

07.12.2011

Kit Components

Product code	Description
35077	SERVA Silver Stain Kit native Gele

Components:

400050	Silver nitrate solution
400052	Sodium carbonate solution
400051	Citric acid solution
400053	Formaldehyde solution 37%
400098	Sodium Thiosulfate Pentahydrate
36913	Trichloroacetic acid, 20 % solution

Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 07.12.2011

Version number 1

Revision: 21.03.2011

1 Identification of the substance/mixture and of the company/undertaking

- **1.1. Product identifier**
- **Trade name:** Silver nitrate solution
- **Article number:** 400050
- **1.2. Relevant identified uses of the substance or mixture and uses advised against**
- **Application of the substance / the preparation** Laboratory chemicals
- **1.3. Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**
SERVA Electrophoresis GmbH
Carl-Benz-Str. 7
D-69115 Heidelberg
Tel.: +49 6221 13840-0
FAX: +49 6221 13840-10
msds.info@serva.de
- **Information department:** Product Safety department Tel.: +49 6221 13840-35
- **1.4. Emergency telephone number:** +49 6131 19240 (university hospital Mainz)

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2 Hazards identification

- **2.1. Classification of the substance or mixture**
- **Classification according to Regulation (EC) No 1272/2008**



GHS05

Eye Dam. 1 H318 Causes serious eye damage.



GHS09

Aquatic Chronic 2 H411 Toxic to aquatic life with long lasting effects.



GHS07

Skin Irrit. 2 H315 Causes skin irritation.

- **Classification according to Directive 67/548/EEC or Directive 1999/45/EC**



N; Dangerous for the environment

R50/53: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

- **Information concerning particular hazards for human 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.
- **Classification system:**
The classification was made according to the latest editions of the EU-lists, and expanded upon from company and literature data.

- **2.2. Label elements**
- **Labelling according to Regulation (EC) No 1272/2008**
The product is classified and labelled according to the CLP regulation.
- **Hazard pictograms** GHS05, GHS09
- **Signal word** Danger
- **Hazard statements**
H315 Causes skin irritation.
H318 Causes serious eye damage.

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H411 Toxic to aquatic life with long lasting effects.

· **Precautionary statements**

- P273 Avoid release to the environment.
 P305+P351+P338 **IF IN EYES:** Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P302+P352 **IF ON SKIN:** Wash with plenty of soap and water.
 P332+P313 **If skin irritation occurs:** Get medical advice/attention.
 P362 Take off contaminated clothing and wash before reuse.
 P391 Collect spillage.

· **2.3. Other hazards**

· **Results of PBT and vPvB assessment**







- **PBT:** Not applicable.
 · **vPvB:** Not applicable.

3 Composition/information on ingredients

· **3.2. Chemical characterization: Mixtures**

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

· **Dangerous components:**

CAS: 7761-88-8	silver nitrate	2.5-7%
EINECS: 231-853-9	 C R34;  N R50/53	
 Ox. Sol. 2, H272;  Skin Corr. 1B, H314;  Aquatic Acute 1, H400;  Aquatic Chronic 1, H410		

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

4 First aid measures

· **4.1. Description of first aid measures**

- **After inhalation** Supply fresh air; consult doctor in case of complaints.
 · **After skin contact** Immediately rinse with water.
 · **After eye contact** Rinse opened eye for several minutes under running water.
 · **After swallowing**
 Rinse out mouth and then drink plenty of water.
 If symptoms persist consult doctor.

· **Information for doctor**

· **4.2. Most important symptoms and effects, both acute and delayed**

No further relevant information available.

· **4.3. Indication of any immediate medical attention and special treatment needed**

No further relevant information available.

5 Firefighting measures

· **5.1. Extinguishing media**

· **Suitable extinguishing agents** Use fire fighting measures that suit the environment.

· **5.2. Special hazards arising from the substance or mixture** No further relevant information available.

· **5.3. Advice for firefighters**

· **Protective equipment:** Wear self-contained respiratory protective device.

6 Accidental release measures

· **6.1. Personal precautions, protective equipment and emergency procedures** Wear protective clothing.

· **6.2. Environmental precautions:**

Do not allow to enter sewers/ surface or ground water.

Inform respective authorities in case of seepage into water course or sewage system.

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- **6.3. Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
- **6.4. Reference to other sections**
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

- **Handling**
- **7.1. Precautions for safe handling** *Ensure good ventilation/exhaustion at the workplace.*
- **Information about protection against explosions and fires:** *No special measures required.*
- **7.2. Conditions for safe storage, including any incompatibilities**
- **Storage**
- **Requirements to be met by storerooms and receptacles:** *No special requirements.*
- **Information about storage in one common storage facility:** *Not required.*
- **Further information about storage conditions:** *None.*
- **7.3. Specific end use(s)** *No further relevant information available.*

8 Exposure controls/personal protection

- **Additional information about design of technical systems:** *No further data; see item 7.*
- **8.1. Control parameters**
- **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 creation were used as basis.*
- **8.2. Exposure controls**
- **Personal protective equipment**
- **General protective and hygienic measures** *Wash hands before breaks and at the end of work.*
- **Breathing equipment:** *Suitable respiratory protective device recommended.*
- **Protection of hands:**
Protective gloves.
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
- **Material of gloves**
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.
- **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.
- **For the permanent contact of a maximum of 15 minutes gloves made of the following materials are suitable:**
Nitrile rubber, NBR
Chloroprene rubber, CR
- **Eye protection:** *Tightly sealed goggles.*
- **Body protection:** *Protective work clothing.*

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Trade name: Silver nitrate solution

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9 Physical and chemical properties

· 9.1. Information on basic physical and chemical properties

· General Information

· Appearance:

Form:	Solution
Colour:	Colourless
Odour:	Odourless

· pH-value at 20°C: 10.8

· Change in condition

Melting point/Melting range: undetermined
Boiling point/Boiling range: ca. 100°C

· Flash point: Not applicable

· Self igniting: Product is not selfigniting.

· Danger of explosion: Product does not present an explosion hazard.

· Density at 20°C: 1.1005 g/cm³

· Solubility in / Miscibility with

Water: Fully miscible

· Solvent content:

Organic solvents: 0.0 %

Solids content: 3.0 %

· 9.2. Other information: There are no more data available.

10 Stability and reactivity

· 10.1. Reactivity

· 10.2. Chemical stability

· Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.

· 10.3. Possibility of hazardous reactions: No dangerous reactions known

· 10.4. Conditions to avoid: No further relevant information available.

· 10.5. Incompatible materials: No further relevant information available.

· 10.6. Hazardous decomposition products: No dangerous decomposition products known

11 Toxicological information

· 11.1. Information on toxicological effects

· Acute toxicity:

· LD/LC50 values that are relevant for classification:

7761-88-8 silver nitrate

Oral	LD50	50 mg/kg (Maus)
		1173 mg/kg (rat)
	LC50/96h	0.0085 mg/l (Fish)

· Primary irritant effect:

· on the skin: No irritant effect.

· on the eye: No irritating effect.

· Sensitization: No sensitizing effects known.

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Trade name: Silver nitrate solution

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12 Ecological information

· 12.1. Toxicity

· Aquatic toxicity:

7761-88-8 silver nitrate

EC50/48h 0.0006 mg/l (*Daphnia magna*)

· 12.2. Persistence and degradability

No further relevant information available.

