

# Voluntary safety information following the Safety Data Sheet format according to Regulation (EC) No. 1907/2006 (REACH)



## Bismuth(III) oxide ROTI®METIC 99,999 % (5N)

article number: **1L6X**  
Version: **3.0 en**  
Replaces version of: 08.11.2023  
Version: (2)

date of compilation: 05.08.2021  
Revision: 02.03.2024

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

### 1.1 Product identifier

Identification of the substance	<b>Bismuth(III) oxide ROTI®METIC 99,999 % (5N)</b>
Article number	1L6X
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	215-134-7
CAS number	1304-76-3

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

Relevant identified uses:	Laboratory chemical Laboratory and analytical use
Uses advised against:	Do not use for private purposes (household). Food, drink and animal feedingstuffs.

### 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

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

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

This substance does not meet the criteria for classification in accordance with Regulation No 1272/2008/EC.

### 2.2 Label elements

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

not required

**Bismuth(III) oxide ROTI®METIC 99,999 % (5N)**

article number: 1L6X

**2.3 Other hazards**

**Results of PBT and vPvB assessment**

According to the results of its assessment, this substance is not a PBT or a vPvB.

**Endocrine disrupting properties**

Does not contain an endocrine disruptor (ED) at a concentration of  $\geq 0,1\%$ .

**SECTION 3: Composition/information on ingredients**

**3.1 Substances**

Name of substance	Bismuth(III) oxide
Molecular formula	$\text{Bi}_2\text{O}_3$
Molar mass	466 g/mol
CAS No	1304-76-3
EC No	215-134-7

**SECTION 4: First aid measures**

**4.1 Description of first aid measures**



**General notes**

No special measures are necessary.

**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.

**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. Call a doctor if you feel unwell.

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

Symptoms and effects are not known to date.

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

none

Bismuth(III) oxide ROTI®METIC 99,999 % (5N)

article number: 1L6X

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media



#### Suitable extinguishing media

co-ordinate firefighting measures to the fire surroundings!  
water, foam, dry extinguishing powder, ABC-powder

#### Unsuitable extinguishing media

water jet

### 5.2 Special hazards arising from the substance or mixture

Non-combustible.

### 5.3 Advice for firefighters

In case of fire and/or explosion do not breathe fumes. 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

Control of 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

#### Advice on how to contain a spill

Covering of drains. Take up mechanically.

#### Advice on how to clean up a spill

Take up mechanically.

#### Other information relating to spills and releases

Place in appropriate containers for disposal.

### 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.

Bismuth(III) oxide ROTI®METIC 99,999 % (5N)

article number: 1L6X

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

No special measures are necessary.

#### Advice on general occupational hygiene

Keep away from food, drink and animal feedingstuffs.

### 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:

#### 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)

This information is not available.

#### Human health values

Relevant DNELs and other threshold levels				
Endpoint	Threshold level	Protection goal, route of exposure	Used in	Exposure time
DNEL	70,5 mg/m <sup>3</sup>	human, inhalatory	worker (industry)	chronic - systemic effects

#### Environmental values

Relevant PNECs and other threshold levels				
End-point	Threshold level	Organism	Environmental compartment	Exposure time
PNEC	0,1 mg/l	aquatic organisms	freshwater	short-term (single instance)
PNEC	0,01 mg/l	aquatic organisms	marine water	short-term (single instance)
PNEC	17,5 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
PNEC	45.709 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
PNEC	4.571 mg/kg	aquatic organisms	marine sediment	short-term (single instance)

Bismuth(III) oxide ROTI®METIC 99,999 % (5N)

article number: 1L6X

Relevant PNECs and other threshold levels				
End-point	Threshold level	Organism	Environmental compartment	Exposure time
PNEC	67,6 mg/kg	terrestrial organisms	soil	short-term (single instance)

## 8.2 Exposure controls

### 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.

- **type of material**

NBR (Nitrile rubber)

- **material thickness**

>0,11 mm

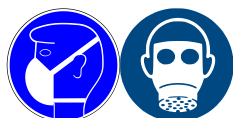
- **breakthrough times of the glove material**

>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). P1 (filters at least 80 % of airborne particles, colour code: White).

#### Environmental exposure controls

Keep away from drains, surface and ground water.

