

Safety Data Sheet

according to Regulations REACH 1907/2006/EC

REF: 931092

VISOCOLOR ECO Sulfate

Page: 1/12

Printing date: 03.08.2026

Date of issue: 16.07.2026

Version: 2.2.4.10

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

1.1 Product identifier

REF 931092
Product name VISOCOLOR ECO Sulfate

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.

2 x 25 mL SO₄-1

1 x 25 g SO₄-2

UFI: 47TT-F310-R200-809C

UFI: E9TT-X3QE-120G-WAVE

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
Valenciennner Str. 11, 52355 Düren, Germany
Phone: +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, <<https://www.ggiz-erfurt.de>>

You find our current versions of SDS in Internet:

<<https://www.mn-net.com/SDS>>

SECTION 2: Hazard identification

2.0 Classification of the complete product according to Regulation (EC) 1272/2008



GHS06



GHS07

Signal word

DANGER

Hazard identification

H301

H319

H332

Hazard classes/categories

Acute Tox. 3 oral

Eye Irrit. 2

Acute Tox. 4 inh.

2.1 Classification of the substance or mixture according to Regulation (EC) 1272/2008

25 g SO₄-2



GHS06



GHS07

Signal word

DANGER

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Hazard identification	Hazard classes/categories
H301	Acute Tox. 3 oral
H302	Acute Tox. 4 oral
H319	Eye Irrit. 2
H332	Acute Tox. 4 inh.

25 mL SO 4 -1

Signal word

Do not need labelling as hazardous

-

No hazard class

List of H phrases: see section 16.2

2.2 Label elements according regulation (EC) 1272/2008

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** must not be labelled with H and P phrases **until 125 mL** (EU 1272/2008 Annex I - 1.5.2).

25 g SO 4 -2



GHS06

Signal word: DANGER

H301

Toxic if swallowed.

P264, P270, P301+310, P330, P405, P501

Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product. IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth. Store locked up. Dispose of contents/container to regulated waste treatment.

25 mL SO 4 -1

Do not need labelling as hazardous

Signal word: -

Label elements of the complete product



GHS06

Signal word: DANGER

H301

Toxic if swallowed.

P264, P270, P301+310, P330, P405, P501

Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product. IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth. Store locked up. Dispose of contents/container to regulated waste treatment.

2.3 Other hazards

Possible hazards from physicochemical properties

In the case of pH values are less than 5 or higher than 9 then it is irritant.

Information pertaining to particular risks to human and possible symptoms

Cause severe after oral intake, impairments of health or can lead to death even when only ingested in small quantities. Cause after impairments of health when ingested in small quantities.

Information pertaining to particular risks to the environment

Should not be released into the environment.

PBT: not applicable

vPvB: not applicable



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Possible endocrine disrupting effects
no data available

SECTION 3: Composition / information on ingredients

3.1 Substances or 3.2 Mixtures

25 g SO₄-2

Substance name: *barium chloride*
CAS No.: 10361-37-2

Substance rating: H301, Acute Tox. 3 oral, H332, Acute Tox. 4 inh.

Formula: BaCl₂

Pseudonym (de): Bariumdichlorid, Chlorbarium

REACH Reg. No.: 01-2119502547-42-xxxx

EC No.: 233-788-1

Concentration: 40 - <60 %

Indice No.: 056-004-00-8

Correlation factor: x 0.66 (= %Ba)

The classification refers to the weight percentage of the metal (according to CLP regulation 2008/1272/EG Annex VI, 1.1.3.2 Note 1)

acc. CLP (GHS): H301, Acute Tox. 3 oral, H332, Acute Tox. 4 inh.

Substance name: *ammonium chloride*
CAS No.: 12125-02-9

Substance rating: H302, Acute Tox. 4 oral, H319, Eye Irrit. 2

Formula: NH₄Cl

Pseudonym (de): Salmiak

REACH Reg. No.: 01-2119487950-27-xxxx

EC No.: 231-211-8

Concentration: 40 - <70 %

Indice No.: 017-014-00-8

acc. CLP (GHS): H302, Acute Tox. 4 oral, H319, Eye Irrit. 2

25 mL SO₄-1

Substance name: *hydrochloric acid*
CAS No.: 7647-01-0

Substance rating: H314, Skin Corr. 1 A, H335, resp. irrit. STOT SE 3

Formula: HCl·H₂O

Pseudonym (de): Chlorwasserstoffsäure

REACH Reg. No.: 01-2119484862-27-xxxx

EC No.: 231-595-7

Indice No.: 017-002-01-X

Specific concentration limit: Eye Irrit. 2; H319: 10 % ≤ C < 25 % - Skin Irrit. 2; H315: 10 % ≤ C < 25 % - Skin Corr. 1B; H314: C ≥ 25 % - STOT SE 3; H335: C ≥ 10 %

Concentration: 1 - <10 %

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 16.2.

