



Be Right™

SAFETY DATA SHEET

Issue Date 30-Aug-2016

Revision Date 19-Jan-2017

Version 5

Page 1 / 19

1. IDENTIFICATION

Product identifier

Product Name SulfaVer® 4 Sulfate Reagent

Other means of identification

Product Code(s) 2106769

Safety data sheet number M00046

Synonyms

Recommended use of the chemical and restrictions on use

Recommended Use Laboratory reagent. Sulfate determination.

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 4
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2A
Aquatic Acute Toxicity	Category 3
Chronic aquatic toxicity	Category 3

Hazards not otherwise classified (HNOC)

Not applicable

Label elements

Signal word - Warning

Product Code(s) 2106769
Issue Date 30-Aug-2016
Version 5

Product Name SulfaVer® 4 Sulfate Reagent
Revision Date 19-Jan-2017
Page 2 / 19



Hazard statements

H302 - Harmful if swallowed
H332 - Harmful if inhaled
H315 - Causes skin irritation
H319 - Causes serious eye irritation
H412 - Harmful to aquatic life with long lasting effects

Precautionary statements

P264 - Wash face, hands and any exposed skin thoroughly after handling
P270 - Do not eat, drink or smoke when using this product
P261 - Avoid breathing dust/fume/gas/mist/vapors/spray
P271 - Use only outdoors or in a well-ventilated area
P280 - Wear protective gloves/protective clothing/eye protection/face protection
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
P312 - Call a POISON CENTER or doctor/physician if you feel unwell
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
P332 + P313 - If skin irritation occurs: Get medical advice/attention
P362 - Take off contaminated clothing and wash before reuse
P301 + P312 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
P330 - Rinse mouth
P501 - Dispose of contents/ container to an approved waste disposal plant

Other Information

May be harmful in contact with skin

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance

Not applicable

Mixture

Synonyms

Chemical Family Mixture.

Percent ranges are used where confidential product information is applicable.

Chemical Name	CAS No	Percent Range	HMRIC #
Citric acid	77-92-9	50 - 60%	-
Barium chloride (BaCl ₂), dihydrate	10326-27-9	40 - 50%	-

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 and/or respirator. If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician. Remove from exposure, lie down. Immediate medical attention is required. IF IN EYES: Flush eyes for at least 15 minutes. May cause skin irritation.
Eye contact	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
Skin contact	For minor skin contact, avoid spreading material on unaffected skin. IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. Remove and isolate contaminated clothing and shoes. Call a POISON CENTER or doctor if you feel unwell. If skin irritation persists, call a physician.
Inhalation	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor if you feel unwell.
Ingestion	Never give anything by mouth to an unconscious person. Clean mouth with water and drink afterwards plenty of water. Remove from exposure, lie down. Call a POISON CENTER or doctor/physician if you feel unwell. Do not induce vomiting without medical advice.
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.

Most important symptoms and effects, both acute and delayed

Symptoms See Section 11: TOXICOLOGICAL INFORMATION.

Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

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

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

Flammable properties

Can burn in fire, releasing toxic vapors. During a fire, irritating and highly toxic gases may be generated by thermal decomposition. Material is not classified as flammable according to GHS criteria.

Specific hazards arising from the chemical

The product causes burns of eyes, skin and mucous membranes. Thermal decomposition can lead to release of irritating and toxic gases and vapors. In the event of fire and/or explosion do not breathe fumes.

Hazardous combustion products

Carbon monoxide, Carbon dioxide. Chlorides.

Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full

protective gear.

6. ACCIDENTAL RELEASE MEASURES

U.S. Notice

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance. Outside of the US, only persons properly qualified according to state or local regulations should respond to a spill involving chemicals.

EC Notice

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

WHMIS Notice

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

Personal precautions, protective equipment and emergency procedures

Personal precautions

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

For emergency responders

Use personal protection recommended in Section 8.

Environmental precautions

Environmental precautions

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

Methods and material for containment and cleaning up

Methods for containment

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

Methods for cleaning up

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

Emergency Response Guide Number

Not applicable

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 out of the reach of children. Keep container tightly closed in a dry and well-ventilated place. Keep in properly labeled containers.

