

## Chemical Safety Data Sheet MSDS / SDS

## Bismuth subnitrate

Revision Date:2025-02-01 Revision Number:1

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

## Product identifier

Product name : Bismuth subnitrate  
CBnumber : CB0163093  
CAS : 1304-85-4  
EINECS Number : 215-136-8  
Synonyms : Bismuth Subnitrate,BISMUTH(III) SUBNITRATE

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

Relevant identified uses : For R&D use only. Not for medicinal, household or other use.  
Uses advised against : none

## Company Identification

Company : Chemicalbook  
Address : Building 1, Huihuang International, Shangdi 10th Street, Haidian District, Beijing  
Telephone : 010-86108875

## SECTION 2: Hazards identification

## GHS Label elements, including precautionary statements

Symbol(GHS)



Signal word

Danger

## Precautionary statements

P405 Store locked up.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.

Continuerinsing.

P221 Take any precaution to avoid mixing with combustibles/...

P220 Keep/Store away from clothing/.../combustible materials.

## Hazard statements

H335 May cause respiratory irritation

H319 Causes serious eye irritation

H315 Causes skin irritation

H272 May intensify fire; oxidizer

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## SECTION 3: Composition/information on ingredients

### Substance

|              |                                              |
|--------------|----------------------------------------------|
| Product name | : Bismuth subnitrate                         |
| Synonyms     | : Bismuth Subnitrate,BISMUTH(III) SUBNITRATE |
| CAS          | : 1304-85-4                                  |
| EC number    | : 215-136-8                                  |
| MF           | : Bi5H9N4O22                                 |
| MW           | : 1461.99                                    |

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## SECTION 4: First aid measures

### Description of first aid measures

#### If inhaled

After inhalation: fresh air.

#### In case of skin contact

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower.

#### In case of eye contact

After eye contact: rinse out with plenty of water. Remove contact lenses.

#### If swallowed

After swallowing: make victim drink water (two glasses at most). Consult doctor if feeling unwell.

### Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

### Indication of any immediate medical attention and special treatment needed

No data available

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## SECTION 5: Firefighting measures

### Extinguishing media

#### Suitable extinguishing media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

#### Unsuitable extinguishing media

For this substance/mixture no limitations of extinguishing agents are given.

### Special hazards arising from the substance or mixture

Nitrogen oxides (NO<sub>x</sub>), Bismuth oxides Not combustible.

Ambient fire may liberate hazardous vapours.

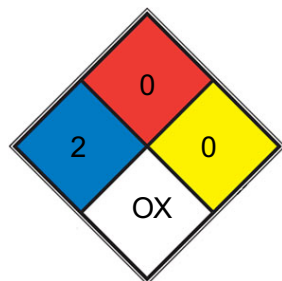
### Advice for firefighters

In the event of fire, wear self-contained breathing apparatus.

### Further information

Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

### NFPA 704



**HEALTH** 2 Intense or continued but not chronic exposure could cause temporary incapacitation or possible residual injury (e.g. [diethyl ether](#), ammonium phosphate, iodine)

**FIRE** 0 Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand. Materials that will not burn in air when exposed to a temperature of 820 °C (1,500 °F) for a period of 5 minutes.(e.g. Carbon tetrachloride)

**REACT** 0 Normally stable, even under fire exposure conditions, and is not reactive with water (e.g. helium,[N2](#))

**SPEC.**  
**HAZ.** OX

## SECTION 6: Accidental release measures

### Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Avoid inhalation of dusts. Evacuate the danger area, observe emergency procedures, consult an expert.

For personal protection see section 8.

### Environmental precautions

Do not let product enter drains.

### Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up dry. Dispose of properly. Clean up affected area. Avoid generation of dusts.

### Reference to other sections

For disposal see section 13.

## SECTION 7: Handling and storage

## Precautions for safe handling

For precautions see section 2.2.

## Conditions for safe storage, including any incompatibilities

No data available

## Specific end use(s)

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

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# SECTION 8: Exposure controls/personal protection

## control parameter

### Hazard composition and occupational exposure limits

Does not contain substances with occupational exposure limits.

## Exposure controls

### Appropriate engineering controls

Change contaminated clothing. Wash hands after working with substance.

### Personal protective equipment

#### Eye/face protection

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

#### Skin protection

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: [www.kcl.de](http://www.kcl.de)).

Full contact

Material: Nitrile rubber

Minimum layer thickness: 0,11 mm Break through time: 480 min

Material tested:KCL 741 Dermatril? L

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: [www.kcl.de](http://www.kcl.de)).

