

Safety Data Sheet

according to Regulations REACH 1907/2006/EC

REF: 985025	NANOCOLOR easily liberated cyanide 04	Page: 1/12
Printing date: 27.09.2023	Date of issue: 24.05.2023	Version: 2.2.4.4

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

1.1 Product identifier

REF 985025
 Product name NANOCOLOR easily liberated cyanide 04

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.

19 x 155 mg e.r. CN - (R1) UFI: GUXW-W3TC-Y20P-C4UQ
 19 x 3,75 mL e.r. CN - (R2)
 19 x 720 mg e.r. CN - (R3) UFI: DXXW-E3GS-9205-1GES

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
 Valencienner 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: <<http://www.mn-net.com/SDS>>

Lieferant / Supplier:
 Carl Roth GmbH + Co KG
 Schöpperlenstr. 3-5
 76185 Karlsruhe, Germany
 +49 721 5606 0
 sicherheit@carlroth.de

SECTION 2: Hazard identification

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



Signal word	DANGER
Hazard identification	Hazard classes/categories
H272	Ox. Liq. 2
H302	Acute Tox. 4 oral
H318	Eye Dam. 1
H335	resp. irrit. STOT SE 3
H410	Aquatic Chronic 1
EUH031	-

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

720 mg e.r. CN - (R3)



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GHS03 GHS07 GHS09

Signal word DANGER

Hazard identification	Hazard classes/categories
EUH031	-
H272	Ox. Liq. 2
H302	Acute Tox. 4 oral
H319	Eye Irrit. 2
H335	resp. irrit. STOT SE 3
H410	Aquatic Chronic 1

155 mg e.r. CN - (R1)



GHS05

Signal word DANGER

Hazard identification	Hazard classes/categories
H318	Eye Dam. 1
H412	Aquatic Chronic 3

3,75 mL e.r. CN - (R2)

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). Inner packages up to 10 mL need max. 2 symbols (Annex I - 1.5.2.4.1 / 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). Oxidizing mixtures with signal word: **DANGER** and **H272** must not be labelled with H and P phrases until 125 mL .

720 mg e.r. CN - (R3)



GHS03 GHS07 GHS09

Signal word: DANGER

155 mg e.r. CN - (R1)



GHS05

Signal word: DANGER
H318

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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.

3,75 mL e.r. CN - (R2)

Do not need labelling as hazardous

Signal word: -

Label elements of the complete product



GHS03



GHS05



GHS09

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.

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.

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

PBT: not applicable

vPvB: not applicable

Possible endocrine disrupting effects

no data available

SECTION 3: Composition / information on ingredients

3.1 Substances or 3.2 Mixtures

720 mg e.r. CN - (R3)

Substance name: *dichloroisocyanuric acid, Na salt*
CAS No.: 2893-78-9

Substance rating: H272, Ox. Liq. 2, H302, Acute Tox. 4 oral, H319, Eye Irrit. 2, H335, resp. irrit. STOT SE 3, H410, Aquatic Chronic 1, EUH031, not defined

Formula: $C_3Cl_2N_3NaO_3$

Pseudonym (de): 1,3-Dichlor-5H-(1,3,5)-triazin-2,4,6-trion

REACH Reg. No.: 01-2119489371-33-xxxx

EC No.: 220-767-7

Indice No.: 613-030-01-7

Concentration: 25 - <50 %

acc. CLP (GHS): H272, Ox. Liq. 2, H302, Acute Tox. 4 oral, H319, Eye Irrit. 2, H335, resp. irrit. STOT SE 3, H410, Aquatic Chronic 1, EUH031,

155 mg e.r. CN - (R1)



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Substance name: *zinc powder (stabilized)*
CAS No.: 7440-66-6

Substance rating: H410, Aquatic Chronic 1
Formula: Zn
REACH Reg. No.: 01-2119467174-37-xxxx
EC No.: 231-175-3
Concentration: 0,25 - <2,5 %
acc. CLP (GHS): H412, Aquatic Chronic 3

Index No.: 030-002-01-9

Substance name: *zinc sulfate*
CAS No.: 7733-02-0

Substance rating: H302, Acute Tox. 4 oral, H318, Eye Dam. 1, H400, Aquatic Acute 1, H410, Aquatic Chronic 1
Formula: ZnSO₄
REACH Reg. No.: 01-2119474684-27-xxxx
EC No.: 231-793-3
Concentration: 1 - <10 %
acc. CLP (GHS): H318, Eye Dam. 1, H412, Aquatic Chronic 3

Index No.: 030-006-00-9
Correlation factor: x 0.40 (= %Zn)
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)

Substance name: *dye(s) for testing*
CAS No.: -

Substance rating: No criteria for classification or naming of chemical not required.
Concentration: 0,01 - <0,1 %
acc. CLP (GHS): The criteria for classification are not fulfilled.

