

Material Safety Data Sheet

According to 91/155 EEC

Reviewed on 21.02.2005

1 Identification of substance:

- **Product details:** Reagent for water analysis
- **Product name:** Silica LR Set (Vario Silica Citric Acid F10)
- **Catalog number:** 251 411 **Model:** Si-1 TP (LR)
- **Supplier:**
WTW Wissenschaftlich-Technische Werkstätten GmbH
Dr.-Karl-Slevogt-Straße 1
D-82362 Weilheim Tel.: +49(0)881 183-0 Internet: <http://www.WTW.com>
Fax: +49(0)881 183-420 Tel.: +49(0)881 183-100 E-Mail: Info@WTW.com
- **Emergency information:**
Poison Center Berlin, Germany
Tel.: +49(0)30 19240

2 Composition/Data on components:

- **Chemical characterization:**
- **CAS No. Designation:**
77-92-9 citric acid
- **Identification number(s):**
- **EINECS Number:** 201-069-1

3 Hazards identification

- **Hazard designation:**



Xi Irritant

- **Information pertaining to particular dangers for man and environment**
R 36 Irritating to eyes.

4 First aid measures

- **After inhalation** Supply fresh air and call for doctor for safety reasons.
- **After skin contact** Instantly wash with water and soap and rinse thoroughly.
- **After eye contact**
Rinse opened eye for several minutes under running water.
Call a doctor immediately.
- **After swallowing**
Drink copious amounts of water, induce vomiting.
Seek medical treatment.
- **The following symptoms may occur:**
after swallowing:
sickness
diarrhoea
mucous membrane irritation

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Product name Silica LR Set (Vario Silica Citric Acid F10)

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cramps

5 Fire fighting measures

· Suitable extinguishing agents

Water

Foam

Fire-extinguishing powder

· Special hazards caused by the material, its products of combustion or resulting gases:

Formation of toxic gases is possible during heating or in case of fire.

combustible

· Protective equipment:

Wear self-contained breathing apparatus.

Wear full protective suit.

· Additional information

Ambient fire may liberate hazardous vapours.

Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.

Collect contaminated fire fighting water separately. It must not enter drains.

6 Accidental release measures

· Person-related safety precautions:

Wear protective equipment. Keep unprotected persons away.

Avoid causing dust.

· Measures for environmental protection: Do not allow product to reach sewage system or water bodies.**· Measures for cleaning/collecting:**

Ensure adequate ventilation.

Collect mechanically.

Dispose of contaminated material as waste according to item 13.

7 Handling and storage

· Handling**· Information for safe handling:** No special measures required.**· Information about protection against explosions and fires:** Protect from heat.**· Storage****· Requirements to be met by storerooms and containers:** Store in cool location.**· Information about storage in one common storage facility:** Store away from metals.**· Further information about storage conditions:**

Keep container tightly sealed.

Store under dry conditions.

Protect from humidity and keep away from water.

Protect from the effects of light.

· Storage class Not required.

8 Exposure controls and personal protection

· Additional information about design of technical systems: No further data; see item 7.**· Components with limit values that require monitoring at the workplace:** Not required.**· Additional information:** The lists that were valid during the compilation were used as basis.**· Personal protective equipment****· General protective and hygienic measures**Keep away from foodstuffs, beverages and food.

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- Take off immediately all contaminated clothing
- Wash hands during breaks and at the end of the work.
- Avoid contact with the eyes and skin.
- **Breathing equipment:** Use breathing protection against the effects of fumes/dust/aerosol.
- **Recommended filter device for short term use:** Filter P2
- **Protection of hands:**
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
After use of gloves apply skin-cleaning agents and skin cosmetics.
- **Material of gloves**
nitrile rubber, NBR
Nitrile
Recommended thickness of the material: ≥ 0.11 mm
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
- **Penetration time of glove material**
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
Value for the permeation: Level ≥ 6 (480 min)
- **Eye protection:** Tightly sealed safety glasses.
- **Body protection:** Protective work clothing.

