

Safety Data Sheet

according to Regulations REACH 1907/2006/EC

REF: 985657	NANOCOLOR ortho Phosphate 15, Robot	Page: 1/12
Printing date: 15.05.2024	Date of issue: 26.09.2022	Version: 2.2.2.10

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

1.1 Product identifier

REF 985657
 Product name NANOCOLOR ortho Phosphate 15, Robot

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 2 g ortho Phosphate 15 (B1)
 1 x 5 mL ortho Phosphate (B2)
 1 x 6 mL ortho Phosphate (R4) UFI: 7F7U-D3A4-W206-4K19
 20 x 5 mL ortho Phosphate 15 (R0)

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>>

SECTION 2: Hazard identification

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



GHS07

Signal word WARNING

Hazard identification	Hazard classes/categories
H315	Skin Irrit. 2
H319	Eye Irrit. 2

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

6 mL ortho Phosphate (R4)



GHS07



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Signal word	WARNING
Hazard identification	Hazard classes/categories
H315	Skin Irrit. 2
H319	Eye Irrit. 2

2 g ortho Phosphate 15 (B1)

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

5 mL ortho Phosphate 15 (R0)

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

5 mL ortho Phosphate (B2)

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).

6 mL ortho Phosphate (R4)



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Signal word: WARNING

2 g ortho Phosphate 15 (B1)

Do not need labelling as hazardous
Signal word: -

5 mL ortho Phosphate 15 (R0)

Do not need labelling as hazardous
Signal word: -

5 mL ortho Phosphate (B2)

Do not need labelling as hazardous
Signal word: -

Label elements of the complete product



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Signal word: WARNING



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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

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

6 mL ortho Phosphate (R4)

Substance name: *ammonium heptamolybdate*
 CAS No.: 12054-85-2

Substance rating: No criteria for classification or naming of chemical not required.
 Formula: $H_{24} Mo_7 N_6 O_{24}$
 Pseudonym (de): Ammoniummolybdat
 REACH Reg. No.: 01-2119498057-28-xxxx
 EC No.: 234-722-4
 Concentration: 2 - <5 % Correlation factor: x 0.58 (= %Mo)
 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): The criteria for classification are not fulfilled.

Substance name: *sulfuric acid*
 CAS No.: 7664-93-9

Substance rating: H315, Skin Irrit. 2, H319, Eye Irrit. 2
 Formula: $H_2 SO_4 \cdot H_2 O$
 REACH Reg. No.: 01-2119458838-20-xxxx
 EC No.: 231-639-5 Indice No.: 016-020-00-8
 Concentration: 5 - <15 %
 acc. CLP (GHS): H315, Skin Irrit. 2, H319, Eye Irrit. 2

2 g ortho Phosphate 15 (B1)

Substance name: *sodium L(+)-ascorbate*
 CAS No.: 134-03-2

Substance rating: No criteria for classification or naming of chemical not required.
 Formula: $C_6 H_7 NaO_6$
 Pseudonym (de): Ascorbinsäure, Na-Salz, E301
 EC No.: 205-126-1
 Concentration: 90 - <100 %
 acc. CLP (GHS): The criteria for classification are not fulfilled.

5 mL ortho Phosphate 15 (R0)

Substance name: *sulfuric acid*
 CAS No.: 7664-93-9

Substance rating: H315, Skin Irrit. 2, H319, Eye Irrit. 2
 Formula: $H_2 SO_4 \cdot H_2 O$
 REACH Reg. No.: 01-2119458838-20-xxxx
 EC No.: 231-639-5 Indice No.: 016-020-00-8
 Concentration: 1 - <5 %
 acc. CLP (GHS): The criteria for classification are not fulfilled.



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5 mL ortho Phosphate (B2)

Substance name: *water*
CAS No.: 7732-18-5

Substance rating: No criteria for classification or naming of chemical not required.
Formula: H₂O
REACH Reg. No.: exempt, Annex IV
EC No.: 231-791-2
Concentration: 90 - <100 %
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.

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

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. ---

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

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

4.3 Indication of any immediate medical attention and special treatment needed

No additionally recommendations. ---

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. 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

no data available



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SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Do not breathe vapours. Regular staff training is necessary.