· Behaviour in environmental systems:

· 12.3. Bioaccumulative potential

No further relevant information available.

· 12.4. Mobility in soil

No further relevant information available.

· Ecotoxicological effects:

· **Remark:** Very toxic for fish

· Additional ecological information:

· General notes:

Water danger class 3 (German Regulation) (Self-assessment): extremely hazardous for water.

Do not allow product to reach ground water, water course or sewage system, even in small quantities.

Danger to drinking water if even extremely small quantities leak into the ground.

Also poisonous for fish and plankton in water bodies.

Very toxic for aquatic organisms

· 12.5. Results of PBT and vPvB assessment

· **PBT:** PBT - assessment not available.

· **vPvB:** vPvB - assessment not available.

· 12.6. Other adverse effects

No further relevant information available.

13 Disposal considerations

· 13.1. Waste treatment methods

· Recommendation

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

· Uncleaned packagings:

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

· **Recommended cleansing agent:** Water, if necessary with cleansing agents.

14 Transport information

· 14.1. UN-Number

· ADR, IMDG, IATA

3082

· 14.2. UN proper shipping name

· ADR

3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE,
LIQUID, N.O.S. (SILVER NITRATE)

· IMDG

ENVIRONMENTALLY HAZARDOUS SUBSTANCE,
LIQUID, N.O.S. (SILVER NITRATE)

· IATA

Environmentally hazardous substance, liquid, n.o.s.
(Silver nitrate)

· 14.3. Transport hazard class(es)

· ADR, IMDG, IATA



· Class

9 Miscellaneous dangerous substances and articles.

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· Label	9
· 14.4. Packing group · ADR, IMDG, IATA	III
· 14.5. Environmental hazards: · Marine pollutant:	Product contains environmentally hazardous substances: silver nitrate Yes
· Special marking (ADR): · Special marking (IATA):	Symbol (fish and tree) Symbol (fish and tree) Symbol (fish and tree)
· 14.6. Special precautions for user · Danger code (Kemler): · EMS Number:	Warning: Miscellaneous dangerous substances and articles. 90 F-A,S-F
· 14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
· Transport/Additional information:	
· ADR · Tunnel restriction code	E
· UN "Model Regulation":	UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., 9, III

* 15 Regulatory information

- **15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **National regulations**
- **Water hazard class: Water danger class 3 (Self-assessment): extremely hazardous for water.**
- **15.2. Chemical safety assessment: A Chemical Safety Assessment has not been carried out.**

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Relevant phrases**

H272 May intensify fire; oxidiser.
H314 Causes severe skin burns and eye damage.
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.

R34 Causes burns.
R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

- **Department issuing MSDS: Product safety department**

- **Contact: +49 6221 13840-35**

- **Abbreviations and acronyms:**

PBT: persistent, bioaccumulative, toxic substance (REACH)

vPvB: very persistent, very bioaccumulative substance (REACH)

REACH: Regulation concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals

CLP: Regulation on classification, labelling and packaging of substances and mixtures

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

ICAO: International Civil Aviation Organization

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Trade name: Silver nitrate solution

GHS: Globally Harmonized System of Classification and Labelling of Chemicals
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent

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

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Printing date 07.12.2011

Version number 1

Revision: 21.03.2011

1 Identification of the substance/mixture and of the company/undertaking

- 1.1. **Product identifier**
- **Trade name:** Sodium carbonate solution
- **Article number:** 400052
- 1.2. **Relevant identified uses of the substance or mixture and uses advised against**
- **Application of the substance / the preparation** Laboratory chemicals
- 1.3. **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**
SERVA Electrophoresis GmbH
Carl-Benz-Str. 7
D-69115 Heidelberg
Tel.: +49 6221 13840-0
FAX: +49 6221 13840-10
msds.info@serva.de
- **Information department:** Product Safety department Tel.: +49 6221 13840-35
- 1.4. **Emergency telephone number:** +49 6131 19240 (university hospital Mainz)

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2 Hazards identification

- 2.1. **Classification of the substance or mixture**
- **Classification according to Regulation (EC) No 1272/2008**



GHS05

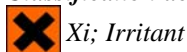
Skin Corr. 1C H314 Causes severe skin burns and eye damage.



GHS07

Eye Irrit. 2 H319 Causes serious eye irritation.

- **Classification according to Directive 67/548/EEC or Directive 1999/45/EC**



Xi; Irritant

R36: Irritating to eyes.

- **Information concerning particular hazards for human 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.

- **Classification system:**

The classification was made according to the latest editions of the EU-lists, and expanded upon from company and literature data.

- 2.2. **Label elements**

- **Labelling according to Regulation (EC) No 1272/2008**

The product is classified and labelled according to the CLP regulation.

- **Hazard pictograms** GHS05

- **Signal word** Danger

- **Hazard statements**

H314 Causes severe skin burns and eye damage.

H319 Causes serious eye irritation.

- **Precautionary statements**

P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

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- P304+P340 **IF INHALED:** Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P305+P351+P338 **IF IN EYES:** Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P301+P330+P331 **IF SWALLOWED:** rinse mouth. Do NOT induce vomiting.
- P337+P313 **If eye irritation persists:** Get medical advice/attention.
- P363 Wash contaminated clothing before reuse.

- **2.3. Other hazards**
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.

3 Composition/information on ingredients

- **3.2. Chemical characterization: Mixtures**
- **Description:** Mixture of the substances listed below with harmless additions.

· **Dangerous components:**

CAS: 497-19-8	sodium carbonate	 Xi R36	15-30%
EINECS: 207-838-8		 Eye Irrit. 2, H319	

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

4 First aid measures

- **4.1. Description of first aid measures**
- **After inhalation** Supply fresh air; consult doctor in case of complaints.
- **After skin contact** Immediately rinse with water.
- **After eye contact**
Rinse opened eye for several minutes under running water. If symptoms persist, consult doctor.
- **After swallowing**
Rinse out mouth and then drink plenty of water.
If symptoms persist consult doctor.
- **Information for doctor**
- **4.2. Most important symptoms and effects, both acute and delayed**
No further relevant information available.
- **4.3. Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

5 Firefighting measures

- **5.1. Extinguishing media**
- **Suitable extinguishing agents** Use fire fighting measures that suit the environment.
- **5.2. Special hazards arising from the substance or mixture** No further relevant information available.
- **5.3. Advice for firefighters**
- **Protective equipment:** Mount respiratory protective device.

6 Accidental release measures

- **6.1. Personal precautions, protective equipment and emergency procedures** Wear protective clothing.
- **6.2. Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
- **6.3. Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
- **6.4. Reference to other sections**
See Section 8 for information on personal protection equipment.

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Trade name: Sodium carbonate solution

See Section 13 for disposal information.

