

Safety Data Sheet

according to Regulations REACH 1907/2006/EC

| | | |
|---------------------------|---------------------------|-------------------|
| REF: 985001 | NANOCOLOR Zirconium 100 | Page: 1/10 |
| Printing date: 15.05.2024 | Date of issue: 26.09.2022 | Version: 2.2.2.16 |

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

1.1 Product identifier

REF 985001
 Product name NANOCOLOR Zirconium 100

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.
 20 x 5 mL Zirconium 100 (R0)
 1 x 20x 32 mg Zirconium 100 NANOFIX (R2)

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

Relevant identified uses
 Product for analytical use.
 Exposure Scenario Classification according REACH, RIP 3.2 Codes: SU 0-2, PC 21, PROC 15, AC 0
 The exposure scenario is integrated into sections 1-16.
Uses advised against
 not described

1.3 Details of the supplier of the safety data sheet

Manufactured by:
 MACHEREY-NAGEL GmbH & Co. KG
 Valencienner Str. 11, 52355 Düren, Germany
 Phone: +49 2421 969 0
 E-mail: sds@mn-net.com (msds@mn-net.com)

1.4 Emergency telephone number

Information not necessary.
 You find our current versions of SDS in Internet: [<http://www.mn-net.com/SDS>](http://www.mn-net.com/SDS)

SECTION 2: Hazard identification

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

| Hazard identification | Hazard classes/categories |
|-----------------------|---------------------------|
| | - |

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

| | |
|---|------------------------------------|
| 20x 32 mg Zirconium 100 NANOFIX (R2) | |
| Signal word | Do not need labelling as hazardous |
| No hazard class | - |
| 5 mL Zirconium 100 (R0) | |
| 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



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20x 32 mg Zirconium 100 NANOFIX (R2)

Do not need labelling as hazardous
Signal word: -

5 mL Zirconium 100 (R0)

Do not need labelling as hazardous
Signal word: -

Label elements of the complete product

Signal word: -

2.3 Other hazards

Possible hazards from physicochemical properties

According to our current status of knowledge and experience we state, that this product does not contain any substances, which - in accordance with EC regulations 1272/2008/EC, 1907/2006/EC and German Regulations for Hazardous goods - have to be declared as dangerous goods, either because of their applied concentration or because of their total amount in anyone kit. An individual package has considerably less hazardous potential.

Information pertaining to particular risks to human and possible symptoms

Information pertaining to particular risks to the environment

PBT: not applicable
vPvB: not applicable

Possible endocrine disrupting effects

no data available

SECTION 3: Composition / information on ingredients

3.1 Substances or 3.2 Mixtures

20x 32 mg Zirconium 100 NANOFIX (R2)

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

Substance rating: No criteria for classification or naming of chemical not required.
Formula: $C_6H_8O_6$
Pseudonym (de): Vitamin C
REACH Reg. No.: exempt, Annex IV
EC No.: 200-066-2
Concentration: 70 - <90 %
acc. CLP (GHS): The criteria for classification are not fulfilled.

5 mL Zirconium 100 (R0)

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

Substance rating: H314, Skin Corr. 1 B
Formula: $H_2SO_4 \cdot (H_2O)$
REACH Reg. No.: 01-2119458838-20-xxxx
EC No.: 231-639-5
Specific concentration limit: Eye Irrit. 2; H319: 5 % ≤ C < 15 % - Skin Irrit. 2; H315: 5 % ≤ C < 15 % - Skin Corr 1A; H314 c ≥ 15%
Concentration: 0 - <1 %
acc. CLP (GHS): The criteria for classification are not fulfilled.

Indice No.: 016-020-00-8



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Substance name: *aluminium chloride (hexahydrate)*
 CAS No.: 7784-13-6

Substance rating: H314, Skin Corr. 1 B
 Formula: $AlCl_3 \cdot 6 H_2O$
 Concentration: 0,1 - <1 %
 acc. CLP (GHS): The criteria for classification are not fulfilled.

Indice No.: 013-003-00-7

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.

4.1.1 After SKIN Contact

Not necessary.

4.1.2 After EYE Contact

Not necessary.

4.1.3 After INHALATION of vapours

Not necessary. ---

4.1.4 After ORAL Intake

Not necessary.

