

Safety Data Sheet

According to EC Directive 91/155/EEC

Date of issue: 30.04.2004
Supersedes edition of 09.02.1998

1. Identification of the substance/preparation and of the company/undertaking

Identification of the product

Catalogue No.: 114548
Product name: Sulfate Cell Test Method: photometric 5 - 250 mg/l SO_4^{2-} 25
Tests Spectroquant®
 SO_4 -1K

Use of the substance/preparation

Reagent for analysis

Company/undertaking identification

Company: Merck KGaA * 64271 Darmstadt * Germany * Tel: +49 (0)6151/72-0
Emergency telephone No.: +49 (0)6151/72112 * Fax: +49 (0)6151/72-7780

2. Composition/information on ingredients

CAS-No.:	10326-27-9	EC-Index-No.:	056-004-00-8
M:	244.28 g/mol	EC-No.:	233-788-1
Formula Hill:	$\text{BaCl}_2 * 2 \text{H}_2\text{O}$		

3. Hazards identification

Harmful by inhalation. Toxic if swallowed.

4. First aid measures

After inhalation: fresh air.

If breathing stops: mouth-to-mouth respiration or mechanical ventilation. Oxygen mask if necessary! Immediately call in physician.

After skin contact: wash off with plenty of water. Remove contaminated clothing.

After eye contact: rinse out with plenty of water with the eyelid held wide open. Call in ophthalmologist if necessary.

After swallowing: make victim drink plenty of water, induce vomiting. Immediately call in physician.

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

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5. Fire-fighting measures

Suitable extinguishing media:
In adaption to materials stored in the immediate neighbourhood.

Special risks:
Non-combustible. Ambient fire may liberate hazardous vapours. The following may develop in event of fire: hydrochloric acid.

Special protective equipment for fire fighting:
Do not stay in dangerous zone without self-contained breathing apparatus.

Other information:
Prevent fire-fighting water from entering surface water or groundwater.

6. Accidental release measures

Person-related precautionary measures:
Avoid substance contact. Avoid generation of dusts; do not inhale dusts. Ensure supply of fresh air in enclosed rooms.

Environmental-protection measures:
Do not allow to enter sewerage system.

Procedures for cleaning / absorption:
Take up dry. Forward for disposal. Clean up affected area.

7. Handling and storage

Handling:

No further requirements.

Storage:

Tightly closed in a well-ventilated place, away from sources of ignition and heat. Dry. At +15°C to +25°C.

Accessible only for authorized persons.

The data apply to the entire pack.

8. Exposure controls/personal protection

Specific control parameter

TRGS 900

Name	Barium compounds soluble (as Ba)
Value	0.5 mg/m ³ inhalable fraction. The limit refers to the metal content as the analytical calculation basis.
Peak limit	4 exceeding factor: 4-fold in 15 minutes

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Personal protective equipment:

Protective clothing should be selected specifically for the working place, depending on concentration and quantity of the hazardous substances handled. The resistance of the protective clothing to chemicals should be ascertained with the respective supplier.

Respiratory protection: required when dusts are generated.

Eye protection: required

Hand protection: In full contact:
Glove material: nitrile rubber
Layer thickness: 0.11 mm
Breakthrough time: > 480 Min.
In splash contact:
Glove material: nitrile rubber
Layer thickness: 0.11 mm
Breakthrough time: > 480 Min.

The protective gloves to be used must comply with the specifications of EC directive 89/686/EEC and the resultant standard EN374, for example KCL 740 Dermatril® (full contact), 740 Dermatril® (splash contact). The breakthrough times stated above were determined by KCL in laboratory tests acc. to EN374 with samples of the recommended glove types.

This recommendation applies only to the product stated in the safety data sheet and supplied by us as well as to the purpose specified by us. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Industrial hygiene:

Immediately change contaminated clothing. Apply skin- protective barrier cream. Wash hands and face after working with substance. Under no circumstances eat or drink at workplace. Work under hood . Do not inhale substance.