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7 Handling and storage

- **Handling**
- **7.1. Precautions for safe handling** Ensure good ventilation/exhaustion at the workplace.
- **Information about protection against explosions and fires:** The product is not flammable
- **7.2. Conditions for safe storage, including any incompatibilities**
- **Storage**
- **Requirements to be met by storerooms and receptacles:** No special requirements.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:** Keep receptacle tightly sealed.
- **7.3. Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.
- **8.1. Control parameters**
- **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 creation were used as basis.
- **8.2. Exposure controls**
- **Personal protective equipment**
- **General protective and hygienic measures**
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.
- **Breathing equipment:** Suitable respiratory protective device recommended.
- **Protection of hands:**
Protective gloves.
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
- **Material of gloves**
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.
- **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.
- **For the permanent contact of a maximum of 15 minutes gloves made of the following materials are suitable:**
Natural rubber, NR
Nitrile rubber, NBR
- **Eye protection:** Tightly sealed goggles.
- **Body protection:** Protective work clothing.

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Trade name: Sodium carbonate solution

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9 Physical and chemical properties

· 9.1. Information on basic physical and chemical properties

· General Information

· Appearance:

Form:	Fluid
Colour:	Colourless
Odour:	Odourless

· pH-value at 20°C: 11.6

· Change in condition

Melting point/Melting range: undetermined
Boiling point/Boiling range: ca. 100°C

· Flash point: Not applicable

· Self igniting: Product is not selfigniting.

· Danger of explosion: Product does not present an explosion hazard.

· Density at 20°C: 1.3066 g/cm³

· Solubility in / Miscibility with

Water: Fully miscible

· Solvent content:

Organic solvents: 0.0 %

Solids content: 20.0 %

· 9.2. Other information: There are no more data available.

10 Stability and reactivity

· 10.1. Reactivity

· 10.2. Chemical stability

· Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.

· 10.3. Possibility of hazardous reactions: No dangerous reactions known

· 10.4. Conditions to avoid: No further relevant information available.

· 10.5. Incompatible materials: No further relevant information available.

· 10.6. Hazardous decomposition products: No dangerous decomposition products known

11 Toxicological information

· 11.1. Information on toxicological effects

· Acute toxicity:

· Primary irritant effect:

· on the skin: No irritant effect.

· on the eye: Irritating effect.

· Sensitization: No sensitizing effects known.

· Additional toxicological information:

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

Irritant

12 Ecological information

· 12.1. Toxicity

· Aquatic toxicity: No further relevant information available.

· 12.2. Persistence and degradability: No further relevant information available.

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- **Behaviour in environmental systems:**
- **12.3. Bioaccumulative potential** No further relevant information available.
- **12.4. Mobility in soil** No further relevant information available.
- **Additional ecological information:**
- **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 course or sewage system.
Rinse off of bigger amounts into drains or the aquatic environment may lead to increased pH-values. A high pH-value harms aquatic organisms. In the dilution of the use-level the pH-value is considerably reduced, so that after the use of the product the aqueous waste, emptied into drains, is only low water-dangerous.
- **12.5. Results of PBT and vPvB assessment**
- **PBT:** PBT - assessment not available.
- **vPvB:** vPvB - assessment not available.
- **12.6. Other adverse effects** No further relevant information available.

13 Disposal considerations

- **13.1. Waste treatment methods**
- **Recommendation**
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.

14 Transport information

- | | |
|--|--|
| · 14.1. UN-Number
· ADR, ADN, IMDG, IATA | Void |
| · 14.2. UN proper shipping name
· ADR, ADN, IMDG, IATA | Void |
| · 14.3. Transport hazard class(es)
· ADR, ADN, IMDG, IATA
· Class | Void |
| · 14.4. Packing group
· ADR, IMDG, IATA | Void |
| · 14.5. Environmental hazards:
· Marine pollutant: | Not applicable.
No |
| · 14.6. Special precautions for user | Not applicable. |
| · 14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code | Not applicable. |
| · Transport/Additional information: | Not dangerous according to the above specifications. |
| · UN "Model Regulation": | - |

15 Regulatory information

- **15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **National regulations**
- **Water hazard class:** Water hazard class 1 (Self-assessment): slightly hazardous for water.

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· **15.2. Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Relevant phrases**

H319 Causes serious eye irritation.

R36 Irritating to eyes.

· **Department issuing MSDS:** Product safety department

· **Contact:** +49 6221 13840-35

· **Abbreviations and acronyms:**

PBT: persistent, bioaccumulative, toxic substance (REACH)

vPvB: very persistent, very bioaccumulative substance (REACH)

REACH: Regulation concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals

CLP: Regulation on classification, labelling and packaging of substances and mixtures

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

ICAO: International Civil Aviation Organization

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

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

GB

Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 07.12.2011

Version number 1

Revision: 15.03.2011

1 Identification of the substance/mixture and of the company/undertaking

- **1.1. Product identifier**
- Trade name: Citric acid solution
- Article number: 400051
- **1.2. Relevant identified uses of the substance or mixture and uses advised against**
- Application of the substance / the preparation Laboratory chemicals
- **1.3. Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**
SERVA Electrophoresis GmbH
Carl-Benz-Str. 7
D-69115 Heidelberg
Tel.: +49 6221 13840-0
FAX: +49 6221 13840-10
msds.info@serva.de
- **Information department:** Product Safety department Tel.: +49 6221 13840-35
- **1.4. Emergency telephone number:** +49 6131 19240 (university hospital Mainz)

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2 Hazards identification

- **2.1. Classification of the substance or mixture**
- Classification according to Regulation (EC) No 1272/2008



GHS05

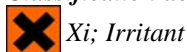
Skin Corr. 1C H314 Causes severe skin burns and eye damage.



GHS07

Eye Irrit. 2 H319 Causes serious eye irritation.

- Classification according to Directive 67/548/EEC or Directive 1999/45/EC



Xi; Irritant

R36: Irritating to eyes.

- **Information concerning particular hazards for human 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.

- **Classification system:**

The classification was made according to the latest editions of the EU-lists, and expanded upon from company and literature data.

- **2.2. Label elements**

- **Labelling according to Regulation (EC) No 1272/2008**

The product is classified and labelled according to the CLP regulation.

- **Hazard pictograms** GHS05

- **Signal word** Danger

- **Hazard statements**

H314 Causes severe skin burns and eye damage.

H319 Causes serious eye irritation.

- **Precautionary statements**

P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

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- P304+P340 **IF INHALED:** Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P305+P351+P338 **IF IN EYES:** Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P301+P330+P331 **IF SWALLOWED:** rinse mouth. Do NOT induce vomiting.
- P337+P313 **If eye irritation persists:** Get medical advice/attention.
- P363 Wash contaminated clothing before reuse.

- **2.3. Other hazards**
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.

3 Composition/information on ingredients

- **3.2. Chemical characterization: Mixtures**
- **Description:** Mixture of the substances listed below with harmless additions.

· **Dangerous components:**

CAS: 5949-29-1	Citric acid monohydrate	 Xi R36	15-30%
EINECS: 201-069-1		 Eye Irrit. 2, H319	

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

4 First aid measures

- **4.1. Description of first aid measures**
- **After inhalation** Supply fresh air; consult doctor in case of complaints.
- **After skin contact** Immediately rinse with water.
- **After eye contact** Rinse opened eye for several minutes under running water. Then consult doctor.
- **After swallowing**
Rinse out mouth and then drink plenty of water.
If symptoms persist consult doctor.
- **Information for doctor**
- **4.2. Most important symptoms and effects, both acute and delayed**
No further relevant information available.
- **4.3. Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

5 Firefighting measures

- **5.1. Extinguishing media**
- **Suitable extinguishing agents** Use fire fighting measures that suit the environment.
- **5.2. Special hazards arising from the substance or mixture** No further relevant information available.
- **5.3. Advice for firefighters**
- **Protective equipment:** Mount respiratory protective device.