4.2 Most important symptoms and effects, both acute and delayed

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

4.3 Indication of any immediate medical attention and special treatment needed

No additionally recommendations. ---

SECTION 5: Firefighting measures

5.1 Extinguishing media

5.1.1 Suitable extinguishing media

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

5.1.2 Unsuitable extinguishing media

no data available

5.2 Special hazards arising from the substance or mixture

None.

5.3 Advice for firefighters

No, for listed product. Product package burns like paper or plastic.

5.4 Additional information

no data available

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Do not breathe vapours. Not necessary.

6.2 Environmental precautions

PBT: not applicable

vPvB: not applicable



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6.3 Methods and material for containment and cleaning up

Clean working area with water. Flush used water into drains.

6.4 Reference to other sections

no data available

SECTION 7: Handling and storage

7.1 Precautions for safe handling

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

7.2 Conditions for safe storage, including any incompatibilities

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

Storage class (VCI): 8B

Water hazard class (DE): 2

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

5 mL Zirconium 100 (R0)

Chemical: *aluminium chloride (hexahydrate)*

CAS No.: 7784-13-6

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

20x 32 mg Zirconium 100 NANOFIX (R2)

Chemical: *L(+)-ascorbic acid*

CAS No.: 50-81-7

8.2 Exposure controls

Not necessary. Good ventilation and extraction system in the room, floor resistant to chemicals with floor drainage and washing facilities.

8.2.1 Respiratory protection

Not necessary.

8.2.2 Skin protection / Hand protection

Not necessary.

8.2.3 Eye / Face Protection

Not necessary.

8.2.4 Skin protection

Not necessary.

8.2.5 Personal hygiene

Information not necessary.

8.2.6 Thermal hazards

no data available



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8.3 Limitation and monitoring of environmental exposure

Information not necessary.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

5 mL Zirconium 100 (R0)

| | |
|--|-------------------|
| a) State of aggregation: | liquid |
| b) Colour: | colourless |
| c) Odor: | odorless |
| d) Melting point: | no data available |
| e) Boiling point: | no data available |
| f) Flammability: | no data available |
| g) Explosive limits (lower / upper): | no data available |
| h) Flash point: | no data available |
| i) Flashing temperature: | no data available |
| j) Decomposition temperature: | no data available |
| k) pH value: | no data available |
| l) Kinematic viscosity: | no data available |
| m) Solubility in water: | no data available |
| n) Dispersion coefficient (K _{o/w}): | no data available |
| o) Vapour pressure (20°C): | no data available |
| p) Specific gravity: | no data available |
| q) Relative vapour density (air=1): | no data available |
| r) Particle size: | no data available |

20x 32 mg Zirconium 100 NANOFIX (R2)

| | |
|--|---------------------|
| a) State of aggregation: | solid (lyophilized) |
| b) Colour: | yellow |
| c) Odor: | odorless |
| d) Melting point: | no data available |
| e) Boiling point: | no data available |
| f) Flammability: | no data available |
| g) Explosive limits (lower / upper): | no data available |
| h) Flash point: | no data available |
| i) Flashing temperature: | no data available |
| j) Decomposition temperature: | no data available |
| k) pH value: | no data available |
| l) Kinematic viscosity: | no data available |
| m) Solubility in water: | no data available |
| n) Dispersion coefficient (K _{o/w}): | no data available |
| o) Vapour pressure (20°C): | no data available |
| p) Specific gravity: | no data available |
| q) Relative vapour density (air=1): | no data available |
| r) Particle size: | no data available |

9.2 Other information

9.2.1 Information on physical hazard classes

no data available

9.2.2 Other safety-related parameters

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

no data available



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SECTION 10: Stability and reactivity

10.1 Reactivity

None

10.2 Chemical stability

no known instability.

10.3 Possibility of hazardous reactions

None.

10.4 Conditions to avoid

Observe the storage temperature printed on it. Not known.

10.5 Incompatible materials

Not known.

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.

