

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Revision Date 08/10/2018

Version 1.1

SECTION 1. Identification**Product identifier**

Catalog No.	101812
Product name	Sulfate Test Method: photometric 0.50 - 50.0 mg/l SO ₄ ²⁻ Spectroquant®
	SO ₄ -1

Relevant identified uses of the substance or mixture and uses advised against

Identified uses	Reagent for analysis
-----------------	----------------------

Details of the supplier of the safety data sheet

Company	EMD Millipore Corporation 400 Summit Drive Burlington Massachusetts 01803 United States of America General Inquiries: +1 800-645-5476 Monday to Friday, 9:00 AM to 4:00 PM Eastern Time (GMT-5) MilliporeSigma is a business of Merck KGaA, Darmstadt, Germany.
---------	---

Emergency telephone

800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week
--

SECTION 2. Hazards identification**GHS Classification**

Flammable liquid, Category 3, H226
Corrosive to Metals, Category 1, H290

For the full text of the H-Statements mentioned in this Section, see Section 16.

GHS-Labeling*Hazard pictograms*

Signal Word
Warning

Hazard Statements

H226 Flammable liquid and vapor.
H290 May be corrosive to metals.

Precautionary Statements

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number	101812	Version 1.1
Product name	Sulfate Test Method: photometric 0.50 - 50.0 mg/l SO ₄ ²⁻ Spectroquant® SO ₄ -1	

P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P233 Keep container tightly closed.
P234 Keep only in original container.
P240 Ground/bond container and receiving equipment.
P241 Use explosion-proof electrical/ ventilating/ lighting/ equipment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing.
Rinse skin with water/ shower.
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
P390 Absorb spillage to prevent material damage.
P403 + P235 Store in a well-ventilated place. Keep cool.
P406 Store in corrosive resistant stainless steel container with a resistant inner liner.
P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards

None known.

SECTION 3. Composition/information on ingredients

Chemical nature Aqueous solution of inorganic and organic compounds.

Hazardous ingredients

Chemical name (Concentration)

CAS-No.

ethanol (>= 10 % - < 30 %)

64-17-5

glycerine (>= 10 % - < 30 %)

56-81-5

hydrochloric acid (>= 1 % - < 5 %)

Exact percentages are being withheld as a trade secret.

SECTION 4. First aid measures

Description of first-aid measures

Inhalation

After inhalation: fresh air.

Skin contact

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower.

Eye contact

After eye contact: rinse out with plenty of water. Remove contact lenses.

Ingestion

After swallowing: make victim drink water (two glasses at most). Consult doctor if feeling unwell.

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number	101812	Version 1.1
Product name	Sulfate Test Method: photometric 0.50 - 50.0 mg/l SO ₄ ²⁻ Spectroquant® SO ₄ -1	

Most important symptoms and effects, both acute and delayed

irritant effects, respiratory paralysis, Dizziness, narcosis, inebriation, Nausea, Vomiting, Cyanosis

Indication of any immediate medical attention and special treatment needed

No information available.

SECTION 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media

Water, Foam, Carbon dioxide (CO₂), Dry powder

Unsuitable extinguishing media

For this substance/mixture no limitations of extinguishing agents are given.

Special hazards arising from the substance or mixture

Mixture with combustible ingredients.

Vapors are heavier than air and may spread along floors.

Forms explosive mixtures with air at elevated temperatures.

Development of hazardous combustion gases or vapors possible in the event of fire.

Fire may cause evolution of:

Hydrogen chloride gas

Advice for firefighters

Special protective equipment for fire-fighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

Further information

Remove container from danger zone and cool with water. Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders:

Protective equipment see section 8.

Environmental precautions

Do not let product enter drains. Risk of explosion.

Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10).

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number	101812	Version1.1
Product name	Sulfate Test Method: photometric 0.50 - 50.0 mg/l SO ₄ ²⁻ Spectroquant® SO ₄ -1	

Take up with liquid-absorbent and neutralizing material (e.g. Chemizorb® H⁺, Art. No. 101595).
Dispose of properly. Clean up affected area.

SECTION 7. Handling and storage

Precautions for safe handling

Observe label precautions.

Advice on protection against fire and explosion

Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers

No metal containers.

Keep tightly closed in a dry, cool and well-ventilated place. Keep away from heat and sources of ignition. Keep locked up or in an area accessible only to qualified or authorized persons.

