

# Safety Data Sheet

According to EC Directive 91/155/EEC

Date of issue: 03.05.2004  
Supersedes edition of 27.01.2000

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

### Identification of the product

Catalogue No.: 114779  
Product name: Sulfide Test Method: photometric also refill pack for art.  
1.14777.0001 0.020 - 1.50 mg/l S<sup>2-</sup> 420 Tests Spectroquant®  
HS-1A

### 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

Aqueous solution.

### Hazardous ingredients:

#### Name according to EC Directives:

CAS-No.	EC No.	EC-Index-No.	Classification	Content:
Sulphamic acid 5329-14-6	226-218-8	016-026-00-0	Xi; R36/38 R52/53	≥ 10 - < 20 %

(Full text of R-Phrases in heading 16)

## 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.  
After swallowing: immediately make victim drink plenty of water (if necessary several litres). Call in physician.

# Merck Safety Data Sheet

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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: nitrogen oxides, sulfur oxides.

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

Other information:  
Contain escaping vapours with water. Prevent fire-fighting water from entering surface water or groundwater.

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## 6. Accidental release measures

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

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

Procedures for cleaning / absorption:  
Take up with liquid-absorbent material (e.g. Chemizorb®). Forward for disposal. Clean up affected area.

Additional notes:  
Render harmless: neutralize with diluted sodium hydroxide solution or by throwing on lime, lime sand, or sodium carbonate.

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## 7. Handling and storage

*Handling:*

No further requirements.

*Storage:*

Tightly closed. 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

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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).

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.

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## 9. Physical and chemical properties

Form:	liquid	
Colour:	colourless	
Odour:	odourless	
pH value	(20 °C)	acid
Melting point		not available
Boiling point		not available
Ignition temperature		not available
Flash point		not available
Explosion limits	lower	not available
	upper	not available
Density	(20 °C)	~ 1.07 g/cm <sup>3</sup>
Solubility in water	(20 °C)	soluble

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## 10. Stability and reactivity

*Conditions to be avoided*

Heating.

*Substances to be avoided*

organic nitro compounds, alkali hydroxides, nitrates, nitrites, metals.

*Hazardous decomposition products*

in the event of fire: See chapter 5.

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## 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 skin contact: Slight irritations.

After eye contact: Slight irritations.

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

### *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.

Biological effects:

Harmfull effect on aquatic organisms.

Harmful effect due to pH shift.

Further ecologic data:

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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HS-1A

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## 14. Transport information

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

Inland waterway ADN, ADNR not tested

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

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

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: ---

R-phrases: ---

S-phrases: ---

*German regulations*

Water pollution class 1 (slightly polluting substance) VwVwS Anh. 4

Storage class VCI 10-13

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## 16. Other information

Text of any R phrases referred to under heading 2:

36/38 Irritating to eyes and skin.

52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

*Reason for alteration*

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.*

# Safety Data Sheet

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Product name: Sulfide Test Method: photometric also refill pack for art.  
1.14777.0001 0.020 - 1.50 mg/l S<sup>2-</sup> 420 Tests Spectroquant®  
HS-2A

### 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

Aqueous sulfuric acid solution.

### Hazardous ingredients:

#### Name according to EC Directives:

CAS-No.	EC No.	EC-Index-No.	Classification	Content:
N,N-Dimethyl-p-phenylenediammonium dichloride 536-46-9	208-635-7		T; R23/24/25	≥ 0.1 - < 3 %
Sulphuric acid 7664-93-9	231-639-5	016-020-00-8	C; R35	≥ 50 %

(Full text of R-Phrases in heading 16)

## 3. Hazards identification

Causes severe burns.

## 4. First aid measures

After inhalation: fresh air. Call in physician.  
After skin contact: wash off with plenty of water. Dab with polyethylene glycol 400.  
Immediately remove contaminated clothing.  
After eye contact: rinse out with plenty of water for at least 10 minutes with the eyelid held wide open. Immediately call in ophthalmologist.  
After swallowing: make victim drink plenty of water (if necessary several litres), avoid vomiting (risk of perforation!). Immediately call in physician. Do not attempt to neutralize.

