

## Chemical Safety Data Sheet MSDS / SDS

**Borane-pyridine complex**

Revision Date:2026-03-21 Revision Number:1

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

Product name : Borane-pyridine complex  
CBnumber : CB0667652  
CAS : 110-51-0  
EINECS Number : 203-773-4  
Synonyms : PYRIDINE BORANE;BORANE-PYRIDINE COMPLEX

**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**

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

Continuerinsing.

P303+P361+P353 IF ON SKIN (or hair): Remove/Take off Immediately all contaminated clothing. Rinse SKIN with water/shower.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P233 Keep container tightly closed.

P210 Keep away from heat/sparks/open flames/hot surfaces. — No smoking.

**Hazard statements**

H330 Fatal if inhaled

H319 Causes serious eye irritation

H315 Causes skin irritation

## SECTION 3: Composition/information on ingredients

### Substance

Product name	: Borane-pyridine complex
Synonyms	: PYRIDINE BORANE;BORANE-PYRIDINE COMPLEX
CAS	: 110-51-0
EC number	: 203-773-4
MF	: C5H8BN
MW	: 92.93

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## SECTION 4: First aid measures

### 4.1 Description of first-aid measures

#### General advice

First aiders need to protect themselves. Show this material safety data sheet to the doctor in attendance.

#### If inhaled

After inhalation: fresh air. Immediately call in physician. If breathing stops: immediately apply artificial respiration, if necessary also oxygen.

#### In case of skin contact

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

#### In case of eye contact

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

#### If swallowed

If swallowed: give water to drink (two glasses at most). Seek medical advice immediately.

In exceptional cases only, if medical care is not available within one hour, induce vomiting (only in persons who are wide awake and fully conscious), administer activated charcoal (20 - 40 g in a 10% slurry) and consult a doctor as quickly as possible.

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

The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11

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

No data available

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## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

#### Suitable extinguishing media

Foam Carbon dioxide (CO<sub>2</sub>) Dry powder

#### Unsuitable extinguishing media

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

## 5.2 Special hazards arising from the substance or mixture

Carbon oxides

Nitrogen oxides (NO<sub>x</sub>)

Borane/boron oxides

Combustible.

Pay attention to flashback.

Vapors are heavier than air and may spread along floors.

Development of hazardous combustion gases or vapours possible in the event of fire.

Forms explosive mixtures with air at ambient temperatures.

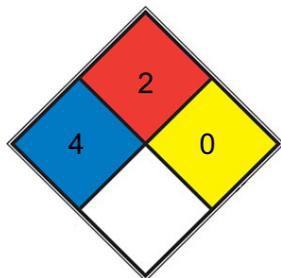
## 5.3 Advice for firefighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

## 5.4 Further information

Remove container from danger zone and cool with water. 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 4 Very short exposure could cause death or major residual injury (e.g. hydrogen cyanide, phosgene, methyl isocyanate, [hydrofluoric acid](#))

FIRE 2 Must be moderately heated or exposed to relatively high ambient temperature before ignition can occur and multiple finely divided suspended solids that do not require heating before ignition can occur. Flash point between 37.8 and 93.3 °C (100 and 200 °F). (e.g. diesel fuel, [sulfur](#))

REACT 0 Normally stable, even under fire exposure conditions, and is not reactive with water (e.g. helium, [N<sub>2</sub>](#))

SPEC.

HAZ.

## SECTION 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition.

Evacuate the danger area, observe emergency procedures, consult an expert.

For personal protection see section 8.

## 6.2 Environmental precautions

Do not let product enter drains. Risk of explosion.

## 6.3 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 carefully with liquid-absorbent material (e.g.

Chemizorb®). Dispose of properly. Clean up affected area.

## 6.4 Reference to other sections

For disposal see section 13.

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# SECTION 7: Handling and storage

## 7.1 Precautions for safe handling

### Advice on safe handling

Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.

### Advice on protection against fire and explosion

Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

### Hygiene measures

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

For precautions see section 2.2.

