SAFETY DATA SHEET

1. IDENTIFICATION

Product identifier
Product Name UniVer® 3 Hardness Reagent

Other means of identification
Product Code(s) 21320H

Safety data sheet number M00168

Recommended use of the chemical and restrictions on use
Recommended Use Hardness determination. Laboratory reagent.
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 +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 - Inhalation (Dusts/Mists)	Category 4
Serious eye damage/eye irritation	Category 2A

Hazards not otherwise classified (HNOC)
Not applicable

Label elements

Signal word - Warning

Hazard statements

H319 - Causes serious eye irritation
H332 - Harmful if inhaled

Precautionary statements
P261 - Avoid breathing dust/fume/gas/mist/vapors/spray
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
P312 - Call a POISON CENTER or doctor/physician if you feel unwell
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

Other Hazards Known
May be harmful if swallowed
May be harmful in contact with skin
Causes mild skin irritation
Harmful to aquatic life

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance
Not applicable

Mixture

Chemical name	CAS No.	Percent Range	HMRIC #
Disodium carbonate	497-19-8	60 - 70%	-
Sodium sulfite	7757-83-7	20 - 30%	-
Ammonium chloride	12125-02-9	10 - 20%	-
Sodium diethyldithiocarbamate	148-18-5	1 - 5%	-
Tetrasodium EDTA	64-02-8	<1%	-
Silica, amorphous	7631-86-9	<1%	-
1-Naphthalenesulfonic acid, 3-hydroxy-4-[(2-hydroxy-5-methylphenyl)azo]-	3147-14-6	<1%	-

4. FIRST AID MEASURES

Description of first aid measures

General advice Show this safety data sheet to the doctor in attendance.

Inhalation Remove to fresh air. If breathing has stopped, give artificial respiration. Get medical attention immediately. If symptoms persist, call a physician.

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

Skin contact Wash skin with soap and water.

Ingestion Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Do NOT induce vomiting. Get medical attention.

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.

Most important symptoms and effects, both acute and delayed

Symptoms Burning sensation. Coughing and/ or wheezing. Difficulty in breathing.

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.

Specific hazards arising from the chemical No information available.

Hazardous combustion products Nitrogen oxides. Sulfur oxides. Carbon monoxide, Carbon dioxide. Sodium oxides. Ammonia. Silicon 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. Use personal protective equipment as required. Ensure adequate ventilation. Avoid generation of dust. Do not breathe dust.

Other Information Refer to protective measures listed in Sections 7 and 8.

Environmental precautions

Environmental precautions 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.

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. Do not eat, drink or smoke when using this product. Avoid breathing dust/fume/gas/mist/vapors/spray. Avoid generation of dust. Ensure adequate 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.

Flammability class Not applicable

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines

Chemical name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Ammonium chloride CAS#: 12125-02-9	STEL: 20 mg/m³ TWA: 10 mg/m³	(vacated) TWA: 10 mg/m³ (vacated) STEL: 20 mg/m³	TWA: 10 mg/m³ fume STEL: 20 mg/m³ fume
Silica, amorphous CAS#: 7631-86-9	NDF	TWA: 50 µg/m³ (vacated) TWA: 6 mg/m³ TWA: 20 mppcf :	IDLH: 3000 mg/m³ TWA: 6 mg/m³

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.

Eye/face protection If splashes are likely to occur, wear safety glasses with side-shields.

Skin and body protection Wear suitable protective clothing.

General Hygiene Considerations Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product. Avoid breathing dust/fume/gas/mist/vapors/spray.