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According to EC Directive 91/155/EEC

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0.020 - 1.50 mg/l S<sup>2-</sup> 420 Tests Spectroquant®  
HS-2A

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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: sulfur oxides.

Special protective equipment for fire fighting:  
Do not stay in dangerous zone without self-contained breathing apparatus. In order to avoid contact with skin, keep a safety distance and wear suitable protective clothing.

Other information:  
Contain escaping vapours with water. Prevent fire-fighting water from entering surface water or groundwater.

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## 6. Accidental release measures

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

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

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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## 7. Handling and storage

*Handling:*

No further requirements.

*Storage:*

Tightly closed. 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*

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0.020 - 1.50 mg/l S<sup>2-</sup> 420 Tests Spectroquant®  
HS-2A

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## TRGS 900

Name	Sulfuric acid
Kind of use	others
Value	0.1 mg/m <sup>3</sup> Inhalable fraction. The following regulation applies to the peak limit: short-term exposure duration: max. 15 minutes as mean value, frequency per shift: 4, time interval: min. 1 hour
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).

### *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: 0.40 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](http://www.kcl.de)).

Other protective equipment: Acid-resistant protective clothing.

Industrial hygiene:

Change contaminated clothing and immerse in water. Apply skin-protective barrier cream. Wash hands and face after working with substance.

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## 9. Physical and chemical properties

Form:	liquid
Colour:	colourless
Odour:	odourless



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0.020 - 1.50 mg/l S<sup>2-</sup> 420 Tests Spectroquant®  
HS-2A

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pH value	(20 °C)	acid
Melting point		not available
Boiling point		not available
Ignition temperature		not available
Flash point		not available
Explosion limits	lower	not available
	upper	not available
Density	(20 °C)	~ 1.35 g/cm <sup>3</sup>
Solubility in water	(20 °C)	soluble (caution ! development of heat)

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## 10. Stability and reactivity

### *Conditions to be avoided*

Heating.

### *Substances to be avoided*

water, alkali metals, alkali compounds, ammonia, alkaline earth metals, alkalis, acids, alkaline earth compounds, metals, metal alloys, phosphorus oxides, phosphorus, hydrides, halogen-halogen compounds, oxyhalogenic compounds, permanganates, nitrates, carbides, combustible substances, organic solvents, acetylidene, nitriles, nitrides, organic nitro compounds, anilines, peroxides, picrates, lithium silicide.

### *Hazardous decomposition products*

in the event of fire: See chapter 5.

### *Further information*

hygroscopic; has a corrosive effect;  
incompatible with metals, animal/vegetable tissues.  
Hydrogen may form upon contact with metals (danger of explosion!).

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## 11. Toxicological information

### *Acute toxicity*

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

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HS-2A

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## *Further toxicological information*

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

After inhalation of aerosols: damage to the affected mucous membranes.

After skin contact: severe burns with formation of scabs.

After eye contact: burns, corneal lesions.

After swallowing: severe pain (risk of perforation!), nausea, vomiting and diarrhoea.

After a latency period of several weeks possibly pyloric stenosis.

Other notes:

The following applies to aromatic amines in general: systemic effect: methaemoglobinaemia with headache, cardiac dysrhythmia, drop in blood pressure, dyspnoea, and spasms, principal symptom: cyanosis (blue discoloration of the blood).

## *Further data*

Further hazardous properties cannot be excluded.

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.

Biological effects:

Harmful effect due to pH shift. Forms corrosive mixtures with water even if diluted.

Further ecologic data:

The following applies to sulfuric acid: biological effects: harmful effect on aquatic organisms.

Harmful effect due to pH shift. Toxic effect on fish and algae. Caustic even in diluted form.

Does not cause biological oxygen deficit. Endangers drinking-water supplies if allowed to enter soil and/or waters in large quantities. Neutralization possible in waste water treatment plants.

Daphnia toxicity: Daphnia magna EC<sub>50</sub>: 29 mg/l/24 h (calculated on the pure substance).