5 mL Zirconium 100 (R0)

| | | |
|------------------|---|--------------------|
| Chemical: | <i>aluminium chloride (hexahydrate)</i> | CAS No.: 7784-13-6 |
| TSCA Inventory: | listed (CAS 7446-70-0) | |
| Japan CSCL/PRTR: | not listed, Japan PDSCL: not listed | |
| Japan ISHL: | listed $\geq 1,0\%$ / $\geq 0,1\%$, | |
| LD50 orl rat : | 3311 mg/kg | |

Chemical: *sulfuric acid*

CAS No.: 7664-93-9

| | | |
|-----------------------------|--|--|
| TSCA Inventory: | listed | California Proposition 65 List: not listed |
| ACGIH: | 1 ppm | |
| Exposure Routes: | inhalation, ingestion, skin and/or eye contact | |
| Target Organs: | Eyes, skin, respiratory system, teeth | |
| Symptoms: | irritation eyes, skin, nose, throat; pulmonary edema, bronchitis; emphysema; conjunctivitis; stomatis; dental erosion; eye, skin burns; dermatitis | |
| Australia NICNAS: | not listed | Canada CEPA 1999: DSL Yes |
| Japan CSCL/PRTR: | not listed, Japan PDSCL: Deleterious Substance | |
| Japan ISHL: | listed $\geq 1,0\%$ / $\geq 1,0\%$, Article 57-2 (SDS required) | |
| South Korea TCCA: | Accident Precaution Chemical Yes | |
| Korea Exist.Chem.Inventory: | KE-32570, >10% Toxic 97-1-405, Acc. Precaution Chem. | |
| LD50 orl rat : | 2140 mg/kg | |
| LC50 ihl mus : | 0,85 mg/L/4H | |
| TRGS 905 (DE): | Kat 4 | |

20x 32 mg Zirconium 100 NANOFIX (R2)

| | | |
|-----------------------------|---------------------------|------------------|
| Chemical: | <i>L(+)-ascorbic acid</i> | CAS No.: 50-81-7 |
| TSCA Inventory: | listed | |
| Korea Exist.Chem.Inventory: | KE-01947 | |
| LD50 orl rat : | 11900 mg/kg | |

11.2 Other hazards

Possible endocrine disrupting effects

no data available

Other information

no additional data available



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SECTION 12: Ecological information

12.1 Toxicity

Following information is valid for pure substances.

5 mL Zirconium 100 (R0)

Substance name: *aluminium chloride (hexahydrate)*

CAS-Nr.: 7784-13-6

Water hazard class (DE): 1

Substance name: *sulfuric acid*

CAS-Nr.: 7664-93-9

PNEC (fresh water): 2.5 µg/L

PNEC = Predicted No Effect Concentration = concentration at which no effect on the environment is expected

LC50 fish/96h: [NOEC, 65d] 25 µg/L

EC50 daphnia/48h: 100 mg/L

EC10 *pseudomonas putida*/16h: [72h] 100 mg/L

Water hazard class (DE): 1 WGK No.: 0182

Storage class (VCI): 8 B

20x 32 mg Zirconium 100 NANOFIX (R2)

Substance name: *L(+)-ascorbic acid*

CAS-Nr.: 50-81-7

Water hazard class (DE): 1 WGK No.: 0737

Storage class (VCI): 13

12.2 Persistence and degradability

12.3 Bioaccumulative potential

12.4 Mobility in soil

12.5 Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT) or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Endocrine disrupting properties

no data available

12.7 Other adverse effects

no additional data available

SECTION 13: Disposal considerations

Not necessary.

13.1 Waste treatment methods

GENERAL: Empty solids into municipal waste, empty liquids diluted into drains. Not necessary, see above.

SECTION 14: Transport information

14.1 - 14.4: No dangerous goods according the transport regulations

14.5 Environmental hazards

none

14.6 Special precautions for user

not necessary

14.7 Carriage in bulk by sea in accordance with IMO instruments

Not applicable.



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SECTION 15: Regulatory information

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

Dangerous Substances Protection Act (DE: Chemikaliengesetz - ChemG), Aug 2013, Stand: Okt 2020
Ordinance on protection against dangerous substances (E: Gefahrstoffverordnung - GefStoffV), Nov 2010, Stand: Mrz 2017
MN leaflet/instructions for use, also at www.mn-net.com
If necessary, observe other country-specific regulations.

