

# Safety Data Sheet

According to EC Directive 91/155/EEC

Date of issue: 30.04.2004  
Supersedes edition of 17.12.1999

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

### Identification of the product

Catalogue No.: 114564  
Product name: Sulfate Cell Test Method: photometric 100 - 1000 mg/l SO<sub>4</sub><sup>2-</sup>  
25 Tests Spectroquant®  
SO<sub>4</sub>-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:	BaCl <sub>2</sub> * 2 H <sub>2</sub> 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.

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## 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.

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## 7. Handling and storage

*Handling:*

No further requirements.

*Storage:*

Tightly closed in a well-ventilated place. Accessible only for authorised persons. Dry. At +15°C to +25°C.

The data apply to the entire pack.

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## 8. Exposure controls/personal protection

*Specific control parameter*

TRGS 900

Name	Barium compounds soluble (as Ba)
Value	0.5 mg/m <sup>3</sup> 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](http://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.

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## 9. Physical and chemical properties

Form:	solid		
Colour:	white		
Odour:	odourless		
pH value at 50 g/l H <sub>2</sub> 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 <sup>3</sup>	
Bulk density	~ 1200-1400 kg/m <sup>3</sup>		

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

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## 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.

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## 11. Toxicological information

### *Acute toxicity*

LD<sub>50</sub> (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* LC<sub>50</sub>: 870 mg/l /48 h (anhydrous substance).

Daphnia toxicity: *Daphnia magna* EC<sub>50</sub>: 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 BaCl<sub>2</sub>); *L. idus* LC<sub>50</sub>: 870 mg/l (as BaCl<sub>2</sub>); 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!

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## 13. Disposal considerations

*Product:*

Chemicals must be disposed of in compliance with the respective national regulations. Under [www.retrologistik.de](http://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](http://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 !**

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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.

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## 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

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*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.*

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25 Tests Spectroquant®  
Reaktionsküvette

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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.

## 3. Hazards identification

No hazardous product as specified in Directive 67/548/EEC.

## 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. Call in ophthalmologist if necessary.  
After swallowing: make victim drink plenty of water. Consult doctor if feeling unwell.

## 5. Fire-fighting measures

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

Special risks:  
Non-combustible.

## 6. Accidental release measures

Person-related precautionary measures:  
Do not inhale vapours/aerosols.

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

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Reaktionsküvette

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## 7. Handling and storage

### *Handling:*

No further requirements.

### *Storage:*

Tightly closed in a well-ventilated place. Accessible only for authorised persons. At +15°C to +25°C.

The data apply to the entire pack.

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## 8. Exposure controls/personal protection

### *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

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).

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Industrial hygiene:

Change contaminated clothing. Wash hands after working with substance.

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## 9. Physical and chemical properties

Form: liquid  
Colour: colourless  
Odour: odourless  
pH value (25 °C) 1.0  
Melting point not available

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Boiling point		not available
Ignition temperature		not available
Flash point		not available
Explosion limits	lower	not available
	upper	not available
Density	(25 °C)	~ 1.01 g/cm <sup>3</sup>
Solubility in water	(25 °C)	soluble

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## 10. Stability and reactivity

*Conditions to be avoided*

Strong heating.

*Substances to be avoided*

The generally known reaction partners of water.

*Hazardous decomposition products*

no information available

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## 11. Toxicological information

*Acute toxicity*

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

*Further toxicological information*

Hazardous properties cannot be excluded, but are relatively improbable due to the low concentration of the dissolved substance(s).

*Further data*

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

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## 12. Ecological information

Ecotoxic effects:

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

Further ecologic data:

No ecological problems are to be expected when the product is handled and used with due care and attention.

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## 13. Disposal considerations

*Product:*

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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.  
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## 15. Regulatory information

### *Labelling according to EC Directives*

Symbol: ---  
R-phrases: ---  
S-phrases: ---

### *German regulations*

Water pollution class nwg (nonpolluting substance) VwVwS Anh. 4  
Storage class VCI 10-13

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## 16. Other information

### *Reason for alteration*

Chapter 14: transport information.  
General update.

### *Contact for information:*

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