

Safety Data Sheet

SDS acc. Hazard Communication Standard

REF: 740971.50

NucleoSpin miRNA (50)

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Printing Date: 04.04.2023

Date of Issue: 27.02.2023

Version: 2.2.9.8

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

1.1 Product Identifier / Product Name

REF	740971.50	
Product Name	NucleoSpin miRNA (50)	
1 x 13 mL RNase-free H ₂ O		
1 x 60 mL MX		UFI: Y01V-43QP-G20R-A6PR
1 x 25 mL MDB		UFI: M48V-530M-W20T-7J23
1 x 30 mL ML		UFI: 7U0V-43AV-V20R-0HHM
1 x 20 mL MP		
1 x 35 mL MW1		UFI: D21V-N3E2-T207-YJ8T
1 x 12 mL MW2		
1 x 7 mL Reaction Buffer for rDNase		
1 x 200 U, Size C, rDNase		UFI: 8SGV-63EY-520U-3WWU

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 and 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.

USA: American Association Of Poison Control Centers

Rockville, MD 20857. tel. 1-800-222-1222, <<https://www.poisonhelp.org>>

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(s) Identification

2.0 Classification of the complete Product



GHS02



GHS05



GHS07



GHS08



GHS09

Signal Word

DANGER

Hazard Identification

H225
H302
H314
H334
H335
H351
H411

Hazard Classes/Categories

Flam. Liq. 2
Acute Tox. 4 oral
Skin Corr. 1B
Resp. Sens. 1
STOT SE 3
Carc. 2
Aquatic Chronic 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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2.1 Classification of the substance or mixture

60 mL MX



GHS02 GHS07 GHS08

Signal Word **DANGER**

Hazard Identification	Hazard Classes/Categories
H225	Flam. Liq. 2
H319	Eye Irrit. 2
H335	STOT SE 3
H351	Carc. 2

35 mL MW1



GHS02

Signal Word **WARNING**

Hazard Identification	Hazard Classes/Categories
H226	Flam. Liq. 3

30 mL ML



GHS07

Signal Word **WARNING**

Hazard Identification	Hazard Classes/Categories
H302	Acute Tox. 4 oral
H412	Aquatic Chronic 3

25 mL MDB



GHS02

Signal Word **WARNING**

Hazard Identification	Hazard Classes/Categories
H226	Flam. Liq. 3

20 mL MP



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GHS05 GHS07 GHS09

Signal Word DANGER

Hazard Identification	Hazard Classes/Categories
H314	Skin Corr. 1B
H335	STOT SE 3
H411	Aquatic Chronic 2

13 mL RNase-free H₂O

Signal Word Do not need labelling as hazardous
-

No Hazard Class

200 U, Size C, rDNase



GHS08

Signal Word DANGER

Hazard Identification	Hazard Classes/Categories
H334	Resp. Sens. 1

12 mL MW2

Signal Word Do not need labelling as hazardous
-

No Hazard Class

7 mL Reaction Buffer for rDNase

Signal Word Do not need labelling as hazardous
-

No Hazard Class

List of H phrases: see section 16.2

2.2 Safety, Health and Environmental Regulations/Legislation specific for the Substance or Mixture

According the implementation of GHS immediate packages only must be labelled with product identifier(s), GHS symbol(s), signal word, manufacturer name and phone number (OSHA's interpretation of HCS 2012). Harmful chemicals/mixtures with signal word: **WARNING** and highly flammable chemicals/mixtures must not be labelled with H and P phrases **until 125 mL** (EU 1272/2008 Annex I - 1.5.2) / **until 100 mL** (Canada WHMIS 2015). This labelling exemption does not apply to U.S.A. This labelling exemption is NOT valid for sensiblizing substances.

60 mL MX



GHS02 GHS07 GHS08

Signal Word: DANGER



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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H351
Suspected of causing cancer.
P201, P280sh
Obtain special instructions before use. Wear protective gloves/eye protection.

35 mL MW1



GHS02

Signal Word: WARNING

30 mL ML



GHS07

Signal Word: WARNING

25 mL MDB



GHS02

Signal Word: WARNING

20 mL MP



GHS05



GHS07



GHS09

Signal Word: DANGER

H314

Causes severe skin burns and eye damage.

P260sh, P280sh, P303+361+353, P305+351+338, P310

Do not breathe dust/vapors. Immediately call a POISON CENTER/doctor. Wear protective gloves/eye protection. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower]. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

13 mL RNase-free H₂O

Do not need labelling as hazardous

Signal Word: -

200 U, Size C, rDNase



GHS08

Signal Word: DANGER

H334

May cause allergy or asthma symptoms or breathing difficulties if inhaled.

P261sh, P342+311

Avoid breathing dust/vapors. If experiencing respiratory symptoms: Call a POISON CENTER/doctor.

12 mL MW2

Do not need labelling as hazardous

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Signal Word: -

7 mL Reaction Buffer for rDNase

Do not need labelling as hazardous

Signal Word: -

Label elements of the complete product



GHS02



GHS05



GHS08



GHS09

Signal Word: DANGER

H314, H334, H351

Causes severe skin burns and eye damage. May cause allergy or asthma symptoms or breathing difficulties if inhaled. Suspected of causing cancer.