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

6.4 Reference to other sections

no data available

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 from MACHEREY-NAGEL. 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.

7.3 Specific end use(s)

Product for analytical use.

SECTION 8: Exposure controls /personal protection

8.1 Control parameters

6 mL ortho Phosphate (R4)

Chemical: *ammonium heptamolybdate* CAS No.: 12054-85-2
TRGS 900 (DE): [Mo] 5 E mg/m³
E/e respirable
SUVA(CH) MAK value: [Mo] 5 e mg/m³

Chemical: *sulfuric acid* CAS No.: 7664-93-9

DNEL: 50 µg/m³
DNEL = Derived No-Effect Level (for workers)
PNEC (fresh water): 2.5 µg/L
PNEC = Predicted No Effect Concentration
TRGS 900 (DE): 0.1 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: 0,1 e mg/m³
NIOSH: NTP Report on Carcinogens (RoC) List Yes (Known to be a human carcinogen); TWA 1 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] 1 mg/m³

5 mL ortho Phosphate 15 (R0)

Chemical: *sulfuric acid* CAS No.: 7664-93-9
DNEL: 50 µg/m³
DNEL = Derived No-Effect Level (for workers)
PNEC (fresh water): 2.5 µg/L
PNEC = Predicted No Effect Concentration
TRGS 900 (DE): 0.1 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: 0,1 e mg/m³



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NIOSH: NTP Report on Carcinogens (RoC) List Yes (Known to be a human carcinogen); TWA 1 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] 1 mg/m³

2 g ortho Phosphate 15 (B1)
 Chemical: *sodium L(+)-ascorbate* CAS No.: 134-03-2

5 mL ortho Phosphate (B2)
 Chemical: *water* CAS No.: 7732-18-5

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.

8.2.4 Skin protection

Not necessary.

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

6 mL ortho Phosphate (R4)

a) State of aggregation:	liquid
b) Colour:	slightly yellow
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:	0
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:	1,11 g/cm ³
q) Relative vapour density (air=1):	no data available
r) Particle size:	no data available

5 mL ortho Phosphate 15 (R0)

a) State of aggregation:	liquid
b) Colour:	colourless
c) Odor:	odorless
d) Melting point:	no data available
e) Boiling point:	no data available



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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 _{o/w}):	no data available
o) Vapour pressure (20°C):	no data available
p) Specific gravity:	1,01 g/cm ³
q) Relative vapour density (air=1):	no data available
r) Particle size:	no data available

2 g ortho Phosphate 15 (B1)

a) State of aggregation:	powder (solid)
b) Colour:	white
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:	[10%] 6-7.5
l) Kinematic viscosity:	no data available
m) Solubility in water:	0-38 %
n) Dispersion coefficient (K _{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

5 mL ortho Phosphate (B2)

a) State of aggregation:	liquid
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:	no data available
l) Kinematic viscosity:	no data available
m) Solubility in water:	no data available
n) Dispersion coefficient (K _{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

9.2.1 Information on physical hazard classes
no data available

9.2.2 Other safety-related parameters



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

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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

No further data available.

10.4 Conditions to avoid

Observe the storage temperature printed on it.

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.

6 mL ortho Phosphate (R4)

Chemical:	<i>ammonium heptamolybdate</i>	CAS No.:	12054-85-2
TSCA Inventory:	listed (CAS 11098-84-3)		
Japan ISHL:	listed $\geq 1,0\%$ / $\geq 0,1\%$,		
Korea Exist.Chem.Inventory:	not listed		
LD50 orl rat :	2000-5000 mg/kg		
LD50 ihl rat :	1,930-5,840 mg/L/4H		

Chemical:	<i>sulfuric acid</i>	CAS No.:	7664-93-9
TSCA Inventory:	listed	California Proposition 65 List:	not listed
ACGIH:	1 ppm		
Exposure Routes:	inhalation, ingestion, skin and/or eye contact		
Target Organs:	Eyes, skin, respiratory system, teeth		
Symptoms:	irritation eyes, skin, nose		
Australia NICNAS:	not listed	Canada CEPA 1999:	DSL Yes
Japan CSCL/PRTR:	not listed, Japan PDSCL: Deleterious Substance		
Japan ISHL:	listed $\geq 1,0\%$ / $\geq 1,0\%$, Article 57-2 (SDS required)		
South Korea TCCA:	Accident Precaution Chemical Yes		
Korea Exist.Chem.Inventory:	KE-32570		
LD50 orl rat :	2140 mg/kg		
LC50 ihl mus :	0,85 mg/L/4H		

