

# Safety Data Sheet

according to Regulations 1907/2006/EC (REACH) and 2015/830/EU

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## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1 Product identifier

REF 814200  
 Product name TLC Micro Set F 1

REACH Registration number(s): see SECTION 3.1/3.2 or  
 A registration number for the substance(s) does not exist because the annual tonnage does not require registration or the substance or its use is excluded from registration.

- 1 x 50 mL Acetic acid 50%
- 1 x 100 mL Acetone
- 1 x 8 mL Amino acid test mixture
- 1 x 100 mL Ammonia solution 25%
- 1 x 8 mL Arginine reference solution (A)
- 1 x 8 mL Cation test mixture (heavy metals)
- 1 x 50 mL Hydrochloric acid 18%
- 1 x 100 mL n-Butanol
- 1 x 100 mL Ninhydrin spray reagent
- 1 x 8 mL Reference solution Copper
- 1 x 8 mL Reference solution Manganese
- 1 x 100 mL Rubeanic acid spray reagent
- 1 x 8 mL Tryptophan reference solution (B)

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

**Relevant identified uses**  
 Product for analytical use.  
 Exposure Scenario Classification according REACH, RIP 3.2 Codes: SU 0-2, PC 21, PROC 15, AC 0  
 The exposure scenario is integrated into sections 1-16.

**Uses advised against**  
 not described

### 1.3 Details of the supplier of the safety data sheet

**Manufactured by:**  
 MACHEREY-NAGEL GmbH & Co. KG  
 Neumann-Neander-Str. 6-8, 52355 Dueren, GERMANY  
 Tel.: +49 2421 969 0  
 E-mail: sds@mn-net.com (msds@mn-net.com)

### 1.4 Emergency telephone number

Outside Germany (DE): Call your regional Poisons Information Service or call local Life Saving Service.  
 DE: Gemeinsames Giftinformationszentrum (GGIZ) 99089 Erfurt tel. +49 361 730 730

You find our current versions of SDS (22 languages) in Internet: <http://www.mn-net.com/SDS>

## SECTION 2: Hazard identification

### 2.0 Classification of the complete product



Signal word                      DANGER

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Hazard identification	Hazard classes/categories
H225	Flam. Liq. 2
H226	Flam. Liq. 3
H290	Met. Corr. 1
H302	Acute Tox. 4 oral
H314	Skin Corr. 1B
H315, EUH066	Skin Irrit. 2
H318	Eye Dam. 1
H319	Eye Irrit. 2
H335, H336	STOT SE 3
H400	Aquatic Acute 1

## 2.1 Classification of the substance or mixture

50 mL Acetic acid 50%



GHS05

Signal word

DANGER

Hazard identification	Hazard classes/categories
H314	Skin Corr. 1B

100 mL Acetone



GHS02



GHS07

Signal word

DANGER

Hazard identification	Hazard classes/categories
EUH066	Skin Irrit. 2
H225	Flam. Liq. 2
H319	Eye Irrit. 2
H336	STOT SE 3

8 mL Amino acid test mixture

Signal word

Do not need labelling as hazardous

No hazard class

100 mL Ammonia solution 25%



GHS05



GHS07



GHS09

Signal word

DANGER

Hazard identification	Hazard classes/categories
H314	Skin Corr. 1B
H335, H336	STOT SE 3
H400	Aquatic Acute 1

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## 8 mL Arginine reference solution (A)

Signal word Do not need labelling as hazardous  
-  
No hazard class

## 8 mL Cation test mixture (heavy metals)

Signal word Do not need labelling as hazardous  
-  
No hazard class

## 50 mL Hydrochloric acid 18%



Signal word GHS07  
WARNING

Hazard identification	Hazard classes/categories
H290	Met. Corr. 1
H315	Skin Irrit. 2
H319	Eye Irrit. 2
H335	STOT SE 3

## 100 mL n-Butanol



Signal word GHS02 GHS05 GHS07  
DANGER

Hazard identification	Hazard classes/categories
H226	Flam. Liq. 3
H302	Acute Tox. 4 oral
H315, EUH066	Skin Irrit. 2
H318	Eye Dam. 1
H335, H336	STOT SE 3

## 100 mL Ninhydrin spray reagent



Signal word GHS02  
DANGER

Hazard identification	Hazard classes/categories
H225	Flam. Liq. 2

## 8 mL Reference solution Copper

Do not need labelling as hazardous

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Signal word -  
No hazard class

### 8 mL Reference solution Manganese

Signal word Do not need labelling as hazardous  
-  
No hazard class

### 100 mL Rubeanic acid spray reagent



GHS02  
Signal word DANGER

Hazard identification	Hazard classes/categories
H225	Flam. Liq. 2

### 8 mL Tryptophan reference solution (B)

Signal word Do not need labelling as hazardous  
-  
No hazard class

## 2.2 Label elements

According CLP directive inner packages must be only labelled with GHS symbol(s) and product identifier(s) (EU 1272/2008 Annex I - 1.5.1.2).

Harmful chemicals/mixtures with signal word: **WARNING** and highly flammable chemicals/mixtures must not be labelled with H and P phrases **until 125 mL** (EU 1272/2008 Annex I - 1.5.2).

Metal corrosive solutions **do not have to** be labelled with GHS symbol, signal word, H and P phrases **until 125 mL** (EU 1272/2008 Annex I - 1.5.2.1.3).

### 50 mL Acetic acid 50%



GHS05  
Signal word: DANGER

H314  
Causes severe skin burns and eye damage.

P260sh, P280sh, P303+361+353, P305+351+338, P310  
Do not breathe dust/vapours. Wear protective gloves/eye protection. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower]. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.

### 100 mL Acetone



GHS02



GHS07

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Signal word: DANGER

## 8 mL Amino acid test mixture

Do not need labelling as hazardous

Signal word: -

## 100 mL Ammonia solution 25%



GHS05

GHS07

GHS09

Signal word: DANGER

H314

Causes severe skin burns and eye damage.

P260sh, P280sh, P303+361+353, P305+351+338, P310

Do not breathe dust/vapours. Wear protective gloves/eye protection. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower]. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.

## 8 mL Arginine reference solution (A)

Do not need labelling as hazardous

Signal word: -

## 8 mL Cation test mixture (heavy metals)

Do not need labelling as hazardous

Signal word: -

## 50 mL Hydrochloric acid 18%



GHS07

Signal word: WARNING

## 100 mL n-Butanol



GHS02

GHS05

GHS07

Signal word: DANGER

H318

Causes serious eye damage.

P280sh, P305+351+338, P310

Wear protective gloves/eye protection. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.

## 100 mL Ninhydrin spray reagent



GHS02

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Signal word: DANGER

## 8 mL Reference solution Copper

Do not need labelling as hazardous

Signal word: -

## 8 mL Reference solution Manganese

Do not need labelling as hazardous

Signal word: -

## 100 mL Rubenic acid spray reagent



GHS02

Signal word: DANGER

## 8 mL Tryptophan reference solution (B)

Do not need labelling as hazardous

Signal word: -

### 2.3 Other hazards

#### Possible hazards from physicochemical properties

Generally in the case of pH values are less than 2 or higher than 11.5 then it is corrosive. In the case of pH values are less than 5 or higher than 9 then it is irritant. Flammable properties. ---

#### Information pertaining to particular risks to human and possible symptoms

Causes varying degrees of acid burns on the skin, to the eyes and to the mucous membranes and wounds which do not heal quickly depending on the concentration, temperature and the exposure time. Vapours especially which steam from hot liquids and mist can have a severe irritant effect upon the eyes and the respiratory organs.

Cause after oral intake, inhalation of vapours/dust, impairments of health when ingested in small quantities. -

#### Information pertaining to particular risks to the environment

Avoid contact of substance/mixture to environment.

