properties

Flash point	Not applicable

Flammability Limit in Air

Upper flammability limit	No data available
Lower flammability limit	No data available

Oxidizing properties	No data available.
Bulk density	No data available
Particle Size	No information available
Particle Size Distribution	No information available

10. STABILITY AND REACTIVITY

Reactivity
Not applicable.

Chemical stability
Stability Stable under normal conditions.

Explosion data
Sensitivity to Mechanical Impact None
Sensitivity to Static Discharge None.

Possibility of Hazardous Reactions
Possibility of Hazardous Reactions None under normal processing.

Hazardous polymerization
Hazardous polymerization does not occur.

Conditions to avoid
Conditions to avoid Excessive heat.

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

Hazardous Decomposition Products
Phosphorus oxides. Sulfur oxides. Carbon dioxide. Carbon monoxide. Nitrogen oxides.

11. TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure
Product Information

Inhalation	May cause irritation of respiratory tract. Toxic by inhalation.
Eye contact	Irritating to eyes. Causes serious eye irritation.
Skin contact	May cause sensitization by skin contact. Repeated or prolonged skin contact may cause allergic reactions with susceptible persons. Causes skin irritation.
Ingestion	Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Harmful if swallowed.
Symptoms	Itching. Rashes. Hives. Redness. May cause redness and tearing of the eyes. Coughing

and/ or wheezing. Difficulty in breathing.

Aggravated Medical Conditions Skin disorders. Eye disorders. Allergies. Respiratory disorders. Blood disorders. Kidney disorders. Prostate. lungs.

Toxicologically synergistic products None known.

Toxicokinetics, metabolism and distribution See ingredients information below.

Chemical name	Toxicokinetics, metabolism and distribution
Benzenesulfonic acid, 4-amino- (20 - 30%) CAS#: 121-57-3	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 derivative.
Benzoic acid, 2,5-dihydroxy- (20 - 30%) 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 Test data reported below

Oral Exposure Route

Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Rat LD_{50}	1500 mg/kg	None reported	**Behavioral** Decreased locomotor activity **Lungs, Thorax, or Respiration** Respiratory depression **Gastrointestinal** Diarrhea Piloerection **Chronic** Death	Outside testing

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

Unknown Acute Toxicity
5.59813% of the mixture consists of ingredient(s) of unknown toxicity.

Acute Toxicity Estimations (ATE)

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

ATEmix (oral)	No information available
ATEmix (dermal)	No information available
ATEmix (inhalation-dust/mist)	0.89 mg/L
ATEmix (inhalation-vapor)	No information available
ATEmix (inhalation-gas)	No information available

Ingredient Acute Toxicity Data

Oral Exposure Route If available, see data below

Chemical name	Endpoint	Reported	Exposure	Toxicological effects	Key literature references and

	type	dose	time		sources for data
Phosphoric acid, potassium salt (1:1) (30 - 40%) 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- (20 - 30%) 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- (20 - 30%) CAS#: 490-79-9	Rat LD_{50}	800 mg/kg	None reported	None reported	RTECS (Registry of Toxic Effects of Chemical Substances)
Cadmium (3 - 7%) CAS#: 7440-43-9	Rat LD_{50}	225 mg/kg	None reported	None reported	ERMA (New Zealands Environmental Risk Management Authority)

Dermal Exposure Route If available, see data below
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)

Inhalation (Vapor) Exposure Route If available, see data below
Inhalation (Gas) Exposure Route If available, see data below

Product Specific Target Organ Toxicity Single Exposure Data
Oral Exposure Route
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 Specific Target Organ Toxicity Single Exposure 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	Rabbit TD_{Lo}	70 mg/kg	None reported	None reported	RTECS (Registry of Toxic Effects of Chemical Substances)