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. Rinse the affected skin or mucous membrane thoroughly under running water. (If possible) use soap.

4.1.2 After EYE Contact



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After contact with the eyes rinse thoroughly under running water with the eyelid wide open with eye washing bottle, eye douche or running water (protect intact eye).

4.1.3 After INHALATION of vapours

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.

4.2 Most important symptoms and effects, both acute and delayed

There are no known delayed symptoms or effects for this product.

4.3 Indication of any immediate medical attention and special treatment needed

TOXIFICATION: Treat symptomatically. Secure the breathing, heart and circulatory function. Remove the substance quickly from the body. Mechanically induce vomiting or ensure the patient eats medicinal charcoal compressed tablets or drinks aluminium oxide drug suspensions. In order to ensure rapid passage through the colon (administer 2 tablespoons of dissolved Glauber's salt). Alleviation of pain, if necessary sedation. Shock treatment. Administer a prophylaxis to counter pulmonary oedema. ---

SECTION 5: Firefighting measures

5.1 Extinguishing media

5.1.1 Suitable 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.

5.1.2 Unsuitable extinguishing media

no data available

5.2 Special hazards arising from the substance or mixture

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). 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

Should not be released into the environment.

PBT: not applicable

vPvB: not applicable

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 5.4,7,8 and 13

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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

Safe storage is guaranteed in the original packaging from MACHEREY-NAGEL. Products which are also classified as toxic must be kept under lock and key. Storage class (German chemical industry): see chapter 12.1

Storage class (VCI): 8B

Water hazard class (DE): 1

7.2.1 Requirements for stock rooms and containers

Keep original product packages tightly closed during handling and storage, so that they are not immediately accessible to outside parties. Use inbreakable container for transport of glass bottles.

7.3 Specific end use(s)

Product for analytical use.

SECTION 8: Exposure controls /personal protection

8.1 Control parameters

25 mL SO₄ -1

Chemical: *hydrochloric acid*

CAS No.: 7647-01-0

DNEL: [inh] 8 mg/m³

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/m³; [STEL] 10 ppm/ 15 mg/m³

TRGS 900 (DE): 2 mL/m³ / 3 mg/m³

E/e respirable

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/m³

NIOSH: [C] 5 ppm / 7 mg/m³

[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/m³

25 g SO₄ -2

Chemical: *barium chloride*

CAS No.: 10361-37-2

EU value: 0.5 Ba e mg/m³

TRGS 900 (DE): 0.5 Ba E mg/m³

E/e respirable

Short-term exposure factor: 1 (I)

skin resorptive (H), respiratory sensitizable (Sa), skin sensitizable (Sh), teratogenic (Z) not securely excluded / (Y) certainly excluded

SUVA(CH) MAK value: 0,5 e mg/m³

NIOSH: TWA 0.5 Ba mg/m³

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

OSHA: TWA 0.5 Ba mg/m³

Chemical: *ammonium chloride*

CAS No.: 12125-02-9

DNEL: 128.9 derm mg/kg

DNEL = Derived No-Effect Level (for workers)

PNEC (fresh water): 0.25 mg/L

PNEC = Predicted No Effect Concentration

SUVA(CH) MAK value: 3 a mg/m³

NIOSH STEL: 20 mg/m³

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.



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8.2.2 Skin protection / Hand protection

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

8.2.3 Eye / Face Protection

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

8.2.4 Skin protection

Recommended 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.

8.2.6 Thermal hazards

no data available

8.3 Limitation and monitoring of environmental exposure

Do not release product into environment.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

25 mL SO₄-1

a) State of aggregation:	liquid
b) Colour:	colourless
c) Odor:	penetrative
d) Melting point:	no data available
e) Boiling point:	no data available
f) Flammability:	no data available
g) Explosive limits (lower / upper):	no data available
h) Flash point:	no data available
i) Flashing temperature:	no data available
j) Decomposition temperature:	no data available
k) pH value:	0-1
l) Kinematic viscosity:	no data available
m) Solubility in water:	0-100 %
n) Dispersion coefficient (K _{ow}):	no data available
o) Vapour pressure (20°C):	no data available
p) Specific gravity:	1,04 g/cm ³
q) Relative vapour density (air=1):	no data available
r) Particle size:	no data available