15.2 Chemical safety assessment

no data available

SECTION 16: Other information

16.1 Changes compared to the last version

Between versions 2.2.2.16 and 2.2.2.2 following changes were applied: - 14 substance data corrected

16.2 List of H and P phrases

16.2.1 List of relevant H phrases

H Between versions 2.2.2.16 and 2.2.2.2 following changes were applied: - 14 substance data corrected

16.2.2 List of relevant P phrases

16.3 Recommended restriction on use

None

16.4 Sources of key data

KÜHN, BIRETT, Leaflets on hazardous materials, 2021

Directive 1999/92/EG Minimum requirements to improve the safety and health protection of workers at risk from potentially explosive atmospheres

SUVA .CH, limit values in the air at work 2009, revised on 01/2009

Regulation 790/2009/EU, adaptation of Regulation 1272/2008/EU to technical and scientific progress (1st ATP)

Regulation 453/2010/EU, adaptation of the REACH regulation 1907/2006/EG

Regulation 487/2013/EU, adaptation of regulation 1272/2008/EG to technical and scientific progress (4th ATP)

Regulation 1221/2015/EU, adaptation of regulation 1272/2008/EG to technical and scientific progress (7th ATP)

Regulation 776/2017/EU, adaptation of regulation 1272/2008/EG to technical and scientific progress (10th ATP)

Regulation 669/2018/EU, adaptation of Regulation 1272/2008/EC to technical and scientific progressText (11th ATP)

Regulation 1480/2018/EU, adaptation of regulation 1272/2008/EG to technical and scientific progress (13th ATP)

Regulation 521/2019/EU, adaptation of regulation 1272/2008/EG to technical and scientific progress (12th ATP)

TRGS 900, German rules of technology on limit values in the air at work, as of 03/2019

Regulation 217/2020/EU, adaptation of Annex VI, Part 3, of Regulation 1272/2008/EC to technical and scientific progress (14th ATP)

Regulation 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

MACHEREY-NAGEL GmbH & Co. KG provides the information contained herein in good faith being up-to-date of own realizations at revision time. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgement in determining its appropriateness for a particular purpose.

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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: | lethal concentration 50% |
| LD50: | lethal dose 50% |
| leuciscus idus: | fisch, ide, orfe |
| MAK: | maximum workplace concentration |
| Met: | Metall |
| mus: | mouse |
| Muta: | mutagen |
| NIOSH: | National Institute for Occupational Safety and Health (US) |
| NRD: | Non-rapidly degradable |
| onchorhynchus mykiss: | fisch, rainbow trout |
| orl: | oral |
| OSHA: | Occupational Safety and Health Administration |
| PAX: | transport on passenger planes allowed |
| PBT: | persistent, bioaccumulating, toxic substance |
| pH: | pH value |
| pimephales promelas: | fisch, fathead minnow |
| PNEC: | Predicted No Effect Concentration |
| PROC 15: | Process category 'for laboratory use' |
| PRTR: | Law for PRTR and Promotion of Chemical Management (Jp) |
| PVC: | polyvinyl chloride |
| quail: | bird, quail |
| rat: | rat |
| rbt: | rabbit |
| RD: | rapidly degradable |
| RE: | repeated |
| REACH: | Registration, Evaluation, Authorisation and Restriction of Chemicals |
| REF: | item number, reference number |
| Reg.No.: | rRegistration number |
| Repr: | harmful to reproduction |
| Resp: | respiratory |
| RIP: | REACH Implementations Projects |
| scu: | sub cutan |
| SDS: | safety data sheet |
| Sens: | sensitisation |
| STEL: | short term exposure limit |
| STOT: | Specific Target Organ Toxicity |
| SVHC: | Substance of Very High Concern |
| t/a: | tons per year |



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- TCCA: Toxic Chemicals Control Act (S. Korea)
- Tox: toxic
- TSCA: The Toxic Substances Control Act (US)
- TWA: time weighted average
- TRGS: technical regulations (DE)
- vPvB: very persistent, very bioaccumulating substance

16.7 Training advice

Regular safety training. Multiple safety training of staffs about danger and protection by using hazards in working area. Additionally training and introduction of staffs for using these products.



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