9 Physical and chemical properties:

· Form:	Powder
· Colour:	White
· Odour:	Odourless
· Melting point/Melting range:	153°C
· Boiling point/Boiling range:	Not determined
· Flash point:	Not applicable
· Inflammability (solid, gaseous)	Product is not inflammable.
· Ignition temperature:	345°C
· Danger of explosion:	Product is not explosive.
· Vapour pressure at 20°C:	< 0.1 hPa
· Density at 20°C	1.665 g/cm^3
· Settled apparent density at 20°C	560 kg/m^3
· Solubility in / Miscibility with Water at 20°C:	1330 g/l
· pH-value (7.93 g/l) at 20°C:	2.2
· Organic solvents:	0.0 %
· Solids content:	100.0 %

10 Stability and reactivity

- **Thermal decomposition / conditions to be avoided:** To avoid thermal decomposition do not overheat.
- **Materials to be avoided:**
oxidizing agents
alkalis
metals
reducing agents
- **Dangerous reactions** Risk of dust explosion if enriched with fine dust in presence of air

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Product name: Silica LR Set (Vario Silica Citric Acid F10)

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· **Dangerous products of decomposition:** see chapter 5

11 Toxicological information

· **Acute toxicity:**

· **LD/LC50 values that are relevant for classification:**

77-92-9 citric acid

Oral	LD50	3000 mg/kg (rat)
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· **Primary irritant effect:**

· **on the skin:** Irritant to skin and mucous membranes.

· **on the eye:** Irritant effect.

· **Sensitization:** No sensitizing effect known.

12 Ecological information:

· **Information about elimination (persistence and degradability):**

· **Other information:**

The product is easily biodegradable.

CAS: 77-92-9 Citric acid: 98% / 2 d

· **Behaviour in environmental systems:**

77-92-9 citric acid

log P(o/w)	-1.72 (20°C) (.)
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· **Mobility and bioaccumulation potential:** Does not accumulate in organisms

· **Ecotoxic effects:**

· **Aquatic toxicity:**

77-92-9 citric acid

Daphnia EC50	~ 120 mg/l/72 h (Daphnia magna)
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LC50	440-760 mg/l/96h (Leuciscus idus)
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· **Additional ecological information:**

· **CSB-value:**

77-92-9 citric acid

COD	0.728 g/g (.)
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· **BSB5-value:**

77-92-9 citric acid

BSB5	0.526 g/g (.)
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· **General notes:**

Water hazard class 1 (German Regulation) (Assessment by list): slightly hazardous for water.

Do not allow undiluted product or large quantities of it to reach ground water, water bodies or sewage system.

Must not reach sewage water or drainage ditch undiluted or unneutralized.

Rinse off of bigger amounts into drains or the aquatic environment may lead to decreased pH-values. A low pH-value harms aquatic organisms. In the dilution of the use-level the pH-value is considerably increased, so that after the use of the product the aqueous waste, emptied into drains, is only low water-dangerous.

13 Disposal considerations

· **Product:**

· **Recommendation** Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

· **European waste catalogue**

16 05 08	discarded organic chemicals consisting of or containing dangerous substances
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Product name: Silica LR Set (Vario Silica Citric Acid F10)

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- **Uncleaned packagings:**
 - **Recommendation:** Disposal must be made according to official regulations.
 - **Recommended cleaning agent:** Water, if necessary with cleaning agent.
-

14 Transport information

- **ADR/GGVSE:**
 - **IMDG/GGVSee:**
 - **EMS-Number:**
 - **ICAO/IATA:**
 - **Transport/Additional information:** Not dangerous according to the above specifications.
-

15 Regulatory information

- **Designation according to EC guidelines:**
The product has been classified and labelled in accordance with EC Directives / Ordinance on Hazardous Materials (GefStoffV)
 - **Code letter and hazard designation of product:**
Xi Irritant
 - **Risk phrases:**
36 Irritating to eyes.
 - **Safety phrases:**
26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
-

16 Other information

These data are based on our present knowledge. However, they shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Department issuing data specification sheet:** Department TSS, Dr. Manfred Kaul
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Material Safety Data Sheet According to 91/155 EEC

Reviewed on 24.02.2005

*** 1 Identification of substance:**

- **Product details:** Reagent for water analysis
- **Product name:** Silica LR Set (Vario Silica LR Amino Acid F10)
- **Catalog number:** 251 411 **Model:** Si-1 TP (LR)
- **Supplier:**
 WTW Wissenschaftlich-Technische Werkstätten GmbH
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 Fax: +49(0)881 183-420 Tel.: +49(0)881 183-100 E-Mail: Info@WTW.com
- **Emergency information:**
 Poison Center Berlin, Germany
 Tel.: +49(0)30 19240

*** 2 Composition/Data on components:**

· **Description:** Mixture of the substances listed below with harmless additions.