9. Physical and chemical properties

Form:	solid		
Colour:	white		
Odour:	odourless		
pH value at 50 g/l H ₂ O	(20 °C)	5.2-8.2	
Melting point	963	°C	(anhydrous substance)
Boiling point	1560	°C	(anhydrous substance)
Ignition temperature	not combustible		
Flash point	not flammable		
Explosion limits	lower	not applicable	
	upper	not applicable	
Vapour pressure	low		
Density	3.86	g/cm ³	
Bulk density	~ 1200-1400 kg/m ³		

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Solubility in water	(20 °C)	375	g/l	(anhydrous substance)
Thermal decomposition		> 100	°C	(release of crystalline water)

10. Stability and reactivity

Conditions to be avoided

Heating.

Substances to be avoided

halogen-halogen compounds, furan-2-percarbonic acid, acids, strong oxidizing agents, strong reducing agents.

Hazardous decomposition products

in the event of fire: See chapter 5.

Further information

releases water of crystallization when heated.

11. Toxicological information

Acute toxicity

LD₅₀ (oral, rat): 118 mg/kg (anhydrous substance).

Subacute to chronic toxicity

Mutagenicity (mammal cell test): negative. (in vitro)

Bacterial mutagenicity: Ames test: negative.

Further toxicological information

After inhalation: Irritations of the mucous membranes, coughing, and dyspnoea. absorption. The following applies to soluble barium compounds in general: after swallowing: mucosal irritation, nausea, salivation, vomiting, dizziness, pain, colics, and diarrhoea. Systemic effects include: cardiac dysrhythmias, bradycardia (subdued cardiac activity), rise in blood pressure, shock and circulatory collapse as well as muscular rigidity. Possible damages: respiratory paralysis, cardiac arrest, death.

Chronic intoxication: damage of respiratory tract, conjunctivitis, dermatitis, cardiovascular disorders.

Further data

The product should be handled with the care usual when dealing with chemicals.

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12. Ecological information

Biologic degradation:

Methods for the determination of biodegradability are not applicable to inorganic substances.

Ecotoxic effects:

Biological effects:

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

Fish toxicity: *L. idus* LC₅₀: 870 mg/l /48 h (anhydrous substance).

Daphnia toxicity: *Daphnia magna* EC₅₀: 21.9 mg/l /48 h (anhydrous substance).

Further ecologic data:

The following applies to barium compounds: biological effects: fish: lethal as from 158 mg/l: *Salmo* lethal as from 158 mg/l (as BaCl₂); *L. idus* LC₅₀: 870 mg/l (as BaCl₂); barium ions toxic for aquatic organisms: algae: *Sc. quadricauda* toxic as from 34 mg/l ; crustaceans: toxic as from 29 mg/l; hazard for drinking water!

Do not allow to enter waters, waste water, or soil!

13. Disposal considerations

Product:

Chemicals must be disposed of in compliance with the respective national regulations. Under www.retrologistik.de you will find country- and substance-specific information as well as contact partners.

Packaging:

Merck product packaging must be disposed of in compliance with the country-specific regulations or must be passed to a packaging return system. Under www.retrologistik.de you will find special information on the respective national conditions as well as contact partners.

14. Transport information

Road & Rail ADR, RID

UN 3316 CHEMIE-TESTSATZ, 9, III

Inland waterway ADN, ADNR not tested

Sea IMDG-Code

UN 3316 CHEMICAL KIT, 9, III

Ems F-A S-P

Air CAO, PAX

CHEMICAL KIT, 9, UN 3316, III

The transport regulations are cited according to international regulations and in the form applicable in Germany. Possible national deviations in other countries are not considered.
THESE TRANSPORT DATA APPLY TO THE ENTIRE PACK !

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15. Regulatory information

Labelling according to EC Directives

Symbol:	T	Toxic
R-phrases:	20-25	Harmful by inhalation. Toxic if swallowed.
S-phrases:	45	In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
EC-No.:	233-788-1	EC label
contains:	barium chloride	

German regulations

Water pollution class 1 (slightly polluting substance) VwVwS Anh. 2 KennNr. 25

Storage class VCI 6.1 B

Data sheet of the Chemical Professional Association M050 Dealing with harmful substances

M053 General industrial safety measures for dangerous substances.