P201, P260sh, P280sh, P303+361+353, P305+351+338, P310

Do not breathe dust/vapors. Immediately call a POISON CENTER/doctor. Obtain special instructions before use. Wear protective gloves/eye protection. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower]. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

2.3 Other Hazards

Possible Hazards from physicochemical Properties

Generally in the case of pH values are less than 2 or higher than 11.5 then it is corrosive. In the case of pH values are less than 5 or higher than 9 then it is irritant. Flammable properties. 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.). For guanidine thiocyanate CAS 593-84-0: The properties H314, H332 "Causes severe skin burns and eye damage. Harmful if inhaled." are not relevant, because the mixture solution is buffered to pH 4-9 (see GHS Directive 1272/2008/EC Annex I, chapter 3.2.3.1.2.).

Information pertaining to particular Risks to Human and possible Symptoms

Causes varying degrees of acid burns on the skin, to the eyes and to the mucous membranes and wounds which do not heal quickly depending on the concentration, temperature and the exposure time. Vapors especially which steam from hot liquids and mist can have a severe irritant effect upon the eyes and the respiratory organs.

Cause after oral intake, inhalation of vapors/dust, impairments of health when ingested in small quantities. May cause allergy or asthma symptoms or breathing difficulties if inhaled. Suspected of causing cancer.

Kit contains small amounts of enzymes, which may cause sensitization by direct and repeated contact.

Information pertaining to particular Risks to the Environment

Avoid contact of substance/mixture to environment.

PBT: not applicable

vPvB: not applicable

Possible endocrine disrupting effects

data not available

SECTION 3: Composition/Information on Ingredients

3.1 Substances or 3.2 Mixtures

200 U, Size C, rDNase

Substance name: *rDNase*
CAS No.: 9003-98-9

Substance rating: H334, Resp. Sens. 1
Chemical Formula: Enzyme Comm. No. 3.1.21.1, origin: cloned
Synonyms (de): Deoxyribonucleodepolymerase
EC No.: 232-667-0
Concentration: 90 - <100 %
acc. GHS: H334, Resp. Sens. 1

20 mL MP

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Substance name: *zinc chloride*
 CAS No.: 7646-85-7

Substance rating: H302, Acute Tox. 4 oral, H314, Skin Corr. 1B, H318, Eye Dam. 1, H335, STOT SE 3, H400, Aquatic Acute 1, H410, Aquatic Chronic 1
 Chemical Formula: ZnCl₂
 Synonyms (de): Chlorzink
 REACH Reg. No.: 01-2119472431-44-xxxx
 EC No.: 231-592-0
 Concentration: 5 - <10 %
 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. GHS: H314, Skin Corr. 1B, H318, Eye Dam. 1, H335, STOT SE 3, H411, Aquatic Chronic 2

Index No.: 030-003-00-2
 Correlation Factor: x 0.48 (= %Zn)

12 mL MW2

Substance name: *chemicals/mixture until 1%*
 CAS No.: -

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

7 mL Reaction Buffer for rDNase

Substance name: *chemicals/mixture until 2%*
 CAS No.: -

Substance rating: No criteria for classification or naming of chemical is not required.
 Concentration: 1 - <2 %
 acc. GHS: The criteria for classification are not fulfilled.

60 mL MX

Substance name: *1,4-dioxane*
 CAS No.: 123-91-1

Substance rating: H225, Flam. Liq. 2, H319, Eye Irrit. 2, H335, STOT SE 3, H351, Carc. 2
 Chemical Formula: C₄H₈O₂
 Synonyms (de): Glycolethylether, Ethylendioxid
 REACH Reg. No.: 01-2119462837-26-0001
SVHC listed: listed (08/07/2021) Cand. Lst. REACH Art59(10)
 EC No.: 204-661-8
 Concentration: 90 - <100 %
 acc. GHS: H225, Flam. Liq. 2, H319, Eye Irrit. 2, H335, STOT SE 3, H351, Carc. 2

Index No.: 603-024-00-5

25 mL MDB

Substance name: *ethanol*
 CAS No.: 64-17-5
 (denatured with 1% 2-butanone)

Substance rating: H225, Flam. Liq. 2
 Chemical Formula: C₂H₆O; C₂H₅OH
 Synonyms (de): Äthylalkohol, vergällter Spiritus
 REACH Reg. No.: 01-2119457610-43-xxxx
 EC No.: 200-578-6
 Concentration: 5 - <20 %
 acc. GHS: H226, Flam. Liq. 3

Index No.: 603-002-00-5

Substance name: *guanidinium thiocyanate*
 CAS No.: 593-84-0

Substance rating: H302, Acute Tox. 4 oral, H312, Acute Tox. 4 derm., H314, Skin Corr. 1C, H332, Acute Tox. 4 inh., H412, Aquatic Chronic 3
 Chemical Formula: C₂H₆N₄S
 Synonyms (de): Guanidiniumrhodanid
 REACH Reg. No.: 01-2120735072-65-0001
 EC No.: 209-812-1
 Concentration: 5 - <10 %
 acc. GHS: The criteria for classification are not fulfilled.

Index No.: 615-004-00-3



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30 mL ML

Substance name: *2-mercaptoethanol*
 CAS No.: 60-24-2

Substance rating: H301, Acute Tox. 3 oral, H310, Acute Tox. 1 derm., H315, Skin Irrit. 2, H317, Skin Sens. 1, H318, Eye Dam. 1, H330, Acute Tox. 1 inh., H410, Aquatic Chronic 1
 Chemical Formula: C₂H₆OS
 Synonyms (de): β-ME, BME, Hydroxyethylmercaptan, Thioglycol
 REACH Reg. No.: 01-2119517582-41-xxxx
 EC No.: 200-464-6
 Concentration: 0,1 - <1 %
 acc. GHS: The criteria for classification are not fulfilled.

