

Safety Data Sheet

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

REF: 934125

PF-3 Drinking Water, case, Cl2 solid

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Printing date: 01.10.2019

Date of issue: 17.04.2019

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

1.1 Product identifier

REF 934125
Product name PF-3 Drinking Water, case, Cl2 solid

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 Calibration tube (5 mL)
3 x Alkaline Manganese Batteries Type AA
1 x Button cell CR2032, built-in
3 x 30 mL F-1
1 x 17 mL Fe-1
1 x 5 g Fe-2
3 x 50 capsules NANOFIX pH 6.5-8.2
1 x 20 mL Cl₂ -2
1 x 28 g Cl₂ -1
1 x 25 mL ClO₂ -3
1 x 18 mL ClO₂ -2
1 x 16 mL ClO₂ -1

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

Relevant identified uses

Product for analytical use.

Exposure Scenario Classification according REACH, RIP 3.2 Codes: SU 0-2, PC 21, PROC 15, AC 0

The exposure scenario is integrated into sections 1-16.

Uses advised against

not described

1.3 Details of the supplier of the safety data sheet

Manufactured by:

MACHEREY-NAGEL GmbH & Co. KG
Neumann-Neander-Str. 6-8, 52355 Dueren, GERMANY
Tel.: +49 2421 969 0

E-mail: sds@mn-net.com (msds@mn-net.com)

1.4 Emergency telephone number

Outside Germany (DE): Call your regional Poisons Information Service or call local Life Saving Service.

DE: Gemeinsames Giftinformationszentrum (GGIZ) 99089 Erfurt tel. +49 361 730 730

You find our current versions of SDS (22 languages) in Internet:

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

SECTION 2: Hazard identification

2.0 Classification of the complete product



GHS07

Signal word WARNING

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

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2.1 Classification of the substance or mixture

Calibration tube (5 mL)

Signal word Do not need labelling as hazardous
-

No hazard class

Alkaline Manganese Batteries Type AA

Signal word Do not need labelling as hazardous
-

No hazard class

Button cell CR2032, built-in

Signal word Do not need labelling as hazardous
-

No hazard class

30 mL F-1



Signal word GHS07
WARNING

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

17 mL Fe-1

Signal word Do not need labelling as hazardous
-

No hazard class

5 g Fe-2

Signal word Do not need labelling as hazardous
-

No hazard class

50 capsules NANOFIX pH 6.5-8.2

Signal word Do not need labelling as hazardous
-

No hazard class

20 mL Cl₂ -2

Do not need labelling as hazardous

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Signal word -

No hazard class

28 g Cl₂ -1

Signal word Do not need labelling as hazardous

No hazard class -

25 mL ClO₂ -3



GHS07

Signal word WARNING

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

18 mL ClO₂ -2

Signal word Do not need labelling as hazardous

No hazard class -

16 mL ClO₂ -1

Signal word Do not need labelling as hazardous

No hazard class -

2.2 Label elements

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

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

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

Calibration tube (5 mL)

Do not need labelling as hazardous
Signal word: -

Alkaline Manganese Batteries Type AA

Do not need labelling as hazardous
Signal word: -

Button cell CR2032, built-in

Do not need labelling as hazardous
Signal word: -

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30 mL F-1



GHS07

Signal word: WARNING

17 mL Fe-1

Do not need labelling as hazardous

Signal word: -

5 g Fe-2

Do not need labelling as hazardous

Signal word: -

50 capsules NANOFIX pH 6.5-8.2

Do not need labelling as hazardous

Signal word: -

20 mL Cl₂ -2

Do not need labelling as hazardous

Signal word: -

28 g Cl₂ -1

Do not need labelling as hazardous

Signal word: -

25 mL ClO₂ -3



GHS07

Signal word: WARNING

18 mL ClO₂ -2

Do not need labelling as hazardous

Signal word: -

16 mL ClO₂ -1

Do not need labelling as hazardous

Signal word: -

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. The property H314 "Causes severe skin burns and eye damage." of some salts is not applicable, because the mixture is buffered to pH >3-4 (see GHS Directive 1272/2008/EC Annex I, chapter 3.2.3.1.2.). ---

Information pertaining to particular risks to human and possible symptoms

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

Information pertaining to particular risks to the environment

Other hazards

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This SDS contains information on shipping and transport safety. ---

SECTION 3: Composition/information on ingredients

3.1 Substances or 3.2 Mixtures

Calibration tube (5 mL)

Chemical:	water	CAS No.:	7732-18-5
Classification:	No criteria for classification or naming of chemical not required.		
Formula:	H ₂ O		
TSCA Inventory:	listed		
REACH Reg. No.:	exempt, Annex IV		
EC No.:	231-791-2		
RTECS:	ZC0110000		
KE No.:	KE-35400		
Concentration:	90 - <100 %		
acc. CLP (GHS):	The criteria for classification are not fulfilled.		