6 Accidental release measures

- **6.1. Personal precautions, protective equipment and emergency procedures** Wear protective clothing.
- **6.2. Environmental precautions:**
Dilute with plenty of water.
Do not allow to enter sewers/ surface or ground water.
- **6.3. Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
- **6.4. Reference to other sections**
See Section 8 for information on personal protection equipment.

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See Section 13 for disposal information.

7 Handling and storage

- **Handling**
- **7.1. Precautions for safe handling** Ensure good ventilation/exhaustion at the workplace.
- **Information about protection against explosions and fires:** The product is not flammable
- **7.2. Conditions for safe storage, including any incompatibilities**
- **Storage**
- **Requirements to be met by storerooms and receptacles:** No special requirements.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:** Keep receptacle tightly sealed.
- **7.3. Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.
- **8.1. Control parameters**
- **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 creation were used as basis.
- **8.2. Exposure controls**
- **Personal protective equipment**
- **General protective and hygienic measures**
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.
- **Breathing equipment:** Suitable respiratory protective device recommended.
- **Protection of hands:**
Protective gloves.
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
- **Material of gloves**
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.
- **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.
- **For the permanent contact of a maximum of 15 minutes gloves made of the following materials are suitable:**
Nitrile rubber, NBR
Chloroprene rubber, CR
- **Eye protection:** Tightly sealed goggles.
- **Body protection:** Protective work clothing.

GB

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9 Physical and chemical properties

· 9.1. Information on basic physical and chemical properties

· General Information

· Appearance:

Form:	Solution
Colour:	Colourless
Odour:	Recognizable

· pH-value at 20°C: 1.4

· Change in condition

Melting point/Melting range: undetermined
Boiling point/Boiling range: ca. 100°C

· Flash point: Not applicable

· Self igniting: Product is not selfigniting.

· Danger of explosion: Product does not present an explosion hazard.

· Density at 20°C: 1.108 g/cm³

· Solubility in / Miscibility with

Water: Fully miscible

· Solvent content:

Organic solvents: 0.0 %

Solids content: 20.0 %

· 9.2. Other information: There are no more data available.

10 Stability and reactivity

· 10.1. Reactivity

· 10.2. Chemical stability

· Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.

· 10.3. Possibility of hazardous reactions: No dangerous reactions known

· 10.4. Conditions to avoid: No further relevant information available.

· 10.5. Incompatible materials: No further relevant information available.

· 10.6. Hazardous decomposition products: No dangerous decomposition products known

11 Toxicological information

· 11.1. Information on toxicological effects

· Acute toxicity:

· Primary irritant effect:

· on the skin: No irritant effect.

· on the eye: Irritating effect.

· Sensitization: No sensitizing effects known.

· Additional toxicological information:

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

Irritant

12 Ecological information

· 12.1. Toxicity

· Aquatic toxicity: No further relevant information available.

· 12.2. Persistence and degradability: No further relevant information available.

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- **Behaviour in environmental systems:**
- **12.3. Bioaccumulative potential** No further relevant information available.
- **12.4. Mobility in soil** No further relevant information available.
- **Additional ecological information:**
- **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 course or sewage system.
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.
- **12.5. Results of PBT and vPvB assessment**
- **PBT:** PBT - assessment not available.
- **vPvB:** vPvB - assessment not available.
- **12.6. Other adverse effects** No further relevant information available.

13 Disposal considerations

- **13.1. Waste treatment methods**
- **Recommendation**
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.
- **Recommended cleansing agent:** Water, if necessary with cleansing agents.

14 Transport information

- | | |
|--|--|
| · 14.1. UN-Number
· ADR, ADN, IMDG, IATA | Void |
| · 14.2. UN proper shipping name
· ADR, ADN, IMDG, IATA | Void |
| · 14.3. Transport hazard class(es)
· ADR, ADN, IMDG, IATA
· Class | Void |
| · 14.4. Packing group
· ADR, IMDG, IATA | Void |
| · 14.5. Environmental hazards:
· Marine pollutant: | Not applicable.
No |
| · 14.6. Special precautions for user | Not applicable. |
| · 14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code | Not applicable. |
| · Transport/Additional information: | Not dangerous according to the above specifications. |
| · UN "Model Regulation": | - |

15 Regulatory information

- **15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **National regulations**
- **Water hazard class:** Water hazard class 1 (Self-assessment): slightly hazardous for water.

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· **15.2. Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· Relevant phrases

H319 Causes serious eye irritation.

R36 Irritating to eyes.

· **Department issuing MSDS:** Product safety department

· **Contact:** +49 6221 13840-35

· Abbreviations and acronyms:

PBT: persistent, bioaccumulative, toxic substance (REACH)

vPvB: very persistent, very bioaccumulative substance (REACH)

REACH: Regulation concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals

CLP: Regulation on classification, labelling and packaging of substances and mixtures

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

ICAO: International Civil Aviation Organization

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

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

GB

Safety data sheet
according to 1907/2006/EC, Article 31

Printing date 07.12.2011

Version number 1

Revision: 05.12.2011

1 Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

· Trade name: Formaldehyde solution 37%

· Article number: 400053

1.2. Relevant identified uses of the substance or mixture and uses advised against

· Application of the substance / the preparation Laboratory chemicals

1.3. Details of the supplier of the safety data sheet

· Manufacturer/Supplier:

SERVA Electrophoresis GmbH

Carl-Benz-Str. 7

D-69115 Heidelberg

Tel.: +49 6221 13840-0

FAX: +49 6221 13840-10

msds.info@serva.de

· Information department: Product Safety department Tel.: +49 6221 13840-35

· 1.4. Emergency telephone number: +49 6131 19240 (university hospital Mainz)

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2 Hazards identification

2.1. Classification of the substance or mixture

· Classification according to Regulation (EC) No 1272/2008



GHS06

Acute Tox. 3 H311 Toxic in contact with skin.

Acute Tox. 3 H331 Toxic if inhaled.



GHS08

Carc. 2 H351 Suspected of causing cancer.

STOT SE 1 H370 Causes damage to organs.



GHS05

Skin Corr. 1B H314 Causes severe skin burns and eye damage.



GHS07

Acute Tox. 4 H302 Harmful if swallowed.

Skin Sens. 1 H317 May cause an allergic skin reaction.

· Classification according to Directive 67/548/EEC or Directive 1999/45/EC



T; Toxic

R23/24/25: Toxic by inhalation, in contact with skin and if swallowed.



C; Corrosive

R34: Causes burns.



Xn; Harmful

R40: Limited evidence of a carcinogenic effect.

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Revision: 05.12.2011

Trade name: **Formaldehyde solution 37%**

(Contd. of page 1)

 **Xi; Irritant**

R37: *Irritating to respiratory system.*

 **Xi; Sensitising**

R43: *May cause sensitisation by skin contact.*

· **Information concerning particular hazards for human 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.

· **Classification system:**

The classification was made according to the latest editions of the EU-lists, and expanded upon from company and literature data.