Substance name: *guanidinium thiocyanate*
 CAS No.: 593-84-0

Substance rating: H302, Acute Tox. 4 oral, H312, Acute Tox. 4 derm., H314, Skin Corr. 1C, H332, Acute Tox. 4 inh., H412, Aquatic Chronic 3
 Chemical Formula: C₂H₆N₄S
 Synonyms (de): Guanidiniumrhodanid
 REACH Reg. No.: 01-2120735072-65-0001
 EC No.: 209-812-1
 Concentration: 45 - <60 %
 acc. GHS: H302, Acute Tox. 4 oral, H412, Aquatic Chronic 3

Index No.: 615-004-00-3

35 mL MW1

Substance name: *guanidinium thiocyanate*
 CAS No.: 593-84-0

Substance rating: H302, Acute Tox. 4 oral, H312, Acute Tox. 4 derm., H314, Skin Corr. 1C, H332, Acute Tox. 4 inh., H412, Aquatic Chronic 3
 Chemical Formula: C₂H₆N₄S
 Synonyms (de): Guanidiniumrhodanid
 REACH Reg. No.: 01-2120735072-65-0001
 EC No.: 209-812-1
 Concentration: 5 - <10 %
 acc. GHS: The criteria for classification are not fulfilled.

Index No.: 615-004-00-3

Substance name: *ethanol*
 CAS No.: 64-17-5
 (denatured with 1% 2-butanone)

Substance rating: H225, Flam. Liq. 2
 Chemical Formula: C₂H₆O; C₂H₅OH
 Synonyms (de): Äthylalkohol, vergällter Spiritus
 REACH Reg. No.: 01-2119457610-43-xxxx
 EC No.: 200-578-6
 Concentration: 35 - <55 %
 acc. GHS: H226, Flam. Liq. 3

Index No.: 603-002-00-5

13 mL RNase-free H₂O

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

Substance rating: No criteria for classification or naming of chemical is not required.
 Chemical Formula: H₂O
 REACH Reg. No.: exempt, Annex IV
 EC No.: 231-791-2
 Concentration: 90 - <100 %
 acc. 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 Hazard and Precaution phrases: see section 16.2.



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SECTION 4: First-Aid Measures

4.1 Description of First-Aid Measures

Place insured person out of danger zone to fresh air immediately. Ensure quiet, warmth, and provide resuscitation if necessary. If necessary contact medical advice. Remove contaminated clothing. Show product package, packing insert and this material safety data sheet to the doctor. Take to a doctor, in a raised position if there are breathing difficulties.

4.1.1 After SKIN Contact

Remove contaminated clothing immediately. Rinse the affected skin or mucous membrane thoroughly for min. 15 minutes under running water. (If possible) use soap. Avoid neutralisation. Then apply a loose bandage.

4.1.2 After EYE Contact

After contact with the eyes rinse thoroughly under running water with the eyelid wide open for min. 10 minutes with eye washing bottle, eye douche or running water (protect intact eye). Before (if possible) apply eye drops Proxymetacaine 0.5%, if the opening the eyelid convulsion is painful. Further treatment to be carried out by an eye specialist.

4.1.3 After INHALATION of Vapors

After inhalation of foam or vapor fresh air should be inhaled. Keep airways free. If vomiting and if insensible place patient in recovery position and keep airways free. Administer a Dexamethasone spray as soon as possible. Ensure quiet, warmth, and provide resuscitation if necessary. In the event of respiratory distress ensure that the patient inhales oxygen. Secure the breathing, heart and circulatory function.

4.1.4 After ORAL Intake

After oral intake lots of water with activated charcoal supplement should be drunk after it has been ingested. Do not induce vomiting under any circumstances. Do not make any efforts to neutralize it. Contact medical advice for possible consequences.

4.2 Most important Symptoms and Effects, both acute and delayed

May cause allergy or asthma symptoms or breathing difficulties if inhaled. Chronic effects: Repeated contact, even in small amounts, can lead to sensitization. Rapid penetration and destruction of the skin. Especially in the heated form. Causes severe skin burns and eye damage. CMR Effekte: Suspected of causing cancer.

4.3 Indication of any immediate Medical Attention and Special Treatment needed

CORROSIVE DAMAGE: After SKIN CONTACT rinse with water for a long time. Efforts to neutralise the substance can frequently make matters worse. Apply glucocorticosteroides following inflammatory reactions. After EYE CONTACT rinse immediately with plenty of water for a long time. Eyelid convulsion measures. Name the corrosive substance. Further treatment must to be carried out by an eye specialist. After INTAKE administer aluminium oxide drug suspensions. Administer a prophylaxis to counter pulmonary oedema following the INGESTION of corrosive aerosols. In the event of RESPIRATORY DISTRESS ensure that the patient inhales oxygen. Inform patient respectively further measures and the possibility of long-term damages. ---

SECTION 5: Fire-Fighting Measures

5.1 Extinguishable 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

data not available

5.2 Special Hazards arising from the Substance or Mixture

DANGER: Highly flammable. Forms explosive vapor-air mixtures. Formation of hazardous and caustic vapor-air mixtures possible.

5.3 Advice for Firefighters

No, for listed product. Product package burns like paper or plastic. Spray any vapours released with water. Retent fire water. Use only acid-resistant safety equipment.

For great amount - if necessary - protective breathing apparatus which is independent of the ambient air (isolated equipment), and sealed protective clothing is necessary in the event of a large-scale formation of toxic substances.

5.4 Additional Information

Danger for environment **only in the event of a large-scale leakage** or formation of hazardous substances.