Alkaline Manganese Batteries Type AA

Chemical:	alkaline manganese battery	CAS No.:	-
Classification:	No criteria for classification or naming of chemical not required.		
Concentration:	99 - <100 %		
acc. CLP (GHS):	The criteria for classification are not fulfilled.		

Button cell CR2032, built-in

Chemical:	Button cell on circuit board (lithium metal battery)	CAS No.:	-
Classification:	No criteria for classification or naming of chemical not required.		
Concentration:	99 - <100 %		
acc. CLP (GHS):	The criteria for classification are not fulfilled.		

30 mL F-1

Chemical:	zirconium(IV) dichloride oxide	CAS No.:	13520-92-8
Classification:	No criteria for classification or naming of chemical not required.		
Formula:	ZrOCl ₂ · 8 H ₂ O		
TSCA Inventory:	not listed		
EC No.:	231-717-9		
RTECS:	ZH7250000	MFCD:	00149898
KE No.:	not listed		
Concentration:	< 1,00 %		
acc. CLP (GHS):	The criteria for classification are not fulfilled.		

Chemical:	1,8-dihydroxy-2-(4-sulfophenylazo)naphthalin-3,6-disulfonic acid, trisodium salt	CAS No.:	23647-14-5
Classification:	H315, Skin Irrit. 2, H319, Eye Irrit. 2		
Formula:	C ₁₆ H ₉ N ₂ Na ₃ O ₁₁ S ₃		
Pseudonym:	4,5-dihydroxy-3-[2-(4-sulfophenyl)diazenyl]-2,7-naphthalenedisulfonic acid, trisodium salt		
TSCA Inventory:	listed		
EC No.:	245-803-9	MFCD:	00003952
Concentration:	0,2 - <1 %		
acc. CLP (GHS):	The criteria for classification are not fulfilled.		

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

17 mL Fe-1

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Chemical: *triazine derivate* CAS No.: -
 Classification: No criteria for classification or naming of chemical not required.
 TSCA Inventory: listed
 Concentration: < 1,00 %
 acc. CLP (GHS): The criteria for classification are not fulfilled.

Chemical: *acetate buffer solution* CAS No.: -
 Classification: No criteria for classification or naming of chemical not required.
 Formula: CH₃ COOH/K/Na•H₂ O
 TSCA Inventory: all listed
 KE No.: listed
 Concentration: 45 - <60 %
 acc. CLP (GHS): The criteria for classification are not fulfilled.

5 g Fe-2

Chemical: *L(+)-ascorbic acid* CAS No.: 50-81-7
 Classification: No criteria for classification or naming of chemical not required.
 Formula: C₆ H₈ O₆
 Pseudonym: vitamin C
 TSCA Inventory: listed
 REACH Reg. No.: exempt, Annex IV
 EC No.: 200-066-2
 RTECS: C17650000 MFCD: 00064328
 KE No.: KE-01947
 Concentration: 20 - <30 %
 acc. CLP (GHS): The criteria for classification are not fulfilled.

Chemical: *sodium chloride* CAS No.: 7647-14-5
 Classification: No criteria for classification or naming of chemical not required.
 Formula: NaCl
 Pseudonym: salt
 TSCA Inventory: listed
 REACH Reg. No.: exempt, Annex V
 EC No.: 231-598-3
 RTECS: VZ4725000
 KE No.: KE-31387
 Concentration: 50 - <80 %
 acc. CLP (GHS): The criteria for classification are not fulfilled.