Bismuth(III) oxide ROTI®METIC 99,999 % (5N)

article number: 1L6X

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

Physical state	solid
Form	powder
Colour	light yellow
Odour	odourless
Melting point/freezing point	817 – 820 °C
Boiling point or initial boiling point and boiling range	1.890 °C
Flammability	non-combustible
Lower and upper explosion limit	not determined
Flash point	not applicable
Auto-ignition temperature	not determined
Decomposition temperature	not relevant
pH (value)	not applicable
Kinematic viscosity	not relevant
<u>Solubility(ies)</u>	
Water solubility	(practically insoluble)
<u>Partition coefficient</u>	
Partition coefficient n-octanol/water (log value):	not relevant (inorganic)
Vapour pressure	not determined
<u>Density and/or relative density</u>	
Density	8,93 g/cm <sup>3</sup> at 20 °C
Relative vapour density	Information on this property is not available.
Bulk density	~1.000 kg/m <sup>3</sup>
Particle characteristics	No data available.
<u>Other safety parameters</u>	
Oxidising properties	none

### 9.2 Other information

Information with regard to physical hazard classes:	hazard classes acc. to GHS (physical hazards): not relevant
---	---

Bismuth(III) oxide ROTI®METIC 99,999 % (5N)

article number: 1L6X

Other safety characteristics:

There is no additional information.

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

This material is not reactive under normal ambient conditions.

### 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

No known hazardous reactions.

### 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.

## SECTION 11: Toxicological information

### 11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

#### Classification according to GHS (1272/2008/EC, CLP)

This substance does not meet the criteria for classification in accordance with Regulation No 1272/2008/EC.

#### Acute toxicity

Shall not be classified as acutely toxic.

Acute toxicity					
Exposure route	Endpoint	Value	Species	Method	Source
oral	LD50	>2.000 mg/kg	rat		ECHA
inhalation: dust/mist	LC50	>5,07 mg/l/4h	rat		ECHA

#### 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.

#### Germ cell mutagenicity

Shall not be classified as germ cell mutagenic.

#### Carcinogenicity

Shall not be classified as carcinogenic.

**Bismuth(III) oxide ROTI®METIC 99,999 % (5N)**

article number: **1L6X**

**Reproductive toxicity**

Shall not be classified 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**

Data are not available.

• **If inhaled**

Inhalation of dust may cause irritation of the respiratory system

• **If on skin**

Data are not available.

• **Other information**

none

**11.2 Endocrine disrupting properties**

Does not contain an endocrine disruptor (ED) at a concentration of  $\geq 0,1\%$ .

**11.3 Information on other hazards**

There is no additional information.

**SECTION 12: Ecological information**

**12.1 Toxicity**

Shall not be classified as hazardous to the aquatic environment.

Aquatic toxicity (acute)				
Endpoint	Value	Species	Source	Exposure time
LC50	$>137 \text{ mg/l}$	fish	ECHA	96 h
EC50	$>137 \text{ mg/l}$	aquatic invertebrates	ECHA	48 h
ErC50	$>137 \text{ mg/l}$	algae	ECHA	72 h

**12.2 Persistence and degradability**

Data are not available.

**12.3 Bioaccumulative potential**

Data are not available.



**Bismuth(III) oxide ROTI®METIC 99,999 % (5N)**

article number: **1L6X**

**12.4 Mobility in soil**

Data are not available.

**12.5 Results of PBT and vPvB assessment**

Data are not available.

**12.6 Endocrine disrupting properties**

Does not contain an endocrine disruptor (ED) at a concentration of  $\geq 0,1\%$ .

**12.7 Other adverse effects**

Data are not available.

## SECTION 13: Disposal considerations

**13.1 Waste treatment methods**



Consult the appropriate local waste disposal expert about waste disposal.

**Sewage disposal-relevant information**

Do not empty into drains.

**Waste treatment of containers/packagings**

Handle contaminated packages in the same way as the substance itself. Completely emptied packages can be recycled.

**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. Non-contaminated packages may be recycled.

## SECTION 14: Transport information

<b>14.1 UN number or ID number</b>	not subject to transport regulations
<b>14.2 UN proper shipping name</b>	not assigned
<b>14.3 Transport hazard class(es)</b>	none
<b>14.4 Packing group</b>	not assigned
<b>14.5 Environmental hazards</b>	non-environmentally hazardous acc. to the dangerous goods regulations
<b>14.6 Special precautions for user</b>	There is no additional information.
<b>14.7 Maritime transport in bulk according to IMO instruments</b>	The cargo is not intended to be carried in bulk.

# Voluntary safety information following the Safety Data Sheet format according to Regulation (EC) No. 1907/2006 (REACH)



**Bismuth(III) oxide ROTI®METIC 99,999 % (5N)**

article number: **1L6X**

## 14.8 Information for each of the UN Model Regulations

### International Maritime Dangerous Goods Code (IMDG) - Additional information

Not subject to IMDG.