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 6: Accidental Release Measures

6.1 Personal Precautions, Protective Equipment and Emergency Procedure

Do not breathe vapors. Wear suitable protective gloves (see 8.2.2). Wear eye protection, respectively face protection. Regular staff training is necessary, indicating hazards and precautions on the basis of operating instructions. Restrictions on activity must be observed.

6.2 Environmental Precautions

Avoid contact of substance/mixture to environment.

PBT: not applicable

vPvB: not applicable

6.3 Methods and Material for Containment and Cleaning up

Bind any escaping liquid with inert absorbent.

And dispose in accordance to local regulations for the disposal of hazards. Clean any contaminated equipment and floors with plenty of water. Collect small amounts of leaked liquid and flush with water into sewer.

6.4 Reference to other Sections

see information in section 5.4,7,8 and 13

SECTION 7: Handling and Storage

7.1 Precautions for Safe Handling

Handling in accordance with the test instruction, that comes with the product. Use only in well-ventilated working areas.

7.2 Conditions for Safe Storage, including any Incompatibilities

The original product package allows a safe storage. Storage class (German chemical industry): see chapter 12.1

Storage class (VCI): 3

Water hazard class (DE): 3

7.2.1 Requirements for stock rooms and containers

Keep original product packages tightly closed during handling and storage. Use inbreakable container for transport of glass bottles.

7.3 Specific End Use(s)

Product for analytical use.

SECTION 8: Exposure Controls/Personal Protection

8.1 Control Parameters

200 U, Size C, rDNase

Chemical: *rDNase*

CAS No.: 9003-98-9

20 mL MP

Chemical: *zinc chloride*

CAS No.: 7646-85-7

DNEL: 1.3 Zn, inh mg/m³

DNEL = Derived No-Effect Level (for workers)

PNEC (fresh water): 0.0206 mg/L

PNEC = Predicted No Effect Concentration

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

12 mL MW2

Chemical: *chemicals/mixture until 1%*

CAS No.: -

7 mL Reaction Buffer for rDNase

Chemical: *chemicals/mixture until 2%*

CAS No.: -

60 mL MX

Chemical: *1,4-dioxane*

CAS No.: 123-91-1

DNEL: 73 mg/m³

DNEL = Derived No-Effect Level (for workers)

PNEC (fresh water): 10 mg/L

PNEC = Predicted No Effect Concentration

NIOSH: Occupational Carcinogen List Yes: TWA_{30min} 1 ppm / 3.6 mg/m³

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



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OSHA: [skin] TWA 100 ppm / 360 mg/m³
 EU value: 20 ppm / 73 mg/m³

25 mL MDB

Chemical: *ethanol* CAS No.: 64-17-5

DNEL: [derm] 343 mg/kg; [inh] 950 mg/m³

DNEL = Derived No-Effect Level (for workers)

PNEC (fresh water): 0.96 mg/L

PNEC = Predicted No Effect Concentration

NIOSH: [TWA] 1000 ppm / 1900 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: 1000 ppm / 1900 mg/m³

Chemical: *guanidinium thiocyanate* CAS No.: 593-84-0

DNEL: [inh] 1092 µg/m³

DNEL = Derived No-Effect Level (for workers)

PNEC (fresh water): 42.4 µg/L

PNEC = Predicted No Effect Concentration

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

30 mL ML

Chemical: *2-mercaptoethanol* CAS No.: 60-24-2

DNEL: [derm] 0.6 mg/kg

DNEL = Derived No-Effect Level (for workers)

PNEC (fresh water): 0.0004 mg/L

PNEC = Predicted No Effect Concentration

Chemical: *guanidinium thiocyanate* CAS No.: 593-84-0

DNEL: [inh] 1092 µg/m³

DNEL = Derived No-Effect Level (for workers)

PNEC (fresh water): 42.4 µg/L

PNEC = Predicted No Effect Concentration

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

35 mL MW1

Chemical: *guanidinium thiocyanate* CAS No.: 593-84-0

DNEL: [inh] 1092 µg/m³

DNEL = Derived No-Effect Level (for workers)

PNEC (fresh water): 42.4 µg/L

PNEC = Predicted No Effect Concentration

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: *ethanol* CAS No.: 64-17-5

DNEL: [derm] 343 mg/kg; [inh] 950 mg/m³

DNEL = Derived No-Effect Level (for workers)

PNEC (fresh water): 0.96 mg/L

PNEC = Predicted No Effect Concentration

NIOSH: [TWA] 1000 ppm / 1900 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: 1000 ppm / 1900 mg/m³

13 mL RNase-free H₂O

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.



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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- 8.2.1 Respiratory Protection**
Use for open access of these substances for example a vapor/dust respirator, class A/AX. No additional recommendations.
- 8.2.2 Skin protection / Hand protection**
Yes, gloves (permeation time >30 min - level 2), consist of PVC, Natural latex, Neopren, or Nitril. Use for short times chemical resistant Latex gloves f.ex. with code EN 374-3 level 1.
- 8.2.3 Eye / Face Protection**
Yes, Splash Goggles or Face Protection.
- 8.2.4 Skin Protection**
Recommended to avoid clothing damage, and to avoid contamination with these hazards.
- 8.2.5 Hygiene Measures**
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**
data not 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

200 U, Size C, rDNase

- | | |
|--------------------------------------|---------------------|
| a) State of aggregation: | solid (lyophilized) |
| b) Color: | white |
| c) Odor: | odorless |
| d) Melting Point: | data not available |
| e) Boiling Point: | data not available |
| f) Flammability: | data not available |
| g) Explosive Limits (lower / upper): | data not available |
| h) Flash Point: | data not available |
| i) Autoignition Temperature: | data not available |
| j) Decomposition Temperature: | data not available |
| k) pH Value: | data not available |
| l) Kinematic Viscosity: | data not available |
| m) Soluble in Water: | data not available |
| n) Partition Coefficient (o/w) : | data not available |
| o) Vapor Pressure (68°F): | data not available |
| p) Specific Gravity: | data not available |
| q) Relative Vapor Density (air=1) : | data not available |
| r) Particle Size: | data not available |