50 capsules NANOFIX pH 6.5-8.2

Chemical: *phenolred, sodium salt (pH indicator)* CAS No.: 34487-61-1
 Classification: H315, Skin Irrit. 2, H319, Eye Irrit. 2
 Formula: C₁₉ H₁₃ NaO₅ S
 Pseudonym: 4,4'-(1,1-dioxido-3H-2,1-benzoxathiol-3-ylidene)bis-phenol, sodium salt
 TSCA Inventory: listed
 EC No.: 252-057-8 MFCD: 00066901
 Concentration: 1 - <10 %
 acc. CLP (GHS): The criteria for classification are not fulfilled.

20 mL Cl₂ -2

Chemical: *potassium iodide* CAS No.: 7681-11-0
 Classification: H319, Eye Irrit. 2
 Formula: KI
 TSCA Inventory: listed
 REACH Reg. No.: YES, confidential
 EC No.: 231-659-4
 RTECS: TT29750000 MFCD: 00011405
 KE No.: not listed
 Concentration: 1 - <10 %
 acc. CLP (GHS): The criteria for classification are not fulfilled.

28 g Cl₂ -1

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Chemical: *boric acid* CAS No.: 10043-35-3
 Classification: H360FD, Repr. 1B
 Formula: H_3BO_3
 TSCA Inventory: listed
 REACH Reg. No.: 01-2119486683-25-0024
SVHC listed: listed (18/06/2010)
 EC No.: 233-139-2
 RTECS: ED4550000
 KE No.: KE-03499
 Concentration: 0,5 - <5,5 %
 The classification refers to weight percent of the metal (according to CLP Regulation 2008/1272/EC Annex VI, 1.1.3.2 Note 1)
 acc. CLP (GHS): The criteria for classification are not fulfilled.

Index No.: 005-007-00-2
 MFCD: 00011337

Correlation factor: x 0.17 (= %B)

Chemical: *tri-sodium citrate* CAS No.: 6132-04-3
 Classification: No criteria for classification or naming of chemical not required.
 Formula: $C_6H_5Na_3O_7 \cdot 2H_2O$
 TSCA Inventory: listed (CAS 68-04-2)
 REACH Reg. No.: 01-2119457027-40-xxxx
 EC No.: 200-675-3
 RTECS: GE8300000
 KE No.: KE-20843
 Concentration: 40 - <60 %
 acc. CLP (GHS): The criteria for classification are not fulfilled.

Chemical: *N,N-Diethyl-1,4-phenylene diammonium sulfate* CAS No.: 6283-63-2
 Classification: H302, Acute Tox. 4 oral, H312, Acute Tox. 4 derm.
 Formula: $C_{10}H_{16}N_2 \cdot H_2O$
 Pseudonym: N,N-diethylbenzene-1,4-diammonium sulfate
 TSCA Inventory: listed (CAS 6065-27-6)
 EC No.: 228-500-6
 RTECS: SS9625000
 Concentration: 1 - <5 %
 acc. CLP (GHS): The criteria for classification are not fulfilled.

Index No.: 612-080-00-X
 MFCD: 00012993

Chemical: *potassium dihydrogen phosphate* CAS No.: 7778-77-0
 Classification: No criteria for classification or naming of chemical not required.
 Formula: KH_2PO_4
 TSCA Inventory: listed
 REACH Reg. No.: 01-2119490224-41-XXXX
 EC No.: 231-913-4
 RTECS: TC6615500
 KE No.: KE-28622
 Concentration: 5 - <25 %
 acc. CLP (GHS): The criteria for classification are not fulfilled.

MFCD: 00011401

25 mL ClO₂-3

Chemical: *N,N-Diethyl-1,4-phenylene diammonium sulfate* CAS No.: 6283-63-2
 Classification: H302, Acute Tox. 4 oral, H312, Acute Tox. 4 derm.
 Formula: $C_{10}H_{16}N_2 \cdot H_2O$
 Pseudonym: N,N-diethylbenzene-1,4-diammonium sulfate
 TSCA Inventory: listed (CAS 6065-27-6)
 EC No.: 228-500-6
 RTECS: SS9625000
 Concentration: 0,1 - <1 %
 acc. CLP (GHS): The criteria for classification are not fulfilled.