· **Dangerous components:**

CAS: 7681-57-4 EINECS: 231-673-0 EC Number: 016-063-00-2	disodium disulphite	☒ Xn; R 22-31-41	60-70%
CAS: 55-55-0 EINECS: 200-237-1 EC Number: 650-031-00-4	bis(4-hydroxy-N-methylanilinium) sulphate	☒ Xn, ☒ N; R 22-43-48/22-50/53	25-30%
CAS: 7758-98-7 EINECS: 231-847-6 EC Number: 029-004-00-0	copper sulphate	☒ Xn, ☒ N; R 22-36/38-50/53	0.1-1.0%

· **Additional information** For the wording of the listed risk phrases refer to section 16.

*** 3 Hazards identification**

· **Hazard designation:**

		Xn Harmful N Dangerous for the environment
-------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------	-----------------------------------------------

· **Information pertaining to particular dangers for man and environment**

The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.

- R 22 Harmful if swallowed.
- R 31 Contact with acids liberates toxic gas.
- R 41 Risk of serious damage to eyes.
- R 43 May cause sensitisation by skin contact.
- R 48/22 Harmful: danger of serious damage to health by prolonged exposure if swallowed.
- R 50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

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Product name: Silica LR Set (Vario Silica LR Amino Acid F10)

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· Classification system

The classification is in line with current EC lists. It is expanded, however, by information from technical literature and by information furnished by supplier companies.

*** 4 First aid measures****· General information**

Instantly remove any clothing soiled by the product.

Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

· **After inhalation** Supply fresh air; consult doctor in case of symptoms.

· After skin contact

Instantly wash with water and soap and rinse thoroughly.

Seek medical treatment.

· After eye contact

Rinse opened eye for several minutes under running water.

Call a doctor immediately.

· After swallowing

Drink copious amounts of water and provide fresh air. Instantly call for doctor.

Induce vomiting.

· The following symptoms may occur:

after inhalation:

breathing difficulty

coughing

mucous membrane irritation

after swallowing:

gastric or intestinal trouble

irritation

· **Danger** risk of skin sensitization

*** 5 Fire fighting measures****· Suitable extinguishing agents**

Use fire fighting measures that suit the environment.

CO₂, extinguishing powder or water jet. Fight larger fires with water jet or alcohol-resistant foam.

· Special hazards caused by the material, its products of combustion or resulting gases:

Formation of toxic gases is possible during heating or in case of fire.

Sulphur oxides (SO_x)

Sodium oxide

· Protective equipment:

Wear self-contained breathing apparatus.

Wear full protective suit.

· Additional information

Ambient fire may liberate hazardous vapours.

Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.

Collect contaminated fire fighting water separately. It must not enter drains.

*** 6 Accidental release measures****· Person-related safety precautions:**

Wear protective equipment. Keep unprotected persons away.

Avoid causing dust.

· Measures for environmental protection:

Do not allow product to reach sewage system or water bodies.

Inform respective authorities in case product reaches water or sewage system.

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Product name: Silica LR Set (Vario Silica LR Amino Acid F10)

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- **Measures for cleaning/collecting:**
 - Collect mechanically.
 - Ensure adequate ventilation.
 - Dispose of contaminated material as waste according to item 13.

* 7 Handling and storage

- **Handling**
- **Information for safe handling:** No special measures required.
- **Information about protection against explosions and fires:** Protect from heat.
- **Storage**
- **Requirements to be met by storerooms and containers:** Store in cool location.
- **Information about storage in one common storage facility:**
 - Do not store together with acids.
 - Store away from oxidizing agents.
- **Further information about storage conditions:**
 - Store under dry conditions.
 - Protect from humidity and keep away from water.
 - Protect from the effects of light.
- **Storage class** Not required.

* 8 Exposure controls and personal protection

- **Additional information about design of technical systems:** No further data; see item 7.