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
Odor Odorless

Color light pink
Odor threshold No data available

Property	Values	Remarks • Method
Molecular weight	No data available	
pH	10.1	
Melting point/freezing point	95 °C / 203 °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)	2.25	
Partition Coefficient (n-octanol/water)	log K_{ow} ~ -0.01	
Soil Organic Carbon-Water Partition Coefficient	log K_{oc} ~ 0	
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

Steel Corrosion Rate Not applicable
Aluminum Corrosion Rate 0.56 mm/yr / 0.02 in/yr

Volatile Organic Compounds (VOC) Content
Not applicable

Chemical name	CAS No.	Volatile organic compounds (VOC) content	CAA (Clean Air Act)
Disodium carbonate	497-19-8	No data available	-
Sodium sulfite	7757-83-7	No data available	-
Ammonium chloride	12125-02-9	No data available	-
Sodium diethyldithiocarbamate	148-18-5	No data available	-

Chemical name	CAS No.	Volatile organic compounds (VOC) content	CAA (Clean Air Act)
Tetrasodium EDTA	64-02-8	No data available	-
Silica, amorphous	7631-86-9	No data available	-
1-Naphthalenesulfonic acid, 3-hydroxy-4-[(2-hydroxy-5-methylphenyl)azo]-	3147-14-6	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
None under normal processing.

Conditions to avoid
Conditions to avoid Excessive heat.

Incompatible materials
Incompatible materials Strong oxidizing agents, strong acids, and strong bases.

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

11. TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure
Product Information

Inhalation	May cause irritation of respiratory tract. Harmful by inhalation.
Eye contact	Causes serious eye irritation. May cause redness, itching, and pain.
Skin contact	May cause irritation. Prolonged contact may cause redness and irritation.
Ingestion	Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.
Symptoms	May cause redness and tearing of the eyes. Coughing and/ or wheezing.
Aggravated Medical Conditions	Skin disorders. Eye disorders. Preexisting 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

Unknown Acute Toxicity
0% 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)	3,292.00 mg/kg
ATEmix (dermal)	2,731.00 mg/kg
ATEmix (inhalation-dust/mist)	1.80 mg/L
ATEmix (inhalation-vapor)	108.00 mg/L
ATEmix (inhalation-gas)	No information available

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
Disodium carbonate (60 - 70%) CAS#: 497-19-8	Rat LD_{50}	4090 mg/kg	None reported	None reported	IUCLID (The International Uniform Chemical Information Database)
Sodium sulfite (20 - 30%) CAS#: 7757-83-7	Rat LD_{50}	3560 mg/kg	None reported	None reported	GESTIS (Information System on Hazardous Substances of the German Social Accident Insurance)
Ammonium chloride (10 - 20%) CAS#: 12125-02-9	Rat LD_{50}	1650 mg/kg	None reported	None reported	IUCLID (The International Uniform Chemical Information Database)
Sodium diethyldithiocarbamate (1 - 5%) CAS#: 148-18-5	Rat LD_{50}	1500 mg/kg	None reported	None reported	GESTIS (Information System on Hazardous Substances of the German Social Accident Insurance)
Tetrasodium EDTA	Rat LD_{50}	1658 mg/kg	None	None reported	ERMA (New Zealands

(<1%) CAS#: 64-02-8			reported		Environmental Risk Management Authority)
1-Naphthalenesulfonic acid, 3-hydroxy-4-[(2-hydroxy-5-methylphenyl)azo]- (<1%) CAS#: 3147-14-6	Rat	> 5000 mg/kg	None reported	None reported	No information available

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
Disodium carbonate (60 - 70%) CAS#: 497-19-8	Mouse LD_{50}	2210 mg/kg	None reported	None reported	No information available
Sodium sulfite (20 - 30%) CAS#: 7757-83-7	Rat LD_{50}	2000 mg/kg	None reported	None reported	EPA (United States Environmental Protection Agency)
Sodium diethyldithiocarbamate (1 - 5%) CAS#: 148-18-5	Rat LD_{50}	> 1000 mg/kg	None reported	None reported	GESTIS (Information System on Hazardous Substances of the German Social Accident Insurance)

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
Disodium carbonate (60 - 70%) CAS#: 497-19-8	Rat LC_{50}	1.15 mg/L	4 hours	None reported	IUCLID (The International Uniform Chemical Information Database)
Sodium sulfite (20 - 30%) CAS#: 7757-83-7	Rat LC_{50}	5.5 mg/L	4 hours	None reported	ECHA (The European Chemicals Agency)