**PBT:** not applicable

**vPvB:** not applicable

#### Other hazards

---

## SECTION 3: Composition/information on ingredients

### 3.1 Substances or 3.2 Mixtures

#### 50 mL Acetic acid 50%

Chemical: *acetic acid*

CAS No.: 64-19-7

Classification: H226, Flam. Liq. 3, H314, Skin Corr. 1B

Formula: C<sub>2</sub>H<sub>4</sub>O<sub>2</sub>; CH<sub>3</sub>-COOH

TSCA Inventory: listed

REACH Reg. No.: 01-2119475328-30-xxxx

EC No.: 200-580-7

Index No.: 607-002-00-6

RTECS: AF1225000

MFCD: 00036152

KE No.: KE-00013

Concentration: 25 - <50 %

acc. CLP (GHS): H314, Skin Corr. 1B

#### 100 mL Acetone

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Chemical: *acetone* CAS No.: 67-64-1  
 Classification: H225, Flam. Liq. 2, H319, Eye Irrit. 2, H336, STOT SE 3, EUH066, Skin Irrit. 2  
 Formula: C<sub>3</sub>H<sub>6</sub>O; (CH<sub>3</sub>)<sub>2</sub>-CO  
 Pseudonym: 2-propanone  
 TSCA Inventory: listed  
 REACH Reg. No.: 01-2119471330-49-xxxx  
 EC No.: 200-662-2  
 RTECS: AL3150000  
 KE No.: KE-29367  
 Concentration: 80 - <100 %  
 acc. CLP (GHS): H225, Flam. Liq. 2, H319, Eye Irrit. 2, H336, STOT SE 3, EUH066, Skin Irrit. 2

## 8 mL Amino acid test mixture

Chemical: *test chemical(s) (ppm)* CAS No.: -  
 Classification: No criteria for classification or naming of chemical not required.  
 TSCA Inventory: all <0.1%  
 Concentration: 0.1 - <1 %  
 acc. CLP (GHS): The criteria for classification are not fulfilled.

## 100 mL Ammonia solution 25%

Chemical: *ammonia solution* CAS No.: 1336-21-6  
 Classification: H314, Skin Corr. 1B, H335, STOT SE 3, H400, Aquatic Acute 1  
 Formula: NH<sub>3</sub>·H<sub>2</sub>O  
 Pseudonym: ammonium hydroxide, Aqua ammonia, aqueous ammonia  
 TSCA Inventory: listed  
 REACH Reg. No.: 01-2119488876-14-xxxx, 01-2119982985-14-XXXX  
 EC No.: 215-647-6  
 RTECS: BQ9625000  
 KE No.: KE-01688, >10% Toxic 97-1-184  
 Concentration: 16 - <25 %  
 acc. CLP (GHS): H314, Skin Corr. 1B, H335, STOT SE 3, H400, Aquatic Acute 1

## 8 mL Arginine reference solution (A)

Chemical: *test chemical(s) (ppm)* CAS No.: -  
 Classification: No criteria for classification or naming of chemical not required.  
 TSCA Inventory: all <0.1%  
 Concentration: 0.1 - <1 %  
 acc. CLP (GHS): The criteria for classification are not fulfilled.

## 8 mL Cation test mixture (heavy metals)

Chemical: *manganese(II) sulfate (monohydrate)* CAS No.: 10034-96-5  
 Classification: H373, STOT RE 2, H411, Aquatic Chronic 2  
 Formula: MnSO<sub>4</sub>·H<sub>2</sub>O  
 TSCA Inventory: listed (CAS 7785-87-7)  
 REACH Reg. No.: 01-2119456624-35-xxxx  
 EC No.: 232-089-9  
 RTECS: OP0893500  
 Concentration: 0.1 - <1 %  
 Correlation factor: x 0.36 (= %Mn)  
 The classification refers to weight percent of the metal (according to CLP Regulation 2008/1272/EC Annex VI, 1.1.3.2 Note 1)  
 acc. CLP (GHS): The criteria for classification are not fulfilled.

Chemical: *copper(II) sulfate (pentahydrate)* CAS No.: 7758-98-7  
 Classification: H302, Acute Tox. 4 oral, H315, Skin Irrit. 2, H318, Eye Dam. 1, H400, Aquatic Acute 1, H410, Aquatic Chronic 1  
 Formula: CuSO<sub>4</sub>  
 TSCA Inventory: listed  
 REACH Reg. No.: 01-2119520566-40-xxxx  
 EC No.: 231-847-6  
 RTECS: GL8800000  
 Concentration: 0.1 - <1 %  
 Correlation factor: 0.40 (= %Cu)  
 The classification refers to weight percent of the metal (according to CLP Regulation 2008/1272/EC Annex VI, 1.1.3.2 Note 1)  
 acc. CLP (GHS): The criteria for classification are not fulfilled.

## 50 mL Hydrochloric acid 18%



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Chemical: *hydrochloric acid* CAS No.: 7647-01-0  
 Classification: H290, Met. Corr. 1, H314, Skin Corr. 1B, H331, Acute Tox. 3 inh.  
 Formula:  $\text{HCl} \cdot \text{H}_2\text{O}$   
 Pseudonym: aqueous hydrogen chloride  
 TSCA Inventory: listed  
 REACH Reg. No.: 01-2119484862-27-xxxx  
 EC No.: 231-595-7 Index No.: 017-002-01-X  
 RTECS: MW4025000  
 KE No.: KE-20189, >10% Toxic 97-1-203, Acc. Precaution Chem.  
 Concentration: 10 - <25 %  
 acc. CLP (GHS): H290, Met. Corr. 1, H315, Skin Irrit. 2, H319, Eye Irrit. 2, H335, STOT SE 3

## 100 mL n-Butanol

Chemical: *1-butanol* CAS No.: 71-36-3  
 Classification: H226, Flam. Liq. 3, H302, Acute Tox. 4 oral, H315, Skin Irrit. 2, H318, Eye Dam. 1, H335, STOT SE 3, H336, STOT SE 3  
 Formula:  $\text{C}_4\text{H}_{10}\text{O}$ ;  $\text{CH}_3(\text{CH}_2)_3\text{OH}$   
 TSCA Inventory: listed  
 REACH Reg. No.: 01-2119484630-38-xxxx  
 EC No.: 200-751-8 Index No.: 603-004-00-6  
 RTECS: EO1400000 MFCD: 00002964  
 KE No.: KE-03867  
 Concentration: 90 - <100 %  
 acc. CLP (GHS): H226, Flam. Liq. 3, H302, Acute Tox. 4 oral, H315, Skin Irrit. 2, H318, Eye Dam. 1, H335, STOT SE 3, H336, STOT SE 3

## 100 mL Ninhydrin spray reagent

Chemical: *ninhydrin* CAS No.: 485-47-2  
 Classification: H302, Acute Tox. 4 oral, H315, Skin Irrit. 2, H319, Eye Irrit. 2, H335, STOT SE 3  
 Formula:  $\text{C}_9\text{H}_6\text{O}_4$   
 Pseudonym: 2,2-dihydroxy-1H-indene-1,3(2H)-dione  
 TSCA Inventory: listed  
 EC No.: 207-618-1  
 RTECS: NK5425000 MFCD: 00003791  
 KE No.: KE-10839  
 Concentration: 0.1 - <1 %  
 acc. CLP (GHS): The criteria for classification are not fulfilled.

Chemical: *ethanol* CAS No.: 64-17-5  
 (denatured with 1%IPA/1%MEK, acc.2016/1867/EU)  
 Classification: H225, Flam. Liq. 2  
 Formula:  $\text{C}_2\text{H}_6\text{O}$ ;  $\text{C}_2\text{H}_5\text{OH}$   
 Pseudonym: ethyl alcohol, methylated spirit  
 TSCA Inventory: listed  
 REACH Reg. No.: 01-2119457610-43-xxxx  
 EC No.: 200-578-6 Index No.: 603-002-00-5  
 RTECS: KQ6300000 MFCD: 00003568  
 KE No.: KE-13217  
 Concentration: 90 - <98 %  
 acc. CLP (GHS): H225, Flam. Liq. 2

## 8 mL Reference solution Copper

Chemical: *copper(II) sulfate (pentahydrate)* CAS No.: 7758-98-7  
 Classification: H302, Acute Tox. 4 oral, H315, Skin Irrit. 2, H318, Eye Dam. 1, H400, Aquatic Acute 1, H410, Aquatic Chronic 1  
 Formula:  $\text{CuSO}_4$   
 TSCA Inventory: listed  
 REACH Reg. No.: 01-2119520566-40-xxxx  
 EC No.: 231-847-6 Index No.: 029-004-00-0  
 RTECS: GL8800000  
 Concentration: 0.1 - <1 % Correlation factor: 0.40 (= %Cu)  
 The classification refers to weight percent of the metal (according to CLP Regulation 2008/1272/EC Annex VI, 1.1.3.2 Note 1)  
 acc. CLP (GHS): The criteria for classification are not fulfilled.

## 8 mL Reference solution Manganese



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Chemical: *manganese(II) sulfate (monohydrate)* CAS No.: 10034-96-5  
 Classification: H373, STOT RE 2, H411, Aquatic Chronic 2  
 Formula:  $MnSO_4 \cdot H_2O$   
 TSCA Inventory: listed (CAS 7785-87-7)  
 REACH Reg. No.: 01-2119456624-35-xxxx  
 EC No.: 232-089-9 Indice No.: 025-003-00-4  
 RTECS: OP0893500  
 Concentration: 0.1 - <1 % Correlation factor: x 0.36 (= %Mn)  
 The classification refers to weight percent of the metal (according to CLP Regulation 2008/1272/EC Annex VI, 1.1.3.2 Note 1)  
 acc. CLP (GHS): The criteria for classification are not fulfilled.