Dermal Exposure Route If available, see data below
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 LC_{Lo}	39 mg/m^3	20 minutes	**Vascular** Thromobosis distant from injection site **Lungs, Thorax, or Respiration** Respiratory depression	RTECS (Registry of Toxic Effects of Chemical Substances)

Inhalation (Vapor) Exposure Route If available, see data below
Inhalation (Gas) Exposure Route If available, see data below

Aspiration toxicity
If available, see data below
Kinematic viscosity Not applicable

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
Benzenesulfonic acid, 4-amino- (20 - 30%) CAS#: 121-57-3	Standard Draize Test	Rabbit	500 mg	24 hours	Mild skin irritant	RTECS (Registry of Toxic Effects of Chemical Substances)

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
Benzenesulfonic acid, 4-amino- (20 - 30%) 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
Benzenesulfonic acid, 4-amino- (20 - 30%) 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 If available, see data below.

Chronic Toxicity Information

Product Specific Target Organ Toxicity Repeat Dose 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 Specific Target Organ Toxicity Repeat Exposure 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	RTECS (Registry of Toxic Effects of Chemical Substances)

				composition	
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 LOAEL	0.025 mg/m³	90 days	**Lungs, Thorax, or Respiration** Structural or functional change in trachea or bronchi	ECHA (The European Chemicals Agency)

Dermal Exposure Route If available, see data below
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	8.6 years	**Kidney, Ureter, or Bladder** Proteinuria	RTECS (Registry of Toxic Effects of Chemical Substances)

Inhalation (Vapor) Exposure Route If available, see data below
Inhalation (Gas) Exposure Route If available, see data below

Product Carcinogenicity 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 Carcinogenicity Data

Chemical name	**CAS No.**	**ACGIH**	**IARC**	**NTP**	**OSHA**
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

Oral Exposure Route If available, see data below
Dermal Exposure Route If available, see data below
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 If available, see data below
Inhalation (Gas) Exposure Route If available, see data below

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- (20 - 30%) 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- (20 - 30%) 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 (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)

Product 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

Ingredient Germ Cell Mutagenicity *invivo* **Data**

Oral Exposure Route	If available, see data below
Dermal Exposure Route	If available, see data below
Inhalation (Dust/Mist) Exposure Route	If available, see data below
Inhalation (Vapor) Exposure Route	If available, see data below
Inhalation (Gas) Exposure Route	If available, see data below

Product Reproductive 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 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
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)
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}	215 mg/kg	Multiple generations	**Effects on Fertility** Pre-implantation mortality (e.g. reduction in number of implants	RTECS (Registry of Toxic Effects of Chemical Substances)

				per female; total number of implants per corpora lutea) **Effects on Newborn** Germ cell effects (in offspring)	

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

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

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
Benzenesulfonic acid, 4-amino- (20 - 30%) CAS#: 121-57-3	96 hours	*Pimephales promelas*	LC_{50}	100.4 mg/L	IUCLID (The International Uniform Chemical Information Database)
Benzoic acid, 2,5-dihydroxy- (20 - 30%) CAS#: 490-79-9	96 hours	None reported	LC_{50}	1140 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**
Cadmium (3 - 7%) CAS#: 7440-43-9	7 days	*Epinephelus coioides*	NOEC	0.03333 mg/L	ECHA (The European Chemicals Agency)

Crustacea 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- (20 - 30%) 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- (20 - 30%) 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 (3 - 7%) CAS#: 7440-43-9	48 Hours	None reported	EC_{50}	0.58 mg/L	PEEN (Pan European Ecological Network)
2-Propenamide, homopolymer	48 Hours	*Daphnia pulex*	LC_{50}	0.08 mg/L	CEPA (Canadian Environmental Protection Agency)

(<0.1%) CAS#: 9003-05-8					
Chemical name	**Exposure time**	**Species**	**Endpoint type**	**Reported dose**	**Key literature references and sources for data**
Cadmium (3 - 7%) CAS#: 7440-43-9	21 days	*Ctenodrilus serratus*	NOEC	0.001 mg/L	ECHA (The European Chemicals Agency)

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- (20 - 30%) 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- (20 - 30%) 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 (3 - 7%) CAS#: 7440-43-9	72 Hours	None reported	EC_{50}	0.132 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	3 days	*Chaetoceros compressum*	EC_{10}	0.00183 mg/L	ECHA (The European Chemicals Agency)

Other Information

Persistence and degradability

Product Biodegradability Data
No data available.

