

safety data sheet

according to Regulation (EC) No. 1907/2006 (REACH), amended by 2015/830/EU



Selenium ROTI®METIC 99,999 % (5N)

article number: **4547**
Version: **2.0 en**
Replaces version of: 2016-04-13
Version: (1.0)

date of compilation: 2016-04-13
Revision: 2016-09-29

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

1.1 Product identifier

Identification of the substance	Selenium
Article number	4547
Registration number (REACH)	This information is not available.
Index No	034-001-00-2
EC number	231-957-4
CAS number	7782-49-2

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

Identified uses: laboratory chemical

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 according to Regulation (EC) No 1272/2008 (CLP)

Classification acc. to GHS			
Section	Hazard class	Hazard class and category	Hazard statement
3.10	acute toxicity (oral)	(Acute Tox. 3)	H301
3.11	acute toxicity (inhal.)	(Acute Tox. 3)	H331
3.9	specific target organ toxicity - repeated exposure	(STOT RE 2)	H373
4.1C	hazardous to the aquatic environment - chronic hazard	(Aquatic Chronic 4)	H413

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Remarks

For full text of Hazard- and EU Hazard-statements: see SECTION 16.

2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008 (CLP)

Signal word

Danger

Pictograms



Hazard statements

H301+H331 Toxic if swallowed or if inhaled.
H373 May cause damage to organs through prolonged or repeated exposure.
H413 May cause long lasting harmful effects to aquatic life.

Precautionary statements

Precautionary statements - prevention

P261 Avoid breathing dust.

Precautionary statements - response

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P311 Call a POISON CENTER/doctor.
P330 Rinse mouth.

Labelling of packages where the contents do not exceed 125 ml

Signal word: **Danger**

Symbol(s)



H301+H331 Toxic if swallowed or if inhaled.
H413 May cause long lasting harmful effects to aquatic life.

P261 Avoid breathing dust.
P304+P340 IF INHALED: Remove person to fresh air and keep at rest in a position comfortable for breathing.
P311 Call a POISON CENTER/doctor.
P330 Rinse mouth.

2.3 Other hazards

There is no additional information.

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SECTION 3: Composition/information on ingredients

3.1 Substances

Name of substance	Selenium
Index No	034-001-00-2
EC number	231-957-4
CAS number	7782-49-2
Molecular formula	Se
Molar mass	78,96 g/mol

SECTION 4: First aid measures

4.1 Description of first aid measures



General notes

Self-protection of the first aider.

Following inhalation

Call a physician immediately. If breathing is irregular or stopped, administer artificial respiration.

Following skin contact

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

Following eye contact

Rinse cautiously with water for several minutes. In all cases of doubt, or when symptoms persist, seek medical advice.

Following ingestion

Rinse mouth immediately and drink plenty of water. Call a physician immediately.

4.2 Most important symptoms and effects, both acute and delayed

Unconsciousness, Cardiac arrhythmias, Headache, Drowsiness, Vertigo, Dyspnoea

4.3 Indication of any immediate medical attention and special treatment needed

Give sodium sulfate as laxative (1 tablespoon in 1 glass of water).

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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

Non-combustible.

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

Wearing of suitable protective equipment (including personal protective equipment referred to under Section 8 of the safety data sheet) to prevent any contamination of skin, eyes and personal clothing. 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.

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

Use extractor hood (laboratory).

Advice on general occupational hygiene

When using do not eat or drink. Thorough skin-cleansing after handling the product.

7.2 Conditions for safe storage, including any incompatibilities

Store in a dry place.

Incompatible substances or mixtures

Observe hints for combined storage.

Consideration of other advice

Store locked up.

• 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)

Country	Name of agent	CAS No	Notation	Identifier	TWA [mg/m ³]	STEL [mg/m ³]	Source
GB	selenium	7782-49-2		WEL	0,1		EH40/2005

Notation

STEL Short-term exposure limit: a limit value above which exposure should not occur and which is related to a 15-minute period unless otherwise specified

TWA Time-weighted average (long-term exposure limit): measured or calculated in relation to a reference period of 8 hours time-weighted average

8.2 Exposure controls

Individual protection measures (personal protective equipment)



Eye/face protection

Use safety goggle with side protection.

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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). P3 (filters at least 99,95 % of airborne particles, colour code: White).