Local regulations on chemical accidents: 2

The employment restrictions for young workers in accordance with section 22 of the Youth Employment Protection Law (JArbSchG) are to be observed.

The employment restrictions for expectant and nursing mothers in accordance with sections 4 and 5 of the Maternity Protection Guideline (MuSchRiV) are to be observed.

16. Other information

Reason for alteration

Chapter 5: fire-fighting measures.
Chapter 11: toxicological information.
Chapter 14: transport information.

General update.

Contact for information:

HSSE-C/CI * Tel: +49 (0)6151/722775 * Fax: +49 (0)6151/726433 * e-mail:prodsafe@merck.de

The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

Safety Data Sheet

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Supersedes edition of 25.07.1997

1. Identification of the substance/preparation and of the company/undertaking

Identification of the product

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Tests Spectroquant®
Reaktionsküvette, Reagenz SO₄-2K

Use of the substance/preparation

Reagent for analysis

Company/undertaking identification

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Emergency telephone No.: +49 (0)6151/72112 * Fax: +49 (0)6151/72-7780

2. Composition/information on ingredients

Aqueous solution of inorganic and organic compounds.

Hazardous ingredients:

Name according to EC Directives:

CAS-No.	EC No.	EC-Index-No.	Classification	Content:
2-Propanol 67-63-0	200-661-7	603-117-00-0	F; R11 Xi; R36 R67	≥ 10 - < 20 %
Hydrochloric acid 7647-01-0	231-595-7	017-002-01-X	C; R34 Xi; R37	≥ 1 - < 5 %

(Full text of R-Phrases in heading 16)

3. Hazards identification

Flammable.

4. First aid measures

After inhalation: fresh air.
After skin contact: wash off with plenty of water. Remove contaminated clothing.
After eye contact: rinse out with plenty of water with the eyelid held wide open.
After swallowing: immediately make victim drink plenty of water. Call in physician.

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5. Fire-fighting measures

Suitable extinguishing media:
Water, foam, powder.

Special risks:
Combustible. Development of hazardous combustion gases or vapours possible in the event of fire.

Special protective equipment for fire fighting:
Do not stay in dangerous zone without self-contained breathing apparatus.

Other information:
Prevent fire-fighting water from entering surface water or groundwater.

6. Accidental release measures

Person-related precautionary measures:
Avoid substance contact. Do not inhale vapours/aerosols. Ensure supply of fresh air in enclosed rooms.

Environmental-protection measures:
Do not allow to enter sewerage system; risk of explosion!

Procedures for cleaning / absorption:
Take up with liquid-absorbent and neutralizing material (e.g. Chemizorb® H⁺, Art. No. 101595). Forward for disposal. Clean up affected area.

7. Handling and storage

Handling:

Notes for prevention of fire and explosion:
Keep away from sources of ignition. Take measures to prevent electrostatic charging.

Storage:

Tightly closed in a well-ventilated place, away from sources of ignition and heat. At +15°C to +25°C.

Accessible only for authorized persons.

The data apply to the entire pack.

8. Exposure controls/personal protection

Specific control parameter

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BAT Germany (biol. tolerance value)

Name	Propan-2-ol
Parametr	Acetone
Values	50 mg/l
Test material	blood
test extraction, time	b
Parametr	Acetone
Values	50 mg/l
Test material	urine
test extraction, time	b

EC

Name	Hydrogen chloride
Value	5 ml/m ³ 8 mg/m ³

TRGS 900

Name	Hydrogen chloride
Value	8 mg/m ³
Peak limit	=1= Concentration must not exceed limit concentration.
Embryotoxic	Y Substances with which no foetotoxic risk is to be expected when observing the maximum allowable concentration (MAC Germany) and the biological tolerance value at the workplace (BAT Germany).

Name	Propan-2-ol
Value	200 ml/m ³ 500 mg/m ³
Peak limit	4 exceeding factor: 4-fold in 15 minutes
Embryotoxic	Y Substances with which no foetotoxic risk is to be expected when observing the maximum allowable concentration (MAC Germany) and the biological tolerance value at the workplace (BAT Germany).