Index No.: 612-080-00-X
 MFCD: 00012993

Chemical: *sulfuric acid* CAS No.: 7664-93-9
 Classification: H314, Skin Corr. 1B
 Formula: $H_2SO_4 (\cdot H_2O)$
 TSCA Inventory: listed
 REACH Reg. No.: 01-2119458838-20-xxxx
 EC No.: 231-639-5
 RTECS: WS5600000
 KE No.: KE-32570, >10% Toxic 97-1-405, Acc. Precaution Chem.
 Concentration: 5 - <15 %
 acc. CLP (GHS): H315, Skin Irrit. 2, H319, Eye Irrit. 2

Index No.: 016-020-00-8



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18 mL ClO₂ -2

Chemical: *phosphate buffer solution*

CAS No.: -

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

Formula: $K/Na_{1-3} H_{2-0} PO_4 \cdot x H_2 O$

TSCA Inventory: all listed

KE No.: listed

Concentration: 50 - <75 %

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

16 mL ClO₂ -1

Chemical: *chemicals/mixture < 1%*

CAS No.: -

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

TSCA Inventory: all listed, <1%

KE No.: listed

Concentration: 0,1 - <1 %

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

3.3 Remarks

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

List of H and P phrases: see section 16.1

SECTION 4: First aid measures

4.1 Description of first aid measures

Place insured person out of danger zone to fresh air immediately. Ensure quiet, warmth, and provide resuscitation if necessary. If necessary contact medical advice.

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

4.3 Indication of any immediate medical attention and special treatment needed

No additionally recommendations. ---

SECTION 5: Firefighting measures

5.1 Extinguishing media

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

5.2 Special hazards arising from the substance or mixture

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

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SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Regular staff training is necessary.

6.2 Environmental precautions

not necessary

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

SECTION 7: Handling and storage

7.1 Precautions for safe handling

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

7.2 Conditions for safe storage, including any incompatibilities

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

Storage class (VCI): 8B

Water hazard class (DE): 3

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

Calibration tube (5 mL)

Chemical: *water*

CAS No.: 7732-18-5

Alkaline Manganese Batteries Type AA

Chemical: *alkaline manganese battery*

CAS No.: -

Button cell CR2032, built-in

Chemical: *Button cell on circuit board (lithium metal battery)*

CAS No.: -

30 mL F-1

Chemical: *zirconium(IV) dichloride oxide*

CAS No.: 13520-92-8

TRGS 900 (DE): 1_{Zr} E mg/m³
E/e respirable

Short-term exposure factor: 1 (I), S_{ah}
skin sorptive (H), respiratory sensitizable (Sa), skin sensitizable (Sh), teratogenic (Z) not securely excluded / (Y) certainly excluded

SUVA(CH) MAK value: 5 e mg/m³

NIOSH: TWA 5 / ST 10_{Zr} 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 5_{Zr} mg/m³

Chemical: *1,8-dihydroxy-2-(4-sulfophenylazo)naphthalin-3,6-disulfonic acid, tri Na salt* CAS No.: 23647-14-5

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

SUVA(CH) MAK value: 2 ppm / 3* mg/m³

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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

17 mL Fe-1

Chemical: *triazine derivate* CAS No.: -

Chemical: *acetate buffer solution* CAS No.: -

5 g Fe-2

Chemical: *L(+)-ascorbic acid* CAS No.: 50-81-7

Chemical: *sodium chloride* CAS No.: 7647-14-5

50 capsules NANOFIX pH 6.5-8.2

Chemical: *phenolred, sodium salt (pH indicator)* CAS No.: 34487-61-1

20 mL Cl₂ -2

Chemical: *potassium iodide* CAS No.: 7681-11-0

28 g Cl₂ -1

Chemical: *boric acid* CAS No.: 10043-35-3

DNEL: [derm] 392 mg/kg bw/day; [inh] 8.3 mg/m³
 DNEL = Derived No-Effect Level (for workers)

PNEC^(fresh water): 2.9 mg/L
 PNEC = Predicted No Effect Concentration

TRGS 900 (DE): 0.5 E 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: [Bor][MAK] 1,8e/[STEL] 1,8e mg/m³

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

Chemical: *tri-sodium citrate* CAS No.: 6132-04-3

Chemical: *N,N-Diethyl-1,4-phenylene diammonium sulfate* CAS No.: 6283-63-2

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

Chemical: *potassium dihydrogen phosphate* CAS No.: 7778-77-0

25 mL ClO₂ -3

Chemical: *N,N-Diethyl-1,4-phenylene diammonium sulfate* CAS No.: 6283-63-2

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

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

DNEL: [inh] 50 µg/m³
 DNEL = Derived No-Effect Level (for workers)