Store at +15°C to +25°C (+59°F to +77°F).

The data applies to the entire pack.

SECTION 8. Exposure controls/personal protection

Exposure limit(s)

Ingredients

Basis	Value	Threshold limits	Remarks
<i>ethanol (64-17-5)</i>			
ACGIH	Short Term Exposure Limit (STEL):	1,000 ppm	
NIOSH/GUIDE	Recommended exposure limit (REL):	1,000 ppm 1,900 mg/m ³	
OSHA_TRANS	PEL:	1,000 ppm 1,900 mg/m ³	
Z1A	Time Weighted Average (TWA):	1,000 ppm 1,900 mg/m ³	
<i>glycerine (56-81-5)</i>			
OSHA_TRANS	PEL:	15 mg/m ³	Form of exposure: Total dust.
	PEL:	5 mg/m ³	Form of exposure: Respirable fraction.
Z1A	Time Weighted Average (TWA):	10 mg/m ³	Form of exposure: Total dust.
	Time Weighted Average (TWA):	5 mg/m ³	Form of exposure: Respirable fraction.

hydrochloric acid ()

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number	101812	Version1.1
Product name	Sulfate Test Method: photometric 0.50 - 50.0 mg/l SO ₄ ²⁻ Spectroquant® SO ₄ -1	

ACGIH	Ceiling Limit Value:	2 ppm
NIOSH/GUIDE	Ceiling Limit Value and Time Period (if specified):	5 ppm 7 mg/m ³
OSHA_TRANS	Ceiling Limit Value:	5 ppm 7 mg/m ³
Z1A	Ceiling Limit Value:	5 ppm 7 mg/m ³

Engineering measures

Individual protection measures

Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled. The chemical resistance of the protective equipment should be inquired at the respective supplier.

Hygiene measures

Change contaminated clothing. Wash hands after working with substance.

Eye/face protection

Safety glasses

Hand protection

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Other protective equipment:

Flame retardant antistatic protective clothing.

Respiratory protection

required when vapors/aerosols are generated.

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

SECTION 9. Physical and chemical properties

Physical state	liquid
Color	colorless
Odor	alcohol-like
Odor Threshold	No information available.
pH	< 1
Melting point	No information available.
Boiling point	No information available.

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number	101812	Version1.1
Product name	Sulfate Test Method: photometric 0.50 - 50.0 mg/l SO ₄ ²⁻ Spectroquant® SO ₄ -1	

Flash point	95 °F (35 °C)
Evaporation rate	No information available.
Flammability (solid, gas)	No information available.
Lower explosion limit	No information available.
Upper explosion limit	No information available.
Vapor pressure	No information available.
Relative vapor density	No information available.
Density	ca.1.1 g/cm ³ at 68 °F (20 °C)
Relative density	No information available.
Water solubility	No information available.
Partition coefficient: n-octanol/water	No information available.
Autoignition temperature	No information available.
Decomposition temperature	No information available.
Viscosity, dynamic	No information available.
Explosive properties	Not classified as explosive.
Oxidizing properties	none
Corrosion	May be corrosive to metals.

SECTION 10. Stability and reactivity

Reactivity

Vapor/air-mixtures are explosive at intense warming.

Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

Possibility of hazardous reactions

Generates dangerous gases or fumes in contact with:

Metals

Violent reactions possible with:

The generally known reaction partners of water.

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number	101812	Version1.1
Product name	Sulfate Test Method: photometric 0.50 - 50.0 mg/l SO ₄ ²⁻ Spectroquant® SO ₄ -1	

Conditions to avoid

Heating.

Incompatible materials

Metals

Hazardous decomposition products

in the event of fire: See section 5.

SECTION 11. Toxicological information

Information on toxicological effects

Likely route of exposure

Eye contact, Skin contact

Target Organs

Central nervous system

Eyes

Skin

Respiratory system

Cornea

Stomach

Liver

Blood

reproductive system

Kidneys

Acute oral toxicity

Symptoms: Irritations of mucous membranes in the mouth, pharynx, oesophagus and gastrointestinal tract.

Acute inhalation toxicity

Symptoms: Possible damages:., Irritation symptoms in the respiratory tract.

Skin irritation

Possible damages: slight irritation

Eye irritation

Possible damages: slight irritation

Carcinogenicity

Carcinogen classifications of IARC, NTP, California proposition 65 for Ethanol CAS 64-17-5 apply to beverage use only. This product is NOT intended for this use.