- **Components with limit values that require monitoring at the workplace:**

7681-57-4 disodium disulphite
OES (Great Britain) Long-term value: 5 mg/m ³

- **Additional information:** The lists that were valid during the compilation were used as basis.

- **Personal protective equipment**

- **General protective and hygienic measures**

Keep away from foodstuffs, beverages and food.

Take off immediately all contaminated clothing

Wash hands during breaks and at the end of the work.

Avoid contact with the eyes.

Do not eat, drink or smoke while working.

- **Breathing equipment:** Use breathing protection against the effects of fumes/dust/aerosol.

- **Recommended filter device for short term use:** Filter P2

- **Protection of hands:**

Only use chemical-protective gloves with CE-labelling of category III.

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

After use of gloves apply skin-cleaning agents and skin cosmetics.

- **Material of gloves**

Nitrile

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

Recommended thickness of the material: ≥ 0.11 mm

- **Penetration time of glove material**

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

Value for the permeation: Level ≥ 6 (480 min)

- **Eye protection:** Tightly sealed safety glasses.

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Material Safety Data Sheet

According to 91/155 EEC

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Product name: Silica LR Set (Vario Silica LR Amino Acid F10)

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· **Body protection:** Protective work clothing.

* 9 Physical and chemical properties:

· Form:	Powder
· Colour:	White
· Odour:	Odourless
· Melting point/Melting range:	Not determined
· Boiling point/Boiling range:	Not determined
· Flash point:	Not applicable
· Self-inflammability:	Product is not selfigniting.
· Danger of explosion:	Product is not explosive.
· Density at 20°C	1.255 g/cm ³
· Solubility in / Miscibility with Water:	Soluble
· pH-value (4 g/l) at 20°C:	5.3
· Solvent content:	
Organic solvents:	0.0 %
· Solids content:	100.0 %

* 10 Stability and reactivity

- **Thermal decomposition / conditions to be avoided:** strong heating
- **Materials to be avoided:**
 - oxidizing agents
 - > forms heat
 - acids
- **Dangerous reactions**
 - Reacts with strong acids and oxidizing agents
 - Contact with acids releases toxic gases
- **Dangerous products of decomposition:**
 - Carbon monoxide and carbon dioxide
 - Nitrogen oxides (NO_x)
 - Sulphur oxides (SO_x)

* 11 Toxicological information

- **Acute toxicity:** Quantitative data on the toxicity of the preparation are not available.

· LD/LC50 values that are relevant for classification:		
7681-57-4 disodium disulphite		
Oral	LD50	1540 mg/kg (rat)
55-55-0 bis(4-hydroxy-N-methylanilinium) sulphate		
Oral	LD50	237 mg/kg (rat)
Dermal	LD50	> 1000 mg/kg (rat)
7758-98-7 copper sulphate		
Oral	LD50	300 mg/kg (rat)
	LDLo	50 mg/kg (human)

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Product name: Silica LR Set (Vario Silica LR Amino Acid F10)

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Primary irritant effect:

- **on the skin:** Irritant to skin and mucous membranes.
- **on the eye:** Strong irritant with the danger of severe eye injury.
- **Sensitization:** Sensitization possible by skin contact.

Additional toxicological information:

The product shows the following dangers according to the calculation method of the General EC Classification Guidelines for Preparations as issued in the latest version:

Harmful
Irritant

* 12 Ecological information:

Information about elimination (persistence and degradability):

- **Other information:** Quantitative data on the ecological effect of this product are not available.

Ecotoxic effects:
Acquatic toxicity:
7681-57-4 disodium disulphite

EC50	89 mg/l/48h (Daphnia magna)
LC50	150-220 mg/l/96h (Onchorhynchus mykiss)

55-55-0 bis(4-hydroxy-N-methylanilinium) sulphate

Dermal	Daphnia EC50	0.019 mg/l/96h (Daphnia magna)
	LC50	0.25 mg/l/96h (Pimephales promelas)

7758-98-7 copper sulphate

EC50	0.024 mg/l/48h (Daphnia magna)
LC50	0.1-2.5 mg/l/96h (fish)

Remark:

Toxic for fish:
sulphates > 7 g/l

- **Algeal toxicity:** CAS No. 7681-57-4 Desmodesmus subspicatus IC50: 48mg/l/72 h

- **Bacterial toxicity:** CAS No. 7681-57-4 Pseudomonas putida EC50: 56 mg/l/17 h

Additional ecological information:
CSB-value:
7681-57-4 disodium disulphite

COD 0.168 g/g (.)