20 mL MP

- | | |
|--------------------------------------|--------------------|
| a) State of aggregation: | liquid |
| b) Color: | colorless |
| c) Odor: | acetic |
| d) Melting Point: | data not available |
| e) Boiling Point: | data not available |
| f) Flammability: | data not available |
| g) Explosive Limits (lower / upper): | data not available |
| h) Flash Point: | data not available |
| i) Autoignition Temperature: | data not available |
| j) Decomposition Temperature: | data not available |
| k) pH Value: | 4-4.5 |
| l) Kinematic Viscosity: | data not available |
| m) Soluble in Water: | 0-100 % |
| n) Partition Coefficient (o/w) : | data not available |
| o) Vapor Pressure (68°F): | data not available |
| p) Specific Gravity: | data not available |
| q) Relative Vapor Density (air=1) : | data not available |
| r) Particle Size: | data not available |



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12 mL MW2

a) State of aggregation:	liquid
b) Color:	colorless
c) Odor:	odorless
d) Melting Point:	data not available
e) Boiling Point:	data not available
f) Flammability:	data not available
g) Explosive Limits (lower / upper):	data not available
h) Flash Point:	data not available
i) Autoignition Temperature:	data not available
j) Decomposition Temperature:	data not available
k) pH Value:	7-8
l) Kinematic Viscosity:	data not available
m) Soluble in Water:	data not available
n) Partition Coefficient (o/w) :	data not available
o) Vapor Pressure (68°F):	data not available
p) Specific Gravity:	1.00 g/cm ³
q) Relative Vapor Density (air=1) :	data not available
r) Particle Size:	data not available

7 mL Reaction Buffer for rDNase

a) State of aggregation:	liquid
b) Color:	colorless
c) Odor:	odorless
d) Melting Point:	data not available
e) Boiling Point:	data not available
f) Flammability:	data not available
g) Explosive Limits (lower / upper):	data not available
h) Flash Point:	data not available
i) Autoignition Temperature:	data not available
j) Decomposition Temperature:	data not available
k) pH Value:	6.5-7.5
l) Kinematic Viscosity:	data not available
m) Soluble in Water:	data not available
n) Partition Coefficient (o/w) :	data not available
o) Vapor Pressure (68°F):	data not available
p) Specific Gravity:	1.01 g/cm ³
q) Relative Vapor Density (air=1) :	data not available
r) Particle Size:	data not available

60 mL MX

a) State of aggregation:	liquid
b) Color:	colorless
c) Odor:	odorless
d) Melting Point:	12 °C
e) Boiling Point:	101.5 °C
f) Flammability:	data not available
g) Explosive Limits (lower / upper):	1.9-22.5 Vol%
h) Flash Point:	11 °C
i) Autoignition Temperature:	375 °C
j) Decomposition Temperature:	data not available
k) pH Value:	6-8
l) Kinematic Viscosity:	data not available
m) Soluble in Water:	< 2 %
n) Partition Coefficient (o/w) :	data not available
o) Vapor Pressure (68°F):	41 hPa
p) Specific Gravity:	1.01-1.03 g/cm ³
q) Relative Vapor Density (air=1) :	3.04
r) Particle Size:	data not available

25 mL MDB

a) State of aggregation:	liquid
b) Color:	colorless
c) Odor:	alcoholic
d) Melting Point:	data not available



MACHEREY-NAGEL GmbH & Co. KG
 Valenciennes 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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e) Boiling Point:	data not available
f) Flammability:	data not available
g) Explosive Limits (lower / upper):	data not available
h) Flash Point:	55 °C
i) Autoignition Temperature:	data not available
j) Decomposition Temperature:	data not available
k) pH Value:	6.7-7.2
l) Kinematic Viscosity:	data not available
m) Soluble in Water:	data not available
n) Partition Coefficient (o/w) :	data not available
o) Vapor Pressure (68°F):	data not available
p) Specific Gravity:	1.01 g/cm ³
q) Relative Vapor Density (air=1) :	data not available
r) Particle Size:	data not available

30 mL ML

a) State of aggregation:	liquid
b) Color:	colorless
c) Odor:	sulfuric
d) Melting Point:	data not available
e) Boiling Point:	data not available
f) Flammability:	data not available
g) Explosive Limits (lower / upper):	data not available
h) Flash Point:	data not available
i) Autoignition Temperature:	data not available
j) Decomposition Temperature:	data not available
k) pH Value:	6.5-7.5
l) Kinematic Viscosity:	data not available
m) Soluble in Water:	data not available
n) Partition Coefficient (o/w) :	data not available
o) Vapor Pressure (68°F):	data not available
p) Specific Gravity:	1.05 g/cm ³
q) Relative Vapor Density (air=1) :	data not available
r) Particle Size:	data not available

35 mL MW1

a) State of aggregation:	liquid
b) Color:	colorless
c) Odor:	alcoholic
d) Melting Point:	data not available
e) Boiling Point:	data not available
f) Flammability:	data not available
g) Explosive Limits (lower / upper):	data not available
h) Flash Point:	23 °C
i) Autoignition Temperature:	data not available
j) Decomposition Temperature:	data not available
k) pH Value:	6.5 - 7.5
l) Kinematic Viscosity:	data not available
m) Soluble in Water:	data not available
n) Partition Coefficient (o/w) :	data not available
o) Vapor Pressure (68°F):	data not available
p) Specific Gravity:	data not available
q) Relative Vapor Density (air=1) :	data not available
r) Particle Size:	data not available

