

# Safety Data Sheet

According to EC Directive 91/155/EEC

Date of issue: 15.04.2004  
Supersedes edition of 24.01.2000

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

### Identification of the product

Catalogue No.: 114690  
Product name: COD Cell Test Method: photometric 50 - 500 mg/l 25 Tests  
Spectroquant®  
Küvetten-Reagenz

### 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

Sulfuric acid solution.

The percent content of the mercury compound mentioned below refers to the amount of the pure mercury therein.

### Hazardous ingredients:

#### Name according to EC Directives:

CAS-No.	EC No.	EC-Index-No.	Classification	Content:
Mercury(II) sulphate 7783-35-9	231-992-5	080-002-00-6	T+; R26/27/28 R33 N; R50/53	≥ 0.5 - < 2 %
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

Toxic by inhalation, in contact with skin and if swallowed. Danger of cumulative effects. Causes severe burns. Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

# Merck Safety Data Sheet

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## 4. First aid measures

First-aid personnel: ensure self-protection!

After inhalation: fresh air.

If breathing stops: immediately apply mechanical ventilation, if necessary oxygen mask.

Immediately call in physician.

After skin contact: wash off with plenty of water. Dab with polyethylene glycol 400.

Immediately remove contaminated clothing. Immediately call in physician.

After eye contact: rinse out with plenty of water with the eyelid held wide open. Immediately call in ophthalmologist.

After swallowing: make victim drink plenty of water, avoid vomiting (risk of perforation!).

Immediately call in physician. Do not attempt to neutralize.

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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, mercury vapours.

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:

Cool container with spray water from a safe distance. 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:*

Notes for safe handling:

Work under hood. Do not inhale substance. Avoid generation of vapours/aerosols.

*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

### *Specific control parameter*

BAT Germany (biol. tolerance value)

Name	Mercury, metallic and inorganic compounds
Parametr	Mercury
Values	25 µg/l
Test material	blood
test extraction, time	a

Parametr	Mercury
Values	100 µg/l
Test material	urine
test extraction, time	a

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).

Name	Mercury (inorganic mercury compounds)
Value	0.1 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
Skin resorption	Risk of skin absorption

### *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: viton  
Layer thickness: 0.70 mm  
Breakthrough time: > 480 Min.

In splash contact:  
Glove material: butyl rubber  
Layer thickness: 0.7 mm  
Breakthrough time: > 120 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 890 Vitoject® (full contact), 898 Butoject® (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 and immerse in water. Apply skin-protective barrier cream. Wash hands and face after working with substance. Work under hood. Do not inhale substance. Under no circumstances eat or drink at workplace.

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## 9. Physical and chemical properties

Form:	liquid	
Colour:	orange	
Odour:	odourless	
pH value	(20 °C)	< 0.5
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)	~ 1.55 g/cm <sup>3</sup>
Solubility in water	(20 °C)	soluble (development of heat)

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## 10. Stability and reactivity

### *Conditions to be avoided*

Strong 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, organic nitro compounds, anilines, peroxides, picrates, nitrides, 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.

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## 11. Toxicological information

### *Acute toxicity*

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

### *Further toxicological information*

Properties to be expected on the basis of the main component 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.

Applicable to partial component(s):

Danger of skin absorption.

Mercury compounds have a cytotoxic and protoplasmatoxic effect. Intoxication symptoms:  
acute: contact with eye causes severe lesions. Swallowing and inhalation of dusts damages mucous membranes of gastrointestinal and respiratory tract (metallic taste, nausea, vomiting, abdominal pain, bloody diarrhoea, intestinal burns, glottal oedema, aspiration pneumonia);  
drop in blood pressure, cardiac dysrhythmia, circulatory collapse, and renal failure;  
chronic: inflammation of the mouth with loss of teeth and mercurial line. The principal signs manifest themselves in the CNS (impaired speech, vision, hearing, and sensitivity, loss of memory, irritability, hallucinations, delirium inter alia).

Other notes:

Danger of cumulative effects.

### *Further data*

Further hazardous properties cannot be excluded.

This substance should be handled with particular care.

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According to EC Directive 91/155/EEC

Catalogue No.: 114690  
Product name: COD Cell Test Method: photometric 50 - 500 mg/l 25 Tests Spectroquant®  
Küvetten-Reagenz

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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 on aquatic organisms. May cause long-term adverse effects in the aquatic environment.