### 100 mL Rubenic acid spray reagent

Chemical: *ethanol* CAS No.: 64-17-5  
 (denatured with 1%IPA/1%MEK, acc.2016/1867/EU)  
 Classification: H225, Flam. Liq. 2  
 Formula:  $C_2H_6O$ ;  $C_2H_5OH$   
 Pseudonym: ethyl alcohol, methylated spirit  
 TSCA Inventory: listed  
 REACH Reg. No.: 01-2119457610-43-xxxx  
 EC No.: 200-578-6 Indice No.: 603-002-00-5  
 RTECS: KQ6300000 MFCD: 00003568  
 KE No.: KE-13217  
 Concentration: 90 - <98 %  
 acc. CLP (GHS): H225, Flam. Liq. 2

Chemical: *rubenic acid* CAS No.: 79-40-3  
 Classification: H302, Acute Tox. 4 oral  
 Formula:  $C_2H_4N_2S_2$   
 Pseudonym: ethanedithioamide  
 TSCA Inventory: listed  
 EC No.: 201-203-9  
 RTECS: RP1575000 MFCD: 00004941  
 KE No.: not listed  
 Concentration: 0.1 - <1 %  
 acc. CLP (GHS): The criteria for classification are not fulfilled.

### 8 mL Tryptophan reference solution (B)

Chemical: *test chemical(s) (ppm)* CAS No.: -  
 Classification: No criteria for classification or naming of chemical not required.  
 TSCA Inventory: all <0.1%  
 Concentration: 0.1 - <1 %  
 acc. CLP (GHS): The criteria for classification are not fulfilled.

## 3.3 Remarks

When not listed, mixtures are added with water [CAS No. 7732-18-5] to 100%.

List of H and P phrases: see section 16.1

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

Place insured person out of danger zone to fresh air immediately. Ensure quiet, warmth, and provide resuscitation if necessary. If necessary contact medical advice. Remove contaminated clothing. Show product package, packing insert and this material safety data sheet to the doctor.

#### 4.1.1 After SKIN Contact

Remove contaminated clothing immediately. Rinse the affected skin or mucous membrane thoroughly for min. 15 minutes under running water. (If possible) use soap. Avoid neutralisation. Then apply a loose bandage.

#### 4.1.2 After EYE Contact

After contact with the eyes rinse thoroughly under running water with the eyelid wide open for min. 10 minutes with eye washing bottle, eye douche or running water (protect intact eye). Before (if possible) apply eye drops Proxymetacaine 0.5%, if the opening the eyelid convulsion is painful. Further treatment to be carried out by an eye specialist.

#### 4.1.3 After INHALATION of vapours

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After inhalation of foam or vapour fresh air should be inhaled. Keep airways free. If vomiting and if insensible place patient in recovery position and keep airways free. ---

#### 4.1.4 After ORAL Intake

After oral intake lots of water with activated charcoal supplement should be drunk after it has been ingested. Do not induce vomiting under any circumstances. Do not make any efforts to neutralise it. Contact medical advice for possible consequences. ---

#### 4.2 Most important symptoms and effects, both acute and delayed

---

#### 4.3 Indication of any immediate medical attention and special treatment needed

**CORROSIVE DAMAGE:** After SKIN CONTACT rinse with water for a long time. Efforts to neutralise the substance can frequently make matters worse. Apply glucocorticosteroides following inflammatory reactions. After EYE CONTACT rinse immediately with plenty of water for a long time. Eyelid convulsion measures. Name the corrosive chemical. Further treatment must be carried out by an eye specialist. After INTAKE administer aluminium oxide drug suspensions. Administer a prophylaxis to counter pulmonary oedema following the INGESTION of corrosive aerosols. In the event of RESPIRATORY DISTRESSES ensure that the patient inhales oxygen. ---

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

Fire extinguishers appropriate to the fire classification, and, if applicable, a fire blanket must be available in a prominent location in the work area. All extinguishers like FOAM, WATER SPRAY, DRY POWDER, CARBON DIOXIDE can be used.

### 5.2 Special hazards arising from the substance or mixture

**WARNING:** Flammable (GHS regulation). May form explosive vapour-air mixtures. **DANGER:** Highly flammable (GHS regulation). Forms explosive vapour-air mixtures. Formation of hazardous and caustic vapour-air mixtures possible. ---

### 5.3 Advice for firefighters

No, for listed product. Product package burns like paper or plastic. Spray any vapours released with water. Retent fire water. Use only acid-resistant safety equipment.

For great amount - if necessary - protective breathing apparatus which is independent of the ambient air (isolated equipment), and sealed protective clothing is necessary in the event of a large-scale formation of toxic substances.

### 5.4 Additional information

Danger for environment **only in the event of a large-scale leakage** or formation of hazardous substances. ---

## SECTION 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

Do not breathe vapours. Wear suitable protective gloves (see 8.2.2). Wear eye protection, respectively face protection. Regular staff training is necessary, indicating hazards and precautions on the basis of operating instructions. Restrictions on activity must be observed.

### 6.2 Environmental precautions

not necessary

### 6.3 Methods and material for containment and cleaning up

Bind any escaping liquid with inert absorbent. And dispose in accordance to local regulations for the disposal of hazardous chemicals. Clean any contaminated equipment and floors with plenty of water.

Collect small amounts of leaked liquid and flush with water into drains.

### 6.4 Reference to other sections

see information in section 5.4 ---

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

Handling in accordance with the test instruction, that comes with the product.

### 7.2 Conditions for safe storage, including any incompatibilities

The original product package of MACHEREY-NAGEL allows a safe storage.

Storage class (VCI): 3

Water hazard class (DE): 2

#### 7.2.1 Requirements for stock rooms and containers

Keep original product packages tightly closed during handling and storage. Use inbreakable container for transport of glass bottles.

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## 7.3 Specific end use(s)

Product for analytical use.

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

#### 50 mL Acetic acid 50%

Chemical: *acetic acid*

CAS No.: 64-19-7

DNEL: [loc, inh] 25 mg/m<sup>3</sup>  
DNEL = Derived No-Effect Level (for workers)

PNEC<sub>(fresh water)</sub>: 3.058 mg/L  
PNEC = Predicted No Effect Concentration

EU value: [TWA] 25 / [STEL] 50 mg/m<sup>3</sup>

TRGS 900 (DE): 10 mL/m<sup>3</sup> / 25 mg/m<sup>3</sup>  
A/a aveoles passing, E/e respirable, G total

Short-term exposure factor: 2(I), Y  
skin resorptive (H), respiratory sensitizable (Sa), skin sensitizable (Sh), teratogenic (Z) not securely excluded / (Y) certainly excluded

SUVA(CH) MAK value: 10 ppm / 25 mg/m<sup>3</sup>

NIOSH: [TWA] 10 ppm / 25 mg/m<sup>3</sup>; [STEL] 15 ppm / 37 mg/m<sup>3</sup>  
[TWA] Time-weighted average to a reference period of 8 hours, [STEL] Short-term exposure limit related to a 15-minute period

OSHA: [TWA] 10 ppm / 25 mg/m<sup>3</sup>

#### 100 mL Acetone

Chemical: *acetone*

CAS No.: 67-64-1

DNEL: [inh] (1210) mg/m<sup>3</sup>  
DNEL = Derived No-Effect Level (for workers)

PNEC<sub>(fresh water)</sub>: 10.6 mg/L  
PNEC = Predicted No Effect Concentration

EU value: 500 ppm / 1200 mg/m<sup>3</sup>

TRGS 900 (DE): 500 mL/m<sup>3</sup> / 1200 mg/m<sup>3</sup>  
A/a aveoles passing, E/e respirable, G total

Short-term exposure factor: 2 (I), Y  
skin resorptive (H), respiratory sensitizable (Sa), skin sensitizable (Sh), teratogenic (Z) not securely excluded / (Y) certainly excluded

SUVA(CH) MAK value: 500 ppm / 1200 mg/m<sup>3</sup>

SUVA(CH) BAT value: [U/b] 80 mg/L

TRGS 903 (DE): [U/b] 80 mg/L  
B blood, U urine, a no limitation, b end of exposition or shift

NIOSH: [TWA] 250 ppm / [STEL] 590 mg/m<sup>3</sup>  
[TWA] Time-weighted average to a reference period of 8 hours, [STEL] Short-term exposure limit related to a 15-minute period