### International Civil Aviation Organization (ICAO-IATA/DGR) - Additional information

Not subject to ICAO-IATA.

## 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)

#### Restrictions according to REACH, Annex XVII

not listed

#### List of substances subject to authorisation (REACH, Annex XIV)/SVHC - candidate list

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
	not assigned		

#### Deco-Paint Directive

VOC content	0 %
VOC content	0 g/l

#### Industrial Emissions Directive (IED)

VOC content	0 %
VOC content	0 g/l

#### Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)

not listed

#### Regulation concerning the establishment of a European Pollutant Release and Transfer Register (PRTR)

not listed

#### Water Framework Directive (WFD)

# Voluntary safety information following the Safety Data Sheet format according to Regulation (EC) No. 1907/2006 (REACH)



**Bismuth(III) oxide ROTI®METIC 99,999 % (5N)**

article number: **1L6X**

List of pollutants (WFD)				
Name of substance	Name acc. to inventory	CAS No	Listed in	Remarks
Bismuth(III) oxide	Metals and their compounds		a)	

#### Legend

a) Indicative list of the main pollutants

#### Regulation on the marketing and use of explosives precursors

not listed

#### Regulation on drug precursors

not listed

#### Regulation on substances that deplete the ozone layer (ODS)

not listed

#### Regulation concerning the export and import of hazardous chemicals (PIC)

not listed

#### Regulation on persistent organic pollutants (POP)

not listed

#### Other information

Directive 94/33/EC on the protection of young people at work. Observe employment restrictions under the Maternity Protection Directive (92/85/EEC) for expectant or nursing mothers.

#### National inventories

Country	Inventory	Status
AU	AIIC	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 (ACTIVE)
VN	NCI	substance is listed

#### Legend

AIIC Australian Inventory of Industrial Chemicals  
 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  
 NCI National Chemical Inventory  
 NZIoC New Zealand Inventory of Chemicals  
 PICCS Philippine Inventory of Chemicals and Chemical Substances (PICCS)

# Voluntary safety information following the Safety Data Sheet format according to Regulation (EC) No. 1907/2006 (REACH)



## Bismuth(III) oxide ROTI®METIC 99,999 % (5N)

article number: 1L6X

### Legend

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

### Indication of changes (revised safety data sheet)

Section	Former entry (text/value)	Actual entry (text/value)	Safety-relevant
2.3	Endocrine disrupting properties: Does not contain an endocrine disruptor (ED) in a concentration of $\geq 0,1\%$ .	Endocrine disrupting properties: Does not contain an endocrine disruptor (ED) at a concentration of $\geq 0,1\%$ .	yes

### Abbreviations and acronyms

Abbr.	Descriptions of used abbreviations
ADR	Accord relatif au transport international des marchandises dangereuses par route (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
DGR	Dangerous Goods Regulations (see IATA/DGR)
DNEL	Derived No-Effect Level
EC50	Effective Concentration 50 %. The EC50 corresponds to the concentration of a tested substance causing 50 % changes in response (e.g. on growth) during a specified time interval
EC No	The EC Inventory (EINECS, ELINCS and the NLP-list) is the source for the seven-digit EC number, an identifier of substances commercially available within the EU (European Union)
ED	Endocrine disruptor
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances
ErC50	$\equiv$ EC50: in this method, that concentration of test substance which results in a 50 % reduction in either growth (EbC50) or growth rate (ErC50) relative to the control
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
LC50	Lethal Concentration 50%: the LC50 corresponds to the concentration of a tested substance causing 50 % lethality during a specified time interval
LD50	Lethal Dose 50 %: the LD50 corresponds to the dose of a tested substance causing 50 % lethality during a specified time interval
NLP	No-Longer Polymer

# Voluntary safety information following the Safety Data Sheet format according to Regulation (EC) No. 1907/2006 (REACH)



**Bismuth(III) oxide ROTI®METIC 99,999 % (5N)**

article number: **1L6X**

Abbr.	Descriptions of used abbreviations
PBT	Persistent, Bioaccumulative and Toxic
PNEC	Predicted No-Effect Concentration
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
SVHC	Substance of Very High Concern
VOC	Volatile Organic Compounds
vPvB	Very Persistent and very Bioaccumulative

## Key literature references and sources for data

Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures.  
Regulation (EC) No. 1907/2006 (REACH), amended by 2020/878/EU.

Agreement concerning the International Carriage of Dangerous Goods by Road (ADR). International Maritime Dangerous Goods Code (IMDG). Dangerous Goods Regulations (DGR) for the air transport (IATA).

## Disclaimer

This information is based upon the present state of our knowledge. This SDS has been compiled and is solely intended for this product.