Splash contact Material: Nitrile rubber

Minimum layer thickness: 0,11 mm Break through time: 480 min

Material tested:KCL 741 Dermatril? L

#### Respiratory protection

required when dusts are generated.

Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

## Control of environmental exposure

Do not let product enter drains.

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## SECTION 9: Physical and chemical properties

### Information on basic physicochemical properties

|                                              |                                                       |
|----------------------------------------------|-------------------------------------------------------|
| Appearance                                   | powder                                                |
| Odour                                        | No data available                                     |
| Odour Threshold                              | No data available                                     |
| pH                                           | 3.2 (50g/l, H <sub>2</sub> O, 20 °C)(slurry)          |
| Melting point/freezing point                 | Melting point/range: 500 °C                           |
| Initial boiling point and boiling range      | No data available                                     |
| Flash point                                  | No data available                                     |
| Evaporation rate                             | No data available                                     |
| Flammability (solid, gas)                    | The product is not flammable. - Flammability (solids) |
| Upper/lower flammability or explosive limits | No data available                                     |
| Vapour pressure                              | No data available                                     |
| Vapour density                               | No data available                                     |
| Relative density                             | 4,93 g/cm <sup>3</sup>                                |
| Water solubility                             | 900,7 g/l at 20 °C - OECD Test Guideline 105          |
| Partition coefficient: n-octanol/water       | Not applicable for inorganic substances               |
| Autoignition temperature                     | >401 °C                                               |
| Decomposition temperature                    | No data available                                     |
| Viscosity                                    | No data available                                     |
| Explosive properties                         | No data available                                     |
| Oxidizing properties                         | No data available                                     |

### Other safety information

No data available

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## SECTION 10: Stability and reactivity

### Reactivity

No data available

### Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

### Possibility of hazardous reactions

No data available

### Conditions to avoid

no information available

### **Incompatible materials**

Alkaline bicarbonates, soluble iodides, gallic acid, calomel, tannins, salicylic acid

### **Hazardous decomposition products**

Hazardous decomposition products formed under fire conditions. - Nitrogen oxides (NO<sub>x</sub>), Bismuth oxides

Other decomposition products - No data available In the event of fire: see section 5

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## **SECTION 11: Toxicological information**

### **Information on toxicological effects**

#### **Acute toxicity**

LD50 Oral - Rat - female - > 2.000 mg/kg (OECD Test Guideline 423)

LC50 Inhalation - Rat - male and female - 4 h - > 5,07 mg/l (OECD Test Guideline 436)

Remarks: (in analogy to similar products)

#### **Skin corrosion/irritation**

Skin - Rabbit

Result: No skin irritation (OECD Test Guideline 439)

#### **Serious eye damage/eye irritation**

Eyes - Rabbit

Result: No eye irritation

(OECD Test Guideline 405)

#### **Respiratory or skin sensitization**

(OECD Test Guideline 429)

#### **Germ cell mutagenicity**

In vitro mammalian cell gene mutation test mouse lymphoma cells

Result: negative

Chromosome aberration test in vitro Chinese hamster lung cells

Result: negative Ames test

Salmonella typhimurium Result: negative

(in analogy to similar products)

#### **Carcinogenicity**

No data available

IARC: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

#### **Reproductive toxicity**

Developmental Toxicity- Rat- Oral

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

No data available

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

No data available

#### **Aspiration hazard**

No data available

#### **Additional Information**

Repeated dose toxicity - Rat - male and female - Oral - 90 d - NOAEL (No observed adverse effect level) - 1.000 mg/kg

Subchronic toxicity RTECS: Not available

Gastrointestinal disturbance, Anorexia., Headache, Jaundice, Absorption into the body leads to the formation of methemoglobin which in sufficient concentration causes cyanosis. Onset may be delayed 2 to 4 hours or longer., A unique encephalopathy occurs in colostomy and ileostomy patients using bismuth subnitrate, bismuth subgallate, and tripotassium- dicitrate-bismuthate for control of fecal odor and consistency. Symptoms include progressive mental confusion, irregular myoclonic jerks, a distinctive pattern of disordered gait, and a variable degree of dysarthria. The severity of the disorder appeared to be independent of dose and duration of therapy and was fatal to patients who continued the use of the bismuth compounds. Full recovery was rapid in those patients in whom therapy was discontinued. Symptoms of chronic bismuth toxicity in humans consists of decreased appetite, weakness, rheumatic pain, diarrhea, fever, metal line on the gums, foul breath, gingivitis, and dermatitis. Jaundice and conjunctival hemorrhage are rare, but have been reported. Bismuth nephropathy with proteinuria may occur. The kidney is the site of highest concentration with the liver being considerably lower. Bismuth does pass into the amniotic fluid and into the fetus.