OSHA: [TWA] 1000 ppm / [STEL] 2400 mg/m<sup>3</sup>

#### 8 mL Amino acid test mixture

Chemical: *test chemical(s) (ppm)*

CAS No.: -

#### 100 mL Ammonia solution 25%

Chemical: *ammonia solution*

CAS No.: 1336-21-6

DNEL: [inh] 14 mg/m<sup>3</sup>  
DNEL = Derived No-Effect Level (for workers)

PNEC<sub>(fresh water)</sub>: 0.0011 mg/L  
PNEC = Predicted No Effect Concentration

EU value: 20 ppm / 14 mg/m<sup>3</sup>

TRGS 900 (DE): 20 ppm / 14 mg/m<sup>3</sup>  
A/a aveoles passing, E/e respirable, G total

Short-term exposure factor: 2 (I), Y  
skin resorptive (H), respiratory sensitizable (Sa), skin sensitizable (Sh), teratogenic (Z) not securely excluded / (Y) certainly excluded

SUVA(CH) MAK value: 20 ppm / 14 mg/m<sup>3</sup>

NIOSH: [TWA] 25 ppm / 18 mg/m<sup>3</sup>

NIOSH STEL: 35 ppm / 27 mg/m<sup>3</sup>

[TWA] Time-weighted average to a reference period of 8 hours, [STEL] Short-term exposure limit related to a 15-minute period

OSHA: Yes (TQ = 15000 lbs) - n/a; [TWA] 50 ppm / 35 mg/m<sup>3</sup>

#### 8 mL Arginine reference solution (A)

Chemical: *test chemical(s) (ppm)*

CAS No.: -

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**8 mL Cation test mixture (heavy metals)**

Chemical: *manganese(II) sulfate (monohydrate)* CAS No.: 10034-96-5  
 EU value: [Mn, TWA] 0.2E / 0.05A mg/m<sup>3</sup>  
 TRGS 900 (DE): [Mn] 0.02A; 0.2E mg/m<sup>3</sup>  
 A/a aveoles passing, E/e respirable, G total  
 Short-term exposure factor: 8 (II), Y  
 skin resorptive (H), respiratory sensitizable (Sa), skin sensitizable (Sh), teratogenic (Z) not securely excluded / (Y) certainly excluded  
 TRGS 903 (DE): nicht mehr gelistet  
 B blood, U urine, a no limitation, b end of exposition or shift  
 NIOSH: [TWA] 1 / [STEL] 3 mg/m<sup>3</sup>  
 [TWA] Time-weighted average to a reference period of 8 hours, [STEL] Short-term exposure limit related to a 15-minute period  
 OSHA: [C] 5 mg/m<sup>3</sup>

Chemical: *copper(II) sulfate (pentahydrate)* CAS No.: 7758-98-7

TRGS 900 (DE): 1 (0,1) E mg/m<sup>3</sup>  
 A/a aveoles passing, E/e respirable, G total  
 Short-term exposure factor: 4  
 skin resorptive (H), respiratory sensitizable (Sa), skin sensitizable (Sh), teratogenic (Z) not securely excluded / (Y) certainly excluded  
 SUVA(CH) MAK value: [als Cu][MAK]0,1 e/[STEL] 0,2 e mg/m<sup>3</sup>

**50 mL Hydrochloric acid 18%**

Chemical: *hydrochloric acid* CAS No.: 7647-01-0  
 DNEL: [inh] 8 mg/m<sup>3</sup>  
 DNEL = Derived No-Effect Level (for workers)  
 PNEC (fresh water): 36 µg/L  
 PNEC = Predicted No Effect Concentration  
 EU value: [TWA] 5 ppm / 8 mg/m<sup>3</sup> ; [STEL] 10 ppm / 15 mg/m<sup>3</sup>  
 TRGS 900 (DE): 2 mL/m<sup>3</sup> / 3 mg/m<sup>3</sup>  
 A/a aveoles passing, E/e respirable, G total  
 Short-term exposure factor: 2 (I), Y  
 skin resorptive (H), respiratory sensitizable (Sa), skin sensitizable (Sh), teratogenic (Z) not securely excluded / (Y) certainly excluded  
 SUVA(CH) MAK value: 2 ppm / 3\* mg/m<sup>3</sup>  
 NIOSH: [C] 5 ppm / 7 mg/m<sup>3</sup>  
 [TWA] Time-weighted average to a reference period of 8 hours, [STEL] Short-term exposure limit related to a 15-minute period  
 OSHA: List of highly hazardous chemicals, toxics and reactives Yes (TQ = 5000 lbs) n/a; TWA 5 ppm / 7 mg/m<sup>3</sup>

**100 mL n-Butanol**

Chemical: *1-butanol* CAS No.: 71-36-3  
 DNEL: [inh] 310 mg/m<sup>3</sup>  
 DNEL = Derived No-Effect Level (for workers)  
 PNEC (fresh water): 0,082 mg/L  
 PNEC = Predicted No Effect Concentration  
 TRGS 900 (DE): 100 ppm / 310 mg/m<sup>3</sup>  
 A/a aveoles passing, E/e respirable, G total  
 Short-term exposure factor: 1 (I), Y  
 skin resorptive (H), respiratory sensitizable (Sa), skin sensitizable (Sh), teratogenic (Z) not securely excluded / (Y) certainly excluded  
 SUVA(CH) MAK value: 50 ppm / 150 mg/m<sup>3</sup>  
 TRGS 903 (DE): [Kreatinin] U/d 2; U/b 10 mg/g  
 B blood, U urine, a no limitation, b end of exposition or shift  
 NIOSH: C [skin] 50 ppm / 150 mg/m<sup>3</sup>  
 [TWA] Time-weighted average to a reference period of 8 hours, [STEL] Short-term exposure limit related to a 15-minute period  
 OSHA: [TWA] 100 ppm / 300 mg/m<sup>3</sup>

**100 mL Ninhydrin spray reagent**

Chemical: *ninhydrin* CAS No.: 485-47-2  
 Chemical: *ethanol* CAS No.: 64-17-5  
 DNEL: [derm] 343 mg/kg; [inh] 950 mg/m<sup>3</sup>  
 DNEL = Derived No-Effect Level (for workers)  
 PNEC (fresh water): 0.96 mg/L  
 PNEC = Predicted No Effect Concentration  
 TRGS 900 (DE): 200 mL/m<sup>3</sup> / 380 mg/m<sup>3</sup>  
 A/a aveoles passing, E/e respirable, G total  
 Short-term exposure factor: 4 (II), Y  
 skin resorptive (H), respiratory sensitizable (Sa), skin sensitizable (Sh), teratogenic (Z) not securely excluded / (Y) certainly excluded  
 SUVA(CH) MAK value: 500 ppm / 960 mg/m<sup>3</sup>  
 NIOSH: [TWA] 1000 ppm / 1900 mg/m<sup>3</sup>



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[TWA] Time-weighted average to a reference period of 8 hours, [STEL] Short-term exposure limit related to a 15-minute period  
 OSHA: [TWA] 1000 ppm / 1900 mg/m<sup>3</sup>

### 8 mL Reference solution Copper

Chemical: *copper(II) sulfate (pentahydrate)* CAS No.: 7758-98-7  
 TRGS 900 (DE): 1 (0,1) E mg/m<sup>3</sup>  
A/a aveoles passing, E/e respirable, G total  
 Short-term exposure factor: 4  
skin resorptive (H), respiratory sensitizable (Sa), skin sensitizable (Sh), teratogenic (Z) not securely excluded / (Y) certainly excluded  
 SUVA(CH) MAK value: [als Cu][MAK]0,1 e/[STEL] 0,2 e mg/m<sup>3</sup>

### 8 mL Reference solution Manganese

Chemical: *manganese(II) sulfate (monohydrate)* CAS No.: 10034-96-5  
 EU value: [Mn, TWA] 0.2E / 0.05A mg/m<sup>3</sup>  
 TRGS 900 (DE): [Mn] 0.02A; 0.2E mg/m<sup>3</sup>  
A/a aveoles passing, E/e respirable, G total  
 Short-term exposure factor: 8 (II), Y  
skin resorptive (H), respiratory sensitizable (Sa), skin sensitizable (Sh), teratogenic (Z) not securely excluded / (Y) certainly excluded  
 TRGS 903 (DE): nicht mehr gelistet  
B blood, U urine, a no limitation, b end of exposition or shift  
 NIOSH: [TWA] 1 / [STEL] 3 mg/m<sup>3</sup>  
[TWA] Time-weighted average to a reference period of 8 hours, [STEL] Short-term exposure limit related to a 15-minute period  
 OSHA: [C] 5 mg/m<sup>3</sup>