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number 101812
Product name Sulfate Test Method: photometric 0.50 - 50.0 mg/l SO₄²⁻ Spectroquant®
SO₄-1

Version 1.1

Specific target organ systemic toxicity - single exposure

The substance or mixture is not classified as specific target organ toxicant, single exposure.

Specific target organ systemic toxicity - repeated exposure

The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Aspiration hazard

Regarding the available data the classification criteria are not fulfilled.

Carcinogenicity

IARC	No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
OSHA	No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.
NTP	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
ACGIH	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

Further information

After absorption of large quantities:

Dizziness, inebriation, narcosis, respiratory paralysis, Cyanosis

However, when the product is handled appropriately, hazardous effects are unlikely to occur.

Handle in accordance with good industrial hygiene and safety practice.

Ingredients

ethanol

Acute oral toxicity

LD50 Rat: 10,470 mg/kg

OECD Test Guideline 401

Acute inhalation toxicity

LC50 Rat: 124.7 mg/l; 4 h ; vapor

OECD Test Guideline 403

Skin irritation

Rabbit

Result: No skin irritation

OECD Test Guideline 404

Eye irritation

Rabbit

Result: Eye irritation

OECD Test Guideline 405

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number 101812 Version 1.1
Product name Sulfate Test Method: photometric 0.50 - 50.0 mg/l SO₄²⁻ Spectroquant®
SO₄-1

Sensitization

Local lymph node assay (LLNA) Mouse
Result: negative
Method: OECD Test Guideline 429

Germ cell mutagenicity

Genotoxicity in vitro

Ames test
Salmonella typhimurium
Result: negative
Method: OECD Test Guideline 471

In vitro mammalian cell gene mutation test

MOUSE LYMPHOMA TEST

Result: negative
Method: OECD Test Guideline 476

Reproductive toxicity

Application Route: Oral
Mouse
Method: OECD Test Guideline 416

glycerine

Acute oral toxicity

LD50 Rat: 12,600 mg/kg (IUCLID)

Acute dermal toxicity

LD50 Rabbit: > 18,700 mg/kg (IUCLID)

Skin irritation

Rabbit
Result: No irritation
(IUCLID)

Eye irritation

Rabbit
Result: No eye irritation
OECD Test Guideline 405

Sensitization

Patch test: human
Result: negative
(IUCLID)

Germ cell mutagenicity

Genotoxicity in vitro

Ames test
Result: negative
(IUCLID)

hydrochloric acid

Skin irritation

Rabbit
Result: Corrosive
OECD Test Guideline 404

Eye irritation

Rabbit
Result: Irreversible effects on the eye
OECD Test Guideline 405

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number 101812 Version 1.1
Product name Sulfate Test Method: photometric 0.50 - 50.0 mg/l SO₄²⁻ Spectroquant®
SO₄-1

Sensitization

Maximization Test Guinea pig
Result: Does not cause skin sensitization.
Method: OECD Test Guideline 406

SECTION 12. Ecological information

Ecotoxicity

No information available.

Persistence and degradability

No information available.

Bioaccumulative potential

No information available.

Mobility in soil

No information available.

Ingredients

ethanol

Toxicity to fish

flow-through test EC50 Pimephales promelas (fathead minnow): 15,300 mg/l; 96 h
Analytical monitoring: yes
US-EPA

Toxicity to daphnia and other aquatic invertebrates

EC50 Daphnia magna (Water flea): 9,268 - 14,221 mg/l; 48 h (IUCLID)

Toxicity to algae

IC5 Scenedesmus quadricauda (Green algae): 5,000 mg/l; 7 d (Lit.)

Toxicity to bacteria

EC5 Pseudomonas putida: 6,500 mg/l; 16 h (IUCLID)

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)

semi-static test NOEC Daphnia magna (Water flea): 9.6 mg/l; 9 d
(ECHA)

Biodegradability

94 %
OECD Test Guideline 301E
Readily biodegradable.

Biochemical Oxygen Demand (BOD)

930 - 1,670 mg/g (5 d)
(Lit.)

Theoretical oxygen demand (ThOD)

2,100 mg/g
(Lit.)

Ratio COD/ThBOD

90 %
(Lit.)