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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HS-2A

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## 14. Transport information

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

Inland waterway ADN, ADNR not tested

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

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

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:	C	Corrosive
R-phrases:	35	Causes severe burns.
S-phrases:	26-36/37/39-45	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing, gloves and eye/face protection. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

contains: Sulphuric acid

### German regulations

Water pollution class 1 (slightly polluting substance) VwVwS Anh. 4

Storage class VCI 8 B

Data sheet of the Chemical Professional Association M004 Irritant substances/corrosive substances

M051 Dangerous chemical substances

M053 General industrial safety measures for dangerous substances.

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

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## 16. Other information

Text of any R phrases referred to under heading 2:

23/24/25	Toxic by inhalation, in contact with skin and if swallowed.
35	Causes severe burns.

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Reduced labelling on the container due to small quantity.

*Reason for alteration*

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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1.14777.0001 0.020 - 1.50 mg/l S<sup>2-</sup> 420 Tests Spectroquant®  
HS-3A

### 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

Weak sulfuric acid solution.

### Hazardous ingredients:

Name according to EC Directives:

CAS-No.	EC No.	EC-Index-No.	Classification	Content:
Sulphuric acid 7664-93-9	231-639-5	016-020-00-8	C; R35	≥ 1 - < 5 %

(Full text of R-Phrases in heading 16)

## 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.

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HS-3A

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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: sulfur oxides.

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

Other information:  
Contain escaping vapours with water. Prevent fire-fighting water from entering surface water or groundwater.

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## 6. Accidental release measures

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

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

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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## 7. Handling and storage

*Handling:*

No further requirements.

*Storage:*

Tightly closed. 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*

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0.020 - 1.50 mg/l S<sup>2-</sup> 420 Tests Spectroquant®  
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---

## TRGS 900

Name	Sulfuric acid
Kind of use	others
Value	0.1 mg/m <sup>3</sup> Inhalable fraction. The following regulation applies to the peak limit: short-term exposure duration: max. 15 minutes as mean value, frequency per shift: 4, time interval: min. 1 hour
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).

### *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).

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:

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

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## 9. Physical and chemical properties

Form:	liquid
Colour:	colourless
Odour:	odourless
pH value	(20 °C) weakly acid
Melting point	not available

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HS-3A

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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	(20 °C)	~ 1.08 g/cm <sup>3</sup>
Solubility in water	(20 °C)	soluble

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## 10. Stability and reactivity

*Conditions to be avoided*

Heating.

*Substances to be avoided*

metals.

The generally known reaction partners of water.

*Hazardous decomposition products*

in the event of fire: See chapter 5.

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## 11. Toxicological information

*Acute toxicity*

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

*Further toxicological information*

Property which must be anticipated on the basis of the chemical/physical data:

After skin contact: irritative response if not handled appropriately.

After eye contact: corneal lesions may occur under certain circumstances.

After swallowing: damage to the affected mucous membranes possible.

*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:

The following applies to sulfuric acid: biological effects: harmful effect on aquatic organisms.

Harmful effect due to pH shift. Toxic effect on fish and algae. Caustic even in diluted form.

Does not cause biological oxygen deficit. Endangers drinking-water supplies if allowed to enter soil and/or waters in large quantities. Neutralization possible in waste water treatment plants.

Daphnia toxicity: Daphnia magna EC<sub>50</sub>: 29 mg/l/24 h (calculated on the pure substance).

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:*

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, II

Inland waterway ADN, ADNR not tested

Sea IMDG-Code

UN 3316 CHEMICAL KIT, 9, II

Ems F-A S-P

Air CAO, PAX

CHEMICAL KIT, 9, UN 3316, II

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: ---

R-phrases: ---

S-phrases: ---

### *German regulations*

Water pollution class 1 (slightly polluting substance) VwVwS Anh. 4

Storage class VCI 10-13

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## 16. Other information

Text of any R phrases referred to under heading 2:

35 Causes severe burns.

# Merck Safety Data Sheet

According to EC Directive 91/155/EEC

Catalogue No.: 114779  
Product name: Sulfide Test Method: photometric also refill pack for art. 1.14777.0001  
0.020 - 1.50 mg/l S<sup>2-</sup> 420 Tests Spectroquant®  
HS-3A

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## *Reason for alteration*

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.*