General notes:

Very toxic for aquatic organisms
copper ions at concentration below 1 mg/l
Water danger class 3 (German Regulation) (Self-assessment): extremely hazardous for water.
Do not allow product to reach ground water, water bodies or sewage system, even in small quantities.
Danger to drinking water if even extremely small quantities leak into soil.
The product contains materials that are harmful to the environment.

* 13 Disposal considerations

Product:

- **Recommendation** Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

European waste catalogue

16 05 06 | laboratory chemicals, consisting of or containing dangerous substances, including mixtures of laboratory chemicals

Uncleaned packagings:

- **Recommendation:** Disposal must be made according to official regulations.

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Material Safety Data Sheet

According to 91/155 EEC

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Product name: Silica LR Set (Vario Silica LR Amino Acid F10)

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· Recommended cleaning agent: Water, if necessary with cleaning agent.

* 14 Transport information

· ADR/GGVSE: UN 3316 CHEMIE-TESTSATZ, 9, II**· IMDG/GGVSee:** UN 3316 CHEMICAL KIT, 9, II
· EMS-Number: F-A S-P**· ICAO/IATA:** CHEMICAL KIT, 9, UN 3316, II

* 15 Regulatory information

· Designation according to EC guidelines:

The product has been classified and labelled in accordance with EC Directives / Ordinance on Hazardous Materials (GefStoffV)

· Code letter and hazard designation of product:

Xn Harmful

N Dangerous for the environment

· Hazard-determining components of labelling:

bis(4-hydroxy-N-methylanilinium) sulphate

disodium disulphite

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Material Safety Data Sheet

According to 91/155 EEC

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Product name: Silica LR Set (Vario Silica LR Amino Acid F10)

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· Risk phrases:

- 22 Harmful if swallowed.
- 31 Contact with acids liberates toxic gas.
- 41 Risk of serious damage to eyes.
- 43 May cause sensitisation by skin contact.
- 48/22 Harmful: danger of serious damage to health by prolonged exposure if swallowed.
- 50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

· Safety phrases:

- 24 Avoid contact with skin.
 - 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
 - 37/39 Wear suitable gloves and eye/face protection.
 - 57 Use appropriate container to avoid environmental contamination.
 - 60 This material and its container must be disposed of as hazardous waste.
-

16 Other information

These data are based on our present knowledge. However, they shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· Relevant R-phrases

- 22 Harmful if swallowed.
- 31 Contact with acids liberates toxic gas.
- 36/38 Irritating to eyes and skin.
- 41 Risk of serious damage to eyes.
- 43 May cause sensitisation by skin contact.
- 48/22 Harmful: danger of serious damage to health by prolonged exposure if swallowed.
- 50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

· Department issuing data specification sheet: Department TSS, Dr. Manfred Kaul**· Data compared to the previous version altered.**

Material Safety Data Sheet

According to 91/155 EEC

Reviewed on 24.02.2005

Product name: Silica LR Set (Molybdate 3 Reagent Solution)

(Contd. of page 1)

Immediate medical treatment necessary. Failure to treat burns can prevent wounds from healing.

· After eye contact

Rinse opened eye for several minutes under running water.

Call a doctor immediately.

· After swallowing Drink copious amounts of water and provide fresh air. Instantly call for doctor.**· The following symptoms may occur:**

after inhalation:

damage to the affected mucous membranes

after swallowing:

sickness

vomiting

diarrhoea

pain

coughing

breathing difficulty

· Danger Danger of gastric perforation.**· Treatment** Subsequent observation for pneumonia and pulmonary oedema

*** 5 Fire fighting measures****· Suitable extinguishing agents**

Use fire fighting measures that suit the environment.

CO₂, extinguishing powder or water jet. Fight larger fires with water jet or alcohol-resistant foam.

· Special hazards caused by the material, its products of combustion or resulting gases:

Development of hazardous combustion gases or vapours possible in the event of fire.

nitrous gases

Sulphur oxides (SO_x)

· Protective equipment:

Wear self-contained breathing apparatus.

