

Safety Data Sheet

according to Regulations REACH 1907/2006/EC

REF: 91334

QUANTOFIX Arsenic 10

Page: 1/13

Printing date: 20.07.2023

Date of issue: 02.08.2022

Version: 2.2.4.2

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

1.1 Product identifier

REF 91334
Product name QUANTOFIX Arsenic 10

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 30 g As-3 (Arsenic 10) UFI: PKGU-F3VV-0207-Y0DE
1 x 100 test sticks Arsenic
1 x 10 mL As-1 UFI: GSVV-232J-2204-QQGV
2 x 30 g As-2 UFI: 2ARU-130K-J20R-HQU7

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.

If CE labelling: Product for in-vitro-diagnostic use (IVD) or Accessory for medical use

Uses advised against

not described

1.3 Details of the supplier of the safety data sheet

Manufactured by:

MACHEREY-NAGEL GmbH & Co. KG
Valenciener 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



Signal word WARNING

Hazard identification	Hazard classes/categories
H315	Skin Irrit. 2
H319	Eye Irrit. 2
H361d	Repr. 2
H410	Aquatic Chronic 1

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

30 g As-2



MACHEREY-NAGEL GmbH & Co. KG
Valenciener Str. 11
52355 Düren · Germany
www.mn-net.com

DE Tel.: +49 24 21 969-0 info@mn-net.com
CH Tel.: +41 62 388 55 00 sales-ch@mn-net.com
FR Tel.: +33 388 68 22 68 sales-fr@mn-net.com
US Tel.: +1 888 321 62 24 sales-us@mn-net.com

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GHS07

Signal word: WARNING

Hazard identification	Hazard classes/categories
H315	Skin Irrit. 2
H319	Eye Irrit. 2
H412	Aquatic Chronic 3

30 g As-3 (Arsenic 10)



GHS09

Signal word: WARNING

Hazard identification	Hazard classes/categories
H410	Aquatic Chronic 1

10 mL As-1



GHS08

Signal word: WARNING

Hazard identification	Hazard classes/categories
H361d	Repr. 2

100 test sticks Arsenic

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).

30 g As-2



GHS07

Signal word: WARNING



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52355 Düren · Germany
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DE Tel.: +49 24 21 969-0 info@mn-net.com
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30 g As-3 (Arsenic 10)



GHS09

Signal word: WARNING

10 mL As-1



GHS08

Signal word: WARNING

H361d

Suspected of damaging the unborn child.

P201, P280sh

Obtain special instructions before use. Wear protective gloves/eye protection.

100 test sticks Arsenic

Do not need labelling as hazardous

Signal word: -

Label elements of the complete product



GHS07



GHS08



GHS09

Signal word: WARNING

H361d

Suspected of damaging the unborn child.

P201, P280sh

Obtain special instructions before use. Wear protective gloves/eye protection.

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

Suspected of damaging the unborn child.

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

100 test sticks Arsenic

Substance name: PVC foil (CAS 9002-86-2)

CAS No.: -

Substance rating: No criteria for classification or naming of chemical not required.

Concentration: 95 - <100 %

acc. CLP (GHS): The criteria for classification are not fulfilled.

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Substance name: *cellulose paper*
 CAS No.: 9004-34-6

Substance rating: No criteria for classification or naming of chemical not required.
 Formula: $(C_6H_{10}O_5)_n$
 REACH Reg. No.: exempt, Annex IV
 EC No.: 232-674-9
 Concentration: 1 - <10 %
 acc. CLP (GHS): The criteria for classification are not fulfilled.

10 mL As-1

Substance name: *potassium permanganate*
 CAS No.: 7722-64-7

Substance rating: H272, Ox. Liq. 2, H302, Acute Tox. 4 oral, H361d, Repr. 2, H400, Aquatic Acute 1, H410, Aquatic Chronic 1
 Formula: $KMnO_4$
 REACH Reg. No.: 01-2119480139-34-xxxx
 EC No.: 231-760-3
 Concentration: 3 - <5 %
 acc. CLP (GHS): H361d, Repr. 2

Index No.: 025-002-00-9
 Correlation factor: x 0.35 (= %Mn)
 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)

30 g As-2

Substance name: *aminosulfonic acid (sulfamic acid)*
 CAS No.: 5329-14-6

Substance rating: H315, Skin Irrit. 2, H319, Eye Irrit. 2, H412, Aquatic Chronic 3
 Formula: $H_3NO_3S; NH_2-SO_3H$
 Pseudonym (de): Amidosulfonsäure
 REACH Reg. No.: 01-2119488633-28-xxxx
 EC No.: 226-218-8
 Concentration: 90 - <100 %
 acc. CLP (GHS): H315, Skin Irrit. 2, H319, Eye Irrit. 2, H412, Aquatic Chronic 3

Index No.: 016-026-00-0

30 g As-3 (Arsenic 10)

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: 75 - <95 %
 acc. CLP (GHS): H410, Aquatic Chronic 1

Index No.: 030-002-01-9

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 dust with wetted tissue. Remove contaminated clothing. Rinse the affected skin or mucous membrane thoroughly under running water. (If possible) use soap.