· **2.2. Label elements**

· **Labelling according to Regulation (EC) No 1272/2008**

The product is classified and labelled according to the CLP regulation.

· **Hazard pictograms** GHS05, GHS06, GHS08

· **Signal word** Danger

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

formaldehyde

methanol

· **Hazard statements**

H302 Harmful if swallowed.

H311 Toxic in contact with skin.

H331 Toxic if inhaled.

H314 Causes severe skin burns and eye damage.

H317 May cause an allergic skin reaction.

H351 Suspected of causing cancer.

H370 Causes damage to organs.

· **Precautionary statements**

P201 Obtain special instructions before use.

P281 Use personal protective equipment as required.

P301+P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P330 Rinse mouth.

· **2.3. Other hazards**

· **Results of PBT and vPvB assessment**

· **PBT:** Not applicable.

· **vPvB:** Not applicable.

*** 3 Composition/information on ingredients**

· **3.2. Chemical characterization: Mixtures**

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

· **Dangerous components:**

(Contd. on page 3)

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











according to 1907/2006/EC, Article 31

Printing date 07.12.2011

Version number 1

Revision: 05.12.2011

Trade name: Formaldehyde solution 37%

		(Contd. of page 2)
CAS: 50-00-0 EINECS: 200-001-8	formaldehyde  T R23/24/25;  C R34;  Xn R40;  Xi R43 Carc. Cat. 3 <hr style="border-top: 1px dashed black;"/>  Acute Tox. 3, H301;  Acute Tox. 3, H311;  Acute Tox. 3, H331;  Carc. 2, H351;  Skin Corr. 1B, H314;  Skin Sens. 1, H317	30-50%
CAS: 67-56-1 EINECS: 200-659-6	methanol  T R23/24/25-39/23/24/25;  F R11 <hr style="border-top: 1px dashed black;"/>  Flam. Liq. 2, H225;  Acute Tox. 3, H301;  Acute Tox. 3, H311;  Acute Tox. 3, H331;  STOT SE 1, H370	5-15%

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

* 4 First aid measures

- **4.1. Description of first aid measures**
- **General information** Remove contaminated clothing.
- **After inhalation**
Take affected persons into fresh air and keep quiet.
Call a doctor immediately.
- **After skin contact** Immediately rinse with water.
- **After eye contact** Rinse opened eye for several minutes under running water. Then consult doctor.
- **After swallowing** Drink copious amounts of water and provide fresh air. Call for doctor immediately.
- **Information for doctor**
- **4.2. Most important symptoms and effects, both acute and delayed**
No further relevant information available.
- **4.3. Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

* 5 Firefighting measures

- **5.1. Extinguishing media**
- **Suitable extinguishing agents** Use fire fighting measures that suit the environment.
- **5.2. Special hazards arising from the substance or mixture** No further relevant information available.
- **5.3. Advice for firefighters**
- **Protective equipment:** Mount respiratory protective device.

* 6 Accidental release measures

- **6.1. Personal precautions, protective equipment and emergency procedures**
Wear protective equipment. Keep unprotected persons away.
- **6.2. Environmental precautions:**
Dilute with plenty of water.
Do not allow to enter sewers/ surface or ground water.
- **6.3. Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.
- **6.4. Reference to other sections**
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

GB

(Contd. on page 4)

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Trade name: **Formaldehyde solution 37%**

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7 Handling and storage

- **Handling**
- **7.1. Precautions for safe handling**
Ensure good ventilation/exhaustion at the workplace.
Open and handle receptacle with care.
- **Information about protection against explosions and fires:** Keep respiratory protective device available.
- **7.2. Conditions for safe storage, including any incompatibilities**
- **Storage**
- **Requirements to be met by storerooms and receptacles:** No special requirements.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:** Keep receptacle tightly sealed.
- **7.3. Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

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

- **8.1. Control parameters**

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

50-00-0 formaldehyde (30-50%)

WEL	Short-term value: 2.5 mg/m ³ , 2 ppm
	Long-term value: 2.5 mg/m ³ , 2 ppm

- **Additional information:** The lists that were valid during the creation were used as basis.
- **8.2. Exposure controls**
- **Personal protective equipment**
- **General protective and hygienic measures**
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing
Wash hands before breaks and at the end of work.
Store protective clothing separately.
Avoid contact with the eyes and skin.
- **Breathing equipment:**
Short term filter device:
Filter P3.
- **Protection of hands:**
Protective gloves.
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
- **Material of gloves**
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.
- **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.
- **For the permanent contact of a maximum of 15 minutes gloves made of the following materials are suitable:**
Rubber gloves
PVA gloves
- **Eye protection:** Tightly sealed goggles.

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Trade name: Formaldehyde solution 37%

(Contd. of page 4)

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

9 Physical and chemical properties

· 9.1. Information on basic physical and chemical properties

· General Information

· Appearance:

Form:	Liquid
Colour:	Colourless
Odour:	Pungent

· Change in condition

Melting point/Melting range: undetermined
Boiling point/Boiling range: 64°C

· Flash point: > 55°C

· Self igniting: Product is not selfigniting.

· Danger of explosion: Product does not present an explosion hazard.

· Explosion limits:

Lower:	7.0 Vol %
Upper:	73.0 Vol %

· Density: Not determined

· Solubility in / Miscibility with

Water: Fully miscible

· Solvent content:

Organic solvents: 37.0 %

· 9.2. Other information: There are no more data available.

10 Stability and reactivity

· 10.1. Reactivity

· 10.2. Chemical stability

· Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.

· 10.3. Possibility of hazardous reactions: No dangerous reactions known

· 10.4. Conditions to avoid: No further relevant information available.

· 10.5. Incompatible materials: No further relevant information available.

· 10.6. Hazardous decomposition products: No dangerous decomposition products known

11 Toxicological information

· 11.1. Information on toxicological effects

· Acute toxicity:

· LD/LC50 values that are relevant for classification:

50-00-0 formaldehyde

Oral	LD50	>200 mg/kg (rat)
------	------	------------------

· Primary irritant effect:

· on the skin: Caustic effect on skin and mucous membranes.

· on the eye: Strong caustic effect.

· Sensitization: Sensitization possible through skin contact.

· Additional toxicological information:

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

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Toxic

Corrosive

Irritant

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

- **12.1. Toxicity**
- **Acquatic toxicity:** No further relevant information available.
- **12.2. Persistence and degradability** No further relevant information available.
- **Behaviour in environmental systems:**
- **12.3. Bioaccumulative potential** No further relevant information available.
- **12.4. Mobility in soil** No further relevant information available.
- **Additional ecological information:**
- **General notes:**
Water hazard class 2 (German Regulation) (Self-assessment): hazardous for water.
Do not allow product to reach ground water, water course or sewage system.
Must not reach sewage water or drainage ditch undiluted or unneutralized.
Danger to drinking water if even small quantities leak into the ground.
- **12.5. Results of PBT and vPvB assessment**
- **PBT:** PBT - assessment not available.
- **vPvB:** vPvB - assessment not available.
- **12.6. Other adverse effects** No further relevant information available.

13 Disposal considerations

- **13.1. Waste treatment methods**
- **Recommendation**
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.
- **Recommended cleansing agent:** Water, if necessary with cleansing agents.