## 7.2 Conditions for safe storage, including any incompatibilities

### Storage conditions

Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition. Keep locked up or in an area accessible only to qualified or authorized persons.

### Storage stability Recommended storage temperature

2 - 8 °C

Handle and store under inert gas.

### Storage class

Storage class (TRGS 510): 3: Flammable liquids

## 7.3 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

## 8.1 Control parameters

### Ingredients with workplace control parameters

## 8.2 Exposure controls

### 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

required

### Body Protection

Flame retardant antistatic protective clothing.

### Respiratory protection

required when vapours/aerosols 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.

Recommended Filter type: Filter type ABEK

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer.

These measures have to be properly documented.

### Control of environmental exposure

Do not let product enter drains. Risk of explosion.

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## SECTION 9: Physical and chemical properties

### Information on basic physicochemical properties

a) Physical state	liquid
b) Color	Clear to slightly hazy colorless to amber
c) Odor	No data available
d) Melting point/freezing point	Melting point/range: 10 - 11 °C - lit.
e) Initial boiling point and boiling range	102 °C (0.37505 mmHg)
f) Flammability (solid, gas)	No data available
g) Upper/lower flammability or explosive limits	No data available
h) Flash point	21 °C
i) Autoignition temperature	No data available
j) Decomposition temperature	50 °C
k) pH	No data available
l) Viscosity	Viscosity, kinematic: 2 - 3 mm <sup>2</sup> /s at 22 °C Viscosity, dynamic: No data available
m) Water solubility	Decomposes in contact with water.
n) Partition coefficient n-octanol/water	No data available
o) Vapor pressure	0,1 hPa at 25 °C
p) Density	0,92 g/mL at 25 °C - lit.
Relative density	0.929 g/mL at 20 °C
q) Relative vapor density	No data available
r) Particle characteristics	No data available

s) Explosive properties	No data available
t) Oxidizing properties	No data available
Solubility	very sol methanol, THF, toluene, dichloromethane; sol water, diethyl ether; insol hexane.

## 9.2 Other safety information

No data available

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## SECTION 10: Stability and reactivity

### 10.1 Reactivity

Vapors may form explosive mixture with air.

### 10.2 Chemical stability

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

### 10.3 Possibility of hazardous reactions

No data available

### 10.4 Conditions to avoid

Do not heat over: 30°C

Warming.

### 10.5 Incompatible materials

Oxygen, Oxidizing agents, Acids, Acid chlorides, Acid anhydrides, Alcohols

### 10.6 Hazardous decomposition products

In the event of fire: see section 5

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## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

#### Mixture Acute toxicity

Acute toxicity estimate Oral - 117,38 mg/kg (Calculation method)

Symptoms: Irritations of mucous membranes in the mouth, pharynx, oesophagus and gastrointestinal tract.

Acute toxicity estimate Inhalation - 4 h - 0,3981 mg/l - vapor(Calculation method)

Symptoms: Possible symptoms:, mucosal irritations

Acute toxicity estimate Dermal - 239,13 mg/kg (Calculation method)

#### Skin corrosion/irritation

Remarks: Mixture causes skin irritation.

#### Serious eye damage/eye irritation

Remarks: Mixture causes serious eye irritation.

#### Respiratory or skin sensitization

Classified based on available data. For more details, see section 2

### **Germ cell mutagenicity**

Classified based on available data. For more details, see section 2

### **Carcinogenicity**

Classified based on available data. For more details, see section 2

### **Reproductive toxicity**

Classified based on available data. For more details, see section 2

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

Classified based on available data. For more details, see section 2

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

Classified based on available data. For more details, see section 2

### **Aspiration hazard**

Classified based on available data. For more details, see section 2

## **11.2 Additional Information**

### **Endocrine disrupting properties**

Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Other dangerous properties can not be excluded.

This substance should be handled with particular care.

Handle in accordance with good industrial hygiene and safety practice.