13 mL RNase-free H₂O

a) State of aggregation:	liquid
b) Color:	colorless
c) Odor:	odorless
d) Melting Point:	data not available
e) Boiling Point:	data not available
f) Flammability:	data not available
g) Explosive Limits (lower / upper):	data not available
h) Flash Point:	data not available



MACHEREY-NAGEL GmbH & Co. KG
 Valenciennes 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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i) Autoignition Temperature:	data not available
j) Decomposition Temperature:	data not available
k) pH Value:	6-8
l) Kinematic Viscosity:	data not available
m) Soluble in Water:	data not available
n) Partition Coefficient (o/w):	data not available
o) Vapor Pressure (68°F):	data not available
p) Specific Gravity:	1.0 g/cm ³
q) Relative Vapor Density (air=1):	data not available
r) Particle Size:	data not available

9.2 Further Information

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

Properties relevant to substance groups

Substances are highly volatile and form flammable gas-air mixtures. Substances are highly corrosive.

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

Can react violently with organic material. Can form very reactive substances with oxidizing agents. Possibility: &H:EUH031& No further data available.

10.4 Conditions to avoid

No more required.

10.5 Incompatible Materials

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 Toxicological Effects

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

200 U, Size C, rDNase

Chemical: *rDNase* CAS No.: 9003-98-9

TSCA Inventory: listed

Acute Effects: Cause after impairments of health when ingested in small quantities.

Chronic Effects: May cause sensitization by skin contact, also in repeated contact of small amounts. May cause allergy or asthma symptoms or breathing difficulties if inhaled.

20 mL MP

Chemical: *zinc chloride* CAS No.: 7646-85-7

TSCA Inventory: listed California Prop. 65 List: not listed

Canada CEPA 1999: DSL Yes

LD50 _{orl rat}: 350 mg/kg

LD50 _{orl mus}: 329 mg/kg

Acute Effects: Cause after inhalation of vapors/dust, impairments of health when ingested in small quantities.

12 mL MW2

Chemical: *chemicals/mixture until 1%* CAS No.: -

TSCA Inventory: all listed, <1%



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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7 mL Reaction Buffer for rDNase

Chemical: *chemicals/mixture until 2%* CAS No.: -
 TSCA Inventory: all listed, <2%

60 mL MX

Chemical: *1,4-dioxane* CAS No.: 123-91-1
 TSCA Inventory: listed California Prop. 65 List: listed cancer
 Exposure Routes: inhalation, skin absorption, ingestion, skin and/or eye contact
 Target Organs: Eyes, skin, respiratory system, liver, kidneys; [in animals: lung, liver & nasal cavity tumors]
 Symptoms: irritation eyes, skin, nose, throat; drowsiness, headache; nausea, vomiting; liver damage; kidney failure; [potential occupational carcinogen]
 Canada CEPA 1999: DSL Yes
 LD50 orl rat : 5150 mg/kg
 LC50 ihl rat : 155 mg/L
 Acute Effects: Cause after inhalation of vapors/dust, impairments of health when ingested in small quantities.
 Carcinogenic Effects: Suspected of causing cancer.
 EU carcinogen: Carcinogenicity cat. 2

25 mL MDB

Chemical: *ethanol* CAS No.: 64-17-5
 TSCA Inventory: listed California Prop. 65 List: not listed
 ACGIH: 1000 ppm
 Exposure Routes: inhalation, ingestion, skin and/or eye contact
 Target Organs: Eyes, skin, respiratory system, central nervous system, liver, blood, reproductive system
 Symptoms: irritation eyes, skin, nose; headache, drowsiness, lassitude (weakness, exhaustion), narcosis; cough; liver damage; anemia; reproductive, teratogenic
 Canada CEPA 1999: DSL yes
 LD50 orl rat : 6200 mg/kg
 LC_{Low} ihl gpg : 21,900 mg/L
 LC_{Low} orl hmh : 1400 mg/kg
 LC50 ihl mus : 123,4 mg/L/4H
 LC50 ihl rat : 115,9-133,8 mg/L/4H
 LD50 orl mus : 3450 mg/kg

Chemical: *guanidinium thiocyanate* CAS No.: 593-84-0
 TSCA Inventory: listed California Prop. 65 List: not listed
 Canada CEPA 1999: DSL yes
 LD50 orl rat : 593 mg/kg
 LC50 ihl rat : 5,319 mg/L/4H

30 mL ML

Chemical: *2-mercaptoethanol* CAS No.: 60-24-2
 TSCA Inventory: listed
 Canada CEPA 1999: DSL yes
 LD50 orl rat : 98-162 mg/kg
 LC50 ihl rat : 2 mg/L/4H

Chemical: *guanidinium thiocyanate* CAS No.: 593-84-0
 TSCA Inventory: listed California Prop. 65 List: not listed
 Canada CEPA 1999: DSL yes
 LD50 orl rat : 593 mg/kg
 LC50 ihl rat : 5,319 mg/L/4H
 Acute Effects: Cause after oral intake, impairments of health when ingested in small quantities.