4.1.2 After EYE Contact



MACHEREY-NAGEL GmbH & Co. KG
 Valencienner Str. 11
 52355 Düren · Germany
www.mn-net.com

DE Tel.: +49 24 21 969-0 info@mn-net.com
 CH Tel.: +41 62 388 55 00 sales-ch@mn-net.com
 FR Tel.: +33 388 68 22 68 sales-fr@mn-net.com
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Rub dust with teardrops from eyes or: 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. After inhalation of dust fresh air should be inhaled.

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

CMR Effekte: Suspected of damaging the unborn child.

4.3 Indication of any immediate medical attention and special treatment needed

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
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
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.

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
Storage class (VC1): 5.1B
Water hazard class (DE): 3



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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.
If CE labelling: Product for in-vitro-diagnostic use (IVD) or Accessory for medical use

SECTION 8: Exposure controls /personal protection

8.1 Control parameters

100 test sticks Arsenic

Chemical: *PVC foil (CAS 9002-86-2)* CAS No.: -
 Chemical: *cellulose paper* CAS No.: 9004-34-6
 TRGS 900 (DE): Staub 1.25 A / 4 E mg/m³
 E/e respirable
 SUVA(CH) MAK value: 3 a ppm
 NIOSH: TWA 10 (total) / 5 (resp) 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 15 (total) / 5 (resp) mg/m³

10 mL As-1

Chemical: *potassium permanganate* CAS No.: 7722-64-7
 DNEL: 0.218 inh mg/m³
 DNEL = Derived No-Effect Level (for workers)
 EU value: [TWA] 0.2E Mn / 0.05A Mn mg/m³
 TRGS 900 (DE): 0.02 Mn A; 0.2 Mn E mg/m³
 E/e respirable
 Short-term exposure factor: 1 (II), Y
 skin resorptive (H), respiratory sensitizable (Sa), skin sensitizable (Sh), teratogenic (Z) not securely excluded / (Y) certainly excluded
 TRGS 903 (DE): 15 µg/L
 B blood, U urine, a no limitation, b end of exposition or shift
 NIOSH: TWA 1 / ST 3 Mn 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: C 5 Mn mg/m³

30 g As-2

Chemical: *aminosulfonic acid (sulfamic acid)* CAS No.: 5329-14-6
 DNEL: [derm] 10 mg/kg bw/d; [inh] 70,5 mg/m³
 DNEL = Derived No-Effect Level (for workers)
 PNEC (fresh water): 1.8 mg/L
 PNEC = Predicted No Effected Concentration

30 g As-3 (Arsenic 10)

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

8.2 Exposure controls

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

Recommended to avoid contamination with these hazards.



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- 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

100 test sticks Arsenic

- | | |
|--------------------------------------|-------------------|
| a) State of aggregation: | 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: | 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 |

10 mL As-1

- | | |
|--------------------------------------|-------------------|
| a) State of aggregation: | liquid |
| b) Colour: | colored |
| 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: | 7-8 |
| 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 |

30 g As-2

- | | |
|--------------------------------------|-------------------|
| a) State of aggregation: | solid |
| b) Colour: | colourless |
| c) Odor: | odorless |
| d) Melting point: | instable 205 °C |
| 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: | < 2 |



MACHEREY-NAGEL GmbH & Co. KG
Valenciener Str. 11
52355 Düren · Germany
www.mn-net.com

DE Tel.: +49 24 21 969-0 info@mn-net.com
CH Tel.: +41 62 388 55 00 sales-ch@mn-net.com
FR Tel.: +33 388 68 22 68 sales-fr@mn-net.com
US Tel.: +1 888 321 62 24 sales-us@mn-net.com

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l) Kinematic viscosity:	no data available
m) Solubility in water:	0-17 %
n) Dispersion coefficient (o/w) :	no data available
o) Vapour pressure (20°C):	0.0078 hPa
p) Specific gravity:	2.12 sol. g/cm ³
q) Relative vapour density (air=1) :	no data available
r) Particle size:	no data available

30 g As-3 (Arsenic 10)

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:	6-8
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

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

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.

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.

100 test sticks Arsenic



MACHEREY-NAGEL GmbH & Co. KG
 Valenciener Str. 11
 52355 Düren · Germany
www.mn-net.com

DE Tel.: +49 24 21 969-0 info@mn-net.com
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Chemical: *PVC foil (CAS 9002-86-2)* CAS No.: -
 TSCA Inventory: listed

Chemical: *cellulose paper* CAS No.: 9004-34-6
 TSCA Inventory: listed California Proposition 65 List: not listed
 Exposure Routes: inhalation, skin and/or eye contact
 Target Organs: Eyes, skin, respiratory system
 Symptoms: irritation eyes, skin, mucous membrane
 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-05339
 LD50 orl rat : > 5000 mg/kg
 LC50 ihl rat : > 5,800 mg/L/4H

10 mL As-1
 Chemical: *potassium permanganate* CAS No.: 7722-64-7
 TSCA Inventory: listed
 Exposure Routes: inhalation, ingestion
 Target Organs: respiratory system, central nervous system, blood, kidneys
 Symptoms: Manganism; asthenia, insomnia, mental confusion; metal fume fever: dry throat, cough, chest tightness, dyspnea (breathing difficulty), rales, flu-like
 Japan CSCL/PRTR: PRTR: ≥1,0%Mn class I, Japan PDSCL: not listed
 Japan ISHL: listed ≥1,0%/≥0,1%
 LD50 orl rat : 750 mg/kg
 LC_Low orl hmn : 100 mg/kg

Carcinogenic Effects: Suspected of damaging the unborn child.