Flammability class

Not applicable

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines

.

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Barium chloride (BaCl ₂), dihydrate 40 - 50%	TWA: 0.5 mg/m ³	TWA: 0.5 mg/m ³ (vacated) TWA: 0.5 mg/m ³	TWA: 0.5 mg/m ³ except Barium sulfate Ba

Chemical Name	Alberta OEL	British Columbia OEL	Manitoba OEL	New Brunswick OEL	New Foundland & Labrador OEL
Barium chloride (BaCl ₂), dihydrate 40 - 50%	TWA: 0.5 mg/m ³	TWA: 0.5 mg/m ³	TWA: 0.5 mg/m ³	TWA: 0.5 mg/m ³	TWA: 0.5 mg/m ³

Chemical Name	Northwest Territories OEL	Nova Scotia OEL	Nunavut OEL	Ontario TWA	Prince Edward Island OEL
Barium chloride (BaCl ₂), dihydrate 40 - 50%	TWA: 0.5 mg/m ³ STEL: 1.5 mg/m ³	TWA: 0.5 mg/m ³	TWA: 0.5 mg/m ³ STEL: 1.5 mg/m ³	TWA: 0.5 mg/m ³	TWA: 0.5 mg/m ³

Chemical Name	Quebec OEL	Saskatchewan OEL	Yukon OEL
Barium chloride (BaCl ₂), dihydrate 40 - 50%	TWA: 0.5 mg/m ³	TWA: 0.5 mg/m ³ STEL: 1.5 mg/m ³	STEL: 0.5 mg/m ³ TWA: 0.5 mg/m ³

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 and/or respirator
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 protective gloves and protective clothing.

Respiratory protection Do not breathe gas/fumes/vapor/spray. If no local exhaust use approved fume hood and/or respirator. In case of inadequate ventilation wear respiratory protection.

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

Product Code(s) 2106769
Issue Date 30-Aug-2016
Version 5

Product Name SulfaVer® 4 Sulfate Reagent
Revision Date 19-Jan-2017
Page 6 / 19

Appearance powder
Odor Odorless

Color white
Odor threshold No data available

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
Molecular weight	No data available	
pH	2.01	5% Solution
Melting point/freezing point	~ 124 °C / 255 °F	Estimation based on theoretical calculation
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	Estimation based on theoretical calculation
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

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

Solubility in other solvents

<u>Chemical Name</u>	<u>Solubility classification</u>	<u>Solubility</u>	<u>Solubility Temperature</u>
Acid	Soluble	> 1000 mg/L	25 °C / 77 °F

Other Information

Metal Corrosivity	Not classified as corrosive to metal according to GHS criteria
Steel Corrosion Rate	Not applicable
Aluminum Corrosion Rate	Not applicable
Volatile Organic Compounds (VOC) Content	Not applicable.

Product Code(s) 2106769
Issue Date 30-Aug-2016
Version 5

Product Name SulfaVer® 4 Sulfate Reagent
Revision Date 19-Jan-2017
Page 7 / 19

Bulk density	No data available
Explosive properties	Not classified according to GHS criteria.
Explosion data	No data available
Upper explosion limit	No data available
Lower explosion limit	No data available
Flammable properties	Can burn in fire, releasing toxic vapors. During a fire, irritating and highly toxic gases may be generated by thermal decomposition. Material is 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 properties	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 properties

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

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

Explosive properties

Product Code(s) 2106769
Issue Date 30-Aug-2016
Version 5

Product Name SulfaVer® 4 Sulfate Reagent
Revision Date 19-Jan-2017
Page 8 / 19

Not classified according to GHS criteria.

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	Causes skin irritation. Causes serious eye irritation. Harmful if swallowed. Harmful by inhalation. MAY BE HARMFUL IF ABSORBED THROUGH SKIN. May be harmful in contact with skin.
Inhalation	Avoid breathing dust/fume/gas/mist/vapors/spray. Harmful by inhalation.
Eye contact	Severely irritating to eyes.
Skin contact	Causes skin irritation. May be harmful in contact with skin.
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.