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 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 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
Ammonium chloride (10 - 20%) CAS#: 12125-02-9	Domestic mammal - Not specified LD_{Lo}	1500 mg/kg	None reported	**Lungs, Thorax, or Respiration** Respiratory stimulation	RTECS (Registry of Toxic Effects of Chemical Substances)
Silica, amorphous (<1%) CAS#: 7631-86-9	Rat LC_{Lo}	5000 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
Silica, amorphous (<1%) CAS#: 7631-86-9	Rat LC_{Lo}	2.19 mg/L	4 hours	**Lungs, Thorax, or Respiration** Dyspnea	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.

Key literature references and sources for data
Outside testing

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
Disodium carbonate (60 - 70%) CAS#: 497-19-8	Standard Draize Test	Rabbit	500 mg	24 hours	Mild skin irritant	ECHA (The European Chemicals Agency) HSDB (Hazardous Substances Data Bank)
Sodium sulfite (20 - 30%) CAS#: 7757-83-7	Standard Draize Test	Rabbit	500 mg	4 hours	Not corrosive or irritating to skin	ECHA (The European Chemicals Agency)
Ammonium chloride (10 - 20%) CAS#: 12125-02-9	Existing human experience	Human	None reported	None reported	Mild skin irritant	RTECS (Registry of Toxic Effects of Chemical Substances)
Silica, amorphous (<1%) CAS#: 7631-86-9	Standard Draize Test	Rabbit	500 mg	24 hours	Not corrosive or irritating to skin	IUCLID (The International Uniform Chemical Information Database)

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
Disodium carbonate (60 - 70%) CAS#: 497-19-8	Standard Draize Test	Rabbit	100 mg	24 hours	Eye irritant	HSDB (Hazardous Substances Data Bank)
Sodium sulfite (20 - 30%) CAS#: 7757-83-7	Standard Draize Test	Rabbit	162 mg	None reported	Mild eye irritant	ECHA (The European Chemicals Agency)
Silica, amorphous (<1%) CAS#: 7631-86-9	Standard Draize Test	Rabbit	25 mg	24 hours	Mild eye irritant	IUCLID (The International Uniform Chemical Information Database)

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
Ammonium chloride (10 - 20%) CAS#: 12125-02-9	OECD Test No. 406: Skin Sensitization	Guinea pig	Not confirmed to be a skin sensitizer	OECD (Organization for Economic Co-operation and Development)
Silica, amorphous (<1%) CAS#: 7631-86-9	OECD Test No. 406: Skin Sensitization	Guinea pig	Not confirmed to be a skin sensitizer	IUCLID (The International Uniform Chemical Information Database)

Respiratory Sensitization Exposure Route If available, see data below.

Chemical name	Test method	Species	Results	Key literature references and sources for data
Sodium sulfite (20 - 30%) CAS#: 7757-83-7	Based on human experience	Human	Confirmed to be a respiratory sensitizer	OECD (Organization for Economic Co-operation and Development)

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
Ammonium chloride (10 - 20%) CAS#: 12125-02-9	Rat TD_{Lo}	3500 mg/kg	7 days	**Nutritional and Gross Metabolic** Metabolic acidosis	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**
Ammonium chloride (10 - 20%) CAS#: 12125-02-9	Rat TD_{Lo}	556000 mg/kg	78 weeks	**Kidney, Ureter, or Bladder** Changes in tubules (including acute renal failure, acute tubular necrosis)	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
Silica, amorphous (<1%) CAS#: 7631-86-9	Rat TC_{Lo}	0.154 mg/L	28 days	**Lungs, Thorax, or Respiration** Structural or functional change in trachea or bronchi	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**
Silica, amorphous (<1%) CAS#: 7631-86-9	Rat TC_{Lo}	0.00541 mg/L	5 days	None reported	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
Disodium carbonate	497-19-8	-	-	-	-
Sodium sulfite	7757-83-7	-	Group 3	-	-
Ammonium chloride	12125-02-9	-	-	-	-
Sodium diethyldithiocarbamate	148-18-5	-	Group 3	-	-
Tetrasodium EDTA	64-02-8	-	-	-	-
Silica, amorphous	7631-86-9	-	Group 3	Known	X
1-Naphthalenesulfonic acid, 3-hydroxy-4-[(2-hydroxy-5-methylphenyl)azo]-	3147-14-6	-	-	-	-

