

**Safety Data Sheet**

according to Regulation (EC) No 1907/2006

**(Boc-L-Sec)2**

Revision date: 19.10.2022

Product code: BAA3680

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**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1. Product identifier**

(Boc-L-Sec)2

**Further trade names**

N-alpha-t-Butyloxycarbonyl-L-selenocystine  
Boc-L-Selenocystine  
Boc-Selenocystine  
(Boc-Sec-OH)2  
(2R,2'R)-3,3'-diselanediyibis(2-(t-butoxycarbonylamino)propanoic acid)  
(2R,2'R)-3,3'-diselanediyibis(2-((tert-butoxycarbonyl)amino)propanoic acid)  
(Boc-Sec)2

Substance name: Boc-L-Selenocystine  
CAS No: 877754-71-7

**1.2. Relevant identified uses of the substance or mixture and uses advised against****Use of the substance/mixture**

Laboratory chemical. Manufacture of the substance.

**Uses advised against**

Do not use for private purposes (household).  
Restrictions on use: Pharmaceutical substance

**1.3. Details of the supplier of the safety data sheet**

Company name: Iris Biotech GmbH  
Street: Adalbert-Zoellner-Straße 1  
Place: D-95615 Marktredwitz, Germany  
Post-office box: 568  
D-95605 Marktredwitz, Germany  
Telephone: +49 9231 97121 0  
Telefax: +49 9231 97121 99  
e-mail: info@iris-biotech.de  
Contact person: Compliance Department  
Telephone: +49 9231 97121 0  
e-mail: sds@iris-biotech.de  
Internet: www.iris-biotech.de  
Responsible Department: Only available during office hours.

**1.4. Emergency telephone number:** +49 (0)89 19240 (POISON CENTER Munich: 24 h)**SECTION 2: Hazards identification****2.1. Classification of the substance or mixture****Regulation (EC) No 1272/2008**

Acute Tox. 3; H331  
Acute Tox. 3; H301  
STOT RE 2; H373  
Aquatic Acute 1; H400  
Aquatic Chronic 1; H410

Full text of hazard statements: see SECTION 16.

**2.2. Label elements****Regulation (EC) No 1272/2008****Signal word:** Danger

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**Pictograms:****Hazard statements**

H301+H331	Toxic if swallowed or if inhaled.
H373	May cause damage to organs through prolonged or repeated exposure.
H410	Very toxic to aquatic life with long lasting effects.

**Precautionary statements**

P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P264	Wash hands thoroughly after handling.
P273	Avoid release to the environment.
P301+P310	IF SWALLOWED: Immediately call a POISON CENTER/doctor.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P311	Call a POISON CENTER/doctor.
P314	Get medical advice/attention if you feel unwell.
P391	Collect spillage.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.
P501	Dispose of contents/container to an approved disposal site.

**Additional advice on labelling**

Warning - substance not yet tested completely.

**Labelling of packages where the contents do not exceed 125 ml****Signal word:** Danger**Pictograms:****Hazard statements**

H301+H331

**Precautionary statements**

P264-P301+P310-P304+P340-P311-P403+P233-P405-P501

**2.3. Other hazards**

Product is not dust explosive in its original delivery form. The addition of particulate matter, however, results in a dust explosion risk.

**SECTION 3: Composition/information on ingredients****3.1. Substances****Chemical characterization**

(2R,2'R)-3,3'-diselanediybis(2-(t-butoxycarbonylamino)propanoic acid)

Sum formula: C<sub>16</sub>H<sub>28</sub>N<sub>2</sub>O<sub>8</sub>Se<sub>2</sub>

Molecular weight: 534,35 g/mol

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**Hazardous components**

CAS No	Chemical name	Quantity
	EC No	
	Index No	
	REACH No	
	Classification (Regulation (EC) No 1272/2008)	
877754-71-7	Boc-L-Selenocystine	100 %
	Acute Tox. 3, Acute Tox. 3, STOT RE 2, Aquatic Acute 1, Aquatic Chronic 1; H331 H301 H373 H400 H410	

Full text of H and EUH statements: see section 16.