Product Acute Toxicity Data

Test data reported below

Oral Exposure Route

Product Code(s) 2106769
Issue Date 30-Aug-2016
Version 5

Product Name SulfaVer® 4 Sulfate Reagent
Revision Date 19-Jan-2017
Page 9 / 19

<u>Endpoint type</u>	<u>Reported dose</u>	<u>Toxicological effects</u>	<u>Key literature references and sources for data</u>
Rat LD ₅₀	680 mg/kg	Behavioral Decreased locomotor activity Sedation Chronic Death Gastrointestinal Enteritis of the intestines Gas Smooth pyloric and ulcerated stomach Lungs, Thorax, or Respiration Congestion of the lungs Hemorrhagic lungs Skin and Appendages Piloerection	Outside testing

Dermal Exposure Route

<u>Endpoint type</u>	<u>Reported dose</u>
Rat LD ₅₀	> 3414 mg/kg

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 (inhalation-dust/mist)	2.70 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
Citric acid (50 - 60%) CAS#: 77-92-9	Rat LD ₅₀	3000 mg/kg	None reported	None reported	IUCLID (The International Uniform Chemical Information Database)
Barium chloride (BaCl ₂), dihydrate (40 - 50%) CAS#: 10326-27-9	Rat LD ₅₀	118 mg/kg	None reported	None reported	IUCLID (The International Uniform Chemical Information Database)

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
Citric acid (50 - 60%) CAS#: 77-92-9	Rat LD ₅₀	> 2000 mg/kg	None reported	None reported	IUCLID (The International Uniform Chemical Information Database)

Inhalation (Dust/Mist) Exposure Route

If available, see data below

Chemical Name	Endpoint	Reported	Exposure	Toxicological effects	Key literature references and
---------------	----------	----------	----------	-----------------------	-------------------------------

Product Code(s) 2106769
Issue Date 30-Aug-2016
Version 5

Product Name SulfaVer® 4 Sulfate Reagent
Revision Date 19-Jan-2017
Page 10 / 19

	type	dose	time		sources for data
Barium chloride (BaCl ₂), dihydrate (40 - 50%) CAS#: 10326-27-9	Rat LC ₅₀	> 1.1 mg/L	4 hours	None reported	No information available
Chemical Name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Citric acid (50 - 60%) CAS#: 77-92-9	Rat TD _{Lo}	0.180 mg/L	None reported	Lungs, Thorax, or Respiration Other changes Liver Impaired liver function tests Biochemical Enzyme inhibition, induction, or change in blood or tissue levels (dehydrogenases)	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
Citric acid (50 - 60%) CAS#: 77-92-9	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
Barium chloride (BaCl ₂), dihydrate (40 - 50%) CAS#: 10326-27-9	Standard Draize Test	Rabbit	100 mg	None reported	Eye irritant	ECHA (The European Chemicals Agency)
Chemical Name	Test method	Species	Reported dose	Exposure time	Results	Key literature references and sources for data
Citric acid (50 - 60%) CAS#: 77-92-9	Standard Draize Test	Rabbit	0.750 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.

Product Code(s) 2106769
Issue Date 30-Aug-2016
Version 5

Product Name SulfaVer® 4 Sulfate Reagent
Revision Date 19-Jan-2017
Page 11 / 19

Respiratory Sensitization Exposure Route

No data available.

Ingredient Sensitization Data

Skin Sensitization Exposure Route

No data available.

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
Barium chloride (BaCl ₂), dihydrate (40 - 50%) CAS#: 10326-27-9	Rat TD _{Lo}	91 mg/kg	182 days	Behavioral Biochemical Blood Alteration of classical conditioning Enzyme inhibition, induction, or change in blood or tissue levels (multiple enzyme effects)	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
Citric acid (50 - 60%) CAS#: 77-92-9	Rat TD _{Lo}	930 mg/kg	15 days	Biochemical Enzyme inhibition, induction, or change in blood or tissue levels (dehydrogenases) Blood Changes in serum composition (e.g. TP, bilirubin, cholesterol)	RTECS (Registry of Toxic Effects of Chemical Substances)
Barium chloride (BaCl ₂), dihydrate (40 - 50%) CAS#: 10326-27-9	Rat TD _{Lo}	70 mg/kg	4 weeks	Cardiac Vascular BP elevation not characterized in autonomic section Other changes	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
Citric acid (50 - 60%) CAS#: 77-92-9	Rat TD _{Lo}	0.180 mg/L	None reported	Lungs, Thorax, or Respiration Other changes Liver Impaired liver function tests Biochemical Enzyme inhibition, induction, or	RTECS (Registry of Toxic Effects of Chemical Substances)