### 100 mL Rubeanic acid spray reagent

Chemical: *ethanol* CAS No.: 64-17-5  
 DNEL: [derm] 343 mg/kg; [inh] 950 mg/m<sup>3</sup>  
DNEL = Derived No-Effect Level (for workers)  
 PNEC(fresh water): 0.96 mg/L  
PNEC = Predicted No Effect Concentration  
 TRGS 900 (DE): 200 mL/m<sup>3</sup> / 380 mg/m<sup>3</sup>  
A/a aveoles passing, E/e respirable, G total  
 Short-term exposure factor: 4 (II), Y  
skin resorptive (H), respiratory sensitizable (Sa), skin sensitizable (Sh), teratogenic (Z) not securely excluded / (Y) certainly excluded  
 SUVA(CH) MAK value: 500 ppm / 960 mg/m<sup>3</sup>  
 NIOSH: [TWA] 1000 ppm / 1900 mg/m<sup>3</sup>  
[TWA] Time-weighted average to a reference period of 8 hours, [STEL] Short-term exposure limit related to a 15-minute period  
 OSHA: [TWA] 1000 ppm / 1900 mg/m<sup>3</sup>  
 Chemical: *rubeanic acid* CAS No.: 79-40-3

### 8 mL Tryptophan reference solution (B)

Chemical: *test chemical(s) (ppm)* CAS No.: -

## 8.2 Exposure controls

Good ventilation and extraction system in the room, floor resistant to chemicals with floor drainage and washing facilities. The highest level of cleanliness must be maintained at the workplace.

### 8.2.1 Respiratory protection

No additional recommendations.

### 8.2.2 Hand protection

Yes, gloves according EN 374 (permeation time >30 min - level 2), consist of PVC (f.ex. from Ansell or KCL). Use for short times chemical resistant latex or nitril gloves with code EN 374-3 level 1.

### 8.2.3 Eye protection

Yes, safety glasses according EN 166 with integrated side shields or wrap-around protection or face protection.

### 8.2.4 Skin protection

Recommended to avoid clothing damage, and to avoid contamination with these hazards.

### 8.2.5 Personal hygiene

Eating, drinking, smoking, taking snuff and storage of food in work areas and at outdoor workplaces is prohibited. Avoid contact with the skin, eyes and clothing. Rinse any clothing on which the substance has been spilled, and soak it in water. Wash hands thoroughly with soap and water when stopping work and before eating, and then apply protective skin cream.

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## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

**50 mL Acetic acid 50%**

Appearance: liquid	Colour: colourless	Odor: acetic
Odor limit:	0.2-183 mg/m <sup>3</sup>	
pH:	2-3	
Melting point:	-84 °C	
Boiling point:	77 °C	
Flash point:	>100 °C	
Evaporation rate <sub>(ether=1)</sub> :	2,8	
Explosion limits:	2.1-11.5 Vol%	
Vapour pressure (20°C):	92 hPa	
Vapour density <sub>(air=1)</sub> :	3,04	
Specific gravity:	1,06 g/cm <sup>3</sup>	
Solubility in water:	0-8 %	
Flashing temperature:	460 °C	
Volatiles by volume:	333 g/m <sup>3</sup>	

**100 mL Acetone**

Appearance: liquid	Colour: colourless	Odor: like acetone
Odor limit:	1-1600 mg/m <sup>3</sup>	
pH:	5-6	
Melting point:	-95 °C	
Boiling point:	56 °C	
Flash point:	-20 °C	
Evaporation rate <sub>(ether=1)</sub> :	2,1	
Explosion limits:	2.5-13 Vol%	
Vapour pressure (20°C):	233 hPa	
Vapour density <sub>(air=1)</sub> :	2,01	
Specific gravity:	0,79 g/cm <sup>3</sup>	
Solubility in water:	0-100 %	
Flashing temperature:	540 °C	
Volatiles by volume:	555 g/m <sup>3</sup>	

**8 mL Amino acid test mixture**

Appearance: liquid	Colour: colourless	Odor: odorless
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**100 mL Ammonia solution 25%**

Appearance: liquid	Colour: colourless	Odor: aminic
Odor limit:	1-4 mg/m <sup>3</sup>	
pH:	> 11,5	
Melting point:	< -57.5 °C	
Boiling point:	37.7 (25%) °C	
Explosion limits:	15-28 Vol%	
Vapour pressure (20°C):	> 500 hPa	
Specific gravity:	0,88 g/cm <sup>3</sup>	
Solubility in water:	0-100 %	

**8 mL Arginine reference solution (A)**

Appearance: liquid	Colour: colourless	Odor: odorless
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**8 mL Cation test mixture (heavy metals)**

Appearance: liquid	Colour: colored	Odor: odorless
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**50 mL Hydrochloric acid 18%**

Appearance: liquid	Colour: colourless	Odor: penetrative
pH:	0-1	
Specific gravity:	1,09 g/cm <sup>3</sup>	

**100 mL n-Butanol**

Appearance: liquid	Colour: colourless	Odor: fusty, mouldy
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Odor limit:	0.36-150 mg/m <sup>3</sup>
pH:	7
Melting point:	-89 °C
Boiling point:	117 °C
Flash point:	34 °C
Evaporation rate <sub>(ether=1)</sub> :	33
Explosion limits:	1.4-11 Vol%
Vapour pressure (20°C):	6.3 hPa
Vapour density <sub>(air=1)</sub> :	2,55
Specific gravity:	0,81 g/cm <sup>3</sup>
Solubility in water:	0-8 %
Flashing temperature:	325 °C
Volatiles by volume:	20 g/m <sup>3</sup>

**100 mL Ninhydrin spray reagent**

Appearance: liquid	Colour: red	Odor: alcoholic
Odor limit:	19-93 mg/m <sup>3</sup>	
pH:	7	
Melting point:	-114 °C	
Boiling point:	78 °C	
Flash point:	12 °C	
Explosion limits:	3.2-15 Vol%	
Vapour pressure (20°C):	59 hPa	
Vapour density <sub>(air=1)</sub> :	1,59	
Specific gravity:	0,79-0,86 g/cm <sup>3</sup>	
Solubility in water:	0-100 %	
Flashing temperature:	425 °C	
Volatiles by volume:	112 g/m <sup>3</sup>	

**8 mL Reference solution Copper**

Appearance: liquid	Colour: blue	Odor: odorless
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**8 mL Reference solution Manganese**

Appearance: liquid	Colour: colourless	Odor: odorless
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**100 mL Rubenic acid spray reagent**

Appearance: liquid	Colour: yellow	Odor: alcoholic
Odor limit:	19-93 mg/m <sup>3</sup>	
pH:	7	
Melting point:	-114 °C	
Boiling point:	78 °C	
Flash point:	12 °C	
Explosion limits:	3.2-15 Vol%	
Vapour pressure (20°C):	59 hPa	
Vapour density <sub>(air=1)</sub> :	1,59	
Specific gravity:	0,79-0,86 g/cm <sup>3</sup>	
Solubility in water:	0-100 %	
Flashing temperature:	425 °C	
Volatiles by volume:	112 g/m <sup>3</sup>	

**8 mL Tryptophan reference solution (B)**

Appearance: liquid	Colour: colourless	Odor: odorless
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**9.2 Other information**

Data for the other parameters of the mixtures are not available, because no registration and no chemical safety report is required.

**Relevant Properties of Substance Group**

Substances are very volatile and form flammable vapour-air mixtures. ---



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## SECTION 10: Stability and reactivity

### 10.1 Reactivity

no further data available.

### 10.2 Chemical stability

No known instability.

### 10.3 Possibility of hazardous reactions

Can react violently with organic material. No further data available.

### 10.4 Conditions to avoid

Not necessary. ---

### 10.5 Incompatible materials

Avoid contact with strong acids or alkalines.

### 10.6 Hazardous decomposition products

In the original package all parts/all reagents are safety and separated stored. Decompositions are not observed during the expiration period under recommended conditions.

## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

Following information is valid for pure substances. Quantitative data on the toxicity of this product are not available.

