

Safety data sheet

Safe Work Australia - Code of Practice



Cerium(III) nitrate hexahydrate ROTI®METIC 99,999 % (5N)

article number: **5312**
Version: **GHS 2.0 en**
Replaces version of: 2016-11-04
Version: (GHS 1)

date of compilation: 2016-11-04
Revision: 2019-01-30

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

1.1 Product identifier

Identification of the substance	Cerium(III) nitrate hexahydrate
Article number	5312
Registration number (REACH)	It is not required to list the identified uses because the substance is not subject to registration according to REACH (< 1 t/a)
EC number	233-297-2
CAS number	10294-41-4

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

Identified uses:	laboratory chemical laboratory and analytical use formulation [mixing] of preparations and/or re-packaging (excluding alloys) feedstock use
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1.3 Details of the supplier of the safety data sheet

Carl Roth GmbH + Co KG
Schoemperlenstr. 3-5
D-76185 Karlsruhe
Germany

Telephone: +49 (0) 721 - 56 06 0
Telefax: +49 (0) 721 - 56 06 149
e-mail: sicherheit@carlroth.de
Website: www.carlroth.de

Competent person responsible for the safety data sheet : Department Health, Safety and Environment

e-mail (competent person) : sicherheit@carlroth.de

1.4 Emergency telephone number

Emergency information service **Poison Centre Munich: +49/(0)89 19240**

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification acc. to GHS

Classification acc. to GHS			
Section	Hazard class	Hazard class and category	Hazard statement
2.14	oxidising solid	(Ox. Sol. 2)	H272
3.10	acute toxicity (oral)	(Acute Tox. 5)	H303
3.1D	acute toxicity (dermal)	(Acute Tox. 5)	H313

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Classification acc. to GHS			
Section	Hazard class	Hazard class and category	Hazard statement
3.3	serious eye damage/eye irritation	(Eye Dam. 1)	H318
4.1A	hazardous to the aquatic environment - acute hazard	(Aquatic Acute 1)	H400
4.1C	hazardous to the aquatic environment - chronic hazard	(Aquatic Chronic 1)	H410

2.2 Label elements

Labelling GHS

Signal word

Danger

Pictograms

GHS03, GHS05,
GHS09



Hazard statements

H272 May intensify fire; oxidiser
H303+H313 May be harmful if swallowed or in contact with skin
H318 Causes serious eye damage
H410 Very toxic to aquatic life with long lasting effects

Precautionary statements

Precautionary statements - prevention

P210 Keep away from heat.
P221 Take any precaution to avoid mixing with combustibles.
P280 Wear eye protection/face protection.

Precautionary statements - response

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P370+P378 In case of fire: Use sand, carbon dioxide or powder extinguisher for extinction.
P391 Collect spillage.

Precautionary statements - disposal

P501 Dispose of contents/container to industrial combustion plant.

Labelling of packages where the contents do not exceed 125 ml

Signal word: **Danger**

Symbol(s)



H303+H313 May be harmful if swallowed or in contact with skin.
H318 Causes serious eye damage.
P280 Wear eye protection/face protection.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

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2.3 Other hazards

There is no additional information.

SECTION 3: Composition/information on ingredients

3.1 Substances

Name of substance	Cerium(III) nitrate hexahydrate
EC number	233-297-2
CAS number	10294-41-4
Molecular formula	$\text{Ce}(\text{NO}_3)_3 \cdot 6\text{H}_2\text{O}$
Molar mass	434.2 g/mol

SECTION 4: First aid measures

4.1 Description of first aid measures



General notes

Take off contaminated clothing.

Following inhalation

Provide fresh air. In all cases of doubt, or when symptoms persist, seek medical advice.

Following skin contact

Rinse skin with water/shower. In all cases of doubt, or when symptoms persist, seek medical advice.

Following eye contact

In case of contact with eyes flush immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart and consult an ophthalmologist.

Following ingestion

Rinse mouth. Call a doctor if you feel unwell.