Product Code(s) 2106769
Issue Date 30-Aug-2016
Version 5

Product Name SulfaVer® 4 Sulfate Reagent
Revision Date 19-Jan-2017
Page 12 / 19

				change in blood or tissue levels (dehydrogenases)	
--	--	--	--	--	--

Inhalation (Vapor) Exposure Route

No data available

Inhalation (Gas) Exposure Route

No data available

Chemical Name	CAS No	ACGIH	IARC	NTP	OSHA
Citric acid	77-92-9	-	-	-	-
Barium chloride (BaCl ₂), dihydrate	10326-27-9	-	-	-	-

Legend

ACGIH (American Conference of Governmental Industrial Hygienists)	Does not apply
IARC (International Agency for Research on Cancer)	Does not apply
NTP (National Toxicology Program)	Does not apply
OSHA (Occupational Safety and Health Administration of the US Department of Labor)	Does not apply

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

No data available

Inhalation (Vapor) Exposure Route

No data available

Inhalation (Gas) Exposure Route

No data available

Product Germ Cell Mutagenicity *in vitro* Data

No data available.

Ingredient Germ Cell Mutagenicity *in vitro* Data

If available, see data below

Chemical Name	Test	Cell Strain	Reported dose	Exposure time	Results	Key literature references and sources for data
Barium chloride (BaCl ₂), dihydrate (40 - 50%) CAS#: 10326-27-9	Gene conversion and mitotic recombination	Saccharomyces cerevisiae	14 mmol/L	None reported	Positive test result for mutagenicity	RTECS (Registry of Toxic Effects of Chemical Substances)

Oral Exposure Route

No data available

Product Code(s) 2106769
Issue Date 30-Aug-2016
Version 5

Product Name SulfaVer® 4 Sulfate Reagent
Revision Date 19-Jan-2017
Page 13 / 19

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 *in vivo* 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
Barium chloride (BaCl ₂), dihydrate (40 - 50%) CAS#: 10326-27-9	Rat TD _{Lo}	84 mg/kg	24 weeks	Paternal Effects Spermatogenesis (including genetic material, sperm morphology, motility, and count)	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 Harmful to aquatic life with long lasting effects.

Product Ecological Data

Aquatic toxicity

Fish No data available

Crustacea No data available

Algae No data available

Product Code(s) 2106769
Issue Date 30-Aug-2016
Version 5

Product Name SulfaVer® 4 Sulfate Reagent
Revision Date 19-Jan-2017
Page 14 / 19

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
Citric acid (50 - 60%) CAS#: 77-92-9	96 hours	<i>Lepomis macrochirus</i>	LC ₅₀	1516 mg/L	IUCLID (The International Uniform Chemical Information Database)
Barium chloride (BaCl ₂), dihydrate (40 - 50%) CAS#: 10326-27-9	96 hours	<i>Leuciscus idus</i>	LC ₅₀	870 mg/L	Vendor SDS
Chemical Name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
Citric acid (50 - 60%) CAS#: 77-92-9	48 hours	<i>Leuciscus idus Melanotus</i>	LC ₅₀	440 mg/L	IUCLID (The International 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
Barium chloride (BaCl ₂), dihydrate (40 - 50%) CAS#: 10326-27-9	48 Hours	<i>Daphnia magna</i>	EC ₅₀	14.5 mg/L	IUCLID (The International Uniform Chemical Information Database)
Chemical Name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
Citric acid (50 - 60%) CAS#: 77-92-9	72 hours	<i>Daphnia magna</i>	EC ₅₀	120 mg/L	IUCLID (The International Uniform Chemical Information Database)

Algae No data available

Terrestrial toxicity

Soil No data available

Vertebrates No data available

Invertebrates No data available

Other Information

Persistence and degradability

None known.