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number 101812 Version 1.1
Product name Sulfate Test Method: photometric 0.50 - 50.0 mg/l SO₄²⁻ Spectroquant®
SO₄-1

Partition coefficient: n-octanol/water
log Pow: -0.31
(experimental)
(Lit.) Bioaccumulation is not expected.

Substance does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.

glycerine

Toxicity to fish
static test LC50 *Oncorhynchus mykiss* (rainbow trout): 54,000 mg/l; 96 h (ECHA)

Toxicity to daphnia and other aquatic invertebrates
static test EC50 *Daphnia magna* (Water flea): > 10,000 mg/l; 24 h (ECHA)

Biodegradability
63 %; 14 d
OECD Test Guideline 301C
Readily biodegradable.

Biochemical Oxygen Demand (BOD)
870 mg/g (5 d)
(External MSDS)

Chemical Oxygen Demand (COD)
1,160 mg/g
(External MSDS)

Theoretical oxygen demand (ThOD)
1,217 mg/g
(Lit.)

Ratio BOD/ThBOD
BOD5 71 %
(Lit.)

Ratio COD/ThBOD
95 %
(Lit.)

Partition coefficient: n-octanol/water
log Pow: -1.8 (25 °C)
(experimental)
Bioaccumulation is not expected. (Lit.)

hydrochloric acid

Toxicity to fish
Lepomis macrochirus (Bluegill sunfish): 20.5 mg/l; 96 h
OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates
EC50: 1.3 mg/l; 48 h
OECD Test Guideline 202

Substance does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number	101812	Version1.1
Product name	Sulfate Test Method: photometric 0.50 - 50.0 mg/l SO ₄ ²⁻ Spectroquant® SO ₄ -1	

SECTION 13. Disposal considerations

The information presented only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national and local laws and regulations.

SECTION 14. Transport information

Land transport (DOT)

UN number	UN3316
Proper shipping name	CHEMICAL KIT
Class	9
Packing group	III
Environmentally hazardous	--

Air transport (IATA)

UN number	UN 3316
Proper shipping name	CHEMICAL KIT
Class	9
Packing group	III
Environmentally hazardous	--
Special precautions for user	no

Sea transport (IMDG)

UN number	UN 3316
Proper shipping name	CHEMICAL KIT
Class	9
Packing group	III
Environmentally hazardous	--
Special precautions for user	yes
EmS	F-A S-P

THIS TRANSPORT DATA APPLIES TO THE ENTIRE PACK!

SECTION 15. Regulatory information

United States of America

SARA 313

The following components are subject to reporting levels established by SARA Title III, Section 313:

Ingredients

hydrochloric acid

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number	101812	Version1.1
Product name	Sulfate Test Method: photometric 0.50 - 50.0 mg/l SO ₄ ²⁻ Spectroquant® SO ₄ -1	

SARA 302

The following components are subject to reporting levels established by SARA Title III, Section 302:

Ingredients

hydrochloric acid

Clean Water Act

The following Hazardous Substances are listed under the U.S. CleanWater Act, Section 311, Table 116.4A:

Ingredients

hydrochloric acid

The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:

Ingredients

hydrochloric acid

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

DEA List I

Not listed

DEA List II

Listed

Ingredients

hydrochloric acid

US State Regulations

Massachusetts Right To Know

Ingredients

ethanol

glycerine

hydrochloric acid

Pennsylvania Right To Know

Ingredients

ethanol

glycerine

hydrochloric acid

New Jersey Right To Know

Ingredients

ethanol

glycerine

hydrochloric acid

California Prop 65 Components

This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number	101812	Version 1.1
Product name	Sulfate Test Method: photometric 0.50 - 50.0 mg/l SO ₄ ²⁻ Spectroquant® SO ₄ -1	

Notification status

TSCA: All components of the product are listed in the TSCA-inventory.

DSL: All components of this product are on the Canadian DSL

SECTION 16. Other information

Training advice

Provide adequate information, instruction and training for operators.

Labeling

Hazard pictograms



Signal Word

Warning

Hazard Statements

H226 Flammable liquid and vapor.

H290 May be corrosive to metals.

Precautionary Statements

Prevention

P210 Keep away from heat.

Full text of H-Statements referred to under sections 2 and 3.

H226 Flammable liquid and vapor.

H290 May be corrosive to metals.

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

Used abbreviations and acronyms can be looked up at www.wikipedia.org.