25 g SO₄-2

a) State of aggregation:	powder (solid)
b) Colour:	colourless
c) Odor:	odorless
d) Melting point:	no data available
e) Boiling point:	no data available
f) Flammability:	no data available
g) Explosive limits (lower / upper):	no data available
h) Flash point:	no data available
i) Flashing temperature:	no data available
j) Decomposition temperature:	no data available
k) pH value:	6-7
l) Kinematic viscosity:	no data available
m) Solubility in water:	no data available
n) Dispersion coefficient (K _{ow}):	no data available
o) Vapour pressure (20°C):	no data available
p) Specific gravity:	no data available
q) Relative vapour density (air=1):	no data available
r) Particle size:	no data available

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9.2 Other information

9.2.1 Information on physical hazard classes

no data available

9.2.2 Other safety-related parameters

No data is available for the other parameters for the mixtures, since no registration and no chemical safety report is required.

□ □

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

No further data available.

10.4 Conditions to avoid

No more required.

10.5 Incompatible materials

no additional data available

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 the hazard classes according regulation (EC) 1272/2008

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

25 mL SO₄ -1

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 edema

Australia NICNAS:

Canada CEPA 1999: DSL Yes

Japan CSCL/PRTR: not listed, Japan PDSCL: Deleterious Substance

Japan ISHL: listed ≥0.2%/≥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 orl rat : 900 mg/kg

25 g SO₄ -2

Chemical: *barium chloride*

CAS No.: 10361-37-2

TSCA Inventory: listed

Exposure Routes: inhalation, ingestion, skin and/or eye contact

Target Organs: Eyes, skin, respiratory system, heart, central nervous system

Symptoms: irritation eyes, skin, upper respiratory system; skin burns; gastroenteritis; muscle spasm; slow pulse,

extrasystoles; hypokalemia

Japan CSCL/PRTR: not listed, Japan PDSCL: Deleterious substance

Japan ISHL: listed ≥1.0%/≥1.0%

Korea Exist.Chem.Inventory: KE-02037

LD50 orl rat : 118 mg/kg

LC₅₀ orl hmn : 11.4 mg/kg

Acute Effects: Cause severe after oral intake, impairments of health or can lead to death even when only ingested in small quantities. Acute Effects: Cause after skin contact, impairments of health when ingested in small quantities.



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Chemical: *ammonium chloride* CAS No.: 12125-02-9
TSCA Inventory: listed
Japan CSCL/PRTR: not listed, Japan PDSCL: not listed
Japan ISHL: listed $\geq 1,0\%$ / $\geq 1,0\%$,
Korea Exist.Chem.Inventory: KE-01645
LD50 orl rat : 1440 mg/kg
LC₅₀ Low orl rbt : 1000 mg/kg
LC50 ihl rat : 1000 ppm/4h
LD50 orl mus : 1300 mg/kg
Acute Effects: Cause after oral intake, impairments of health when ingested in small quantities.

11.2 Other hazards

Possible endocrine disrupting effects

no data available

Other information

no additional data available

SECTION 12: Ecological information

12.1 Toxicity

Following information is valid for pure substances.

25 mL SO₄ -1

Substance name: *hydrochloric acid* CAS-Nr.: 7647-01-0
PNEC (fresh water): 36 µg/L
PNEC = Predicted No Effect Concentration = concentration at which no effect on the environment is expected
LC50 fish/96h : 24.6 mg/L
EC50 daphnia/48h : 0.492 mg/L
EC50 pseudokirchneriella subcapitata/72h : 0.78 mg/L
Water hazard class (DE): 1 WGK No.: 0238
Storage class (VCI): 8 B

25 g SO₄ -2

Substance name: *barium chloride* CAS-Nr.: 10361-37-2
Do not release into the environment.
LC50 leuciscus idus/96h : 870 mg/L
EC50 daphnia/48h : 21.9 mg/L
Water hazard class (DE): 1 WGK No.: 0025
Storage class (VCI): 6.1 B

Substance name: *ammonium chloride* CAS-Nr.: 12125-02-9
PNEC (fresh water): 0.25 mg/L
PNEC = Predicted No Effect Concentration = concentration at which no effect on the environment is expected
LC50 fish/96h : 42.9 mg/L
EC50 daphnia/48h : 136.6 mg/L
EC50 chlorella vulgaris/5d : EC50/5d: 1300 mg/L
Water hazard class (DE): 1 WGK No.: 0213
Storage class (VCI): 12-13

12.2 Persistence and degradability

12.3 Bioaccumulative potential

Substance name: *ammonium chloride* CAS-Nr.: 12125-02-9
Dispersion coefficient (K_{ow}): -4,37

12.4 Mobility in soil

12.5 Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT) or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

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12.6 Endocrine disrupting properties

no data available

12.7 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). Close container tightly.