Blood -

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## **SECTION 12: Ecological information**

### **Toxicity**

#### **Toxicity to fish**

static test LC50 - Danio rerio (zebra fish) - > 137 mg/l - 96 h (OECD Test Guideline 203)

#### **Toxicity to daphnia and other aquatic invertebrates**

static test EC50 - Daphnia magna (Water flea) - > 137 mg/l - 48 h (OECD Test Guideline 202)

#### **Toxicity to algae**

static test ErC50 - Pseudokirchneriella subcapitata - > 137 mg/l - 72 h  
(OECD Test Guideline 201)

static test NOEC - Pseudokirchneriella subcapitata - > 137 mg/l - 72 h  
(OECD Test Guideline 201)

#### **Toxicity to bacteria**

static test EC10 - activated sludge - 175,4 mg/l - 3 h  
(OECD Test Guideline 209)

### **Persistence and degradability**

The methods for determining biodegradability are not applicable to inorganic substances.

### **Bioaccumulative potential**

No data available

### **Mobility in soil**

No data available

### **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.

### Other adverse effects

No data available

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## SECTION 13: Disposal considerations

### Waste treatment methods

### Product

See [www.retrologistik.com](http://www.retrologistik.com) for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

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## SECTION 14: Transport information

### UN number

ADR/RID: - IMDG: - IATA: -

14.2 UN proper shipping name ADR/RID: Not dangerous goods IMDG: Not dangerous goods IATA: Not dangerous goods

Transport hazard class(es)

14.3 ADR/RID: - IMDG: - IATA: -

Packaging group

14.4 ADR/RID: - IMDG: - IATA: -

Environmental hazards

14.5 ADR/RID: no IMDG Marine pollutant: no IATA: no

### Special precautions for user

### Further information

Not classified as dangerous in the meaning of transport regulations.

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## SECTION 15: Regulatory information

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

#### Regulations on the Safety Management of Hazardous Chemicals

China Catalog of Hazardous chemicals 2015:Not Listed. website: <https://www.mem.gov.cn/>

#### Measures for Environmental Management of New Chemical Substances

Vietnam National Chemical Inventory:Listed. website: <https://chemicaldata.gov.vn/>

Chinese Chemical Inventory of Existing Chemical Substances (China IECSC):Not Listed. website: <https://www.mee.gov.cn/>

United States Toxic Substances Control Act (TSCA) Inventory:Listed. website: <https://www.epa.gov/>

New Zealand Inventory of Chemicals (NZIoC):Listed. website: <https://www.epa.govt.nz/>

Philippines Inventory of Chemicals and Chemical Substances (PICCS):Listed. website: <https://emb.gov.ph/>

European Inventory of Existing Commercial Chemical Substances (EINECS):Listed. website: <https://echa.europa.eu/>

Korea Existing Chemicals List (KECL):Listed. website: <http://ncis.nier.go.kr>

EC Inventory:Listed.

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## SECTION 16: Other information

### Abbreviations and acronyms

CAS: Chemical Abstracts Service

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

RID: Regulation concerning the International Carriage of Dangerous Goods by Rail

IMDG: International Maritime Dangerous Goods

IATA: International Air Transportation Association

TWA: Time Weighted Average

STEL: Short term exposure limit

LC50: Lethal Concentration 50%

LD50: Lethal Dose 50%

EC50: Effective Concentration 50%

### References

【1】 CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>

【2】 ChemIDplus, website: <http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>

【3】 ECHA - European Chemicals Agency, website: <https://echa.europa.eu/>

【4】 eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website:  
[http://www.echemportal.org/echemportal/index?pageID=0&request\\_locale=en](http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en)

【5】 ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: <http://www.phmsa.dot.gov/hazmat/library/erg>

【6】 Germany GESTIS-database on hazard substance, website: <http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp>

【7】 HSDB - Hazardous Substances Data Bank, website: <https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>

【8】 IARC - International Agency for Research on Cancer, website: <http://www.iarc.fr/>

【9】 IPCS - The International Chemical Safety Cards (ICSC), website: <http://www.ilo.org/dyn/icsc/showcard.home>

【10】 Sigma-Aldrich, website: <https://www.sigmaaldrich.com/>

#### Disclaimer:

The information in this MSDS is only applicable to the specified product, unless otherwise specified, it is not applicable to the mixture of this product and other substances. This MSDS only provides information on the safety of the product for those who have received the appropriate professional training for the user of the product. Users of this MSDS must make independent judgments on the applicability of this SDS. The authors of this MSDS will not be held responsible for any harm caused by the use of this MSDS.