Revision Date 08/10/2018

The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to appropriate safety precautions. It does not represent a warranty of any product properties and we assume no liability for any loss or injury which may result from the use of this information. Users should conduct their own investigations to determine the suitability of the information.

All rights reserved. Millipore and the "M" Mark are registered trademarks of Merck KGaA, Darmstadt, Germany.

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Revision Date 08/10/2018

Version 1.1

SECTION 1. Identification**Product identifier**

Catalog No. 101812

Product name Sulfate Test Method: photometric 0.50 - 50.0 mg/l SO₄²⁻
Spectroquant®

SO₄-2

CAS-No. 10326-27-9

Relevant identified uses of the substance or mixture and uses advised against

Identified uses Reagent for analysis

Details of the supplier of the safety data sheet

Company EMD Millipore Corporation | 400 Summit Drive | Burlington |
Massachusetts 01803 | United States of America | General Inquiries:
+1 800-645-5476 | Monday to Friday, 9:00 AM to 4:00 PM Eastern
Time (GMT-5)
MilliporeSigma is a business of Merck KGaA, Darmstadt, Germany.

Emergency telephone 800-424-9300 CHEMTREC (USA)
+1-703-527-3887 CHEMTREC (International)
24 Hours/day; 7 Days/week

SECTION 2. Hazards identification**GHS Classification**

Acute toxicity, Category 3, Oral, H301

Acute toxicity, Category 4, Inhalation, H332

For the full text of the H-Statements mentioned in this Section, see Section 16.

GHS-Labeling*Hazard pictograms*

Signal Word
Danger

Hazard Statements

H301 Toxic if swallowed.

H332 Harmful if inhaled.

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number	101812	Version1.1
Product name	Sulfate Test Method: photometric 0.50 - 50.0 mg/l SO ₄ ²⁻ Spectroquant® SO ₄ -2	

Precautionary Statements

P261 Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/doctor.
P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P312 Call a POISON CENTER/doctor if you feel unwell.
P321 Specific treatment (see supplemental first aid instructions on this label).
P330 Rinse mouth.
P405 Store locked up.
P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards

None known.

SECTION 3. Composition/information on ingredients

Formula	BaCl ₂ * 2 H ₂ O (Hill)
Molar mass	244.28 g/mol

Hazardous ingredients

Chemical name (Concentration)

CAS-No.

barium chloride dihydrate (>= 90 % - <= 100 %)

10326-27-9

Exact percentages are being withheld as a trade secret.

SECTION 4. First aid measures

Description of first-aid measures

General advice

First aider needs to protect himself.

Inhalation

After inhalation: fresh air. If breathing stops: mouth-to-mouth breathing or artificial respiration.

Oxygen if necessary. Immediately call in physician.

Skin contact

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower.

Eye contact

After eye contact: rinse out with plenty of water. Remove contact lenses.

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number	101812	Version 1.1
Product name	Sulfate Test Method: photometric 0.50 - 50.0 mg/l SO ₄ ²⁻ Spectroquant® SO ₄ -2	

Ingestion

If swallowed: give water to drink (two glasses at most). Seek medical advice immediately. In exceptional cases only, if medical care is not available within one hour, induce vomiting (only in persons who are wide awake and fully conscious), administer activated charcoal (20 - 40 g in a 10% slurry) and consult a doctor as quickly as possible.

Most important symptoms and effects, both acute and delayed

The following applies to soluble barium compounds in general: after swallowing: mucosal irritation, nausea, salivation, vomiting, dizziness, pain, colics, and diarrhea. Systemic effects include: cardiac dysrhythmias, bradycardia (subdued cardiac activity), rise in blood pressure, shock and circulatory collapse as well as muscular rigidity. Irritant effects, conjunctivitis, Cough, respiratory paralysis, Shortness of breath, Dermatitis, cardiac arrest, death

Indication of any immediate medical attention and special treatment needed

Subsequently administer: Sodium sulfate (1 tablespoon/1/4 l water).

SECTION 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media

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

Unsuitable extinguishing media

For this substance/mixture no limitations of extinguishing agents are given.

Special hazards arising from the substance or mixture

Not combustible.

Ambient fire may liberate hazardous vapors.

Fire may cause evolution of:

Hydrogen chloride gas

Advice for firefighters

Special protective equipment for fire-fighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

Further information

Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Avoid inhalation of dusts. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders:

Protective equipment see section 8.