#### 50 mL Acetic acid 50%

Chemical:	<i>acetic acid</i>	CAS No.:	64-19-7
TSCA Inventory:	listed	California Proposition 65 List:	not listed
Exposure Routes:	inhalation, skin and/or eye contact		
Target Organs:	Eyes, skin, respiratory system, teeth		
Symptoms:	irritation eyes, skin, nose, throat; eye, skin burns; skin sensitization; dental erosion; black skin, hyperkeratosis; conjunctivitis, lacrimation (di		
Australia NICNAS:	not listed	Canada CEPA 1999:	DSL Yes
Japan CSCL/PRTR:	not listed, Japan PDSCL:	not listed	
Japan ISHL:	listed $\geq 1,0\%$ / $\geq 1,0\%$ , Article 57-2 (SDS required)		
South Korea TCCA:	not listed		
Korea Exist.Chem.Inventory:	KE-00013		
LD50 <sub>orl rat</sub> :	3310 mg/kg		
LC50 <sub>inh rat</sub> :	[4h] 8.5-12,7 mg/L		
LD50 <sub>drm rbt</sub> :	1060 mg/kg		
LD50 <sub>oral mouse</sub> :	4960 mg/kg		

#### 100 mL Acetone

Chemical:	<i>acetone</i>	CAS No.:	67-64-1
TSCA Inventory:	listed	California Proposition 65 List:	not listed
ACGIH:	750 ppm		
Exposure Routes:	inhalation, ingestion, skin and/or eye contact		
Target Organs:	Eyes, skin, respiratory system, central nervous system		
Symptoms:	irritation eyes, nose, throat; headache, dizziness, central nervous system depression; dermatitis		
Australia NICNAS:	not listed	Canada CEPA 1999:	DSL yes
Japan CSCL/PRTR:	[PAC] Yes, Japan PDSCL: not listed		
Japan ISHL:	listed $\geq 1,0\%$ / $\geq 0,1\%$ , Article 57-1+2 (Labelling&SDS required)		
South Korea TCCA:	not listed		
Korea Exist.Chem.Inventory:	KE-29367		
LD50 <sub>orl rat</sub> :	5800 mg/kg		
LC50 <sub>ihl rat</sub> :	[8h] 50.1 g/m <sup>3</sup>		
LD50 <sub>drm rbt</sub> :	7.426-15.8 g/kg		

#### 8 mL Amino acid test mixture

Chemical:	<i>test chemical(s) (ppm)</i>	CAS No.:	-
TSCA Inventory:	all <0.1%		

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## 100 mL Ammonia solution 25%

Chemical: *ammonia solution* CAS No.: 1336-21-6  
 TSCA Inventory: listed California Proposition 65 List: not listed  
 Exposure Routes: inhalation, ingestion (solution), skin and/or eye contact (solution/liquid)  
 Target Organs: Eyes, skin, respiratory system  
 Symptoms: irritation eyes, nose, throat; dyspnea (breathing difficulty), wheezing, chest pain; pulmonary edema; pink frothy sputum; skin burns, vesiculation; I  
 Australia NICNAS: not listed Canada CEPA 1999: DSL yes, Toxic Substances (Schedule 1) Yes (Item 53.)  
 Japan CSCL/PRTR: not listed, Japan PDSCL: Deleterious Substance  
 Japan ISHL: listed  $\geq 0,2\%/\geq 0,1\%$ , Article 57-2 (SDS required)  
 South Korea TCCA: not listed  
 Korea Exist.Chem.Inventory: KE-01688, >10% Toxic 97-1-184  
 LD50<sub>orl rat</sub>: 350 mg/kg  
 LC<sub>LoWohl hmn</sub>: 5000 mg/m<sup>3</sup>  
 LC50<sub>ihl rat</sub>: [4h] 2000 ppm  
 LD50<sub>drm rbt</sub>: [5min] 5000 ppm  
 Acute Effects: Cause after inhalation of vapours/dust, impairments of health when ingested in small quantities.

## 8 mL Arginine reference solution (A)

Chemical: *test chemical(s) (ppm)* CAS No.: -  
 TSCA Inventory: all <0.1%

## 8 mL Cation test mixture (heavy metals)

Chemical: *manganese(II) sulfate (monohydrate)* CAS No.: 10034-96-5  
 TSCA Inventory: listed (CAS 7785-87-7)  
 Exposure Routes: inhalation, ingestion  
 Symptoms: Manganism; asthenia, insomnia, mental confusion; metal fume fever: dry throat, cough, chest tightness, dyspnea (breathing difficulty), rales, flu-like  
 Japan CSCL/PRTR: PRTR:  $\geq 1,0\%$ Mn class I, Japan PDSCL: not listed  
 Japan ISHL: listed  $\geq 1,0\%/\geq 0,1\%$   
 LD50<sub>orl rat</sub>: 2150 mg/kg

Chemical: *copper(II) sulfate (pentahydrate)* CAS No.: 7758-98-7  
 TSCA Inventory: listed  
 Japan ISHL: listed  $\geq 1,0\%/\geq 0,1\%$   
 LD50<sub>orl rat</sub>: 300 mg/kg  
 LC<sub>LoWohl hmn</sub>: 50 mg/kg  
 LD50<sub>drm rbt</sub>: >2000 mg/kg

TRGS 905 (DE): R<sub>F</sub> C

## 50 mL Hydrochloric acid 18%

Chemical: *hydrochloric acid* CAS No.: 7647-01-0  
 TSCA Inventory: listed California Proposition 65 List: not listed  
 Exposure Routes: inhalation, ingestion (solution), skin and/or eye contact  
 Target Organs: Eyes, skin, respiratory system  
 Symptoms: irritation nose, throat, larynx; cough, choking; dermatitis; solution: eye, skin burns; liquid: frostbite; in animals: laryngeal spasm; pulmonary ede  
 Australia NICNAS: not listed Canada CEPA 1999: DSL Yes  
 Japan CSCL/PRTR: not listed, Japan PDSCL: Deleterious Substance  
 Japan ISHL: listed  $\geq 0,2\%/\geq 0,1\%$ , Article 57-2 (SDS required)  
 South Korea TCCA: Accident Precaution Chemical Yes  
 Korea Exist.Chem.Inventory: KE-20189, >10% Toxic 97-1-203, Acc. Precaution Chem.  
 LD50<sub>orl rat</sub>: 900 mg/kg  
 LC50<sub>drm rbt</sub>: >5010 mg/kg  
 Acute Effects: Cause after inhalation of vapours/dust, impairments of health when ingested in small quantities.

## 100 mL n-Butanol

Chemical: *1-butanol* CAS No.: 71-36-3  
 TSCA Inventory: listed California Proposition 65 List: not listed  
 ACGIH: 152 ppm  
 Exposure Routes: inhalation, skin absorption, ingestion, skin and/or eye contact  
 Target Organs: Eyes, skin, respiratory system, central nervous system

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Symptoms: irritation eyes, nose, throat; headache, dizziness, drowsiness; corneal inflammation, blurred vision, lacrimation (discharge of tears), photophobia (

Australia NICNAS: not listed Canada CEPA 1999: DSL yes  
 Japan CSCL/PRTR: PAC yes, Japan PDSCL: not listed  
 Japan ISHL: listed  $\geq 1,0\%$ / $\geq 0,1\%$ , Article 57-1+2 (Labelling&SDS required)  
 South Korea TCCA: not listed  
 Korea Exist.Chem.Inventory: KE-03867  
 LD50<sub>orl rat</sub>: 790 mg/kg  
 LC<sub>LoWinh hmn</sub>: 0.08 mg/L  
 LC50<sub>inh rat</sub>: >18<sub>4h</sub> mg/L  
 LD50<sub>drm rbt</sub>: 3400 mg/kg  
 Acute Effects: Cause after oral intake, inhalation of vapours/dust, impairments of health when ingested in small quantities.  
 TRGS 905 (DE): R<sub>F</sub> C

## 100 mL Ninhydrin spray reagent

Chemical: *ninhydrin* CAS No.: 485-47-2  
 TSCA Inventory: listed  
 Korea Exist.Chem.Inventory: KE-10839  
 LD50<sub>orl rat</sub>: 600 mg/kg  
 LC<sub>LoWorl rat</sub>: 250 mg/kg

Chemical: *ethanol* CAS No.: 64-17-5  
 TSCA Inventory: listed California Proposition 65 List: not listed  
 ACGIH: 1000 ppm  
 Exposure Routes: inhalation, ingestion, skin and/or eye contact  
 Target Organs: Eyes, skin, respiratory system, central nervous system, liver, blood, reproductive system  
 Symptoms: irritation eyes, skin, nose; headache, drowsiness, lassitude (weakness, exhaustion), narcosis; cough; liver damage; anemia; reproductive, teratogenic  
 Australia NICNAS: not listed Canada CEPA 1999: DSL yes  
 Japan CSCL/PRTR: not listed, Japan PDSCL: not listed  
 Japan ISHL: listed  $\geq 0,1\%$ / $\geq 0,1\%$ , Article 57-2 (SDS required)  
 South Korea TCCA: not listed  
 Korea Exist.Chem.Inventory: KE-13217  
 LD50<sub>orl rat</sub>: 6200 mg/kg  
 LC<sub>LoWihl gpg</sub>: 21.9 g/m<sup>3</sup>  
 LC<sub>LoWorl hmn</sub>: 1400 mg/kg  
 LC50<sub>ihl mouse</sub>: [4h] 39 g/m<sup>3</sup>  
 LC50<sub>ihl rat</sub>: [10h] 20 g/m<sup>3</sup>  
 LD50<sub>drm rbt</sub>: 20 000 mg/kg  
 LD50<sub>oral mouse</sub>: 3450 mg/kg  
 TRGS 905 (DE): K5, M5, R<sub>F</sub> C