14 Transport information

- | | |
|---|----------------------------|
| · 14.1. UN-Number | 2209 |
| · ADR, IMDG, IATA | |
| · 14.2. UN proper shipping name | 2209 FORMALDEHYDE SOLUTION |
| · ADR | FORMALDEHYDE SOLUTION |
| · IMDG | FORMALDEHYDE SOLUTION |
| · IATA | Formaldehyde solution |
| · 14.3. Transport hazard class(es) | |
| · ADR | |
|  | |
| · Class | 8 Corrosive substances. |

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Trade name: Formaldehyde solution 37%

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· Label	8
· IMDG, IATA	
	
· Class	8 Corrosive substances.
· Label	8
· 14.4. Packing group · ADR, IMDG, IATA	III
· 14.5. Environmental hazards: · Marine pollutant:	Not applicable. No
· 14.6. Special precautions for user · Danger code (Kemler): · EMS Number:	Warning: Corrosive substances. 80 F-A,S-B
· 14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
· Transport/Additional information:	
· ADR · Tunnel restriction code	E
· UN "Model Regulation":	UN2209, FORMALDEHYDE SOLUTION, 8, III

15 Regulatory information

- **15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **National regulations**
- **Technical instructions (air):**

Class	Share in %
I	30-50

- **Water hazard class:** Water hazard class 2 (Self-assessment): hazardous for water.
- **15.2. Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Relevant phrases**
- H225 Highly flammable liquid and vapour.
- H301 Toxic if swallowed.
- H311 Toxic in contact with skin.
- H314 Causes severe skin burns and eye damage.
- H317 May cause an allergic skin reaction.
- H331 Toxic if inhaled.
- H351 Suspected of causing cancer.
- H370 Causes damage to organs.
- R11 Highly flammable.
- R23/24/25 Toxic by inhalation, in contact with skin and if swallowed.

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R34 Causes burns.

R39/23/24/25 Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed.

R40 Limited evidence of a carcinogenic effect.

R43 May cause sensitisation by skin contact.

· **Department issuing MSDS:** Product safety department

· **Contact:** +49 6221 13840-35

· **Abbreviations and acronyms:**

PBT: persistent, bioaccumulative, toxic substance (REACH)

vPvB: very persistent, very bioaccumulative substance (REACH)

REACH: Regulation concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals

CLP: Regulation on classification, labelling and packaging of substances and mixtures

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

ICAO: International Civil Aviation Organization

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

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

GB

Safety data sheet
according to 1907/2006/EC, Article 31

Printing date 07.12.2011

Version number 1

Revision: 21.03.2011

1 Identification of the substance/mixture and of the company/undertaking

- **1.1. Product identifier**
- **Trade name:** Sodium Thiosulfate Pentahydrate
- **Article number:** 400098
- **CAS Number:**
10102-17-7
- **EC number:**
231-867-5
- **1.2. Relevant identified uses of the substance or mixture and uses advised against**
- **Application of the substance / the preparation** Laboratory chemicals
- **1.3. Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**
SERVA Electrophoresis GmbH
Carl-Benz-Str. 7
D-69115 Heidelberg
Tel.: +49 6221 13840-0
FAX: +49 6221 13840-10
msds.info@serva.de
- **Information department:** Product Safety department Tel.: +49 6221 13840-35
- **1.4. Emergency telephone number:** +49 6131 19240 (university hospital Mainz)

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2 Hazards identification

- **2.1. Classification of the substance or mixture**
- **Classification according to Regulation (EC) No 1272/2008**
The substance is not classified according to the CLP regulation.
- **Classification according to Directive 67/548/EEC or Directive 1999/45/EC not applicable**
- **Classification system:**
The classification was made according to the latest editions of the EU-lists, and expanded upon from company and literature data.
- **2.2. Label elements**
- **Labelling according to Regulation (EC) No 1272/2008** Void
- **Hazard pictograms** Void
- **Signal word** Void
- **Hazard statements** Void
- **2.3. Other hazards**
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.

3 Composition/information on ingredients

- **3.1. Chemical characterization: Substances**
- **CAS No. Description:**
10102-17-7 Sodium Thiosulfate pentahydrate
- **Identification number(s):**
- **EC number:** 231-867-5

4 First aid measures

- **4.1. Description of first aid measures**
- **General information** No special measures required.

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Safety data sheet
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Trade name: Sodium Thiosulfate Pentahydrate

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- **After inhalation** Supply fresh air; consult doctor in case of complaints.
- **After skin contact** Immediately rinse with water.
- **After eye contact** Rinse opened eye for several minutes under running water. Then consult doctor.
- **After swallowing**
Rinse out mouth and then drink plenty of water.
If symptoms persist consult doctor.
- **Information for doctor**
- **4.2. Most important symptoms and effects, both acute and delayed**
No further relevant information available.
- **4.3. Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

* **5 Firefighting measures**

- **5.1. Extinguishing media**
- **Suitable extinguishing agents**
CO₂, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **5.2. Special hazards arising from the substance or mixture**
In case of fire, the following can be released:
Sulphur dioxide (SO₂)
- **5.3. Advice for firefighters**
- **Protective equipment:** Mount respiratory protective device.

* **6 Accidental release measures**

- **6.1. Personal precautions, protective equipment and emergency procedures** Wear protective clothing.
- **6.2. Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
- **6.3. Methods and material for containment and cleaning up:**
Pick up mechanically.
Dispose contaminated material as waste according to item 13.
- **6.4. Reference to other sections** No dangerous substances are released.

* **7 Handling and storage**

- **Handling**
- **7.1. Precautions for safe handling** Prevent formation of dust.
- **Information about protection against explosions and fires:** No special measures required.
- **7.2. Conditions for safe storage, including any incompatibilities**
- **Storage**
- **Requirements to be met by storerooms and receptacles:** No special requirements.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:** Store in dry conditions.
- **7.3. Specific end use(s)** No further relevant information available.

* **8 Exposure controls/personal protection**

- **Additional information about design of technical systems:** No further data; see item 7.
- **8.1. Control parameters**
- **Components with limit values that require monitoring at the workplace:** Not required.
- **Additional information:** The lists that were valid during the creation were used as basis.

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Trade name: Sodium Thiosulfate Pentahydrate

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- **8.2. Exposure controls**
- **Personal protective equipment**
- **General protective and hygienic measures**
The usual precautionary measures should be adhered to when handling chemicals.
- **Breathing equipment:** Suitable respiratory protective device recommended.
- **Protection of hands:**
Protective gloves.
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
- **Material of gloves**
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.
- **For the permanent contact of a maximum of 15 minutes gloves made of the following materials are suitable:**
Nitrile rubber, NBR
Natural rubber, NR
- **Eye protection:** Safety glasses
- **Body protection:** Protective work clothing.

9 Physical and chemical properties

- **9.1. Information on basic physical and chemical properties**
- **General Information**
- **Appearance:**

Form:	Crystalline
Colour:	Colourless
Odour:	Odourless
- **pH-value (100 g/l) at 20°C:** 7.2
- **Change in condition**

Melting point/Melting range:	48°C
Boiling point/Boiling range:	undetermined
- **Flash point:** Not applicable
- **Flammability (solid, gaseous)** Product is not flammable.
- **Danger of explosion:** Product does not present an explosion hazard.
- **Density at 20°C:** 1.73 g/cm³
- **Bulk density at 20°C:** ca. 1000 kg/m³
- **Solubility in / Miscibility with**

Water at 20°C:	680 g/l
Organic solvents:	0.0 %
- **9.2. Other information** There are no more data available.