4.2 Most important symptoms and effects, both acute and delayed

After eye contact: Risk of serious damage to eyes, Risk of blindness,
After ingestion: Methaemoglobinaemia

4.3 Indication of any immediate medical attention and special treatment needed

none

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SECTION 5: Firefighting measures

5.1 Extinguishing media



Suitable extinguishing media

Co-ordinate fire-fighting measures to the fire surroundings
water spray, foam, dry extinguishing powder, carbon dioxide (CO₂)

Unsuitable extinguishing media

water jet

5.2 Special hazards arising from the substance or mixture

Oxidising property. Non-combustible.

Hazardous combustion products

In case of fire may be liberated: nitrogen oxides (NO_x)

5.3 Advice for firefighters

Do not allow firefighting water to enter drains or water courses. Fight fire with normal precautions from a reasonable distance. Wear self-contained breathing apparatus.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures



For non-emergency personnel

Use personal protective equipment as required. Avoid contact with skin, eyes and clothes. Do not breathe dust.

6.2 Environmental precautions

Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it.

6.3 Methods and material for containment and cleaning up

Advices on how to contain a spill

Covering of drains.

Advices on how to clean up a spill

Take up mechanically. Control of dust.

Other information relating to spills and releases

Place in appropriate containers for disposal. Ventilate affected area.

6.4 Reference to other sections

Hazardous combustion products: see section 5. Personal protective equipment: see section 8. Incompatible materials: see section 10. Disposal considerations: see section 13.

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SECTION 7: Handling and storage

7.1 Precautions for safe handling

No special measures are necessary.

- **Measures to prevent fire as well as aerosol and dust generation**

Take any precaution to avoid mixing with combustibles.

Advice on general occupational hygiene

Wash hands before breaks and after work. Keep away from food, drink and animal feedingstuffs.

7.2 Conditions for safe storage, including any incompatibilities

Store in a dry place. Keep away from combustible material.

Incompatible substances or mixtures

Observe hints for combined storage.

Consideration of other advice

- **Ventilation requirements**

Use local and general ventilation.

- **Specific designs for storage rooms or vessels**

Recommended storage temperature: 15 – 25 °C.

7.3 Specific end use(s)

No information available.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

National limit values

Occupational exposure limit values (Workplace Exposure Limits)

Data are not available.

Relevant DNELs/DMELs/PNECs and other threshold levels

- **environmental values**

Endpoint	Threshold level	Environmental compartment	Exposure time
PNEC	0.13 µg/l	freshwater	short-term (single instance)
PNEC	0.013 µg/l	marine water	short-term (single instance)
PNEC	9.1 mg/l	sewage treatment plant (STP)	short-term (single instance)
PNEC	17.1 mg/kg	freshwater sediment	short-term (single instance)
PNEC	1.71 mg/kg	marine sediment	short-term (single instance)
PNEC	0.451 mg/kg	soil	short-term (single instance)

8.2 Exposure controls

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Individual protection measures (personal protective equipment)

Eye/face protection



Use safety goggle with side protection.

Skin protection



• hand protection

Wear suitable gloves. Chemical protection gloves are suitable, which are tested according to EN 374. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

• type of material

NBR (Nitrile rubber)

• material thickness

>0,11 mm

• breakthrough times of the glove material

>480 minutes (permeation: level 6)

• other protection measures

Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended.

Respiratory protection



Respiratory protection necessary at: Dust formation. Particulate filter device (EN 143).

Environmental exposure controls

Keep away from drains, surface and ground water.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state	solid (crystalline)
Colour	white
Odour	faintly perceptible
Odour threshold	No data available

Other physical and chemical parameters

pH (value)	~ 3.7 (water: 100 g/l, 25 °C)
Melting point/freezing point	>140 °C

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Initial boiling point and boiling range	This information is not available.
Flash point	not applicable
Evaporation rate	no data available
Flammability (solid, gas)	These information are not available
<u>Explosive limits</u>	
• lower explosion limit (LEL)	this information is not available
• upper explosion limit (UEL)	this information is not available
Explosion limits of dust clouds	these information are not available
Vapour pressure	This information is not available.
Density	2.4 g/cm ³ at 20 °C
Vapour density	This information is not available.
Relative density	Information on this property is not available.
<u>Solubility(ies)</u>	
Water solubility	>600 g/l
<u>Partition coefficient</u>	
n-octanol/water (log KOW)	This information is not available.
Auto-ignition temperature	>400 °C
Decomposition temperature	140 °C at 982 hPa (ECHA)
Viscosity	not relevant (solid matter)
Explosive properties	Shall not be classified as explosive
Oxidising properties	oxidiser

9.2 Other information

There is no additional information.