30 g As-2
 Chemical: *aminosulfonic acid (sulfamic acid)* CAS No.: 5329-14-6
 TSCA Inventory: listed
 Target Organs: affect the eye or visual capacity
 Symptoms: conjunctivitis; corneal damage
 LD50 orl rat : 2065 mg/kg

30 g As-3 (Arsenic 10)
 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

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.

100 test sticks Arsenic
 Chemical: *PVC foil (CAS 9002-86-2)* CAS No.: -



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Chemical: *cellulose paper* CAS No.: 9004-34-6
 Water hazard class (DE): nwg
 Storage class (VCI): 11

10 mL As-1

Chemical: *potassium permanganate* CAS No.: 7722-64-7
 LC50 fish/96h : 3.6 mg/L
 Water hazard class (DE): 3 WGK No.: 1936
 Storage class (VCI): 5.1 B

30 g As-2

Chemical: *aminosulfonic acid (sulfamic acid)* CAS No.: 5329-14-6
 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).
 PNEC (fresh water) : 1.8 mg/L
 PNEC = Predicted No Effect Concentration
 LC50 fish/96h : [4d] 70.3 mg/L
 EC50 daphnia/48h : [48h=24h] 71.6 mg/L
 IC50 scenedesmus quadricauda/72h : [72h] 48 mg/L
 Water hazard class (DE): 1 WGK No.: 1266
 Dispersion coefficient (o/w) : -4,34
 Storage class (VCI): 8 B

30 g As-3 (Arsenic 10)

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

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



MACHEREY-NAGEL GmbH & Co. KG
 Valencienner Str. 11
 52355 Düren · Germany
www.mn-net.com

DE Tel.: +49 24 21 969-0 info@mn-net.com
 CH Tel.: +41 62 388 55 00 sales-ch@mn-net.com
 FR Tel.: +33 388 68 22 68 sales-fr@mn-net.com
 US Tel.: +1 888 321 62 24 sales-us@mn-net.com

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SECTION 14: Transport information

14.1 UN number:	3077		
14.2 UN proper shipping name:	Environmentally hazardous substance, solid, n.o.s. (zinc powder (stabilized) mixture)		
14.3 Class:	9		
14.4 Packing group:	III		
<i>Road transport ADR</i>			
Classification code:	M7	Tunnel restriction code:	E
Limited Quantity:	5 Kg	Special instructions:	335 (< 10 g) and 375 (< 5 kg) nicht/not ADR
Excepted Quantity:	E 1		
<i>Air transport IATA DGR</i>			
Limited Quantity:	PAX: 956	max. quantity PAX:	400 Kg
	CAO: 956	max. quantity CAO:	400 Kg
Excepted Quantity:	E 1		
<i>Maritime transport IMDG</i>			
EmS:	F-A, S-F	Staukategorie:	A

14.5 Environmental hazards
none, 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
 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
 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 2.2.4.2 and 2.2.2.2 following changes were applied: - 2 composition data corrected

16.2 List of H and P phrases

16.2.1 List of relevant H phrases	
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H361d	Suspected of damaging the unborn child.
H410	Very toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.
16.2.2 List of relevant P phrases	
P201	Obtain special instructions before use.
P280sh	Wear protective gloves/eye protection.



MACHEREY-NAGEL GmbH & Co. KG
 Valenciener Str. 11
 52355 Düren · Germany
www.mn-net.com

DE Tel.: +49 24 21 969-0 info@mn-net.com
 CH Tel.: +41 62 388 55 00 sales-ch@mn-net.com
 FR Tel.: +33 388 68 22 68 sales-fr@mn-net.com
 US Tel.: +1 888 321 62 24 sales-us@mn-net.com

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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

Directive 2004/37/EC on the protection of workers from the risk of carcinogens or mutagens at work 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)

TRGS 905, German rules of technology for carcinogenic and mutagenic substances, as of March 18, 2016

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)

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



MACHEREY-NAGEL GmbH & Co. KG
Valenciener Str. 11
52355 Düren · Germany
www.mn-net.com

DE Tel.: +49 24 21 969-0 info@mn-net.com
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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:	fish, ide, orfe
MAK:	maximum workplace concentration
Met:	Metal
mus:	mouse
Muta:	mutagen
NIOSH:	National Institute for Occupational Safety and Health (US)
NRD:	Non-rapidly degradable
onchorhynchus mykiss:	fish, 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:	fish, 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.