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number 101812 Version 1.1
Product name Sulfate Test Method: photometric 0.50 - 50.0 mg/l SO₄²⁻ Spectroquant®
SO₄-2

Environmental precautions

Do not let product enter drains.

Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully. Dispose of properly. Clean up affected area. Avoid generation of dusts.

SECTION 7. Handling and storage

Precautions for safe handling

Observe label precautions.

Work under hood. Do not inhale substance/mixture.

Conditions for safe storage, including any incompatibilities

Keep tightly closed in a dry, cool and well-ventilated place. Keep away from heat and sources of ignition. Keep locked up or in an area accessible only to qualified or authorized persons.

Store at +15°C to +25°C (+59°F to +77°F).

The data applies to the entire pack.

SECTION 8. Exposure controls/personal protection

Exposure limit(s)

Ingredients

Basis	Value	Threshold limits	Remarks
<i>barium chloride dihydrate (10326-27-9)</i>			
ACGIH	Time Weighted Average (TWA):	0.5 mg/m ³	Expressed as: as Ba
NIOSH/GUIDE	Recommended exposure limit (REL):	0.5 mg/m ³	Expressed as: as Ba
	Recommended exposure limit (REL):	0.5 mg/m ³	Expressed as: as Ba
OSHA_TRANS	PEL:	0.5 mg/m ³	Expressed as: as Ba
Z1A	Time Weighted Average (TWA):	0.5 mg/m ³	Expressed as: as Ba

Engineering measures

Individual protection measures

Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled. The chemical resistance of the protective equipment should be inquired at the respective supplier.

Hygiene measures

Change contaminated clothing. Application of skin- protective barrier cream recommended. Wash hands after working with substance.

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number 101812
Product name Sulfate Test Method: photometric 0.50 - 50.0 mg/l SO₄²⁻ Spectroquant®
SO₄-2

Version 1.1

Eye/face protection

Safety glasses

Hand protection

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Other protective equipment:

protective clothing

Respiratory protection

required when dusts are generated.

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

SECTION 9. Physical and chemical properties

Physical state	solid
Color	white
Odor	odorless
Odor Threshold	Not applicable
pH	5.2 - 8.0 at 50 g/l 77 °F (25 °C)
Melting point	No information available.
Boiling point	No information available.
Flash point	does not flash
Evaporation rate	No information available.
Flammability (solid, gas)	The product is not flammable.
Lower explosion limit	Not applicable
Upper explosion limit	Not applicable
Vapor pressure	No information available.
Relative vapor density	No information available.
Density	3.86 g/cm ³ at 68 °F (20 °C)

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number	101812	Version 1.1
Product name	Sulfate Test Method: photometric 0.50 - 50.0 mg/l SO ₄ ²⁻ Spectroquant® SO ₄ -2	

Relative density	No information available.
Water solubility	No information available.
Partition coefficient: n-octanol/water	No information available.
Autoignition temperature	No information available.
Decomposition temperature	> 212 °F (> 100 °C) Elimination of water of crystallization
Viscosity, dynamic	No information available.
Explosive properties	Not classified as explosive.
Oxidizing properties	none
Ignition temperature	not combustible
Bulk density	ca. 1,200 - 1,400 kg/m ³

SECTION 10. Stability and reactivity

Reactivity

See below

Chemical stability

releases water of crystallization when heated.

Possibility of hazardous reactions

Risk of explosion with:

furan-2-percarbonic acid

Violent reactions possible with:

halogen-halogen compounds, Strong oxidizing agents, strong reducing agents, acids

Conditions to avoid

Strong heating (decomposition).

Incompatible materials

various metals, (generation of hydrogen)

Hazardous decomposition products

in the event of fire: See section 5.

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number 101812 Version 1.1
Product name Sulfate Test Method: photometric 0.50 - 50.0 mg/l SO₄²⁻ Spectroquant®
SO₄-2

SECTION 11. Toxicological information

Information on toxicological effects

Likely route of exposure

Eye contact, Skin contact, Ingestion

Acute oral toxicity

LD50 Rat: 118 mg/kg (anhydrous substance) (IUCLID)

Acute inhalation toxicity

Acute toxicity estimate: 1.6 mg/l

Expert judgment

Symptoms: mucosal irritations, Cough, Shortness of breath

Specific target organ systemic toxicity - single exposure

The substance or mixture is not classified as specific target organ toxicant, single exposure.