SECTION 10: Stability and reactivity

10.1 Reactivity

Oxidising property.

10.2 Chemical stability

The material is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

10.3 Possibility of hazardous reactions

Violent reaction with: Reducing agents, Strong alkali, Strong acid, Cyanides

10.4 Conditions to avoid

Keep away from heat. Decomposition takes place from temperatures above: 140 °C at 982 hPa.

10.5 Incompatible materials

There is no additional information.

10.6 Hazardous decomposition products

Hazardous combustion products: see section 5.

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SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Exposure route	Endpoint	Value	Species	Source
oral	LD50	4,200 mg/kg	rat	ECHA
dermal	LD50	>2,000 mg/kg	rat	ECHA

Skin corrosion/irritation

Shall not be classified as corrosive/irritant to skin.

Serious eye damage/eye irritation

Causes serious eye damage.

Respiratory or skin sensitisation

Shall not be classified as a respiratory or skin sensitiser.

Summary of evaluation of the CMR properties

Shall not be classified as germ cell mutagenic, carcinogenic nor as a reproductive toxicant

- **Specific target organ toxicity - single exposure**

Shall not be classified as a specific target organ toxicant (single exposure).

- **Specific target organ toxicity - repeated exposure**

Shall not be classified as a specific target organ toxicant (repeated exposure).

Aspiration hazard

Shall not be classified as presenting an aspiration hazard.

Symptoms related to the physical, chemical and toxicological characteristics

- **If swallowed**

data are not available

- **If in eyes**

Causes serious eye damage, risk of blindness

- **If inhaled**

data are not available

- **If on skin**

data are not available

Other information

None

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SECTION 12: Ecological information

12.1 Toxicity

Very toxic to aquatic life with long lasting effects.

Aquatic toxicity (acute)

Very toxic to aquatic organisms.

Endpoint	Value	Species	Method	Source	Exposure time
LC50	0.13 mg/l	rainbow trout	anhydrous	ECHA	96 h
EC50	6.9 mg/l	daphnia magna	anhydrous	ECHA	48 h
ErC50	0.63 mg/l	algae	anhydrous	ECHA	72 h

Aquatic toxicity (chronic)

May cause long-term adverse effects in the aquatic environment.

12.2 Process of degradability

The methods for determining the biological degradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential

Data are not available.

12.4 Mobility in soil

Data are not available.

12.5 Results of PBT and vPvB assessment

Data are not available.

12.6 Other adverse effects

Data are not available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods



This material and its container must be disposed of as hazardous waste. Dispose of contents/container in accordance with local/regional/national/international regulations.

Sewage disposal-relevant information

Do not empty into drains. Avoid release to the environment. Refer to special instructions/safety data sheets.

Waste treatment of containers/packagings

It is a dangerous waste; only packagings which are approved (e.g. acc. to ADR) may be used.

Sewage disposal-relevant information

Do not empty into drains. Avoid release to the environment. Refer to special instructions/safety data sheets.

Waste treatment of containers/packagings

It is a dangerous waste; only packagings which are approved (e.g. acc. to ADR) may be used.

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13.2 Relevant provisions relating to waste

The allocation of waste identity numbers/waste descriptions must be carried out according to the EEC, specific to the industry and process.

13.3 Remarks

Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities. Please consider the relevant national or regional provisions.

SECTION 14: Transport information

14.1	UN number	1477
14.2	UN proper shipping name	NITRATES, INORGANIC, N.O.S.
	Hazardous ingredients	Cerium(III) nitrate hexahydrate
14.3	Transport hazard class(es)	
	Class	5.1 (oxidizing substances)
14.4	Packing group	III (substance presenting low danger)
14.5	Environmental hazards	hazardous to the aquatic environment

14.6 Special precautions for user



Provisions for dangerous goods (ADR) should be complied within the premises.

14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code

The cargo is not intended to be carried in bulk.