Wear full protective suit.

· Additional information

Ambient fire may liberate hazardous vapours.

Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.

Collect contaminated fire fighting water separately. It must not enter drains.

*** 6 Accidental release measures****· Person-related safety precautions:**

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

· Measures for environmental protection: Do not allow product to reach sewage system or water bodies.**· Measures for cleaning/collecting:**

Dispose of contaminated material as waste according to item 13.

Ensure adequate ventilation.

Neutralize with diluted sodium hydroxide solution or by throwing on lime sand, lime or sodium carbonate.

Absorb with liquid-binding material (sand, diatomite, universal binders).

*** 7 Handling and storage****· Handling****· Information for safe handling:**

Ensure good ventilation/exhaustion at the workplace.

Open and handle container with care.

Prevent formation of aerosols.

Use only in well ventilated areas.

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Material Safety Data Sheet

According to 91/155 EEC

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Product name: Silica LR Set (Molybdate 3 Reagent Solution)

(Contd. of page 2)

- **Information about protection against explosions and fires:** The product is not flammable
 - **Storage**
 - **Requirements to be met by storerooms and containers:** Store in cool location.
 - **Information about storage in one common storage facility:** Store away from metals.
 - **Further information about storage conditions:**
 - Keep container tightly sealed.
 - Store under dry conditions.
 - Protect from humidity and keep away from water.
 - This product is hygroscopic.
 - Protect from the effects of light.
 - **Storage class** Not required.
-

* 8 Exposure controls and personal protection

- **Additional information about design of technical systems:** No further data; see item 7.
 - **Components with limit values that require monitoring at the workplace:**
 - The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
 - **Additional information:** The lists that were valid during the compilation were used as basis.
 - **Personal protective equipment**
 - **General protective and hygienic measures**
 - Keep away from foodstuffs, beverages and food.
 - Take off immediately all contaminated clothing
 - Wash hands during breaks and at the end of the work.
 - Do not inhale gases / fumes / aerosols.
 - Avoid contact with the eyes and skin.
 - Do not eat, drink or smoke while working.
 - **Breathing equipment:** Use breathing protection against the effects of fumes/dust/aerosol.
 - **Recommended filter device for short term use:** Filter P2
 - **Protection of hands:**
 - Acid resistant gloves
 - Only use chemical-protective gloves with CE-labelling of category III.
 - The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
 - Preventive skin protection by use of skin-protecting agents is recommended.
 - After use of gloves apply skin-cleaning agents and skin cosmetics.
 - **Material of gloves**
 - Nitrile
 - nitrile rubber, NBR
 - The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.
 - Recommended thickness of the material: ≥ 0.11 mm
 - **Penetration time of glove material**
 - The exact break trough time has to be found out by the manufacturer of the protective gloves and has to be observed.
 - Value for the permeation: Level ≥ 6 (480 min)
 - **Eye protection:** Tightly sealed safety glasses.
 - **Body protection:** Acid resistant protective clothing
-

* 9 Physical and chemical properties:

- | | |
|------------------------------------------------------|------------|
| · Form: | Fluid |
| · Colour: | Colourless |
| · Odour: | Odourless |
| · Melting point/Melting range: Not determined | |

(Contd. on page 4)

Material Safety Data Sheet

According to 91/155 EEC

Reviewed on 24.02.2005

Product name: Silica LR Set (Molybdate 3 Reagent Solution)

(Contd. of page 3)

· Boiling point/Boiling range:	100°C
· Flash point:	Not applicable
· Self-inflammability:	Product is not selfigniting.
· Danger of explosion:	Product is not explosive.
· Density at 20°C	1.23 g/cm ³
· Solubility in / Miscibility with Water:	Fully miscible
· pH-value at 20°C:	1.2
· Solvent content:	
Organic solvents:	0.0 %
Water:	> 70 %
· Solids content:	< 12 %

* 10 Stability and reactivity

- **Thermal decomposition / conditions to be avoided:** To avoid thermal decomposition do not overheat.
- **Materials to be avoided:**
 - ammonia
 - alkalis
 - acids
 - metals
 - halogen compounds
 - combustible substances
 - organic solvents
 - nitriles
 - peroxides
- **Dangerous reactions**
 - Corrosive action on metals
 - When diluting, always add acid to water, never vice versa
 - Reacts with metals forming hydrogen
 - > Explosive
 - Reacts with organic substances
 - Diluting or dissolving in water always causes rapid heating
- **Dangerous products of decomposition:**
 - nitrous gases
 - Sulphur oxides (SO_x)
 - see chapter 5

* 11 Toxicological information

- **Acute toxicity:** Quantitative data on the toxicity of the preparation are not available.