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 (pellets)
Colour	red brown
Odour	odourless
Odour threshold	No data available

Other physical and chemical parameters

pH (value)	This information is not available.
Melting point/freezing point	220 °C
Initial boiling point and boiling range	685 °C at 1.013 hPa
Flash point	not applicable
Evaporation rate	no data available
Flammability (solid, gas)	Non-flammable
<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	4,81 g/cm ³
Vapour density	This information is not available.

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Relative density	Information on this property is not available.
<u>Solubility(ies)</u>	
Water solubility	poorly soluble
<u>Partition coefficient</u>	
n-octanol/water (log KOW)	This information is not available.
Auto-ignition temperature	Information on this property is not available.
Decomposition temperature	no data available
Viscosity	not relevant (solid matter)
Explosive properties	Shall not be classified as explosive
Oxidising properties	none

9.2 Other information

There is no additional information.

SECTION 10: Stability and reactivity

10.1 Reactivity

The product in the delivered form is not dust explosion capable; the enrichment of fine dust however leads to the danger of dust explosion.

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

Danger of explosion: Alkali metals, Cadmium, Potassium, Metals, Sodium, Oxygen, Nitrogen oxides (NOx), Tin,

Release of an acute toxic gas: Hydrochloric acid, Sulphuric acid,

Exothermic reaction with: Bromates, Beryllium, Chlorates, Nickel, Oxidisers, Phosphorus, Nitric acid, Platinum

10.4 Conditions to avoid

There are no specific conditions known which have to be avoided.

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

Skin corrosion/irritation

Shall not be classified as corrosive/irritant to skin.

Serious eye damage/eye irritation

Shall not be classified as seriously damaging to the eye or eye irritant.

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

May cause damage to organs through prolonged or 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

data are not available

• If inhaled

cough

• If on skin

data are not available

Other information

Cardiac arrhythmias, Headache, Dyspnoea, Unconsciousness, Vertigo, Drowsiness

SECTION 12: Ecological information

12.1 Toxicity

May cause long lasting harmful effects to aquatic life.

Aquatic toxicity (acute)

Endpoint	Value	Species	Source	Exposure time
EC50	2,6 mg/l	daphnia magna		48 h
LC50	1 mg/l	Pimephales promelas		96 h

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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

Hazardous to water. Avoid release to the environment.

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.

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	3288
14.2	UN proper shipping name	TOXIC SOLID, INORGANIC, N.O.S.
	Hazardous ingredients	Selenium
14.3	Transport hazard class(es)	
	Class	6.1 (toxic substances)
14.4	Packing group	III (substance presenting low danger)
14.5	Environmental hazards	none (non-environmentally hazardous acc. to the dangerous goods regulations)
14.6	Special precautions for user	
	Provisions for dangerous goods (ADR) should be complied within the premises.	

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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	3288
Proper shipping name	TOXIC SOLID, INORGANIC, N.O.S.
Particulars in the transport document	UN3288, TOXIC SOLID, INORGANIC, N.O.S., (Selenium), 6.1, III, (E)
Class	6.1
Classification code	T5
Packing group	III
Danger label(s)	6.1



Special provisions (SP)	274, 802(ADN)
Excepted quantities (EQ)	E1
Limited quantities (LQ)	5 kg
Transport category (TC)	2
Tunnel restriction code (TRC)	E
Hazard identification No	60
Emergency Action Code	2X

• International Maritime Dangerous Goods Code (IMDG)

UN number	3288
Proper shipping name	TOXIC SOLID, INORGANIC, N.O.S.
Particulars in the shipper's declaration	UN3288, TOXIC SOLID, INORGANIC, N.O.S., (Selenium), 6.1, III
Class	6.1
Packing group	III
Danger label(s)	6.1



Special provisions (SP)	223, 274
Excepted quantities (EQ)	E1
Limited quantities (LQ)	5 kg
EmS	F-A, S-A
Stowage category	A

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SECTION 15: Regulatory information

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

Relevant provisions of the European Union (EU)

- **Regulation 649/2012/EU concerning the export and import of hazardous chemicals (PIC)**

Not listed.

- **Regulation 1005/2009/EC on substances that deplete the ozone layer (ODS)**

Not listed.

- **Regulation 850/2004/EC on persistent organic pollutants (POP)**

Not listed.