Personal protective equipment:

Protective clothing should be selected specifically for the working place, depending on concentration and quantity of the hazardous substances handled. The resistance of the protective clothing to chemicals should be ascertained with the respective supplier.

Respiratory protection: required when vapours/aerosols are generated.

Eye protection: required

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Hand protection: In full contact:
Glove material: nitrile rubber
Layer thickness: 0.40 mm
Breakthrough time: > 480 Min.

In splash contact:
Glove material: nitrile rubber
Layer thickness: 0.40 mm
Breakthrough time: > 480 Min.

The protective gloves to be used must comply with the specifications of EC directive 89/686/EEC and the resultant standard EN374, for example KCL 730 Camatril® -Velours (full contact), 730 Camatril® -Velours (splash contact).

This recommendation applies only to the product stated in the safety data sheet and supplied by us as well as to the purpose specified by us. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Industrial hygiene:

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

9. Physical and chemical properties

Form:	liquid	
Colour:	colourless	
Odour:	characteristic odour	
pH value	(20 °C)	< 1
Melting point		not available
Boiling point		not available
Ignition temperature		not available
Flash point		~ 35 °C
Explosion limits	lower	not available
	upper	not available
Density	(20 °C)	~ 1.11 g/cm ³
Bulk density		~ 650 kg/m ³
Solubility in water	(20 °C)	soluble

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10. Stability and reactivity

Conditions to be avoided

Strong heating.

Substances to be avoided

oxidizing agent, alkali metals, alkaline earth metals.

Hazardous decomposition products

no information available

Further information

unsuitable working materials: various plastics, rubber.
Explosible with air in a vaporous/gaseous state when heated.

11. Toxicological information

Acute toxicity

Quantitative data on the toxicity of this product are not available.

Further toxicological information

Property that must be anticipated on the basis from the components of the preparation:

After inhalation of vapours: Irritation symptoms in the respiratory tract.

After swallowing: irritations of mucous membranes in the mouth, pharynx, oesophagus and gastrointestinal tract.

After absorption: headache, dizziness, unconsciousness.

Further data

Further hazardous properties cannot be excluded.
The product should be handled with the care usual when dealing with chemicals.

12. Ecological information

Ecotoxic effects:

Quantitative data on the ecological effect of this product are not available.

Further ecologic data:

Do not allow to enter waters, waste water, or soil!

13. Disposal considerations

Product:

Chemicals must be disposed of in compliance with the respective national regulations. Under www.retrologistik.de you will find country- and substance-specific information as well as contact partners.

Packaging:

Merck product packaging must be disposed of in compliance with the country-specific regulations or must be passed to a packaging return system. Under www.retrologistik.de you will find special information on the respective national conditions as well as contact partners.

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14. Transport information

Road & Rail ADR, RID
UN 3316 CHEMIE-TESTSATZ, 9, III

Inland waterway ADN, ADNR not tested

Sea IMDG-Code
UN 3316 CHEMICAL KIT, 9, III
Ems F-A S-P

Air CAO, PAX
CHEMICAL KIT, 9, UN 3316, III

The transport regulations are cited according to international regulations and in the form applicable in Germany. Possible national deviations in other countries are not considered.
THESE TRANSPORT DATA APPLY TO THE ENTIRE PACK !

15. Regulatory information

Labelling according to EC Directives

Symbol: ---
R-phrases: 10 Flammable.
S-phrases: ---

German regulations

Water pollution class 1 (slightly polluting substance) VwVwS Anh. 4
Storage class VCI 3 A

The employment restrictions for young workers in accordance with section 22 of the Youth Employment Protection Law (JArbSchG) are to be observed.

16. Other information

Text of any R phrases referred to under heading 2:

11 Highly flammable.
34 Causes burns.
36 Irritating to eyes.
37 Irritating to respiratory system.
67 Vapours may cause drowsiness and dizziness.

Reason for alteration

Chapter 14: transport information.

General update.

Contact for information:

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