**Specific Conc. Limits, M-factors and ATE**

CAS No	EC No	Chemical name	Quantity
		Specific Conc. Limits, M-factors and ATE	
877754-71-7		Boc-L-Selenocystine	100 %
		inhalation: ATE = 3 mg/l (vapours); inhalation: ATE = 0,5 mg/l (dusts or mists); oral: ATE = 100 mg/kg	

**SECTION 4: First aid measures**
**4.1. Description of first aid measures**
**General information**

First aider: Pay attention to self-protection! Remove affected person from the danger area and lay down. In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

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

**After inhalation**

Provide fresh air. If breathing is irregular or stopped, administer artificial respiration. No mouth-to-mouth or mouth-to-nose resuscitation. Use Ambu bag or ventilator. Call a physician immediately. Remove casualty to fresh air and keep warm and at rest. In case of irregular breathing or respiratory arrest provide artificial respiration.

**After contact with skin**

Wash with plenty of water. Immediately remove any contaminated clothing, shoes or stockings. Medical treatment necessary. After contact with skin, wash immediately with plenty of water and soap.

**After contact with eyes**

After eye contact: Rinse immediately carefully and thoroughly with eye-bath or water. Consult an ophthalmologist. If product gets into the eye, keep eyelid open and rinse immediately with large quantities of water, for at least 5 minutes. Subsequently consult an ophthalmologist.

**After ingestion**

Induce vomiting when the affected person is not unconscious. Call a physician immediately. Rinse mouth thoroughly with water. Never give anything by mouth to an unconscious person or a person with cramps.

**4.2. Most important symptoms and effects, both acute and delayed**

No information available.

**4.3. Indication of any immediate medical attention and special treatment needed**

Treat symptomatically.

**SECTION 5: Firefighting measures**
**5.1. Extinguishing media**
**Suitable extinguishing media**

Co-ordinate fire-fighting measures to the fire surroundings. Water spray. alcohol resistant foam. Dry extinguishing powder. Sand.

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**Unsuitable extinguishing media**

High power water jet.

**5.2. Special hazards arising from the substance or mixture**

Non-flammable. Thermal decomposition can lead to the escape of irritating gases and vapours.

In case of fire may be liberated: Carbon dioxide (CO<sub>2</sub>). Carbon monoxide (CO). Nitrogen oxides (NO<sub>x</sub>).

Selenium/Selenium oxides. Hydrogen selenide.

**5.3. Advice for firefighters**

In case of fire: Wear self-contained breathing apparatus.

**Additional information**

Suppress gases/vapours/mists with water spray jet. Collect contaminated fire extinguishing water separately.

Do not allow entering drains or surface water. Usual measures for fire prevention.

**SECTION 6: Accidental release measures****6.1. Personal precautions, protective equipment and emergency procedures****General advice**

Avoid dust formation. Do not breathe dust. Avoid contact with skin, eyes and clothes. Use personal protection equipment. Provide adequate ventilation. Avoid breathing dust/fume/gas/mist/vapours/spray.

Avoid contact with skin, eyes and clothes.

Wear personal protection equipment.

In case of fire: Evacuate area.

**For non-emergency personnel**

Take up carefully when dry.

**For emergency responders**

Take up mechanically, placing in appropriate containers for disposal. Take up dust-free and set down dust-free.

**6.2. Environmental precautions**

Do not allow to enter into surface water or drains. Do not allow to enter into soil/subsoil.

**6.3. Methods and material for containment and cleaning up****For cleaning up**

Take up mechanically. Treat the recovered material as prescribed in the section on waste disposal. Take up mechanically.

**Other information**

Take up mechanically, placing in appropriate containers for disposal. Avoid dust formation.

Clear contaminated areas thoroughly.

**6.4. Reference to other sections**

Safe handling: see section 7

Personal protection equipment: see section 8

Disposal: see section 13

Treat the recovered material as prescribed in the section on waste disposal.

**SECTION 7: Handling and storage****7.1. Precautions for safe handling****Advice on safe handling**

If handled uncovered, arrangements with local exhaust ventilation have to be used. Avoid dust formation. Do not breathe dust. Provide adequate ventilation.

Avoid breathing dust/fume/gas/mist/vapours/spray.