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Trade name: Sodium Thiosulfate Pentahydrate

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10 Stability and reactivity

- **10.1. Reactivity**
- **10.2. Chemical stability**
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **10.3. Possibility of hazardous reactions** No dangerous reactions known
- **10.4. Conditions to avoid** No further relevant information available.
- **10.5. Incompatible materials:**
Acids, NaNO₃, strong oxidising agents, iodine compounds, lead-, silver- and mercury-salts
- **10.6. Hazardous decomposition products:**
Sulphur oxides (SO_x)
Sodium / sodium oxides

11 Toxicological information

- **11.1. Information on toxicological effects**
- **Acute toxicity:**
- **Primary irritant effect:**
- **on the skin:** No irritant effect.
- **on the eye:** No irritating effect.
- **Sensitization:** No sensitizing effects known.
- **Additional toxicological information:**
When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.
The substance is not subject to classification according to the latest version of the EU lists.

12 Ecological information

- **12.1. Toxicity**
- **Acquatic toxicity:** No further relevant information available.
- **12.2. Persistence and degradability** No further relevant information available.
- **Behaviour in environmental systems:**
- **12.3. Bioaccumulative potential** No further relevant information available.
- **12.4. Mobility in soil** No further relevant information available.
- **Additional ecological information:**
- **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 course or sewage system.
- **12.5. Results of PBT and vPvB assessment**
- **PBT:** PBT - assessment not available.
- **vPvB:** vPvB - assessment not available.
- **12.6. Other adverse effects** No further relevant information available.

13 Disposal considerations

- **13.1. Waste treatment methods**
- **Recommendation**
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.

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Trade name: Sodium Thiosulfate Pentahydrate

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· **Recommended cleansing agent:** Water, if necessary with cleansing agents.

14 Transport information

· 14.1. UN-Number · ADR, ADN, IMDG, IATA	Void
· 14.2. UN proper shipping name · ADR, ADN, IMDG, IATA	Void
· 14.3. Transport hazard class(es) · ADR, ADN, IMDG, IATA · Class	Void
· 14.4. Packing group · ADR, IMDG, IATA	Void
· 14.5. Environmental hazards: · Marine pollutant:	Not applicable. No
· 14.6. Special precautions for user	Not applicable.
· 14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
· Transport/Additional information:	Not dangerous according to the above specifications.
· UN "Model Regulation":	-

15 Regulatory information

- **15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **National regulations**
- **Water hazard class:** Water hazard class 1 (Assessment by list): slightly hazardous for water.
- **15.2. Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Department issuing MSDS:** Product safety department
- **Contact:** +49 6221 13840-35
- **Abbreviations and acronyms:**
 PBT: persistent, bioaccumulative, toxic substance (REACH)
 vPvB: very persistent, very bioaccumulative substance (REACH)
 REACH: Regulation concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals
 CLP: Regulation on classification, labelling and packaging of substances and mixtures
 ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
 RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
 IMDG: International Maritime Code for Dangerous Goods
 IATA: International Air Transport Association
 ICAO: International Civil Aviation Organization
 GHS: Globally Harmonized System of Classification and Labelling of Chemicals
 EINECS: European Inventory of Existing Commercial Chemical Substances
 CAS: Chemical Abstracts Service (division of the American Chemical Society)
- *** Data compared to the previous version altered.**

Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 07.12.2011

Version number 1

Revision: 29.11.2011

1 Identification of the substance/mixture and of the company/undertaking

- 1.1. Product identifier
- Trade name: Trichloroacetic acid, 20 % solution
- Article number: 36913
- 1.2. Relevant identified uses of the substance or mixture and uses advised against
- Application of the substance / the preparation Laboratory chemicals
- 1.3. Details of the supplier of the safety data sheet
- Manufacturer/Supplier:
SERVA Electrophoresis GmbH
Carl-Benz-Str. 7
D-69115 Heidelberg
Tel.: +49 6221 13840-0
FAX: +49 6221 13840-10
msds.info@serva.de
- Information department: Product Safety department Tel.: +49 6221 13840-35
- 1.4. Emergency telephone number: +49 6131 19240 (university hospital Mainz)

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2 Hazards identification

- 2.1. Classification of the substance or mixture
- Classification according to Regulation (EC) No 1272/2008



GHS05

Skin Corr. 1A H314 Causes severe skin burns and eye damage.



GHS09

Aquatic Chronic 2 H411 Toxic to aquatic life with long lasting effects.



GHS07

STOT SE 3 H335 May cause respiratory irritation.

- Classification according to Directive 67/548/EEC or Directive 1999/45/EC



C; Corrosive

R35: Causes severe burns.



N; Dangerous for the environment

R51/53: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

- Information concerning particular hazards for human 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.
- Classification system:
The classification was made according to the latest editions of the EU-lists, and expanded upon from company and literature data.

- 2.2. Label elements
- Labelling according to Regulation (EC) No 1272/2008
The product is classified and labelled according to the CLP regulation.
- Hazard pictograms GHS05, GHS07, GHS09
- Signal word Danger

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Revision: 29.11.2011

Trade name: Trichloroacetic acid, 20 % solution

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

trichloroacetic acid

- **Hazard statements**

H314 Causes severe skin burns and eye damage.

H335 May cause respiratory irritation.

H411 Toxic to aquatic life with long lasting effects.

- **Precautionary statements**

P273 Avoid release to the environment.

P303+P361+P353 **IF ON SKIN (or hair):** Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

P304+P340 **IF INHALED:** Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305+P351+P338 **IF IN EYES:** Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P301+P330+P331 **IF SWALLOWED:** rinse mouth. Do NOT induce vomiting.

P363 Wash contaminated clothing before reuse.

- **2.3. Other hazards**

- **Results of PBT and vPvB assessment**

- **PBT:** Not applicable.





- **vPvB:** Not applicable.

3 Composition/information on ingredients

- **3.2. Chemical characterization: Mixtures**

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

- **Dangerous components:**

CAS: 76-03-9	trichloroacetic acid	15-30%
EINECS: 200-927-2	 C R35;  Xi R37;  N R50/53  Skin Corr. 1A, H314;  Aquatic Acute 1, H400;  Aquatic Chronic 1, H410;  STOT SE 3, H335	

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

4 First aid measures

- **4.1. Description of first aid measures**

- **General information** Remove contaminated clothing.

- **After inhalation** Supply fresh air and to be sure call for a doctor.

- **After skin contact** Immediately rinse with water.

- **After eye contact** Rinse opened eye for several minutes under running water. Then consult doctor.

- **After swallowing** Drink copious amounts of water and provide fresh air. Call for doctor immediately.

- **Information for doctor**

- **4.2. Most important symptoms and effects, both acute and delayed**

No further relevant information available.

- **4.3. Indication of any immediate medical attention and special treatment needed**

No further relevant information available.

5 Firefighting measures

- **5.1. Extinguishing media**

- **Suitable extinguishing agents** Use fire fighting measures that suit the environment.