PNEC^(fresh water): 2.5 µg/L
 PNEC = Predicted No Effect Concentration

EU value: 0.1 e mg/m³
 TRGS 900 (DE): 0.1 E mg/m³
 E/e respirable

Short-term exposure factor: 1 (I), Y
 skin resorptive (H), respiratory sensitizable (Sa), skin sensitizable (Sh), teratogenic (Z) not securely excluded / (Y) certainly excluded

SUVA(CH) MAK value: 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



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18 mL ClO₂ -2

Chemical: phosphate buffer solution

CAS No.: -

16 mL ClO₂ -1

Chemical: chemicals/mixture < 1%

CAS No.: -

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 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 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.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Calibration tube (5 mL)

Appearance: liquid	Colour: colourless	Odor: odorless
pH:	6-8	
Specific gravity:	1,00 g/cm ³	

Alkaline Manganese Batteries Type AA

Appearance: solid	Colour: black	Odor: odorless
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Button cell CR2032, built-in

Appearance: solid	Colour: colored	Odor: odorless
Flammability (solid, gas):	Do not transport damaged batteries. Special instruction necessary	

30 mL F-1

Appearance: liquid	Colour: red	Odor: penetrative
pH:	0-1	
Specific gravity:	1,07 g/cm ³	
Solubility in water:	0-100 %	

17 mL Fe-1

Appearance: liquid	Colour: slightly yellow	Odor: acetic
pH:	4-6	

5 g Fe-2

Appearance: powder (solid)	Colour: slightly yellow	Odor: odorless
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50 capsules NANOFIX pH 6.5-8.2

Appearance: solid (lyoph.)	Colour: red	Odor: odorless
pH:	7,0	
Solubility in water:	0-100 %	

20 mL Cl₂ -2

Appearance: liquid	Colour: colourless	Odor: alcoholic
pH:	9	
Flash point:	24 °C	
Specific gravity:	0,93 g/cm ³	
Solubility in water:	0-100 %	

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28 g Cl₂ -1

Appearance: powder (solid) Colour: colourless Odor: odorless
 pH: 6
 Solubility in water: 0-100 %

25 mL ClO₂ -3

Appearance: liquid Colour: rose Odor: odorless
 pH: 0-1
 Specific gravity: 1,1 g/cm³

18 mL ClO₂ -2

Appearance: liquid Colour: colourless Odor: odorless
 pH: 9
 Specific gravity: 1,2 g/cm³
 Solubility in water: 0-100 %

16 mL ClO₂ -1

Appearance: liquid Colour: colourless Odor: odorless
 Specific gravity: 1.01 g/cm³

9.2 Other information

Relevant Properties of Substance Group

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

10.5 Incompatible materials

Avoid contact with strong acids or alkalines.

10.6 Hazardous decomposition products

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

SECTION 11: Toxicological information

11.1 Information on toxicological effects

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

Calibration tube (5 mL)

Chemical: *water* CAS No.: 7732-18-5
 TSCA Inventory: listed
 Korea Exist.Chem.Inventory: KE-35400

Alkaline Manganese Batteries Type AA

Chemical: *alkaline manganese battery* CAS No.: -

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Button cell CR2032, built-in

Chemical: *Button cell on circuit board (lithium metal battery)* CAS No.: -

30 mL F-1

Chemical: *zirconium(IV) dichloride oxide* CAS No.: 13520-92-8
 TSCA Inventory: not listed
 Exposure Routes: inhalation, skin and/or eye contact
 Target Organs: Skin, respiratory system
 Symptoms: Skin, lung granulomas; in animals: irritation skin, mucous membrane; X-ray evidence of retention in lungs
 Korea Exist.Chem.Inventory: not listed
 LD50_{orl rat}: 2950 mg/kg

TRGS 907 (DE): Sah

Chemical: *1,8-dihydroxy-2-(4-sulfophenylazo)naphthalin-3,6-disulfonic acid, tri-salt* CAS No.: 23647-14-5
 TSCA Inventory: listed

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: not listed 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
 LC50_{drm rbt}: >5010 mg/kg
 Acute Effects: Cause after inhalation of vapours/dust, impairments of health when ingested in small quantities.