Avoid contact with skin, eyes and clothes.

**Advice on protection against fire and explosion**

Usual measures for fire prevention.

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**Advice on general occupational hygiene**

Remove contaminated, saturated clothing immediately. Draw up and observe skin protection programme. Wash hands and face before breaks and after work and take a shower if necessary. When using do not eat, drink, smoke, sniff. Take off contaminated clothing. Wash hands before breaks and after work. When using do not eat, drink, smoke, sniff. Avoid contact with skin, eyes and clothes. Provide adequate ventilation.

**7.2. Conditions for safe storage, including any incompatibilities****Requirements for storage rooms and vessels**

Keep container tightly closed. Keep locked up. Store in a place accessible by authorized persons only. Provide adequate ventilation as well as local exhaust at critical locations. Keep container tightly closed in a cool, well-ventilated place. Handle and store contents under inert gas. Protect from moisture. storage temperature: +2°C - +8°C

**Hints on joint storage**

No special measures are necessary.

**7.3. Specific end use(s)**

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

**SECTION 8: Exposure controls/personal protection****8.1. Control parameters****Additional advice on limit values**

To date, no national critical limit values exist.

**8.2. Exposure controls****Appropriate engineering controls**

If handled uncovered, arrangements with local exhaust ventilation have to be used. Do not breathe dust. The receiver of our product is singularly responsible for adhering to existing laws and regulations.

**Individual protection measures, such as personal protective equipment****Eye/face protection**

Wear eye/face protection.

Tightly fitting safety goggles. Face shield (8-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

**Hand protection**

When handling with chemical substances, protective gloves must be worn with the CE-label including the four control digits. The quality of the protective gloves resistant to chemicals must be chosen as a function of the specific working place concentration and quantity of hazardous substances. 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. Wear suitable gloves.

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. The selected protective gloves have to satisfy the specifications of Regulation (EU) 2016/425 and the standard EN 374 derived from it.

**Skin protection**

Use of protective clothing.

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**Respiratory protection**

In case of inadequate ventilation wear respiratory protection. If technical exhaust or ventilation measures are not possible or insufficient, respiratory protection must be worn.

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

**Environmental exposure controls**

Discharge into the environment must be avoided.

**SECTION 9: Physical and chemical properties****9.1. Information on basic physical and chemical properties**

Physical state:	solid	
Colour:	whitish/ light yellow	
Odour:	No data available	
Odour threshold:	not determined	
Melting point/freezing point:		not determined
Boiling point or initial boiling point and boiling range:		not determined
Flammability		
Solid/liquid:		not determined
Gas:		not applicable
Lower explosion limits:		not determined
Upper explosion limits:		not determined
Flash point:		No data available
Auto-ignition temperature:		not determined
Decomposition temperature:		not determined
pH-Value:		not determined
Viscosity / kinematic:		not applicable
Water solubility:		No data available
Solubility in other solvents		
not determined		
Dissolution rate:		not determined
Partition coefficient n-octanol/water:		not determined
Vapour pressure:		not determined
Density:		not determined
Bulk density:		not determined
Relative vapour density:		not determined

**9.2. Other information****Information with regard to physical hazard classes****Explosive properties**

The product is not: Explosive. Product is not dust explosive in its original delivery form. The addition of particulate matter, however, results in a dust explosion risk.

Sustaining combustion: No data available

**Oxidizing properties**

No data available

**Other safety characteristics**

Evaporation rate: not determined

Solvent content: No data available

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Solid content:	not determined
Sublimation point:	not determined
Softening point:	not determined
Viscosity / dynamic:	not applicable
Flow time:	not applicable

**SECTION 10: Stability and reactivity**
**10.1. Reactivity**

No data available

**10.2. Chemical stability**

Stable under recommended storage conditions.

**10.3. Possibility of hazardous reactions**

No data available

**10.4. Conditions to avoid**

 Protect from moisture.  
 Keep away from heat.

**10.5. Incompatible materials**

Oxidizing agents, strong.