Ingredient Biodegradability Data

Chemical name	**Test method**	**Biodegradation**	**Exposure time**	**Results**
Benzoic acid, 2,5-dihydroxy- (20 - 30%) CAS#: 490-79-9	None reported	97.6%	20 days	Readily biodegradable
Cadmium (3 - 7%) CAS#: 7440-43-9	Element	None reported	None reported	Not readily biodegradable

Bioaccumulation

Product Bioaccumulation Data
No data available.

Partition Coefficient (n-octanol/water) log K_{ow} ~ 0.41

Ingredient Bioaccumulation Data

Chemical name	**Test method**	**Exposure time**	**Species**	**Bioconcentration factor (BCF)**	**Results**
Cadmium (3 - 7%)	None reported	None reported	None reported	None reported	Not determined

CAS#: 7440-43-9					

Mobility

Soil Organic Carbon-Water Partition Coefficient log K_{oc} ~ 0.34

Water solubility

Water solubility classification	Water solubility	Water Solubility Temperature
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- (20 - 30%) CAS#: 490-79-9	Group III Chemical	-	-

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Waste from residues/unused products Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

Contaminated packaging Do not reuse empty containers.

US EPA Waste Number D006

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

U.S. DOT

UN/ID no	UN3288
Proper shipping name	Toxic solid, inorganic, n.o.s.
DOT Technical Name	Cadmium
Hazard Class	6.1
Packing Group	III
Description	UN3288, Toxic solid, inorganic, n.o.s. (Cadmium), 6.1, III
Emergency Response Guide Number	151

TDG

UN/ID no	UN3288
Proper shipping name	Toxic solid, inorganic, n.o.s.
TDG Technical Name	Cadmium
Hazard Class	6.1
Packing Group	III

Description	UN3288, Toxic solid, inorganic, n.o.s. (Cadmium), 6.1, III

IATA

UN/ID no	UN3288
Proper shipping name	Toxic solid, inorganic, n.o.s.
IATA Technical Name	Cadmium
Hazard Class	6.1
Packing Group	III
ERG Code	6L
Special precautions for user	A3,A5
Description	UN3288, Toxic solid, inorganic, n.o.s. (Cadmium), 6.1, III

IMDG

UN/ID no	UN3288
Proper shipping name	Toxic solid, inorganic, n.o.s.
IMDG Technical Name	Cadmium
Hazard Class	6.1
Packing Group	III
EmS-No	F-A, S-A
Special precautions for user	223, 274
Description	UN3288, Toxic solid, inorganic, n.o.s. (Cadmium), 6.1, III, 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	Complies
ENCS	Complies
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

WARNING: This product can expose you to chemicals including Cadmium, which is known to the State of California to cause cancer and birth defects or other reproductive harm.
For more information, go to http://www.P65Warnings.ca.gov

IMERC: Not applicable

U.S. State Right-to-Know Regulations

Chemical name	New Jersey	Massachusetts	Pennsylvania
Cadmium 7440-43-9	X	X	X
Copper, [propanedioato(2-)-O,O]- 7268-92-0	X	-	X

U.S. EPA Label Information

Chemical name	FIFRA	FDA
Phosphoric acid, potassium salt (1:1)	180.0920	-

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

Special Comments
None

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 %

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 M	Carcinogen mutagen	R	Reproductive toxicant

Prepared By	Hach Product Compliance Department
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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.

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End of Safety Data Sheet