17 mL Fe-1

Chemical: *triazine derivate* CAS No.: -
 TSCA Inventory: listed

Chemical: *acetate buffer solution* CAS No.: -
 TSCA Inventory: all listed
 Korea Exist.Chem.Inventory: listed

5 g Fe-2

Chemical: *L(+)-ascorbic acid* CAS No.: 50-81-7
 TSCA Inventory: listed
 Korea Exist.Chem.Inventory: KE-01947
 LD50_{orl rat}: 11900 mg/kg
 LD50_{ivn mus}: 518 mg/kg

Chemical: *sodium chloride* CAS No.: 7647-14-5
 TSCA Inventory: listed
 Korea Exist.Chem.Inventory: KE-31387
 LD50_{orl rat}: 3000 mg/kg
 LD50_{drm rbt}: 10 g/kg

50 capsules NANOFIX pH 6.5-8.2

Chemical: *phenolred, sodium salt (pH indicator)* CAS No.: 34487-61-1
 TSCA Inventory: listed

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20 mL Cl₂ -2

Chemical: *potassium iodide*
 TSCA Inventory: listed
 Korea Exist.Chem.Inventory: not listed
 LD50_{orl rat}: 2779 mg/kg

CAS No.: 7681-11-0

28 g Cl₂ -1

Chemical: *boric acid*
 TSCA Inventory: listed
 Australia NICNAS: not listed
 Japan CSCL/PRTR: PRTR: ≥1,0%B class I, Japan PDSCL: not listed
 Japan ISHL: not listed
 South Korea TCCA: not listed
 Korea Exist.Chem.Inventory: KE-03499
 LD50_{orl rat}: >3765 mg/kg
 LC50_{ihl rat}: > 2 mg/m³
 LD50_{drm rat}: >2000 mg/kg

CAS No.: 10043-35-3

California Proposition 65 List: not listed
 Canada CEPA 1999: DSL yes

EU carcinogen: R_D 1B, R_F 1B
 TRGS 905 (DE): R_E 2, R_F 2

Chemical: *tri-sodium citrate*
 TSCA Inventory: listed (CAS 68-04-2)
 Korea Exist.Chem.Inventory: KE-20843
 LD50_{orl rat}: >8000 mg/kg

CAS No.: 6132-04-3

Chemical: *N,N-Diethyl-1,4-phenylene diammonium sulfate*
 TSCA Inventory: listed (CAS 6065-27-6)
 Australia NICNAS: not listed
 Japan CSCL/PRTR: not listed, Japan PDSCL: not listed
 Japan ISHL: not listed
 South Korea TCCA: not listed
 LD50_{orl rat}: 497 mg/kg

CAS No.: 6283-63-2

California Proposition 65 List: not listed
 Canada CEPA 1999: not listed

Chemical: *potassium dihydrogen phosphate*
 TSCA Inventory: listed
 Korea Exist.Chem.Inventory: KE-28622
 LD50_{orl rat}: 4640 mg/kg
 LD50_{drm rbt}: >4640 mg/kg

CAS No.: 7778-77-0

25 mL ClO₂ -3

Chemical: *N,N-Diethyl-1,4-phenylene diammonium sulfate*
 TSCA Inventory: listed (CAS 6065-27-6)
 Australia NICNAS: not listed
 Japan CSCL/PRTR: not listed, Japan PDSCL: not listed
 Japan ISHL: not listed
 South Korea TCCA: not listed
 LD50_{orl rat}: 497 mg/kg

CAS No.: 6283-63-2

California Proposition 65 List: not listed
 Canada CEPA 1999: not listed

Chemical: *sulfuric acid*
 TSCA Inventory: 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, throat; pulmonary edema, bronchitis; emphysema; conjunctivitis; stomatis; dental erosion; eye, skin burns; dermatitis
 Australia NICNAS: not listed
 Japan CSCL/PRTR: not listed, Japan PDSCL: Deleterious Substance
 Japan ISHL: listed ≥1,0%/≥1,0%, Article 57-2 (SDS required)
 South Korea TCCA: Accident Precaution Chemical Yes
 Korea Exist.Chem.Inventory: KE-32570, >10% Toxic 97-1-405, Acc. Precaution Chem.
 LD50_{orl rat}: 2140 mg/kg
 LC50_{ihl rat}: [8h] 600/ [4h] 850 mg/m³