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).

The following applies to the water-soluble matter contained in inorganic Hg compounds in general (tested with mercury(II) chloride): Leuciscus idus LC<sub>50</sub>: 0.5 mg/l (48h), Daphnia magna EC<sub>50</sub>: 0.005-3,6 mg/l (48h), Chlorella pyrenoidosa EC<sub>50</sub>: 0.3 mg/l (5h), Pseudomonas fluorescens IC<sub>50</sub>: 0.005 mg/l. The toxicity of mercury(II) ions for water organisms depends on the water hardness [source: IPCS].

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, 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: T Toxic  
R-phrases: 23/24/25-33-35-52/53 Toxic by inhalation, in contact with skin and if swallowed. Danger of cumulative effects. Causes severe burns. Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.  
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: Mercury(II) sulphate  
Sulphuric acid

### German regulations

Water pollution class 2 (polluting substance) VwVwS Anh. 4  
Storage class VCI 6.1 B  
Data sheet of the Chemical Professional Association M004 Irritant substances/corrosive substances  
M024 Mercury and its compounds  
M051 Dangerous chemical 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

Text of any R phrases referred to under heading 2:

26/27/28 Very toxic by inhalation, in contact with skin and if swallowed.  
33 Danger of cumulative effects.  
35 Causes severe burns.  
50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

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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Supersedes edition of 24.01.2000

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

### Identification of the product

Catalogue No.: 114690  
Product name: COD Cell Test Method: photometric 50 - 500 mg/l 25 Tests  
Spectroquant®  
Blindwert-Simulationsreagenz

### 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:
Sulphuric acid 7664-93-9	231-639-5	016-020-00-8	C; R35	≥ 5 - < 15 %

(Full text of R-Phrases in heading 16)

## 3. Hazards identification

Irritating to eyes and skin.

## 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. Call in physician.

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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 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

*Specific control parameter*

# Merck Safety Data Sheet

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Catalogue No.: 114690  
Product name: COD Cell Test Method: photometric 50 - 500 mg/l 25 Tests Spectroquant®  
Blindwert-Simulationsreagenz

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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:	natural latex
Layer thickness:	0.6 mm
Breakthrough time:	> 480 Min.

In splash contact:

Glove material:	natural latex
Layer thickness:	0.6 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 706 Lapren® (full contact), 706 Lapren® (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 and immerse in water. Apply skin-protective barrier cream. Wash hands after working with substance.

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## 9. Physical and chemical properties

Form:	liquid
Colour:	yellowish
Odour:	odourless
pH value	(20 °C) < 1
Melting point	not available
Boiling point	not available
Ignition temperature	not available

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According to EC Directive 91/155/EEC

Catalogue No.: 114690  
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Blindwert-Simulationsreagenz

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Flash point		not available
Explosion limits	lower	not available
	upper	not available
Density	(20 °C)	~ 1.06 g/cm <sup>3</sup>
Solubility in water	(20 °C)	soluble

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## 10. Stability and reactivity

### *Conditions to be avoided*

Strong 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, organic nitro compounds, anilines, peroxides, picrates, nitrides, lithium silicide.

### *Hazardous decomposition products*

in the event of fire: See chapter 5.

### *Further information*

has a corrosive effect;  
incompatible with metals, animal/vegetable tissues.

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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 toxicological main component of the preparation:

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

After skin contact: severe irritations.

After eye contact: corneal destruction.

After swallowing: damage of the oral, oesophageal, and gastric mucous membranes. Perforation of the oesophagus frequently occurs. Circulatory collapse may occur after 1-2 hours.

### *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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# Merck Safety Data Sheet

According to EC Directive 91/155/EEC

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Product name: COD Cell Test Method: photometric 50 - 500 mg/l 25 Tests Spectroquant®  
Blindwert-Simulationsreagenz

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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).

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, 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: Xi Irritant

R-phrases: ---

S-phrases: ---

# Merck Safety Data Sheet

According to EC Directive 91/155/EEC

Catalogue No.: 114690  
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Blindwert-Simulationsreagenz

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## *German regulations*

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

Storage class VCI 10-13

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

M051 Dangerous chemical 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:

35 Causes severe burns.

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.*