Substance name: *di-sodium hydrogencitrate*
CAS No.: 6132-05-4

Substance rating: No criteria for classification or naming of chemical not required.
Formula: C₆H₆Na₂O₇•1.5H₂O
EC No.: 205-623-3
Concentration: 10 - <30 %
acc. CLP (GHS): The criteria for classification are not fulfilled.

Substance name: *trisodium citrate dihydrate*
CAS No.: 6132-04-3

Substance rating: No criteria for classification or naming of chemical not required.
Formula: C₆H₅Na₃O₇•2H₂O
Pseudonym (de): Na-citrat, E331
REACH Reg. No.: 01-2119457027-40-xxxx
EC No.: 612-118-5
Concentration: 60 - <80 %
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.



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- 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**
After inhalation of foam or vapour fresh air should be inhaled. Keep airways free. ---
- 4.1.4 After ORAL Intake**
After oral intake lots of water should be drunk after it has been ingested.

4.2 Most important symptoms and effects, both acute and delayed

Causes serious eye damage.

4.3 Indication of any immediate medical attention and special treatment needed

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. ---

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.

5.4 Additional information

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Do not breathe vapours. 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

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

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Handling in accordance with the test instruction, that comes with the product. Use a safety bottle when shaking test tubes.

7.2 Conditions for safe storage, including any incompatibilities

Safe storage is guaranteed in the original packaging . Storage class (German chemical industry): see chapter 12.1



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Storage class (VCI): 12
Water hazard class (DE): 3

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.

7.3 Specific end use(s)

Product for analytical use.

SECTION 8: Exposure controls /personal protection

8.1 Control parameters

720 mg e.r. CN⁻ (R3)

Chemical: *dichloroisocyanuric acid, Na salt*

CAS No.: 2893-78-9

NIOSH: not listed

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

OSHA: not listed

155 mg e.r. CN⁻ (R1)

Chemical: *zinc powder (stabilized)*

CAS No.: 7440-66-6

DNEL: 1 inh mg/m³

DNEL = Derived No-Effect Level (for workers)

TRGS 900 (DE): 0.1A / 2E mg/m³
E/e respirable

Chemical: *zinc sulfate*

CAS No.: 7733-02-0

Chemical: *dye(s) for testing*

CAS No.: -

Chemical: *di-sodium hydrogencitrate*

CAS No.: 6132-05-4

Chemical: *trisodium citrate dihydrate*

CAS No.: 6132-04-3

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 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 or face 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

720 mg e.r. CN⁻ (R3)

a) State of aggregation:

solid

b) Colour:

white

c) Odor:

odorless

d) Melting point:

no data available



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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:	no data available
l) Kinematic viscosity:	no data available
m) Solubility in water:	no data available
n) Dispersion coefficient (o/w) :	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

155 mg e.r. CN - (R1)

a) State of aggregation:	solid
b) Colour:	slightly grey
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:	4
l) Kinematic viscosity:	no data available
m) Solubility in water:	no data available
n) Dispersion coefficient (o/w) :	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

9.2 Other information

No data is available for the other parameters for the mixtures, since no registration and no chemical safety report is required.
Properties relevant to substance groups

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

Observe the storage temperature printed on it. No more required.

10.5 Incompatible materials

Avoid contact with concentrated acids and oxidizing agents.

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.



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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.

720 mg e.r. CN - (R3)

Chemical: *dichloroisocyanuric acid, Na salt* CAS No.: 2893-78-9
 TSCA Inventory: listed California Proposition 65 List: not listed
 Australia NICNAS: not listed Canada CEPA 1999: DSL Yes
 Japan CSCL/PRTR: not listed, Japan PDSCL: not listed
 Japan ISHL: not listed
 South Korea TCCA: not listed
 Korea Exist.Chem.Inventory: KE-10215, >25% Toxic 2014-1-688
 LD50 orl rat : 550-1600 mg/kg
 LC_Low orl hmn : 3570 mg/kg
 Acute Effects: Cause after oral intake, inhalation of vapours/dust, impairments of health when ingested in small quantities.