Legend

ACGIH (American Conference of Governmental Industrial Hygienists)	Does not apply
IARC (International Agency for Research on Cancer)	Group 3 - Not classifiable as a human carcinogen
NTP (National Toxicology Program)	Does not apply
OSHA (Occupational Safety and Health Administration of the US Department of Labor)	Does not apply

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 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
Sodium sulfite (20 - 30%) CAS#: 7757-83-7	Cytogenetic analysis	Mouse sperm cells	25 mg/L	None reported	Positive test result for mutagenicity	RTECS (Registry of Toxic Effects of Chemical Substances)
Ammonium chloride (10 - 20%) CAS#: 12125-02-9	Cytogenetic analysis	Hamster fibroblast	400 mg/L	None reported	Positive test result for mutagenicity	RTECS (Registry of Toxic Effects of Chemical Substances)
Sodium diethyldithiocarbamate (1 - 5%) CAS#: 148-18-5	DNA damage	Human HeLa Cell	100 mmol/L	None reported	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**
Sodium sulfite (20 - 30%) CAS#: 7757-83-7	None reported	Human lymphocyte	0.1 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
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

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
Disodium carbonate (60 - 70%) CAS#: 497-19-8	96 hours	*Lepomis macrochirus*	LC_{50}	300 mg/L	IUCLID (The International Uniform Chemical Information Database)
Sodium sulfite (20 - 30%) CAS#: 7757-83-7	96 hours	*Leuciscus idus*	LC_{50}	170 mg/L	OECD (Organization for Economic Co-operation and Development)
Ammonium chloride (10 - 20%) CAS#: 12125-02-9	96 hours	*Oncorhynchus mykiss*	LC_{50}	3.98 mg/L	IUCLID (The International Uniform Chemical Information Database)
Sodium diethyldithiocarbamate (1 - 5%) CAS#: 148-18-5	96 hours	*Poecilia reticulata*	LC_{50}	6.9 mg/L	GESTIS (Information System on Hazardous Substances of the German Social Accident Insurance)
Silica, amorphous	96 hours	*Brachydanio rerio*	LC_{50}	5000 mg/L	IUCLID (The International

(<1%) CAS#: 7631-86-9					Uniform Chemical Information Database)

Crustacea If available, see ingredient data below

Chemical name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
Disodium carbonate (60 - 70%) CAS#: 497-19-8	48 Hours	*Daphnia magna*	EC_{50}	265 mg/L	IUCLID (The International Uniform Chemical Information Database)
Sodium sulfite (20 - 30%) CAS#: 7757-83-7	48 Hours	*Daphnia magna*	EC_{50}	18 mg/L	OECD (Organization for Economic Co-operation and Development)
Ammonium chloride (10 - 20%) CAS#: 12125-02-9	48 Hours	*Daphnia magna*	LC_{50}	161 mg/L	IUCLID (The International Uniform Chemical Information Database)
Sodium diethyldithiocarbamate (1 - 5%) CAS#: 148-18-5	48 Hours	*Daphnia magna*	EC_{50}	0.91 mg/L	GESTIS (Information System on Hazardous Substances of the German Social Accident Insurance)
Silica, amorphous (<1%) CAS#: 7631-86-9	48 Hours	*Ceriodaphnia dubia*	EC_{50}	7600 mg/L	IUCLID (The International Uniform Chemical Information Database)