CAS No.: 7664-93-9

California Proposition 65 List: not listed

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TRGS 905 (DE): Kat 4

18 mL ClO₂ -2

Chemical: *phosphate buffer solution* CAS No.: -
 TSCA Inventory: all listed
 Korea Exist.Chem.Inventory: listed

16 mL ClO₂ -1

Chemical: *chemicals/mixture < 1%* CAS No.: -
 TSCA Inventory: all listed, <1%
 Korea Exist.Chem.Inventory: listed

SECTION 12: Ecological information

12.1 Toxicity

Following information is valid for pure substances.

Calibration tube (5 mL)

Chemical: *water* CAS No.: 7732-18-5

Alkaline Manganese Batteries Type AA

Chemical: *alkaline manganese battery* CAS No.: -

Button cell CR2032, built-in

Chemical: *Button cell on circuit board (lithium metal battery)* CAS No.: -

30 mL F-1

Chemical: *zirconium(IV) dichloride oxide* CAS No.: 13520-92-8
 Water hazard class (DE): 2
 Storage class (VCI): 8 B

Chemical: *1,8-dihydroxy-2-(4-sulfofenylazo)naphthalin-3,6-disulfonic acid, trihydrate* CAS No.: 23647-14-5
 Water hazard class (DE): 2

Chemical: *hydrochloric acid* CAS No.: 7647-01-0

PNEC_(fresh water): 36 µg/L
 PNEC = Predicted No Effect Concentration
 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

17 mL Fe-1

Chemical: *triazine derivate* CAS No.: -
 Storage class (VCI): 12-13

Chemical: *acetate buffer solution* CAS No.: -
 Storage class (VCI): 12

5 g Fe-2

Chemical: *L(+)-ascorbic acid* CAS No.: 50-81-7
 Water hazard class (DE): 1 WGK No.: 0737
 Storage class (VCI): 13

Chemical: *sodium chloride* CAS No.: 7647-14-5
 Water hazard class (DE): 1
 Storage class (VCI): 12-13

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50 capsules NANOFIX pH 6.5-8.2

Chemical: *phenolred, sodium salt (pH indicator)* CAS No.: 34487-61-1
 Water hazard class (DE): 2
 Storage class (VCI): 12-13

20 mL Cl₂ -2

Chemical: *potassium iodide* CAS No.: 7681-11-0
 LC50_{fish/96h}: 2190 mg/L
 Water hazard class (DE): 1
 Dispersion coefficient_(octanol-water): 0.04
 Storage class (VCI): 12-13

28 g Cl₂ -1

Chemical: *boric acid* CAS No.: 10043-35-3
 PNEC_(fresh water): 2.9 mg/L
 PNEC = Predicted No Effect Concentration
 LC50_{fish/96h}: [4d] 79.7 mg/L
 EC50_{daphnia/48h}: 91-165 mg/L
 IC50_{scenedesmus quadricauda/72h}: [72h] 52.4 mg/L
 EC10_{pseudomonas putita/16h}: [EC10] 10 mg/L
 Water hazard class (DE): 1 WGK No.: 0315
 Dispersion coefficient_(octanol-water): -1.09
 Storage class (VCI): 6.1 D

Chemical: *tri-sodium citrate* 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

Chemical: *N,N-Diethyl-1,4-phenylene diammonium sulfate* CAS No.: 6283-63-2
 Water hazard class (DE): 3
 Storage class (VCI): 12-13

Chemical: *potassium dihydrogen phosphate* CAS No.: 7778-77-0
 LC50_{leuciscus idus/96h}: 90048h mg/L
 Water hazard class (DE): 1
 Storage class (VCI): 12-13

25 mL ClO₂ -3

Chemical: *N,N-Diethyl-1,4-phenylene diammonium sulfate* CAS No.: 6283-63-2
 Water hazard class (DE): 3
 Storage class (VCI): 12-13

Chemical: *sulfuric acid* CAS No.: 7664-93-9
 PNEC_(fresh water): 2.5 µg/L
 PNEC = Predicted No Effect Concentration
 LC50_{fish/96h}: [NOEC, 65d] 25 µg/L
 EC50_{daphnia/48h}: 100 mg/L
 EC10_{pseudomonas putita/16h}: [72h] 100 mg/L
 Water hazard class (DE): 1 WGK No.: 0182
 Storage class (VCI): 8 B