### **Components boron hydride-pyridine (1:1)**

#### **Acute toxicity**

LD50 Oral - Rat - 95,4 mg/kg

Remarks: (External MSDS)

LC50 Inhalation - Rat - 4 h - 0,32 mg/l - vapor

Remarks: (External MSDS)

LD50 Dermal - Guinea pig - 200 mg/kg

Remarks: (External MSDS)

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

Classified based on available data. For more details, see section 2

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

Classified based on available data. For more details, see section 2

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

Classified based on available data. For more details, see section 2

### **Germ cell mutagenicity**

Classified based on available data. For more details, see section 2

### **Carcinogenicity**

Classified based on available data. For more details, see section 2

### **Reproductive toxicity**

Classified based on available data. For more details, see section 2

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

Classified based on available data. For more details, see section 2

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

Classified based on available data. For more details, see section 2

#### **Aspiration hazard**

Classified based on available data. For more details, see section 2

#### **Pyridine**

##### **Acute toxicity**

LD50 Oral - Rat - 1.500 mg/kg

Remarks: (ECHA)

Symptoms: Vomiting, Nausea

Acute toxicity estimate Oral - 1.500 mg/kg (Calculation method)

LC50 Inhalation - Rat - male - 4 h - 17,1 mg/l - vapor (US-EPA)

Symptoms: mucosal irritations, Cough, Shortness of breath

Acute toxicity estimate Inhalation - 17,1 mg/l - vapor (Calculation method)

LD50 Dermal - Rabbit - > 1.000 - 2.000 mg/kg (OECD Test Guideline 402)

Acute toxicity estimate Dermal - 1.000,1 mg/kg (Calculation method)

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

Skin - Rabbit

Result: Mild skin irritation - 24 h (Draize Test)

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

Eyes - Rabbit

Result: Irritating to eyes. - 24 h

Remarks: (ECHA)

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

Local lymph node assay (LLNA) - Mouse

Result: negative (OECD Test Guideline 429)

##### **Germ cell mutagenicity**

Test Type: Ames test

Test system: Salmonella typhimurium

Result: negative

Test Type: In vitro mammalian cell gene mutation test

Test system: Chinese hamster lung cells

Result: negative

Method: OECD Test Guideline 475

Species: Mouse - male - Bone marrow

Result: negative

##### **Carcinogenicity**

Classified based on available data. For more details, see section 2

##### **Reproductive toxicity**

Classified based on available data. For more details, see section 2

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

Acute oral toxicity - Vomiting, Nausea

Acute inhalation toxicity - mucosal irritations, Cough, Shortness of breath

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

Classified based on available data. For more details, see section 2

## Aspiration hazard

Classified based on available data. For more details, see section 2

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## SECTION 12: Ecological information

### 12.1 Toxicity

#### Mixture

No data available

### 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/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.

### 12.6 Endocrine disrupting properties

Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission

Delegated regulation (EU) 2017/2100 or Commission

Regulation (EU) 2018/605 at levels of 0.1% or higher.

### 12.7 Other adverse effects

No data available

#### Components boron hydride-pyridine (1:1)

No data available

#### Pyridine

Toxicity to fish semi-static test EC50 - Danio rerio (zebra fish) - 560 - 1.000 mg/l - 96 h (OECD Test Guideline 203)

Remarks: (in analogy to similar products)

Toxicity to daphnia EC50 - Daphnia magna (Water flea) - 320 mg/l - 48 h and other aquatic (OECD Test Guideline 202) invertebrates

Remarks: (in analogy to similar products)

Toxicity to algae static test EC50 - Pseudokirchneriella subcapitata - 320 mg/l - 72 h (OECD Test Guideline 201)

Remarks: (in analogy to similar products)

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## SECTION 13: Disposal considerations

### 13.1 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

### 14.1 UN number

ADR/RID: 1992

IMDG: 1992

IATA: 1992

### 14.2 UN proper shipping name

ADR/RID: FLAMMABLE LIQUID, TOXIC, N.O.S. (boron hydride-pyridine (1:1))