Product Biodegradability Data

If available, see ingredient data below.

Product Code(s) 2106769
Issue Date 30-Aug-2016
Version 5

Product Name SulfaVer® 4 Sulfate Reagent
Revision Date 19-Jan-2017
Page 15 / 19

Ingredient Biodegradability Data

Test data reported below

Chemical Name	Test method	Biodegradation	Exposure time	Results
Citric acid (50 - 60%) CAS#: 77-92-9	None reported	None reported	None reported	Readily biodegradable
Barium chloride (BaCl ₂), dihydrate (40 - 50%) CAS#: 10326-27-9	Inorganic Salt	None reported	None reported	Not readily biodegradable

Bioaccumulation

Has the potential to bioaccumulate according to GHS criteria.

Product Bioaccumulation Data

If available, see ingredient data below.

Ingredient Bioaccumulation Data

No data available

Chemical Name	Test method	Exposure time	Species	Bioconcentration factor (BCF)	Results
Citric acid (50 - 60%) CAS#: 77-92-9	None reported	None reported	None reported	None reported	Does not have the potential to bioaccumulate

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
Citric acid (50 - 60%) CAS#: 77-92-9	log K _{ow} = -1.64	No information available

Mobility

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

Product Information

No data available

Soil Organic Carbon-Water Partition Coefficient

No data available

Ingredient Information

Chemical Name	Soil Organic Carbon-Water Partition Coefficient	Method
Citric acid (50 - 60%) CAS#: 77-92-9	log K _{oc} = -1.16	No information available
Barium chloride (BaCl ₂), dihydrate (40 - 50%) CAS#: 10326-27-9	log K _{oc} = .?	No information available

Product Code(s) 2106769
Issue Date 30-Aug-2016
Version 5

Product Name SulfaVer® 4 Sulfate Reagent
Revision Date 19-Jan-2017
Page 16 / 19

Additional information

Water solubility

Product Information

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

Ingredient Information

Chemical Name	Water solubility classification	Water solubility	Water solubility temperature °C	Water solubility temperature °F
Citric acid CAS#: 77-92-9	Completely soluble	750000 mg/L	25 °C	77 °F
Barium chloride (BaCl ₂), dihydrate CAS#: 10326-27-9	Soluble	> 1000 mg/L	25 °C	77 °F

Other adverse effects

No information available.

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	Do not reuse container.
US EPA Waste Number	D002
Special instructions for disposal	Dispose of material in an E.P.A. approved hazardous waste facility.

14. TRANSPORT INFORMATION

DOT

Proper shipping name Not Currently Regulated

TDG

Proper shipping name Not Currently Regulated

IATA

Proper shipping name Not Currently Regulated

IMDG

Proper shipping name Not Currently 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.

Product Code(s) 2106769
Issue Date 30-Aug-2016
Version 5

Product Name SulfaVer® 4 Sulfate Reagent
Revision Date 19-Jan-2017
Page 17 / 19

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 %
Barium chloride (BaCl ₂), dihydrate (CAS #: 10326-27-9)	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)

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

US State Regulations

Product Code(s) 2106769
Issue Date 30-Aug-2016
Version 5

Product Name SulfaVer® 4 Sulfate Reagent
Revision Date 19-Jan-2017
Page 18 / 19

California Proposition 65

This product does not contain any Proposition 65 chemicals

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Barium chloride (BaCl ₂), dihydrate 10326-27-9	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)

Not applicable

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		

Product Code(s) 2106769
Issue Date 30-Aug-2016
Version 5

Product Name SulfaVer® 4 Sulfate Reagent
Revision Date 19-Jan-2017
Page 19 / 19

Prepared By Hach Product Compliance Department

Issue Date 30-Aug-2016

Revision Date 19-Jan-2017

Revision Note None

Disclaimer

USER RESPONSIBILITY: Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

HACH COMPANY©2016

End of Safety Data Sheet