**10.6. Hazardous decomposition products**

 Thermal decomposition can lead to the escape of irritating gases and vapours.  
 In case of fire may be liberated: Carbon dioxide (CO<sub>2</sub>). Carbon monoxide (CO). Nitrogen oxides (NO<sub>x</sub>).  
 Selenium/Selenium oxides. Hydrogen selenide.

**Further information**

In case of fire: See chapter 5.

**SECTION 11: Toxicological information**
**11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008**
**Toxicokinetics, metabolism and distribution**

No data available

**Acute toxicity**

 Toxic if swallowed.  
 Toxic if inhaled.

CAS No	Chemical name				
	Exposure route	Dose	Species	Source	Method
877754-71-7	Boc-L-Selenocystine				
	oral	ATE 100 mg/kg			
	inhalation vapour	ATE 3 mg/l			
	inhalation dust/mist	ATE 0,5 mg/l			

**Irritation and corrosivity**

Based on available data, the classification criteria are not met.

**Sensitising effects**

Based on available data, the classification criteria are not met.

**Carcinogenic/mutagenic/toxic effects for reproduction**

 Based on available data, the classification criteria are not met.  
 IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

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**STOT-single exposure**

Based on available data, the classification criteria are not met.

**STOT-repeated exposure**

May cause damage to organs through prolonged or repeated exposure. (Boc-L-Selenocystine)

**Aspiration hazard**

Based on available data, the classification criteria are not met.

**Specific effects in experiment on an animal**

No data available

**Practical experience**

No data available

**11.2. Information on other hazards****Endocrine disrupting properties**

No data available

**Further information**

RTECS: No data available

Caution! To the best of our knowledge the toxicological properties of this material have not been thoroughly investigated. Other dangerous properties can not be excluded.

Handle in accordance with good industrial hygiene and safety practice.

**SECTION 12: Ecological information****12.1. Toxicity**

Very toxic to aquatic life.

Very toxic to aquatic life with long lasting effects.

**12.2. Persistence and degradability**

No data available

**12.3. Bioaccumulative potential**

No data available

**12.4. Mobility in soil**

No data available

**12.5. Results of PBT and vPvB assessment**

This substance does not meet the PBT/vPvB criteria of REACH, annex XIII.

**12.6. Endocrine disrupting properties**

This substance does not have endocrine disrupting properties with respect to non-target organisms.

**12.7. Other adverse effects**

Warning - substance not yet tested completely.

**Further information**

Do not allow to enter into surface water or drains. Do not allow to enter into soil/subsoil.

Discharge into the environment must be avoided.

**SECTION 13: Disposal considerations****13.1. Waste treatment methods****Disposal recommendations**

Do not allow to enter into surface water or drains. Do not allow to enter into soil/subsoil. Dispose of waste according to applicable legislation.

Consult the appropriate local waste disposal expert about waste disposal.

Handle contaminated packages in the same way as the substance itself.

**Contaminated packaging**

Hazardous waste according to Directive 2008/98/EC (waste framework directive). Handle contaminated

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packages in the same way as the substance itself.

**SECTION 14: Transport information****Land transport (ADR/RID)**

**14.1. UN number or ID number:** UN 3283  
**14.2. UN proper shipping name:** SELENIUM COMPOUND, SOLID, N.O.S. (Boc-L-Selenocystine)  
**14.3. Transport hazard class(es):** 6.1  
**14.4. Packing group:** II  
Hazard label: 6.1



Classification code: T5  
Special Provisions: 274 563  
Limited quantity: 500 g  
Excepted quantity: E4  
Transport category: 2  
Hazard No: 60  
Tunnel restriction code: D/E

**Inland waterways transport (ADN)**

**14.1. UN number or ID number:** UN 3283  
**14.2. UN proper shipping name:** SELENIUM COMPOUND, SOLID, N.O.S. (Boc-L-Selenocystine)  
**14.3. Transport hazard class(es):** 6.1  
**14.4. Packing group:** II  
Hazard label: 6.1



Classification code: T5  
Special Provisions: 274 563 802  
Limited quantity: 500 g  
Excepted quantity: E4

**Marine transport (IMDG)**

**14.1. UN number or ID number:** UN 3283  
**14.2. UN proper shipping name:** SELENIUM COMPOUND, SOLID, N.O.S. (Boc-L-Selenocystine)  
**14.3. Transport hazard class(es):** 6.1  
**14.4. Packing group:** II  
Hazard label: 6.1