## 8 mL Reference solution Copper

Chemical: *copper(II) sulfate (pentahydrate)* CAS No.: 7758-98-7  
 TSCA Inventory: listed  
 Japan ISHL: listed  $\geq 1,0\%$ / $\geq 0,1\%$   
 LD50<sub>orl rat</sub>: 300 mg/kg  
 LC<sub>LoWorl hmn</sub>: 50 mg/kg  
 LD50<sub>drm rbt</sub>: >2000 mg/kg  
 TRGS 905 (DE): R<sub>F</sub> C

## 8 mL Reference solution Manganese

Chemical: *manganese(II) sulfate (monohydrate)* CAS No.: 10034-96-5  
 TSCA Inventory: listed (CAS 7785-87-7)  
 Exposure Routes: inhalation, ingestion  
 Symptoms: Manganism; asthenia, insomnia, mental confusion; metal fume fever: dry throat, cough, chest tightness, dyspnea (breathing difficulty), rales, flu-like  
 Japan CSCL/PRTR: PRTR:  $\geq 1,0\%$ Mn class I, Japan PDSCL: not listed  
 Japan ISHL: listed  $\geq 1,0\%$ / $\geq 0,1\%$   
 LD50<sub>orl rat</sub>: 2150 mg/kg

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## 100 mL Rubenic acid spray reagent

Chemical: *ethanol* CAS No.: 64-17-5  
 TSCA Inventory: listed California Proposition 65 List: not listed  
 ACGIH: 1000 ppm  
 Exposure Routes: inhalation, ingestion, skin and/or eye contact  
 Target Organs: Eyes, skin, respiratory system, central nervous system, liver, blood, reproductive system  
 Symptoms: irritation eyes, skin, nose; headache, drowsiness, lassitude (weakness, exhaustion), narcosis; cough; liver damage; anemia; reproductive, teratogenic  
 Australia NICNAS: not listed Canada CEPA 1999: DSL yes  
 Japan CSCL/PRTR: not listed, Japan PDSCL: not listed  
 Japan ISHL: listed  $\geq 0,1\%$ / $\geq 0,1\%$ , Article 57-2 (SDS required)  
 South Korea TCCA: not listed  
 Korea Exist.Chem.Inventory: KE-13217  
 LD50<sub>orl rat</sub>: 6200 mg/kg  
 LC<sub>LoWihl</sub> gpg: 21.9 g/m<sup>3</sup>  
 LC<sub>LoWorl</sub> hmh: 1400 mg/kg  
 LC50<sub>ihl mouse</sub>: [4h] 39 g/m<sup>3</sup>  
 LC50<sub>ihl rat</sub>: [10h] 20 g/m<sup>3</sup>  
 LD50<sub>drm rbt</sub>: 20 000 mg/kg  
 LD50<sub>oral mouse</sub>: 3450 mg/kg  
 TRGS 905 (DE): K5, M5, R<sub>F</sub> C

Chemical: *rubenic acid* CAS No.: 79-40-3  
 TSCA Inventory: listed  
 Korea Exist.Chem.Inventory: not listed  
 LD50<sub>orl rat</sub>: 500 mg/kg

## 8 mL Tryptophan reference solution (B)

Chemical: *test chemical(s) (ppm)* CAS No.: -  
 TSCA Inventory: all <0.1%

## SECTION 12: Ecological information

### 12.1 Toxicity

Following information is valid for pure substances.

#### 50 mL Acetic acid 50%

Chemical: *acetic acid* CAS No.: 64-19-7  
 Avoid contact of substance/mixture to environment.  
 PNEC (fresh water): 3.058 mg/L  
 PNEC = Predicted No Effect Concentration  
 LC50<sub>fish/96h</sub>: [4d] 301-1000 mg/L  
 EC50<sub>daphnia/48h</sub>: 301-1000 mg/L  
 IC50<sub>scenedesmus quadricauda/72h</sub>: 301-1000 mg/L  
 Water hazard class (DE): 1 WGK No.: 0093  
 Dispersion coefficient<sub>(octanol-water)</sub>: -0,17  
 Storage class (VCI): 8 B

#### 100 mL Acetone

Chemical: *acetone* CAS No.: 67-64-1  
 PNEC (fresh water): 10.6 mg/L  
 PNEC = Predicted No Effect Concentration  
 LC50<sub>daphnia magna/48h</sub>: [48h] 8.8 g/L  
 LC50<sub>fish/96h</sub>: [4d] 5540 mg/L  
 EC50<sub>daphnia/48h</sub>: 2212 mg/L  
 IC50<sub>scenedesmus quadricauda/72h</sub>: IC50: 7500 mg/L  
 EC10<sub>pseudomonas putida/16h</sub>: [30 min] 61,15 g/L  
 Water hazard class (DE): 1 WGK No.: 0006  
 Dispersion coefficient<sub>(octanol-water)</sub>: -0.24  
 Storage class (VCI): 3

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**8 mL Amino acid test mixture**

Chemical: *test chemical(s) (ppm)* CAS No.: -  
 Storage class (VCI): 12

**100 mL Ammonia solution 25%**

Chemical: *ammonia solution* CAS No.: 1336-21-6  
 Very toxic to aquatic life. Avoid contact of substance/mixture to environment.  
 Environmental hazards must not be labelled with H and P phrases until 125 mL (EU 1272/2008 Annex I - 1.5.2).  
 PNEC(fresh water) : 0.0011 mg/L  
 PNEC = Predicted No Effect Concentration  
 LC50<sub>fish/96h</sub> : 0,89 mg/L  
 EC50<sub>daphnia/48h</sub> : 101 mg/L  
 Water hazard class (DE): 2 WGK No.: 0211  
 Storage class (VCI): 8 B

**8 mL Arginine reference solution (A)**

Chemical: *test chemical(s) (ppm)* CAS No.: -  
 Storage class (VCI): 12

**8 mL Cation test mixture (heavy metals)**

Chemical: *manganese(II) sulfate (monohydrate)* CAS No.: 10034-96-5  
 Water hazard class (DE): 1  
 Storage class (VCI): 12-13

Chemical: *copper(II) sulfate (pentahydrate)* CAS No.: 7758-98-7  
 LC50<sub>pimephales promelas/96h</sub> : 0.1-2.5 mg/L  
 EC50<sub>daphnia/48h</sub> : 0.82 mg/L  
 Water hazard class (DE): 2 WGK No.: 0141  
 Storage class (VCI): 12

**50 mL Hydrochloric acid 18%**

Chemical: *hydrochloric acid* CAS No.: 7647-01-0  
 PNEC(fresh water) : 36 µg/L  
 PNEC = Predicted No Effect Concentration  
 LC50<sub>fish/96h</sub> : 24.6 mg/L  
 EC50<sub>daphnia/48h</sub> : 0.492 mg/L  
 EC50<sub>pseudokirchneriella subcapitata/72h</sub> : 0.78 mg/L  
 Water hazard class (DE): 1 WGK No.: 0238  
 Storage class (VCI): 8 B

**100 mL n-Butanol**

Chemical: *1-butanol* CAS No.: 71-36-3  
 PNEC(fresh water) : 0,082 mg/L  
 PNEC = Predicted No Effect Concentration  
 LC50<sub>leuciscus idus/96h</sub> : 1200-1700 mg/L  
 EC50<sub>daphnia/48h</sub> : 1983 mg/L  
 IC50<sub>scenedesmus quadricauda/72h</sub> : >500 mg/L  
 EC10<sub>pseudomonas putita/16h</sub> : 2250 mg/L  
 Water hazard class (DE): 1 WGK No.: 0039  
 Dispersion coefficient(octanol-water) : 0.88  
 Storage class (VCI): 3

**100 mL Ninhydrin spray reagent**

Chemical: *ninhydrin* CAS No.: 485-47-2  
 Water hazard class (DE): 2  
 Storage class (VCI): 12