- **Restrictions according to REACH, Annex XVII**

not listed

- **List of substances subject to authorisation (REACH, Annex XIV)**

not listed

- **Seveso Directive**

2012/18/EU (Seveso III)				
No	Dangerous substance/hazard categories	Qualifying quantity (tonnes) for the application of lower and upper-tier requirements		Notes
H2	acute toxic (cat. 2 + cat. 3, inhal.)	50	200	41)

Notation

- 41) - Category 2, all exposure routes
- category 3, inhalation exposure route

Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS) - Annex II

not listed

Regulation 166/2006/EC concerning the establishment of a European Pollutant Release and Transfer Register (PRTR)

not listed

Directive 2000/60/EC establishing a framework for Community action in the field of water policy (WFD)

not listed

National inventories

Substance is listed in the following national inventories:

- EINECS/ELINCS/NLP (Europe)
- REACH (Europe)

15.2 Chemical Safety Assessment

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

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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	Identification of the substance: Selenium pellets	Identification of the substance: Selenium	no
2.2		Precautionary statements - response: 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
3.1	Name of substance: Selenium pellets	Name of substance: Selenium	no
8.2	Respiratory protection: Respiratory protection necessary at: Dust formation. Particulate filter device (EN 143). P3 (filters at least 99,95 % of airborne particles, colour code: White). Observe the wear time limits according Gef-StoffV in combination with the rules for using respiratory protection apparatus (BGR 190).	Respiratory protection: Respiratory protection necessary at: Dust formation. Particulate filter device (EN 143). P3 (filters at least 99,95 % of airborne particles, colour code: White).	no
9.1	Explosive properties: none	Explosive properties: Shall not be classified as explosive	no
14.1	UN number: 3283	UN number: 3288	yes
14.2	UN proper shipping name: SELENIUM COMPOUND, SOLID, N.O.S.	UN proper shipping name: TOXIC SOLID, INORGANIC, N.O.S.	yes
14.2	Hazardous ingredients: Selenium pellets	Hazardous ingredients: Selenium	yes
14.8	UN number: 3283	UN number: 3288	yes
14.8	Proper shipping name: SELENIUM COMPOUND, SOLID, N.O.S.	Proper shipping name: TOXIC SOLID, INORGANIC, N.O.S.	yes
14.8	Particulars in the transport document: UN3283, SELENIUM COMPOUND, SOLID, N.O.S., (selenium), 6.1, III, (E)	Particulars in the transport document: UN3288, TOXIC SOLID, INORGANIC, N.O.S., (Selenium), 6.1, III, (E)	yes
14.8	Special provisions (SP): 274, 563, 802(ADN)	Special provisions (SP): 274, 802(ADN)	yes
14.8	UN number: 3283	UN number: 3288	yes
14.8	Proper shipping name: SELENIUM COMPOUND, SOLID, N.O.S.	Proper shipping name: TOXIC SOLID, INORGANIC, N.O.S.	yes
14.8	Particulars in the shipper's declaration: UN3283, SELENIUM COMPOUND, SOLID, N.O.S., (selenium), 6.1, III	Particulars in the shipper's declaration: UN3288, TOXIC SOLID, INORGANIC, N.O.S., (Selenium), 6.1, III	yes

Abbreviations and acronyms

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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)
CLP	Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures
CMR	Carcinogenic, Mutagenic or toxic for Reproduction
EH40/2005	EH40/2005 Workplace exposure limits (http://www.nationalarchives.gov.uk/doc/open-government-licence/)
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
IMDG	International Maritime Dangerous Goods Code
index No	the Index number is the identification code given to the substance in Part 3 of Annex VI to Regulation (EC) No 1272/2008
MARPOL	International Convention for the Prevention of Pollution from Ships (abbr. of "Marine Pollutant")
NLP	No-Longer Polymer
PBT	Persistent, Bioaccumulative and Toxic
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)
STEL	short-term exposure limit
TWA	time-weighted average
vPvB	very Persistent and very Bioaccumulative
WEL	workplace exposure limit

Key literature references and sources for data

- Regulation (EC) No. 1907/2006 (REACH), amended by 2015/830/EU
- Regulation (EC) No. 1272/2008 (CLP, EU GHS)

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

Code	Text
H301	toxic if swallowed
H331	toxic if inhaled
H373	may cause damage to organs through prolonged or repeated exposure
H413	may cause long lasting harmful effects to aquatic life

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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.