35 mL MW1

Chemical: *guanidinium thiocyanate* CAS No.: 593-84-0
 TSCA Inventory: listed California Prop. 65 List: not listed
 Canada CEPA 1999: DSL yes
 LD50 orl rat : 593 mg/kg
 LC50 ihl rat : 5,319 mg/L/4H

Chemical: *ethanol* CAS No.: 64-17-5
 TSCA Inventory: listed California Prop. 65 List: not listed
 ACGIH: 1000 ppm
 Exposure Routes: inhalation, ingestion, skin and/or eye contact
 Target Organs: Eyes, skin, respiratory system, central nervous system, liver, blood, reproductive system
 Symptoms: irritation eyes, skin, nose; headache, drowsiness, lassitude (weakness, exhaustion), narcosis; cough; liver damage; anemia; reproductive, teratogenic
 Canada CEPA 1999: DSL yes



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LD50 orl rat :	6200 mg/kg
LC _{Low} ihl gpg :	21,900 mg/L
LC _{Low} orl hmn :	1400 mg/kg
LC50 ihl mus :	123,4 mg/L/4H
LC50 ihl rat :	115,9-133,8 mg/L/4H
LD50 orl mus :	3450 mg/kg

13 mL RNase-free H₂O

Chemical:	<i>water</i>	CAS No.: 7732-18-5
TSCA Inventory:	listed	
LD50 orl rat :	> 90000 mg/kg	

11.2 Other Hazards

Possible endocrine disrupting effects

data not available

Other Information

no additional data available

SECTION 12: Ecological Information

12.1 Toxicity

Following information is valid for pure chemicals.

200 U, Size C, rDNase

Chemical:	<i>rDNase</i>	CAS No.: 9003-98-9
-----------	---------------	--------------------

20 mL MP

Chemical:	<i>zinc chloride</i>	CAS No.: 7646-85-7
-----------	----------------------	--------------------

Toxic to aquatic life with long lasting effects. Avoid contact of chemical/mixture to environment.

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

PNEC (fresh water) :	0.0206 mg/L
PNEC = Predicted No Effect Concentration	

LC50 fish/96h :	38 mg/L
EC50 daphnia/48h :	1.24 mg/L
EC50 pseudokirchneriella subcapitata/72h :	0.05 mg/L

12 mL MW2

Chemical:	<i>chemicals/mixture until 1%</i>	CAS No.: -
-----------	-----------------------------------	------------

7 mL Reaction Buffer for rDNase

Chemical:	<i>chemicals/mixture until 2%</i>	CAS No.: -
-----------	-----------------------------------	------------

60 mL MX

Chemical:	<i>1,4-dioxane</i>	CAS No.: 123-91-1
-----------	--------------------	-------------------

PNEC (fresh water) :	10 mg/L
PNEC = Predicted No Effect Concentration	

Bio Toxicity:	1/2.1/2.6
LC50 fish/96h :	[21d] 100 mg/L
EC50 daphnia/48h :	1 g/L
IC50 scenedesmus quadricauda/72h :	[72h] 1 g/L
Partition Coefficient (o/w) :	-0,42

25 mL MDB

Chemical:	<i>ethanol</i>	CAS No.: 64-17-5
-----------	----------------	------------------

PNEC (fresh water) :	0.96 mg/L
PNEC = Predicted No Effect Concentration	

LC50 daphnia magna/48h :	>100 g/L
LC50 pimephales promelas/96h :	13.4-15.1 g/L
LC50 leuciscus idus/96h :	[48h] 8.14 g/L
LC50 fish/96h :	13 g/L
EC50 daphnia/48h :	9.3-14.2 g/L
IC50 scenedesmus quadricauda/72h :	[7d] 5000 mg/L
EC10 pseudomonas putita/16h :	[EC5] 6500 mg/L



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Partition Coefficient (o/w) : -0,31

Chemical: *guanidinium thiocyanate*

CAS No.: 593-84-0

PNEC (fresh water) : 42.4 µg/L

PNEC = Predicted No Effect Concentration

LC50 fish/96h : [4d] 89.1 mg/L

EC50 daphnia/48h : 42.4 mg/L

IC50 scenedesmus quadricauda/72h : 130 mg/L

EC10 pseudomonas putita/16h : [10d] 200 mg/L

Partition Coefficient (o/w) : -1,11 pH 5.1

30 mL ML

Chemical: *2-mercaptoethanol*

CAS No.: 60-24-2

PNEC (fresh water) : 0.0004 mg/L

PNEC = Predicted No Effect Concentration

LC50 leuciscus idus/96h : 46-100 mg/L

EC50 daphnia/48h : 1.52 mg/L

Chemical: *guanidinium thiocyanate*

CAS No.: 593-84-0

Harmful to aquatic life with long lasting effects. Avoid contact of chemical/mixture to environment.

Environmental hazards must not be labelled with P phrases until 125 mL (EU-CLP 1272/2008 Annex I - 1.5.2).