14.8 Information for each of the UN Model Regulations

• Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN)

UN number	1477
Proper shipping name	NITRATES, INORGANIC, N.O.S.
Particulars in the transport document	UN1477, NITRATES, INORGANIC, N.O.S., 5.1, III, (E), environmentally hazardous
Class	5.1
Classification code	O2
Packing group	III
Danger label(s)	5.1 + "fish and tree"
 	
Environmental hazards	yes (hazardous to the aquatic environment)
Special provisions (SP)	511
Excepted quantities (EQ)	E1
Limited quantities (LQ)	5 kg
Transport category (TC)	3

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Tunnel restriction code (TRC)	E
Hazard identification No	50
Emergency Action Code	1Y
• International Maritime Dangerous Goods Code (IMDG)	
UN number	1477
Proper shipping name	NITRATES, INORGANIC, N.O.S.
Particulars in the shipper's declaration	UN1477, NITRATES, INORGANIC, N.O.S., 5.1, III, MARINE POLLUTANT
Class	5.1
Marine pollutant	yes (P) (hazardous to the aquatic environment)
Packing group	III
Danger label(s)	5.1 + "fish and tree"
Special provisions (SP)	223
Excepted quantities (EQ)	E1
Limited quantities (LQ)	5 kg
EmS	F-A, S-Q
Stowage category	A
• International Civil Aviation Organization (ICAO-IATA/DGR)	
UN number	1477
Proper shipping name	Nitrates, inorganic, n.o.s.
Particulars in the shipper's declaration	UN1477, Nitrates, inorganic, n.o.s., 5.1, III
Class	5.1
Environmental hazards	yes (hazardous to the aquatic environment)
Packing group	III
Danger label(s)	5.1
Special provisions (SP)	A3
Excepted quantities (EQ)	E1
Limited quantities (LQ)	10 kg

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SECTION 15: Regulatory information

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

National inventories

Substance is listed in the following national inventories:

Country	National inventories	Status
AU	AICS	substance is listed
CA	DSL	substance is listed
CN	IECSC	substance is listed
EU	ECSI	substance is listed
EU	REACH Reg.	substance is listed
JP	CSCL-ENCS	substance is listed
KR	KECI	substance is listed
NZ	NZIoC	substance is listed
PH	PICCS	substance is listed
TW	TCSI	substance is listed
US	TSCA	substance is listed

Legend

AICS	Australian Inventory of Chemical Substances
CSCL-ENCS	List of Existing and New Chemical Substances (CSCL-ENCS)
DSL	Domestic Substances List (DSL)
ECSI	EC Substance Inventory (EINECS, ELINCS, NLP)
IECSC	Inventory of Existing Chemical Substances Produced or Imported in China
KECI	Korea Existing Chemicals Inventory
NZIoC	New Zealand Inventory of Chemicals
PICCS	Philippine Inventory of Chemicals and Chemical Substances
REACH Reg.	REACH registered substances
TCSI	Taiwan Chemical Substance Inventory
TSCA	Toxic Substance Control Act

15.2 Chemical Safety Assessment

No Chemical Safety Assessment has been carried out for this substance.

SECTION 16: Other information

16.1 Indication of changes (revised safety data sheet)

Section	Former entry (text/value)	Actual entry (text/value)	Safety-relevant
1.1	Registration number (REACH): This information is not available.	Registration number (REACH): It is not required to list the identified uses because the substance is not subject to registration according to REACH (< 1 t/a)	yes
2.1		Classification acc. to GHS: change in the listing (table)	yes
2.1	Remarks: For full text of Hazard- and EU Hazard-statements: see SECTION 16.		yes
2.2		Pictograms: change in the listing (table)	yes