Special Provisions: 274  
Limited quantity: 500 g  
Excepted quantity: E4  
EmS: F-A, S-A

**Air transport (ICAO-TI/IATA-DGR)**

**14.1. UN number or ID number:** UN 3283  
**14.2. UN proper shipping name:** SELENIUM COMPOUND, SOLID, N.O.S. (Boc-L-Selenocystine)  
**14.3. Transport hazard class(es):** 6.1  
**14.4. Packing group:** II

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Hazard label:

6.1



Special Provisions:

A3 A5

Limited quantity Passenger:

1 kg

Passenger LQ:

Y644

Excepted quantity:

E4

IATA-packing instructions - Passenger:

669

IATA-max. quantity - Passenger:

25 kg

IATA-packing instructions - Cargo:

676

IATA-max. quantity - Cargo:

100 kg

**14.5. Environmental hazards**

ENVIRONMENTALLY HAZARDOUS:

Yes



Danger releasing substance:

Boc-L-Selenocystine

**14.6. Special precautions for user**

Warning: Acute Toxicity.

**14.7. Maritime transport in bulk according to IMO instruments**

not applicable

**SECTION 15: Regulatory information****15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture****EU regulatory information**Information according to 2012/18/EU  
(SEVESO III):

H2 ACUTE TOXIC

Additional information:

E1

**Additional information**

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH)

**National regulatory information**

Employment restrictions:

Observe restrictions to employment for juveniles according to the 'juvenile work protection guideline' (94/33/EC). Observe employment restrictions under the Maternity Protection Directive (92/85/EEC) for expectant or nursing mothers.

Water hazard class (D):

3 - highly hazardous to water

**15.2. Chemical safety assessment**

For this substance a chemical safety assessment has not been carried out.

**SECTION 16: Other information****Abbreviations and acronyms**

ADR: Accord relatif au transport international des marchandises dangereuses par route (Agreement concerning the International Carriage of Dangerous Goods by Road).

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service

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LC50: Lethal concentration, 50%  
LD50: Lethal dose, 50%  
CLP: Classification, labelling and Packaging  
REACH: Registration, Evaluation and Authorization of Chemicals  
GHS: Globally Harmonised System of Classification, Labelling and Packaging of Chemicals  
UN: United Nations  
CAS: Chemical Abstracts Service  
DNEL: Derived No Effect Level  
DMEL: Derived Minimal Effect Level  
PNEC: Predicted No Effect Concentration  
ATE: Acute toxicity estimate  
LL50: Lethal loading, 50%  
EL50: Effect loading, 50%  
EC50: Effective Concentration 50%  
ErC50: Effective Concentration 50%, growth rate  
NOEC: No Observed Effect Concentration  
BCF: Bio-concentration factor  
PBT: persistent, bioaccumulative, toxic  
vPvB: very persistent, very bioaccumulative  
RID: Regulations concerning the international carriage of dangerous goods by rail  
ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (Accord européen relatif au transport international des marchandises dangereuses par voies de navigation intérieures)  
EmS: Emergency Schedules  
MFAAG: Medical First Aid Guide  
IATA: International Air Transport Association  
ICAO: International Civil Aviation Organization  
MARPOL: International Convention for the Prevention of Marine Pollution from Ships  
IBC: Intermediate Bulk Container  
SVHC: Substance of Very High Concern  
For abbreviations and acronyms, see table at <http://abbrev.esdscom.eu>  
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)  
For abbreviations and acronyms, see: ECHA Guidance on information requirements and chemical safety assessment, chapter R.20 (Table of terms and abbreviations).

**Relevant H and EUH statements (number and full text)**

H301	Toxic if swallowed.
H301+H331	Toxic if swallowed or if inhaled.
H331	Toxic if inhaled.
H373	May cause damage to organs through prolonged or repeated exposure.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

**Further Information**

The information is based on the present level of our knowledge. It does not, however, give assurance of product properties and establishes no contract legal rights. The receiver of our product is singularly responsible for adhering to existing laws and regulations.