Specific target organ systemic toxicity - repeated exposure

The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Aspiration hazard

Regarding the available data the classification criteria are not fulfilled.

Carcinogenicity

IARC	No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
OSHA	No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.
NTP	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
ACGIH	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

Further information

After uptake:

Possible damages:

respiratory paralysis, cardiac arrest, death

Chronic intoxication:

damage of respiratory tract, conjunctivitis, Dermatitis, Cardio-vascular system

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number	101812	Version 1.1
Product name	Sulfate Test Method: photometric 0.50 - 50.0 mg/l SO ₄ ²⁻ Spectroquant® SO ₄ -2	

The following applies to soluble barium compounds in general: after swallowing: mucosal irritation, nausea, salivation, vomiting, dizziness, pain, colics, and diarrhea. Systemic effects include: cardiac dysrhythmias, bradycardia (subdued cardiac activity), rise in blood pressure, shock and circulatory collapse as well as muscular rigidity. Other dangerous properties can not be excluded. This substance should be handled with particular care.

SECTION 12. Ecological information

Ecotoxicity

No information available.

Persistence and degradability

Biodegradability

The methods for determining the biological degradability are not applicable to inorganic substances.

Bioaccumulative potential

No information available.

Mobility in soil

No information available.

Additional ecological information

Formation of health-hazardous mixtures possible with water. Endangers drinking-water supplies if allowed to enter soil or water.

Discharge into the environment must be avoided.

SECTION 13. Disposal considerations

The information presented only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national and local laws and regulations.

SECTION 14. Transport information

Land transport (DOT)

UN number	UN3316
Proper shipping name	CHEMICAL KIT
Class	9
Packing group	III
Environmentally hazardous	--

Air transport (IATA)

UN number	UN 3316
Proper shipping name	CHEMICAL KIT
Class	9

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number	101812	Version 1.1
Product name	Sulfate Test Method: photometric 0.50 - 50.0 mg/l SO ₄ ²⁻ Spectroquant® SO ₄ -2	

Packing group	III
Environmentally hazardous	--
Special precautions for user	no

Sea transport (IMDG)

UN number	UN 3316
Proper shipping name	CHEMICAL KIT
Class	9
Packing group	III
Environmentally hazardous	--
Special precautions for user	yes
EmS	F-A S-P

THIS TRANSPORT DATA APPLIES TO THE ENTIRE PACK!

SECTION 15. Regulatory information

United States of America

SARA 313

The following components are subject to reporting levels established by SARA Title III, Section 313:

Ingredients

barium chloride dihydrate	10326-27-9
---------------------------	------------

SARA 302

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

Clean Water Act

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

DEA List I

Not listed

DEA List II

Not listed

US State Regulations

Massachusetts Right To Know

Remarks

No components are subject to the Massachusetts Right to Know Act.

New Jersey Right To Know

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number	101812	Version1.1
Product name	Sulfate Test Method: photometric 0.50 - 50.0 mg/l SO ₄ ²⁻ Spectroquant® SO ₄ -2	

Ingredients

barium chloride dihydrate

California Prop 65 Components

This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

Notification status

TSCA: All components of the product are listed in the TSCA-inventory.

DSL: All components of this product are on the Canadian DSL

SECTION 16. Other information

Training advice

Provide adequate information, instruction and training for operators.

Labeling

Hazard pictograms



Signal Word

Danger

Hazard Statements

H301 Toxic if swallowed.

H332 Harmful if inhaled.

Precautionary Statements

Response

P308 + P310 IF exposed or concerned: immediately call a POISON CENTER or doctor/ physician.

Full text of H-Statements referred to under sections 2 and 3.

H301 Toxic if swallowed.

H332 Harmful if inhaled.

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

Used abbreviations and acronyms can be looked up at www.wikipedia.org.

Revision Date08/10/2018

SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number	101812	Version1.1
Product name	Sulfate Test Method: photometric 0.50 - 50.0 mg/l SO ₄ ²⁻ Spectroquant® SO ₄ -2	

The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to appropriate safety precautions. It does not represent a warranty of any product properties and we assume no liability for any loss or injury which may result from the use of this information. Users should conduct their own investigations to determine the suitability of the information.

All rights reserved. Millipore and the "M" Mark are registered trademarks of Merck KGaA, Darmstadt, Germany.