TRGS 905 (DE): R F C

5 mL ortho Phosphate 15 (R0)

Chemical:	<i>sulfuric acid</i>	CAS No.:	7664-93-9
TSCA Inventory:	listed	California Proposition 65 List:	not listed
ACGIH:	1 ppm		
Exposure Routes:	inhalation, ingestion, skin and/or eye contact		
Target Organs:	Eyes, skin, respiratory system, teeth		
Symptoms:	irritation eyes, skin, nose		
Australia NICNAS:	not listed	Canada CEPA 1999:	DSL Yes
Japan CSCL/PRTR:	not listed, Japan PDSCL: Deleterious Substance		
Japan ISHL:	listed $\geq 1,0\%$ / $\geq 1,0\%$, Article 57-2 (SDS required)		
South Korea TCCA:	Accident Precaution Chemical Yes		
Korea Exist.Chem.Inventory:	KE-32570		



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LD50 orl rat : 2140 mg/kg
 LC50 ihl mus : 0,85 mg/L/4H

TRGS 905 (DE): R F C

2 g ortho Phosphate 15 (B1)

Chemical: *sodium L(+)-ascorbate* CAS No.: 134-03-2
 TSCA Inventory: listed
 LD50 orl rat : 11900 mg/kg

5 mL ortho Phosphate (B2)

Chemical: *water* CAS No.: 7732-18-5
 TSCA Inventory: listed
 Korea Exist.Chem.Inventory: KE-35400
 LD50 orl rat : > 90000 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.

6 mL ortho Phosphate (R4)

Substance name: *ammonium heptamolybdate* CAS-Nr.: 12054-85-2
 Water hazard class (DE): 1 WGK No.: 0637
 Storage class (VCI): 12-13

Substance name: *sulfuric acid* CAS-Nr.: 7664-93-9

PNEC (fresh water) : 2.5 µg/L
 PNEC = Predicted No Effect Concentration = concentration at which no effect on the environment is expected
 LC50 fish/96h : [NOEC, 65d] 25 µg/L
 EC50 daphnia/48h : 100 mg/L
 EC10 pseudomonas putida/16h : [72h] 100 mg/L
 Water hazard class (DE): 1 WGK No.: 0182
 Storage class (VCI): 8 B

5 mL ortho Phosphate 15 (R0)

Substance name: *sulfuric acid* CAS-Nr.: 7664-93-9

PNEC (fresh water) : 2.5 µg/L
 PNEC = Predicted No Effect Concentration = concentration at which no effect on the environment is expected
 LC50 fish/96h : [NOEC, 65d] 25 µg/L
 EC50 daphnia/48h : 100 mg/L
 EC10 pseudomonas putida/16h : [72h] 100 mg/L
 Water hazard class (DE): 1 WGK No.: 0182
 Storage class (VCI): 8 B

2 g ortho Phosphate 15 (B1)

Substance name: *sodium L(+)-ascorbate* CAS-Nr.: 134-03-2

5 mL ortho Phosphate (B2)

Substance name: *water* CAS-Nr.: 7732-18-5



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12.2 Persistence and degradability

12.3 Bioaccumulative potential

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.

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.

SECTION 14: Transport information

14.1 - 14.4: No dangerous goods according the transport regulations

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.

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
 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 2.2.2.10 and 2.2.2.2 following changes were applied: - 8 substance data corrected

16.2 List of H and P phrases

16.2.1 List of relevant H phrases



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Safety Data Sheet

according to Regulations REACH 1907/2006/EC

REF: 985657	NANOCOLOR ortho Phosphate 15, Robot	Page: 11/12
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H Between versions 2.2.2.10 and 2.2.2.2 following changes were applied: - 8 substance data corrected
 H315 Causes skin irritation.
 H319 Causes serious eye irritation.

16.2.2 List of relevant P phrases

16.3 Recommended restriction on use

Only for professional user.
 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
 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



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- 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
- orl: 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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