· LD/LC50 values that are relevant for classification:		
7664-93-9 sulphuric acid		
Oral	LD50	2140 (25%) mg/kg (rat)
Inhalative	LC 50	510 (pure) mg/m ³ /2h (rat)
10102-40-6 sodium molybdate		
Oral	LD50	4233 mg/kg (rat)
Dermal	LD50	> 2000 mg/kg (rat)

- **Primary irritant effect:**
- **on the skin:** Strong caustic effect on skin and mucous membranes.

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Material Safety Data Sheet

According to 91/155 EEC

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Product name: Silica LR Set (Molybdate 3 Reagent Solution)

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- **on the eye:** Strong caustic effect.
- **Sensitization:** No sensitizing effect known.
- **Additional toxicological information:**
The product shows the following dangers according to the calculation method of the General EC Classification Guidelines for Preparations as issued in the latest version:
Corrosive
Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

* 12 Ecological information:

- **Information about elimination (persistence and degradability):**
- **Other information:**
Quantitative data on the ecological effect of this product are not available.
Methods for the determination of biodegradability are not applicable to inorganic substances.
- **Ecotoxic effects:**

· Aquatic toxicity:	
7664-93-9 sulphuric acid	
Daphnia EC50	29 mg/l/24h (Daphnia magna)
10102-40-6 sodium molybdate	
EC50	330 mg/l/48h (Daphnia magna)
LC50	7600 mg/l/96h (Onchorhynchus mykiss)

- **Remark:**
Forms corrosive mixtures with water even if diluted.
Toxic for algae
- **Algal toxicity:** CAS-No. 10102-40-6: Selenastrum capricornutum IC50: > 100 mg/l/72 h
- **Bacterial toxicity:** CAS-No. 10102-40-6: Pseudomonas putida EC10: 50 mg/l/18 h
- **Remark:** neutralization possible
- **General notes:**
Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water.
Do not allow undiluted product or large quantities of it to reach ground water, water bodies or sewage system.
Must not reach sewage water or drainage ditch undiluted or unneutralized.
Rinse off of bigger amounts into drains or the aquatic environment may lead to decreased pH-values. A low pH-value harms aquatic organisms. In the dilution of the use-level the pH-value is considerably increased, so that after the use of the product the aqueous waste, emptied into drains, is only low water-dangerous.

* 13 Disposal considerations

- **Product:**
- **Recommendation**
Hand over to disposers of hazardous waste.
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

· European waste catalogue	
16 05 07	discarded inorganic chemicals consisting of or containing dangerous substances

- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.
- **Recommended cleaning agent:** Water, if necessary with cleaning agent.

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14 Transport information

· **ADR/GGVSE:** UN 3316 CHEMIE-TESTSATZ, 9, II

· **IMDG/GGVSee:** UN 3316 CHEMICAL KIT, 9, II
 · **EMS-Number:** F-A S-P

· **ICAO/IATA:** CHEMICAL KIT, 9, UN 3316, II

*15 Regulatory information

· **Designation according to EC guidelines:**

The product has been classified and labelled in accordance with EC Directives / Ordinance on Hazardous Materials (GefStoffV)

· **Code letter and hazard designation of product:**

C Corrosive

· **Hazard-determining components of labelling:**

sulphuric acid

· **Risk phrases:**

35 Causes severe burns.

· **Safety phrases:**

20 When using do not eat or drink.

23 Do not breathe fumes/aerosol.

25 Avoid contact with eyes.

26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

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Product name: Silica LR Set (Molybdate 3 Reagent Solution)

60 This material and its container must be disposed of as hazardous waste.

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16 Other information

These data are based on our present knowledge. However, they shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Relevant R-phrases**

35 Causes severe burns.

· **Department issuing data specification sheet:** Department TSS, Dr. Manfred Kaul

· **Data compared to the previous version altered.**

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