13.1 Waste treatment methods

Normally it is possible to empty small amounts (diluted!) into drains.
Dispose of contents/container to regulated waste treatment.

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 ADR

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

Air transport IATA DGR

Limited Quantity: PAX: 960 max. quantity PAX: 10 KG
CAO: 960 max. quantity CAO: 10 KG

Maritime transport IMDG

EmS: F-A, S-P Staukategorie: A

Or use **Alternative declaration for transportation:**

UN No.: (see below) class 6.1 III, **Excepted Quantities** ($\leq 30 \text{ mL} / \sum \leq 1 \text{ L}$) = ADR/ IATA E1

or

14.1 UN number: 1564

14.2 UN proper shipping name: Barium compound, n.o.s.

14.3 Class: 6.1

14.4 Packing group: III

Road transport ADR

Classification code: T5 Tunnel restriction code: E
Limited Quantity: 5 Kg
Excepted Quantity: E 1
Special instructions: 513

Air transport IATA DGR

Limited Quantity: PAX: 670 max. quantity PAX: 100 Kg
CAO: 677 max. quantity CAO: 200 Kg
Excepted Quantity: E 1

Maritime transport IMDG

EmS: F-A, S-A Staukategorie: A

14.5 Environmental hazards

none, contains only small quantities of hazardous substances

14.6 Special precautions for user

not necessary

14.7 Carriage in bulk by sea in accordance with IMO instruments

Not applicable.

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SECTION 15: Regulatory information

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

Chemicals Prohibition Ordinance - (DE: ChemVerbotsV), aktualisiert Jan 2017
 Dangerous Substances Protection Act (DE: Chemikaliengesetz - ChemG), Aug 2013, Stand: Okt 2020
 Ordinance on protection against dangerous substances (E: Gefahrstoffverordnung - GefStoffV), Nov 2010, Stand: Mrz 2017
 TRGS 201, Classification and labeling of activities involving hazardous substances, Feb 2017
 TRGS 220, National aspects when preparing safety data sheets, Jan 2017
 TRGS 400, Risk assessment for activities involving hazardous substances, Jul 2017
 BekGS 408, Application of the GefStoffV and the TRGS with the entry into force of the CLP regulation, December 2009, status: Jan 2012
 TRGS 500, Protective measures, Mai 2008
 TRGS 510, Storage of hazardous substances in portable containers from March 2013, status: Oct 2015
 Chapter 4, Measures when storing hazardous substances up to 50 kg (small quantity regulation)
 Wasserhaushaltsgesetz - WHG, Section 3 Handling substances hazardous to water, Jul 2009, status: Aug 2016
 MN leaflet/instructions for use, also at www.mn-net.com
 If necessary, observe other country-specific regulations.

15.2 Chemical safety assessment

no data available

SECTION 16: Other information

16.1 Changes compared to the last version

Between versions 2.2.4.10 and 2.2.2.2 following changes were applied: - 2 composition data corrected - 8 substance data corrected

16.2 List of H and P phrases

16.2.1 List of relevant H phrases

H Between versions 2.2.4.10 and 2.2.2.2 following changes were applied: - 2 composition data corrected - 8 substance data corrected
 H301 Toxic if swallowed.
 H302 Harmful if swallowed.
 H319 Causes serious eye irritation.
 H332 Harmful if inhaled.

16.2.2 List of relevant P phrases

P264 Wash hands thoroughly after handling.
 P270 Do not eat, drink or smoke when using this product.
 P301+310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
 P330 Rinse mouth.
 P405 Store locked up.
 P501 Dispose of contents/container to regulated waste treatment.