PNEC (fresh water) : 42.4 µg/L

PNEC = Predicted No Effect Concentration

LC50 fish/96h : [4d] 89.1 mg/L

EC50 daphnia/48h : 42.4 mg/L

IC50 scenedesmus quadricauda/72h : 130 mg/L

EC10 pseudomonas putita/16h : [10d] 200 mg/L

Partition Coefficient (o/w) : -1,11 pH 5.1

35 mL MW1

Chemical: *guanidinium thiocyanate*

CAS No.: 593-84-0

PNEC (fresh water) : 42.4 µg/L

PNEC = Predicted No Effect Concentration

LC50 fish/96h : [4d] 89.1 mg/L

EC50 daphnia/48h : 42.4 mg/L

IC50 scenedesmus quadricauda/72h : 130 mg/L

EC10 pseudomonas putita/16h : [10d] 200 mg/L

Partition Coefficient (o/w) : -1,11 pH 5.1

Chemical: *ethanol*

CAS No.: 64-17-5

PNEC (fresh water) : 0.96 mg/L

PNEC = Predicted No Effect Concentration

LC50 daphnia magna/48h : >100 g/L

LC50 pimephales promelas/96h : 13.4-15.1 g/L

LC50 leuciscus idus/96h : [48h] 8.14 g/L

LC50 fish/96h : 13 g/L

EC50 daphnia/48h : 9.3-14.2 g/L

IC50 scenedesmus quadricauda/72h : [7d] 5000 mg/L

EC10 pseudomonas putita/16h : [EC5] 6500 mg/L

Partition Coefficient (o/w) : -0,31

13 mL RNase-free H₂O

Chemical: *water*

CAS No.: 7732-18-5

12.2 Persistence and Degradability

not necessary

12.3 Bioaccumulative Potential

not necessary

12.4 Mobility in Soil

not necessary



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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

data not available

12.7 Other Adverse Effects

no additional data available

SECTION 13: Disposal Considerations

Do not collect in acidic waste. May form toxic gases.

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 (RCRA Code D002/D003, EU waste code number 16 05 06).

13.1 Waste Treatment Methods

Normally it is possible to empty small amounts (diluted!) into drains. Empty containers of corrosive reagents prior to disposal, rinse with water.

SECTION 14: Transport Information

14.1. UN/NA: 1993 **14.2. Proper Shipping Name:** Flammable liquid, n.o.s. (1,4-dioxane, ethanol mixture)

14.3. Hazard Class: 3 **14.4. Packing Group:** II

Transportation by Road

Classification code: F1

Limited Quantity: 1 L

Excepted Quantity: E 2

Tunnel restriction code: E

Special instructions: 640C

Air Transportation

Limited Quantity: LQ 4

Excepted Quantity: E 2

PAX: 353

CAO: 364

max. weight PAX: 5 L

max. weight CAO: 60 L

Maritime Transport

EmS: F-E, S-E Storage Category: B

14.5 Environmental Hazards

none, contains only small quantities of hazardous substances, contains only small amounts of these substances

14.6 Special Precautions for User

not necessary

14.7 Carriage of bulk cargo 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

U.S. Federal Regulations

OSHA "A Guide to The Globally Harmonized System of Classification and Labelling of Chemicals (GHS)"

<https://www.osha.gov/dsg/hazcom/ghs.html>

29 CFR 1910.1200 Hazard communication.

NIOSH Pocket Guide to Chemical Hazards

NIOSH Workplace Safety & Health Topics

TSCA Inventory

U.S. State Regulations

California Prop 65, Safe Drinking Water and Toxic Enforcement Act of 1986

Canada

Canada CEPA 1999 - Domestic Substances List (DSL), List of Toxic Substances (Schedule 1)

MN Leaflet/User manual, also see www.mn-net.com

15.2 Chemical Safety Assessment



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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not necessary for these small amounts

SECTION 16: Other Information

16.1 Changes compared to the last version

Between versions 2.2.9.8 and 2.2.2.2 following changes were applied: - 7 composition data corrected - 6 substance data corrected

16.2 List of Hazard and Precaution Phrases

16.2.1 List of relevant H Phrases

H225	Highly flammable liquid and vapor.
H226	Flammable liquid and vapor.
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335	May cause respiratory irritation.
H351	Suspected of causing cancer.
H411	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.
P260sh	Do not breathe dust/vapors.
P280sh	Wear protective gloves/eye protection.
P303+361+353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
P305+351+338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a POISON CENTER/doctor.

16.3 Recommended Restriction on Use

Only for Professional User.
 Look about employee restrictions for young people!
 Look about employee restrictions for pregnant women and nursing women!
 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
 TRGS 907, German technical rules for listing substances and causes of sensitization, updated November 2011
 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)

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
 2017-08 adjustment according the Ordinance on Ethanol Denaturation 2016/1867/EU
 2017-11 adjustment according the ECHA registration dossier
 2022-11 adjustment according Regulation 878/2020/EU



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

Safety Data Sheet

SDS acc. Hazard Communication Standard

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16.5 Further Information

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16.6 Legend / Abbreviations

acc: according
 ADR: Convention concerning the International Carriage of Dangerous Goods by Road
 Act: acute
 BAT: biological workplace tolerance value
 CAO: Cargo Aircraft Only
 Carc: carcinogen
 CAS: Chemical Abstracts Service
 CLP: Classification, Labelling and Packaging regulation
 CMR: carcinogen, mutagen, reproduction toxic
 Corr: corrosive
 COD: chemical oxygen demand
 CSCL: Chemical Substance Control Law (Jp)
 Dam: damage
 DNEL: Derived No-Effect Level (for workers)
 derm: dermal
 dog: dog
 EC10: Concentration causing a toxic effect in 10% of the test organisms
 EC: European Community
 EC-Nr: Substance number of the EC substance inventory
 EmS: Guide to accident management measures on ships
 EU: European Union
 fish: fish (not specified)
 GHS: Global Harmonized System of Classification and Labeling of Chemicals
 gpg: guinea pig
 ICAO: International Civil Aviation Organization
 ihl: inhaled
 IMDG: International Maritime Dangerous Goods Code
 intrav: intravenous
 ipt: intraperitoneal
 ISHL: Industrial Safety and Health Law (Jp)
 LC50: 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



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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Repr: harmful to reproduction
 Resp: respiratory
 scu: sub cutan
 RIP: REACH Implementations Projects
 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.



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