Algae If available, see ingredient data below

Chemical name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
Sodium sulfite (20 - 30%) CAS#: 7757-83-7	None reported	*Chlamydomonas reinhardtii*	EC_{50}	63 mg/L	OECD (Organization for Economic Co-operation and Development)
Sodium diethyldithiocarbamate (1 - 5%) CAS#: 148-18-5	72 Hours	*Chlorella pyrenoidosa*	EC_{50}	1.4 mg/L	GESTIS (Information System on Hazardous Substances of the German Social Accident Insurance)
Silica, amorphous (<1%) CAS#: 7631-86-9	72 Hours	*Selenastrum capricornutum*	EC_{50}	440 mg/L	IUCLID (The International Uniform Chemical Information Database)

Other Information

Persistence and degradability

Product Biodegradability Data
No data available.

Ingredient Biodegradability Data

Chemical name	Test method	Biodegradation	Exposure time	Results
Disodium carbonate (60 - 70%) CAS#: 497-19-8	None reported	None reported	None reported	Readily biodegradable
Ammonium chloride (10 - 20%) CAS#: 12125-02-9	None reported	None reported	None reported	Readily biodegradable

Bioaccumulation

Product Bioaccumulation Data
No data available.

Partition Coefficient (n-octanol/water) log K_{ow} ~ -0.01

Ingredient Bioaccumulation Data

Chemical name	Test method	Exposure time	Species	Bioconcentration factor (BCF)	Results
Disodium carbonate (60 - 70%) CAS#: 497-19-8	None reported	None reported	None reported	None reported	Does not have the potential to bioaccumulate

Mobility

Soil Organic Carbon-Water Partition Coefficient log K_{oc} ~ 0

Water solubility

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

Other adverse effects
No information available.

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.

Special instructions for disposal Work in an approved fume hood. Dilute material with excess water making a weaker than 5% solution. Adjust to a pH between 6 and 9 with an acid, such as sulfuric or citric. If permitted by regulation. Open cold water tap completely, slowly pour the reacted material to the drain. Allow cold water to run for 5 minutes to completely flush the system.

14. TRANSPORT INFORMATION

U.S. DOT Not regulated
Special Provisions Contact with acids forms toxic fumes.

TDG Not regulated

IATA Not regulated

IMDG Not regulated

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	Complies
TCSI	Complies
AICS	Complies
NZIoC	Complies

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 %
Ammonium chloride (CAS #: 12125-02-9)	1.0

SARA 311/312 Hazard Categories

Acute health hazard	Yes
Chronic Health Hazard	No
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
Ammonium chloride 12125-02-9	5000 lb	-	-	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)
Ammonium chloride 12125-02-9	5000 lb	-	RQ 5000 lb final RQ RQ 2270 kg final RQ

US State Regulations

California Proposition 65

This product contains the following Proposition 65 chemicals

Chemical name	California Proposition 65
Silica, amorphous (CAS #: 7631-86-9)	Carcinogen

WARNING: This product can expose you to chemicals including Silica, amorphous, which is known to the State of California to cause cancer.
For more information, go to http://www.P65Warnings.ca.gov

U.S. State Right-to-Know Regulations

Chemical name	New Jersey	Massachusetts	Pennsylvania
Ammonium chloride 12125-02-9	X	X	X
Silica, amorphous 7631-86-9	-	X	X

U.S. EPA Label Information

Chemical name	FIFRA	FDA
Disodium carbonate	180.1234	21 CFR 184.1742
Sodium sulfite	180.0910	21 CFR 182.3798
Ammonium chloride	180.0920	21 CFR 184.1138
Tetrasodium EDTA	180.0910	-
Silica, amorphous	180.0930	-

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
Sodium sulfite 7757-83-7	Prohibited Substance (LR) Declarable Substance (LR)	0.0 %

NFPA and HMIS Classifications

NFPA	**Health hazards** - 2	**Flammability** - 0	**Instability** - 0	**Physical and Chemical Properties** -
HMIS	**Health hazards** - 1	**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		

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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