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Section	Former entry (text/value)	Actual entry (text/value)	Safety-relevant
2.2		Hazard statements: change in the listing (table)	yes
2.2		Precautionary statements - prevention: change in the listing (table)	yes
2.2		Precautionary statements - response: change in the listing (table)	yes
2.2		Precautionary statements - disposal	yes
2.2		Precautionary statements - disposal: change in the listing (table)	yes
2.2		Labelling of packages where the contents do not exceed 125 ml: change in the listing (table)	yes
2.2		Labelling of packages where the contents do not exceed 125 ml: change in the listing (table)	yes
2.2		Labelling of packages where the contents do not exceed 125 ml: change in the listing (table)	yes
8.1	Occupational exposure limit values (Workplace Exposure Limits): No data available.	Occupational exposure limit values (Workplace Exposure Limits): Data are not available.	yes
8.1		Relevant DNELs/DMELs/PNECs and other threshold levels	yes
8.1		• environmental values	yes
8.1		• environmental values: change in the listing (table)	yes
14.3	Transport hazard class(es)	Transport hazard class(es): class 5.1 hazard - oxidizing substances	yes
14.5	Environmental hazards: none (non-environmentally hazardous acc. to the dangerous goods regulations)	Environmental hazards: hazardous to the aquatic environment	yes
14.8	Particulars in the transport document: UN1477, NITRATES, INORGANIC, N.O.S., 5.1, III, (E)	Particulars in the transport document: UN1477, NITRATES, INORGANIC, N.O.S., 5.1, III, (E), environmentally hazardous	yes
14.8	Danger label(s): 5.1	Danger label(s): 5.1 + "fish and tree"	yes
14.8		Danger label(s): change in the listing (table)	yes
14.8		Environmental hazards: yes (hazardous to the aquatic environment)	yes
14.8	Particulars in the shipper's declaration: UN1477, NITRATES, INORGANIC, N.O.S., 5.1, III	Particulars in the shipper's declaration: UN1477, NITRATES, INORGANIC, N.O.S., 5.1, III, MARINE POLLUTANT	yes
14.8		Marine pollutant: yes (P) (hazardous to the aquatic environment)	yes
14.8	Danger label(s): 5.1	Danger label(s): 5.1 + "fish and tree"	yes
14.8		Danger label(s): change in the listing (table)	yes
14.8		• International Civil Aviation Organization (ICAO-IATA/DGR)	yes

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Section	Former entry (text/value)	Actual entry (text/value)	Safety-relevant
14.8		UN number: 1477	yes
14.8		Proper shipping name: Nitrates, inorganic, n.o.s.	yes
14.8		Particulars in the shipper's declaration: UN1477, Nitrates, inorganic, n.o.s., 5.1, III	yes
14.8		Class: 5.1	yes
14.8		Environmental hazards: yes (hazardous to the aquatic environment)	yes
14.8		Packing group: III	yes
14.8		Danger label(s): 5.1	yes
14.8		Danger label(s): change in the listing (table)	yes
14.8		Special provisions (SP): A3	yes
14.8		Excepted quantities (EQ): E1	yes
14.8		Limited quantities (LQ): 10 kg	yes

Abbreviations and acronyms

Abbr.	Descriptions of used abbreviations
ADN	Accord européen relatif au transport international des marchandises dangereuses par voies de navigation intérieures (European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways)
ADR	Accord européen relatif au transport international des marchandises dangereuses par route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
CAS	Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)
CMR	Carcinogenic, Mutagenic or toxic for Reproduction
DGR	Dangerous Goods Regulations (see IATA/DGR)
DMEL	Derived Minimal Effect Level
DNEL	Derived No-Effect Level
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances
EmS	Emergency Schedule
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations
IATA	International Air Transport Association
IATA/DGR	Dangerous Goods Regulations (DGR) for the air transport (IATA)
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods Code
MARPOL	International Convention for the Prevention of Pollution from Ships (abbr. of "Marine Pollutant")

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Abbr.	Descriptions of used abbreviations
NLP	No-Longer Polymer
PBT	Persistent, Bioaccumulative and Toxic
PNEC	Predicted No-Effect Concentration
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RID	Règlement concernant le transport International ferroviaire des marchandises Dangereuses (Regulations concerning the International carriage of Dangerous goods by Rail)
vPvB	very Persistent and very Bioaccumulative

Key literature references and sources for data

- UN Recommendations on the Transport of Dangerous Good
- Dangerous Goods Regulations (DGR) for the air transport (IATA)
- International Maritime Dangerous Goods Code (IMDG)

List of relevant phrases (code and full text as stated in chapter 2 and 3)

Code	Text
H272	may intensify fire; oxidiser
H303	may be harmful if swallowed
H313	may be harmful in contact with skin
H318	causes serious eye damage
H400	very toxic to aquatic life
H410	very toxic to aquatic life with long lasting effects

Disclaimer

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.