IMDG: FLAMMABLE LIQUID, TOXIC, N.O.S. (boron hydride-pyridine (1:1))

IATA: Flammable liquid, toxic, n.o.s. (boron hydride-pyridine (1:1))

### 14.3 Transport hazard class(es)

ADR/RID: 3 (6.1)

IMDG: 3 (6.1)

IATA: 3 (6.1)

### 14.4 Packaging group

ADR/RID: II

IMDG: II

IATA: II

### 14.5 Environmental hazards

ADR/RID: no

IMDG Marine pollutant: no

IATA: no

### 14.6 Special precautions for user

Tunnel restriction code : (D/E)

Further information : No data available

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## SECTION 15: Regulatory information

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

This material safety data sheet complies with the requirements of Regulation (EC) No.

1907/2006.

National legislation

Seveso III: Directive 2012/18/EU of the H1 ACUTE TOXIC

European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.

P5c FLAMMABLE LIQUIDS

Other regulations

Observe work restrictions regarding maternity protection in accordance to Dir 92/85/EEC or stricter national regulations where applicable.

Take note of Dir 94/33/EC on the protection of young people at work.

## 15.2 Chemical Safety Assessment

For this product a chemical safety assessment was not carried out

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## SECTION 16: Other information

### Full text of other abbreviations

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways

ADR - Agreement concerning the International Carriage of Dangerous Goods by Road

AIIIC - Australian Inventory of Industrial Chemicals

ASTM - American Society for the Testing of Materials

bw - Body weight

CMR - Carcinogen, Mutagen or Reproductive Toxicant

DIN - Standard of the German Institute for Standardisation

DSL - Domestic Substances List (Canada)

EC<sub>x</sub> - Concentration associated with x% response

EL<sub>x</sub> - Loading rate associated with x% response

EmS - Emergency Schedule

ENCS - Existing and New Chemical Substances (Japan)

ErC<sub>x</sub> - Concentration associated with x% growth rate response

GHS - Globally Harmonized System

GLP - Good Laboratory Practice

IARC - International Agency for Research on Cancer

IATA - International Air Transport Association

IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk

IC<sub>50</sub> - Half maximal inhibitory concentration

ICAO - International Civil Aviation Organization

IECSC - Inventory of Existing Chemical Substances in China

IMDG - International Maritime Dangerous Goods

IMO - International Maritime Organization

ISHL - Industrial Safety and Health Law (Japan)

ISO - International Organisation for Standardization

KECI - Korea Existing Chemicals Inventory

LC<sub>50</sub> - Lethal Concentration to 50 % of a test population

LD<sub>50</sub> - Lethal Dose to 50% of a test population (Median Lethal Dose)

MARPOL - International Convention for the Prevention of Pollution from Ships

n.o.s. - Not Otherwise Specified

NO(A)EC - No Observed (Adverse) Effect Concentration

NO(A)EL - No Observed (Adverse) Effect Level

NOELR - No Observable Effect LoadingRate

NZIoC - New Zealand Inventory of Chemicals

OECD - Organization for EconomicCo-operation and Development

OPPTS - Office of Chemical Safety and PollutionPrevention

PBT - Persistent, Bioaccumulative and Toxic substance

PICCS - PhilippinesInventory of Chemicals and Chemical Substances

(Q)SAR - (Quantitative) StructureActivity Relationship

REACH - Regulation (EC) No 1907/2006 of the EuropeanParliament and of the Council concerning the Registration, Evaluation, Authorisation andRestriction of Chemicals

RID - Regulations concerning the International Carriage ofDangerous Goods by Rail

SADT - Self-Accelerating Decomposition Temperature

SDS -Safety Data Sheet

TCSI - Taiwan Chemical Substance Inventory

TECI - ThailandExisting Chemicals Inventory

TSCA - Toxic Substances Control Act (United States)

UN - United Nations

UNRTDG - United Nations Recommendations on the Transport ofDangerous Goods

vPvB - Very Persistent and Very Bioaccumulative

**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.