

Safety Data Sheet

According to EC Directive 91/155/EEC

Date of issue:
Supersedes edition of

15.02.2007
27.07.2004

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

Identification of the product

Catalogue No.: 114678
Product name: Formaldehyde Test Method: photometric 0.02 - 8.00 mg/l HCHO
Spectroquant®
Reagenz HCHO-1

Use of the substance/preparation

Reagent for analysis

Company/undertaking identification

Company: Merck KGaA * 64271 Darmstadt * Germany * Phone: +49 6151 72-0
Emergency telephone No.: Please contact the regional Merck representation
in your country.

2. Composition/information on ingredients

CAS-No.:	7664-93-9	EC-Index-No.:	016-020-00-8
M:	98.08 g/mol	EC-No.:	231-639-5
Formula Hill:	H ₂ O ₄ S		
Chemical formula:	H ₂ SO ₄		

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	95 - < 97 %

(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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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:
Cool container with spray water from a safe distance. Prevent fire-fighting water from entering surface water or groundwater. Contain escaping vapours with water.

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⁺, Merck Art. No. 101595). Forward for disposal. Clean up affected area.

7. Handling and storage

Handling:

No further requirements.

Storage:

Tightly closed. At +15°C to +25°C.

The data apply to the entire pack.

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. Filter P 2 (acc. to DIN 3181) for solid and liquid particles of harmful substances

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). 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).

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.

9. Physical and chemical properties

Form:	liquid
Colour:	colourless
Odour:	odourless
pH value at 49 g/l H ₂ O	(25 °C) 0.3
Viscosity dynamic	(20 °C) ~ 24 mPa*s
Melting point	~ 3 °C
Boiling point	~ 335 °C
Ignition temperature	not applicable
Flash point	not applicable
Explosion limits	lower not applicable
	upper not applicable
Vapour pressure	(20 °C) ~ 0.0001 hPa
Relative vapour density	~ 3.4
Density	(20 °C) 1.84 g/cm ³
Solubility in water	(20 °C) soluble (caution ! development of heat)
Thermal decomposition	~ 338 °C

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10. Stability and reactivity

Conditions to be avoided

Strong heating.

Substances to be avoided

A risk of explosion and/or of toxic gas formation exists with the following substances: /
Violent reactions possible with: water, alkali metals, alkali compounds, ammonia, aldehydes, acetonitrile, 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, iron(III) compounds, bromates, chlorates, perchlorates, hydrogen peroxide.

Hazardous decomposition products

in the event of fire: See chapter 5.

Further information

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

11. Toxicological information

Acute toxicity

LC₅₀ (inhalation, rat): 510 mg/m³ / 2 h (calculated on the pure substance) (IUCLID).

Specific symptoms in animal studies:

Eye irritation test (rabbit): burns (IUCLID).

Skin irritation test (rabbit): burns (IUCLID).

Toxicologic values are not available due to other dangerous properties of the substance.

Subacute to chronic toxicity

No teratogenic effect in animal experiments. (IUCLID)

Bacterial mutagenicity: Ames test: negative. (in vitro) (IUCLID)

Further toxicological information

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.

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.

Behavior in environmental compartments:
Concentration in organisms is not to be expected.

Ecotoxic effects:
Biological effects:
Harmful effect due to pH shift. Forms corrosive mixtures with water even if diluted. Endangers drinking-water supplies if allowed to enter soil or waters in small quantities. Toxic effect on fish and algae. Does not cause biological oxygen deficit.

Fish toxicity: *L.macrochirus* LC₅₀: 16-29 mg/l /96 h (External MSDS).
Daphnia toxicity: *Daphnia magna* EC₅₀: 29 mg/l /24 h (External MSDS).

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.

14. Transport information

Road & Rail ADR, RID
UN 1830 SCHWEFELSAEURE, 8, II

Inland waterway ADN, ADNR not tested

Sea IMDG-Code
UN 1830 SULPHURIC ACID, 8, II
Ems F-A S-B

Air CAO, PAX
UN 1830 SULPHURIC ACID, 8, 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:	26-30-45	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Never add water to this product. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
EC-No.:	231-639-5	EC label
contains:	Sulphuric acid	

16. Other information

Text of any R phrases referred to under heading 2:

35 Causes severe burns.

Reason for alteration

Chapter 12: ecological information.

General update.

Regional representation:

This information is given on the authorised Safety Data Sheet for your country.

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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Identification of the product

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Product name: Formaldehyde Test Method: photometric 0.02 - 8.00 mg/l HCHO
Spectroquant®
Reagenz HCHO-2

Use of the substance/preparation

Reagent for analysis

Company/undertaking identification

Company: Merck KGaA * 64271 Darmstadt * Germany * Phone: +49 6151 72-0
Emergency telephone No.: Please contact the regional Merck representation
in your country.

2. Composition/information on ingredients

CAS-No.: 5808-22-0
M: 400.30 g/mol
Formula Hill: $C_{10}H_6Na_2O_8S_2 \cdot 2 H_2O$
EC-No.: 204-972-9

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.
After swallowing: make victim drink plenty of water. Consult doctor if feeling unwell.

5. Fire-fighting measures

Suitable extinguishing media:
Water, CO₂, foam, powder.

Special risks:
Combustible. Development of hazardous combustion gases or vapours possible in the event of fire. 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:
Avoid generation of dusts; do not inhale dusts.

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:

Protect from light.
No further requirements.

Storage:

Tightly closed. Dry. At +15°C to +25°C.

The data apply to the entire pack.

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 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 741 Dermatrill® L (full contact), 741 Dermatrill® L (splash contact). The breakthrough times stated above were determined by KCL in laboratory tests acc. to EN374 with samples of the recommended glove types.

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Industrial hygiene:
Change contaminated clothing. Wash hands after working with substance.

9. Physical and chemical properties

Form:	solid		
Colour:	white to grey		
Odour:	almost odourless		
pH value at 10 g/l H ₂ O	(20 °C)	~ 3.6	
Melting point		> 300	°C
Boiling point		not available	
Ignition temperature		not available	
Flash point		not available	
Explosion limits	lower	not available	
	upper	not available	
Density		not available	
Bulk density		~ 780	kg/m ³
Solubility in water	(20 °C)	170	g/l
log Pow		-4.48	(anhydrous) (calculated)

10. Stability and reactivity

Conditions to be avoided

Heating.

Substances to be avoided

Violent reactions possible with: strong oxidizing agents, acid anhydrides, acid halides.

Hazardous decomposition products

in the event of fire: See chapter 5.

Further information

The following applies in general to flammable organic substances and preparations: in correspondingly fine distribution, when whirled up a dust explosion potential may generally be assumed.

11. Toxicological information

Acute toxicity

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

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Further toxicological information

Possible symptoms:

After skin contact: Slight irritations.

After eye contact: Slight irritations.

Further data

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

12. Ecological information

Behavior in environmental compartments:

Distribution: log Pow: -4.48 (anhydrous) (calculated).

No bioaccumulation is to be expected (log Pow <1).

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:

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Packaging:

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14. Transport information

Road & Rail ADR, RID

UN 1830 SCHWEFELSAEURE, 8, II

Inland waterway ADN, ADNR not tested

Sea IMDG-Code

UN 1830 SULPHURIC ACID, 8, II

Ems F-A S-B

Air CAO, PAX

UN 1830 SULPHURIC ACID, 8, II

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15. Regulatory information

Labelling according to EC Directives

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

16. Other information

Reason for alteration

General update.

Regional representation:

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