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 Sources of key data

KÜHN, BIRETT, Leaflets on hazardous materials, 2021
 Directive 1999/92/EG Minimum requirements to improve the safety and health protection of workers at risk from potentially explosive atmospheres
 SUVA .CH, limit values in the air at work 2009, revised on 01/2009
 Regulation 790/2009/EU, adaptation of Regulation 1272/2008/EU to technical and scientific progress (1st ATP)
 Regulation 453/2010/EU, adaptation of the REACH regulation 1907/2006/EG
 Regulation 487/2013/EU, adaptation of regulation 1272/2008/EG to technical and scientific progress (4th ATP)
 Regulation 1221/2015/EU, adaptation of regulation 1272/2008/EG to technical and scientific progress (7th ATP)
 Regulation 776/2017/EU, adaptation of regulation 1272/2008/EG to technical and scientific progress (10th ATP)
 Regulation 669/2018/EU, adaptation of Regulation 1272/2008/EC to technical and scientific progress (11th ATP)
 Regulation 1480/2018/EU, adaptation of regulation 1272/2008/EG to technical and scientific progress (13th ATP)
 Regulation 521/2019/EU, adaptation of regulation 1272/2008/EG to technical and scientific progress (12th ATP)
 TRGS 900, German rules of technology on limit values in the air at work, as of 03/2019
 Regulation 217/2020/EU, adaptation of Annex VI, Part 3, of Regulation 1272/2008/EC to technical and scientific progress (14th ATP)
 Regulation 878/2020/EU, adaptation of Annex II of the REACH regulation 1907/2006/EG
 Regulation 1182/2020/EU, adaptation of Annex VI, Part 3, of Regulation 1272/2008/EC to technical and scientific progress (15th ATP)
 Regulation 643/2021/EU, adaptation of Annex VI, Part 1, of Regulation 1272/2008/EC to technical and scientific progress (16th ATP)
 Regulation 849/2021/EU, adaptation of Annex VI, Part 3, of Regulation 1272/2008/EC to technical and scientific progress (17th ATP)



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Safety Data Sheet

according to Regulations REACH 1907/2006/EC

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Regulation 692/2022/EU, adaptation of Annex VI, Part 1, of Regulation 1272/2008/EC to technical and scientific progress (18th ATP)

revisions/updates

Reason for revision: 2014-02 Corrected structure of the sections according to Regulation 453/2010/EU, if necessary
2014-04 adjustment according Regulation 487/2013/EU
2016-03 adjustment according Regulation 1221/2015/EU

2017-11 adjustment according the ECHA registration dossier
2022-11 adjustment according Regulation 878/2020/EU

16.5 Further information

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16.6 Legend / Abbreviations

acc:	according
ADR:	Convention concerning the International Carriage of Dangerous Goods by Road
Act:	acute
BAT:	biological workplace tolerance value
CAO:	Cargo Aircraft Only
Carc:	carcinogen
CAS:	Chemical Abstracts Service
CLP:	Classification, Labelling and Packaging regulation
CMR:	carcinogen, mutagen, reproduction toxic
Corr:	corrosive
COD:	chemical oxygen demand
CSCL:	Chemical Substance Control Law (Jp)
Dam:	damage
DNEL:	Derived No-Effect Level (for workers)
derm:	dermal
dog:	dog
EC10:	Concentration causing a toxic effect in 10% of the test organisms
EC:	European Community
EC-Nr:	Substance number of the EC substance inventory
EmS:	Guide to accident management measures on ships
EU:	European Union
fish:	fish (not specified)
GHS:	Global Harmonized System of Classification and Labeling of Chemicals
gpg:	guinea pig
ICAO:	International Civil Aviation Organization
ihl:	inhaled
IMDG:	International Maritime Dangerous Goods Code
intrav:	intravenous
ipt:	intraperitoneal
ISHL:	Industrial Safety and Health Law (Jp)
LC50:	lethal concentration 50%
LD50:	lethal dose 50%
leuciscus idus:	fisch, ide, orfe
MAK:	maximum workplace concentration
Met:	Metall
mus:	mouse
Muta:	mutagen
NIOSH:	National Institute for Occupational Safety and Health (US)
NRD:	Non-rapidly degradable
onchorhynchus mykiss:	fisch, rainbow trout
ori:	oral
OSHA:	Occupational Safety and Health Administration
PAX:	transport on passenger planes allowed
PBT:	persistent, bioaccumulating, toxic substance
pH:	pH value
pimephales promelas:	fisch, fathead minnow
PNEC:	Predicted No Effect Concentration



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PROC 15: Process category 'for laboratory use'
 PRTR: Law for PRTR and Promotion of Chemical Management (Jp)
 PVC: polyvinyl chloride
 quail: bird, quail
 rat: rat
 rb: rabbit
 RD: rapidly degradable
 RE: repeated
 REACH: Registration, Evaluation, Authorisation and Restriction of Chemicals
 REF: item number, reference number
 Reg.No.: rRegistration number
 Repr: harmful to reproduction
 Resp: respiratory
 RIP: REACH Implementations Projects
 scu: sub cutan
 SDS: safety data sheet
 Sens: sensitisation
 STEL: short term exposure limit
 STOT: Specific Target Organ Toxicity
 SVHC: Substance of Very High Concern
 t/a: tons per year
 TCCA: Toxic Chemicals Control Act (S. Korea)
 Tox: toxic
 TSCA: The Toxic Substances Control Act (US)
 TWA: time weighted average
 TRGS: technical regulations (DE)
 vPvB: very persistent, very bioaccumulating substance

16.7 Training advice

Regular safety training. 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.