- **5.2. Special hazards arising from the substance or mixture** No further relevant information available.

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Trade name: Trichloroacetic acid, 20 % solution

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- **5.3. Advice for firefighters**
- **Protective equipment:** Mount respiratory protective device.

6 Accidental release measures

- **6.1. Personal precautions, protective equipment and emergency procedures**
Wear protective equipment. Keep unprotected persons away.
- **6.2. Environmental precautions:**
Dilute with plenty of water.
Do not allow to enter sewers/ surface or ground water.
Inform respective authorities in case of seepage into water course or sewage system.
- **6.3. Methods and material for containment and cleaning up:**
Use neutralizing agent.
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.
- **6.4. Reference to other sections**
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

- **Handling**
- **7.1. Precautions for safe handling**
Work only in fume cupboard.
Ensure good ventilation/exhaustion at the workplace.
Prevent formation of aerosols.
- **Information about protection against explosions and fires:** The product is not flammable
- **7.2. Conditions for safe storage, including any incompatibilities**
- **Storage**
- **Requirements to be met by storerooms and receptacles:** Provide acid-resistant floor.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:** Keep receptacle tightly sealed.
- **7.3. Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.
- **8.1. Control parameters**
- **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 creation were used as basis.
- **8.2. Exposure controls**
- **Personal protective equipment**
- **General protective and hygienic measures**
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing
Wash hands before breaks and at the end of work.
Do not inhale gases / fumes / aerosols.
Avoid contact with the eyes and skin.
- **Breathing equipment:**
Short term filter device:
Filter P2.

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Safety data sheet
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Trade name: Trichloroacetic acid, 20 % solution

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· **Protection of hands:**

Neoprene gloves

Rubber gloves

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

Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

· **Material of gloves**

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.

· **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.

· **For the permanent contact of a maximum of 15 minutes gloves made of the following materials are suitable:**

Chloroprene rubber, CR

Nitrile rubber, NBR

· **Eye protection:** Tightly sealed goggles.

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

9 Physical and chemical properties

· **9.1. Information on basic physical and chemical properties**

· **General Information**

· **Appearance:**

Form: Fluid

Colour: Colourless

· **Odour:** Acidic

· **pH-value at 20°C:** < 0.5

· **Change in condition**

Melting point/Melting range: undetermined

Boiling point/Boiling range: undetermined

· **Flash point:** Not applicable

· **Self igniting:** Product is not selfigniting.

· **Danger of explosion:** Product does not present an explosion hazard.

· **Vapour pressure at 20°C:** 0.1 hPa

· **Density at 20°C:** 1.083 g/cm³

· **Solubility in / Miscibility with**

Water: Fully miscible

· **Solvent content:**

Organic solvents: 0.0 %

· **VOC %:** 0.00 %

· **Solids content:** 20.0 %

· **9.2. Other information** No further relevant information available.

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Safety data sheet
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Printing date 07.12.2011

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Revision: 29.11.2011

Trade name: *Trichloroacetic acid, 20 % solution*

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10 Stability and reactivity

- **10.1. Reactivity**
- **10.2. Chemical stability**
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **10.3. Possibility of hazardous reactions** No dangerous reactions known
- **10.4. Conditions to avoid** No further relevant information available.
- **10.5. Incompatible materials:** No further relevant information available.
- **10.6. Hazardous decomposition products:** No dangerous decomposition products known

11 Toxicological information

- **11.1. Information on toxicological effects**
- **Acute toxicity:**

· LD/LC50 values that are relevant for classification:

76-03-9 trichloroacetic acid

Oral	LD50	3320 mg/kg (rat)
------	------	------------------

- **Primary irritant effect:**
- **on the skin:** Strong caustic effect on skin and mucous membranes.
- **on the eye:** Strong caustic effect.
- **Sensitization:** No sensitizing effects known.
- **Additional toxicological information:**
The product shows the following dangers according to the calculation method of the General EU 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

- **12.1. Toxicity**
- **Acquatic toxicity:** No further relevant information available.
- **12.2. Persistence and degradability** No further relevant information available.
- **Behaviour in environmental systems:**
- **12.3. Bioaccumulative potential** No further relevant information available.
- **12.4. Mobility in soil** No further relevant information available.
- **Ecotoxicological effects:**
- **Remark:** Toxic for fish
- **Additional ecological information:**
- **General notes:**
Water hazard class 2 (German Regulation) (Self-assessment): hazardous for water.
Do not allow product to reach ground water, water course or sewage system.
Must not reach sewage water or drainage ditch undiluted or unneutralized.
Danger to drinking water if even small quantities leak into the ground.
Also poisonous for fish and plankton in water bodies.
Toxic for aquatic organisms
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.
- **12.5. Results of PBT and vPvB assessment**
- **PBT:** PBT - assessment not available.
- **vPvB:** vPvB - assessment not available.
- **12.6. Other adverse effects** No further relevant information available.

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Safety data sheet
according to 1907/2006/EC, Article 31

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Revision: 29.11.2011



Trade name: *Trichloroacetic acid, 20 % solution*

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13 Disposal considerations

- **13.1. Waste treatment methods**
- **Recommendation**
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.
- **Recommended cleansing agent:** Water, if necessary with cleansing agents.

14 Transport information

· 14.1. UN-Number · ADR, IMDG, IATA	2564
· 14.2. UN proper shipping name · ADR · IMDG, IATA	2564 TRICHLOROACETIC ACID SOLUTION TRICHLOROACETIC ACID SOLUTION
· 14.3. Transport hazard class(es) · ADR	
· Class · Label	8 Corrosive substances. 8
· IMDG, IATA	
· Class · Label	8 Corrosive substances. 8
· 14.4. Packing group · ADR, IMDG, IATA	III
· 14.5. Environmental hazards: · Marine pollutant: · Special marking (ADR):	No Symbol (fish and tree)
· 14.6. Special precautions for user · Danger code (Kemler): · EMS Number:	Warning: Corrosive substances. 80 F-A,S-B
· 14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
· Transport/Additional information:	
· ADR · Tunnel restriction code	E
· UN "Model Regulation":	UN2564, TRICHLOROACETIC ACID SOLUTION, 8, III

GB

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Safety data sheet
according to 1907/2006/EC, Article 31

Printing date 07.12.2011

Version number 1

Revision: 29.11.2011

Trade name: Trichloroacetic acid, 20 % solution

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15 Regulatory information

· **15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**

· **National regulations**

· **Technical instructions (air):**

Class	Share in %
I	15-30

· **Water hazard class:** Water hazard class 2 (Self-assessment): hazardous for water.

· **15.2. Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Relevant phrases**

H314 Causes severe skin burns and eye damage.

H335 May cause respiratory irritation.

H400 Very toxic to aquatic life.

H410 Very toxic to aquatic life with long lasting effects.

R35 Causes severe burns.

R37 Irritating to respiratory system.

R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

· **Department issuing MSDS:** Product safety department

· **Contact:** +49 6221 13840-35

· **Abbreviations and acronyms:**

PBT: persistent, bioaccumulative, toxic substance (REACH)

vPvB: very persistent, very bioaccumulative substance (REACH)

REACH: Regulation concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals

CLP: Regulation on classification, labelling and packaging of substances and mixtures

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

ICAO: International Civil Aviation Organization

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

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