18 mL ClO₂ -2

Chemical: *phosphate buffer solution* CAS No.: -
 Water hazard class (DE): 1
 Storage class (VCI): 12

16 mL ClO₂ -1

Chemical: *chemicals/mixture < 1%* CAS No.: -
 Water hazard class (DE): 1
 Storage class (VCI): 12-13

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- 12.2 Persistence and degradability**
not necessary
- 12.3 Bioaccumulative potential**
not necessary
- 12.4 Mobility in soil**
not necessary
- 12.5 Results of PBT and vPvB assessment**
no data available
- 12.6 Other adverse effects**
no additional data available

SECTION 13: Disposal considerations

Batteries must be collected separately and disposed acc. law regulations (electronic waste, WEEE). Further: Please observe local regulations for collection and disposal of hazardous waste and contact waste disposal company, where you will obtain information on laboratory waste disposal (waste code number 16 05 06).

- 13.1 Waste treatment methods**
Normally it is possible to empty small amounts (diluted!) into drains.

SECTION 14: Transport information

14.1. UN number: 3316 **14.2. UN proper shipping name:** Chemical Kit
14.3. Class: 9 **14.4. Packing group:** II
Road transport
 Classification code: M11 Tunnel restriction code: E
 Limited Quantity: acc. ADR 3.3.1/251: see LQ in Alternative declaration for transportation
Air transport
 PAX: 960 max. weight PAX: 10 KG
 CAO: 960 max. weight CAO: 10 KG
Maritime transport
 EmS: F-A, S-P Storage category: A

Or use **Alternative declaration for transportation:**
14.1 - 14.4: No dangerous goods according the transport regulations
 Lithium metal batteries in equipment, not restricted, PI 970: Section II (button cell), No entry in AWB necessary UN No.: (see below) UN 1993 class 3 III, class 8 III, **Excepted Quantities** ($\leq 30 \text{ mL} / \Sigma \leq 1 \text{ L}$) = ADR/ IATA E1
 or

14.1 UN number: 3264
14.2 UN proper shipping name: Corrosive liquid, acidic, inorganic, n.o.s. (zirconium(IV) dichloride oxide, hydrochloric acid, sulfuric acid
14.3 Class: 8 **14.4 Packing group:** III
Road transport
 Classification code: C1 Tunnel restriction code: E
 Limited Quantity: 5 L
 Excepted Quantity: E 1
Air transport
 PAX: 852 max. weight PAX: 5 L
 CAO: 856 max. weight CAO: 60 L
Maritime transport
 EmS: F-A, S-B Storage category: A

- 14.5 Environmental hazards**
none
- 14.6 Special precautions for user**
not necessary
- 14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code**
not applicable

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SECTION 15: Regulatory information

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

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

15.2 Chemical safety assessment

not necessary for these small amounts ---

SECTION 16: Other information

16.1 List of H and P phrases

16.1.1 List of relevant H phrases

H290	May be corrosive to metals.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.

16.1.2 List of relevant P phrases

P261sh	Avoid breathing dust/vapours.
P280sh	Wear protective gloves/eye protection.
P390	Absorb spillage to prevent material damage.
P403+233	Store in a well-ventilated place. Keep container tightly closed.

16.2 Training advice

Regular safety training.

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 Further information

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16.5 Sources of key data

Regulation 790/2009/EU adaptation of CLP regulation 1272/2008/EU to technical and scientific progress
 Regulation 453/2010/EU REACH - REQUIREMENTS FOR THE COMPILATION OF SAFETY DATA SHEETS
 Regulation 487/2013/EU, 4th adaptation of CLP regulation to technical and scientific progress
 Regulation 669/2018/EU, 4th adaptation of CLP regulation to technical and scientific progress
 TRGS 900, German engineering rules governing limits in air at work, updated 03/2018
 SUVA .CH, Limits in air at work 2009, revised on 01.2009
 KÜHN, BIRETT Merkblätter Gefährliche Arbeitsstoffe (Data Sheets of Hazardous Substances)

Revisions/Updates

Reason for Revision: 2016-03 Adaptation of regulation 1221/2015/EU