155 mg e.r. CN - (R1)

Chemical: *zinc powder (stabilized)* CAS No.: 7440-66-6
 TSCA Inventory: listed
 Korea Exist.Chem.Inventory: KE-35518
 LD50 orl rat : > 2000 mg/kg
 LC_Low ihl hmn : 0,124 mg/L/50M
 LC50 ihl rat : 5,41 mg/L/4H

Chemical: *zinc sulfate* CAS No.: 7733-02-0
 TSCA Inventory: listed
 Japan CSCL/PRTR: PRTR: ≥1,0%Zn class I
 Korea Exist.Chem.Inventory: KE-35582, >25% Toxic 97-1-91
 LD50 orl rat : 1260/2949 mg/kg

Chemical: *dye(s) for testing* CAS No.: -
 TSCA Inventory: all listed, <1%

Chemical: *di-sodium hydrogencitrate* CAS No.: 6132-05-4
 TSCA Inventory: listed (CAS 144-33-2)
 Korea Exist.Chem.Inventory: not listed

Chemical: *trisodium citrate dihydrate* CAS No.: 6132-04-3
 TSCA Inventory: listed (CAS 68-04-2)
 Korea Exist.Chem.Inventory: KE-20843
 LD50 orl rat : > 8000 mg/kg

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.

720 mg e.r. CN - (R3)

Chemical: *dichloroisocyanuric acid, Na salt* CAS No.: 2893-78-9
 Very toxic to aquatic life with long lasting effects. 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).
 Water hazard class (DE): 3
 Storage class (VCI): 13



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155 mg e.r. CN - (R1)

Chemical: *zinc powder (stabilized)* CAS No.: 7440-66-6
 Harmful to aquatic life with long lasting effects. Avoid contact of substance/mixture to environment.
 Environmental hazards must not be labelled with P phrases until 125 mL (EU 1272/2008 Annex I - 1.5.2).
 LC50 fish/96h : 2.01 mg/L
 EC50 daphnia/48h : 0.131 mg/L
 EC50 pseudokirchneriella subcapitata/72h : IC50: 0.713 mg/L
 Water hazard class (DE): 2 WGK No.: 7325
 Storage class (VCI): 13

Chemical: *zinc sulfate* CAS No.: 7733-02-0
 Harmful to aquatic life with long lasting effects. Avoid contact of substance/mixture to environment.
 Environmental hazards must not be labelled with P phrases until 125 mL (EU 1272/2008 Annex I - 1.5.2).
 LC50 fish/96h : 0.43 mg/L
 EC50 daphnia/48h : 1.86 mg/L
 IC50 scenedesmus quadricauda/72h : EC50/5d: 0.52 mg/L
 EC10 pseudomonas putita/16h : EC50/½ h: 22.75 mg/L
 Water hazard class (DE): 3 WGK No.: 0432
 Storage class (VCI): 12-13

Chemical: *dye(s) for testing* CAS No.: -
 Storage class (VCI): 12

Chemical: *di-sodium hydrogencitrate* CAS No.: 6132-05-4
 Water hazard class (DE): 1

Chemical: *trisodium citrate dihydrate* CAS No.: 6132-04-3
 LC50 fish/96h : 18-32 g/L
 EC50 daphnia/48h : 5.6-10 g/L
 EC50 chlorella vulgaris/5d : >18-32 g/L
 EC10 pseudomonas putita/16h : EC50 ps. fluorescens/8h : >1.8-3.2 g/L
 Water hazard class (DE): 1
 Storage class (VCI): 12-13

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

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

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).

13.1 Waste treatment methods

Not necessary, see above.



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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	
<i>Road transport ADR</i>		
Classification code:	M11	
Limited Quantity:	SV 251 L	Tunnel restriction code: E
Excepted Quantity:	E 0	Special instructions: 251, 340
<i>Air transport IATA DGR</i>		
Limited Quantity:	PAX: 960	max. quantity PAX: 10 Kg
	CAO: 960	max. quantity CAO: 10 Kg
Excepted Quantity:	E 0	
<i>Maritime transport IMDG</i>		
EmS:	F-A, S-P	Staukategorie: A

- 14.5 Environmental hazards**
none, contains only small quantities of hazardous substances, contains only small amounts of these substances
- 14.6 Special precautions for user**
not necessary
- 14.7 Carriage in bulk by sea in accordance with IMO instruments**
Not applicable.

SECTION 15: Regulatory information

- 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
 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
 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**
not necessary for these small amounts

SECTION 16: Other information

- 16.1 Changes compared to the last version**
Between versions 2.2.4.4 and 2.2.2.2 following changes were applied: - 2 composition data corrected - 2 substance data corrected

16.2 List of H and P phrases

16.2.1 List of relevant H phrases	
H272	May intensify fire; oxidizer.
H302	Harmful if swallowed.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
H410	Very toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.



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EUH031 Contact with acids liberates toxic gas.

16.2.2 List of relevant P phrases

P280sh Wear protective gloves/eye protection.
 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.

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 progressText (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)
 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



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- 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: letale concentration 50%
- LD50: letale dosis 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
- 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
- rbt: 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.



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