Chemical: *ethanol* CAS No.: 64-17-5  
 PNEC(fresh water) : 0.96 mg/L  
 PNEC = Predicted No Effect Concentration  
 LC50<sub>daphnia magna/48h</sub> : >100 mg/L  
 LC50<sub>pimephales promelas/96h</sub> : 13400 - 15100 mg/L  
 LC50<sub>leuciscus idus/96h</sub> : [48h] 8140 mg/L  
 LC50<sub>fish/96h</sub> : 13 g/L  
 EC50<sub>daphnia/48h</sub> : 9.3-14.2 g/L  
 IC50<sub>scenedesmus quadricauda/72h</sub> : [7d] 5000 mg/L  
 EC10<sub>pseudomonas putita/16h</sub> : [EC5] 6500 mg/L



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Water hazard class (DE): 1      WGK No.: 0096  
 Dispersion coefficient<sub>(octanol-water)</sub>: -0.31  
 Storage class (VCI): 3

**8 mL Reference solution Copper**

Chemical: *copper(II) sulfate (pentahydrate)*      CAS No.: 7758-98-7  
 LC50<sub>pimephales promelas/96h</sub>: 0.1-2.5 mg/L  
 EC50<sub>daphnia/48h</sub>: 0.82 mg/L  
 Water hazard class (DE): 2      WGK No.: 0141  
 Storage class (VCI): 12

**8 mL Reference solution Manganese**

Chemical: *manganese(II) sulfate (monohydrate)*      CAS No.: 10034-96-5  
 Water hazard class (DE): 1  
 Storage class (VCI): 12-13

**100 mL Rubenic acid spray reagent**

Chemical: *ethanol*      CAS No.: 64-17-5  
 PNEC<sub>(fresh water)</sub>: 0.96 mg/L  
 PNEC = Predicted No Effect Concentration  
 LC50<sub>daphnia magna/48h</sub>: >100 mg/L  
 LC50<sub>pimephales promelas/96h</sub>: 13400 - 15100 mg/L  
 LC50<sub>leuciscus idus/96h</sub>: [48h] 8140 mg/L  
 LC50<sub>fish/96h</sub>: 13 g/L  
 EC50<sub>daphnia/48h</sub>: 9.3-14.2 g/L  
 IC50<sub>scenedesmus quadricauda/72h</sub>: [7d] 5000 mg/L  
 EC10<sub>pseudomonas putita/16h</sub>: [EC5] 6500 mg/L  
 Water hazard class (DE): 1      WGK No.: 0096  
 Dispersion coefficient<sub>(octanol-water)</sub>: -0.31  
 Storage class (VCI): 3

Chemical: *rubenic acid*      CAS No.: 79-40-3  
 Water hazard class (DE): 2  
 Storage class (VCI): 12

**8 mL Tryptophan reference solution (B)**

Chemical: *test chemical(s) (ppm)*      CAS No.: -  
 Storage class (VCI): 12

**12.2 Persistence and degradability**

not necessary

**12.3 Bioaccumulative potential**

not necessary

**12.4 Mobility in soil**

not necessary

**12.5 Results of PBT and vPvB assessment**

no data available

**12.6 Other adverse effects**

no additional data available

## SECTION 13: Disposal considerations

Please observe local regulations for collection and disposal of hazardous waste and contact waste disposal company, where you will obtain information on laboratory waste disposal (waste code number 16 05 06).

**13.1 Waste treatment methods**

Normally it is possible to empty small amounts (diluted!) into drains. Empty containers of corrosive reagents prior to disposal, rinse with water.



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## SECTION 14: Transport information

**14.1. UN number:** 3316    **14.2. UN proper shipping name:** Chemical Kit  
**14.3. Class:** 9    **14.4. Packing group:** II

*Road transport*

Classification code: M11    Tunnel restriction code: E  
 Limited Quantity: acc. ADR 3.3.1/251: see LQ in Alternative declaration for transportation

*Air transport*

PAX: 960    max. weight PAX: 10 KG  
 CAO: 960    max. weight CAO: 10 KG

*Maritime transport*

EmS: F-A, S-P    Storage category: A

Or use **Alternative declaration for transportation:**

**14.1 UN number:** 1993    **14.2 UN proper shipping name:** Flammable liquid, n.o.s. (ethanol, acetone mixture)  
**14.3 Class:** 3    **14.4 Packing group:** II

*Road transport*

Classification code: F1    Tunnel restriction code: E  
 Limited Quantity: 1 L  
 Excepted Quantity: E 2    Special instructions: 640C

*Air transport*

PAX: 353    max. weight PAX: 5 L  
 CAO: 364    max. weight CAO: 60 L

*Maritime transport*

EmS: F-E, S-E    Storage category: B

**14.1 UN number:** 3264    **14.2 UN proper shipping name:** Corrosive liquid, acidic, inorganic, n.o.s. (rubeanic acid, hydrochloric acid solution)  
**14.3 Class:** 8    **14.4 Packing group:** II

*Road transport*

Classification code: C1    Tunnel restriction code: E  
 Limited Quantity: 1 L  
 Excepted Quantity: E 2

*Air transport*

PAX: 851    max. weight PAX: 1 L  
 CAO: 855    max. weight CAO: 30 L

*Maritime transport*

EmS: F-A, S-B    Storage category: B

**14.1 UN number:** 3266    **14.2 UN proper shipping name:** Corrosive liquid, basic, inorganic, n.o.s. (ammonia solution)  
**14.3 Class:** 8    **14.4 Packing group:** II

*Road transport*

Classification code: C5    Tunnel restriction code: E  
 Limited Quantity: 1 L  
 Excepted Quantity: E 2

*Air transport*

PAX: 851    max. weight PAX: 1 L  
 CAO: 855    max. weight CAO: 30 L

*Maritime transport*

EmS: F-A, S-B    Storage category: B

### 14.5 Environmental hazards

none, contains only small quantities of hazardous substances

### 14.6 Special precautions for user

not necessary

### 14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code

not applicable



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## SECTION 15: Regulatory information

### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

German act governing protection from hazardous substances (Chemicals Act / Chemikaliengesetz- ChemG), revised on August 2013  
 German order governing protection from hazardous substances (Ordinance on Hazardous Substances / Gefahrstoffverordnung - GefStoffV), revised on November 2010, according to Directive 98/24/EC  
 TRGS 200, German engineering rules governing the classification and labelling of hazardous substances, preparations and products, updated October 2011  
 MN Leaflet/User manual, also see www.mn-net.com  
 Look for your country-specific regulations.

### 15.2 Chemical safety assessment

not necessary for these small amounts ---

## SECTION 16: Other information

### 16.1 List of H and P phrases

#### 16.1.1 List of relevant H phrases

H225	Highly flammable liquid and vapour.
H226	Flammable liquid and vapour.
H290	May be corrosive to metals.
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.
H400	Very toxic to aquatic life.
EUH066	Repeated exposure may cause skin dryness or cracking.

#### 16.1.2 List of relevant P phrases

P210	Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P233	Keep container tightly closed.
P260D	Do not breathe vapours.
P260sh	Do not breathe dust/vapours.
P261sh	Avoid breathing dust/vapours.
P264W	Wash with water thoroughly after handling.
P273	Avoid release to the environment.
P280sh	Wear protective gloves/eye protection.
P301+312	IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
P303+361+353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
P305+351+338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a POISON CENTER/doctor.
P330	Rinse mouth.
P390	Absorb spillage to prevent material damage.
P403+233	Store in a well-ventilated place. Keep container tightly closed.

### 16.2 Training advice

Multiple safety training of staffs about danger and protection by using hazards in working area. Additionally training and introduction of staffs for using these products.

### 16.3 Recommended restriction on use

Only for professional user.

Look about employee restrictions for young people (f. ex. 94/33/EC or DE § 22 JArbSchG)!

Look about employee restrictions for pregnant women and nursing women (f.ex. 92/85/EEC or for DE §§ 11-13 MuSchG 2017)!

An individual package of this product or test kit has a moderate hazardous potential.

### 16.4 Further information

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## 16.5 Sources of key data

Regulation 453/2010/EU REACH - REQUIREMENTS FOR THE COMPILATION OF SAFETY DATA SHEETS  
Regulation 487/2013/EU, 4<sup>th</sup> adaptation of CLP regulation to technical and scientific progress  
Regulation 669/2018/EU, 4<sup>th</sup> adaptation of CLP regulation to technical and scientific progress  
Regulation 1480/2018/EU, 4<sup>th</sup> adaptation of CLP regulation to technical and scientific progress  
TRGS 900, German engineering rules governing limits in air at work, updated 03/2019  
SUVA .CH, Limits in air at work 2009, revised on 01.2009  
KÜHN, BIRETT Merkblätter Gefährliche Arbeitsstoffe (Data Sheets of Hazardous Substances)

### Revisions/Updates

Reason for Revision: 2016-03 Adaptation of regulation 1221/2015/EU  
2017-08 Adaption of new ethanol denaturation 2016/1867/EU