

# SAFETY DATA SHEETS

According to the UN GHS revision 9

Version: 1.0  
Creation Date: July 15, 2019  
Revision Date: July 15, 2019

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## SECTION 1: Identification

### 1.1 GHS Product identifier

Product name Benzofuran

### 1.2 Other means of identification

Product number -

Other names 2,1,3-benzothiadiazol-4-sulfonyl chloride; Benzofuran; 2,3-benzofuran

### 1.3 Recommended use of the chemical and restrictions on use

Identified uses Industrial and scientific research use.

Uses advised against no data available

### 1.4 Supplier's details

Company Shanghai Baishun Biotechnology Co., Ltd  
Address No. 26, Lane 918, Lianye Road, Zhelin Town, Fengxian District, Shanghai, 201400, China  
Telephone +86-21-37581181

### 1.5 Emergency phone number

Emergency phone number +86-21-37581181

Service hours Monday to Friday, 9am-5pm (Standard time zone: UTC/GMT +8 hours).

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## SECTION 2: Hazard identification

### 2.1 Classification of the substance or mixture

Flammable liquids, Category 3

Carcinogenicity, Category 2

Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 3

### 2.2 GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Hazard statement(s)

Warning

H226 Flammable liquid and vapour

H351 Suspected of causing cancer

H412 Harmful to aquatic life with long lasting effects

**Precautionary statement(s)**

<b>Prevention</b>	P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P233 Keep container tightly closed. P240 Ground and bond container and receiving equipment. P241 Use explosion-proof [electrical/ventilating/lighting/...] equipment. P242 Use non-sparking tools. P243 Take action to prevent static discharges. P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/... P203 Obtain, read and follow all safety instructions before use. P273 Avoid release to the environment.
<b>Response</b>	P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse affected areas with water [or shower]. P370+P378 In case of fire: Use ... to extinguish. P318 IF exposed or concerned, get medical advice.
<b>Storage</b>	P403+P235 Store in a well-ventilated place. Keep cool. P405 Store locked up.
<b>Disposal</b>	P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

**2.3 Other hazards which do not result in classification**

no data available

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**SECTION 3: Composition/information on ingredients****3.1 Substances**

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
Benzofuran	Benzofuran	271-89-6	205-982-6	100%

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**SECTION 4: First-aid measures****4.1 Description of necessary first-aid measures****If inhaled**

Move the victim into fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration and consult a doctor immediately. Do not use mouth to mouth resuscitation if the victim ingested or inhaled the chemical.

**Following skin contact**

Take off contaminated clothing immediately. Wash off with soap and plenty of water. Consult a doctor.

**Following eye contact**

Rinse with pure water for at least 15 minutes. Consult a doctor.

**Following ingestion**

Rinse mouth with water. Do not induce vomiting. Never give anything by mouth to an unconscious person. Call a doctor or Poison Control Center immediately.

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

ACUTE/CHRONIC HAZARDS: When heated to decomposition this compound emits acrid and irritating smoke and fumes. (NTP, 1992)

**4.3 Indication of immediate medical attention and special treatment needed, if necessary**

Basic treatment: Establish a patent airway. Suction if necessary. Watch for signs of respiratory insufficiency and assist ventilations if needed. Administer oxygen by

nonrebreather mask at 10 to 15 L/min. Monitor for pulmonary edema and treat if necessary . Monitor for shock and treat if necessary . Anticipate seizures and treat if necessary . For eye contamination, flush eyes immediately with water. Irrigate each eye continuously with normal saline during transport . Do not use emetics. For ingestion, rinse mouth and administer 5 ml/kg up to 200 ml of water for dilution if the patient can swallow, has a strong gag reflex, and does not drool . Cover skin burns with dry sterile dressings after decontamination . Poison A and B

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## **SECTION 5: Fire-fighting measures**

### **5.1 Suitable extinguishing media**

Use/ foam, dry powder, carbon dioxide. ...Keep drums, etc., cool by spraying with water.

### **5.2 Specific hazards arising from the chemical**

This chemical is combustible. (NTP, 1992)

### **5.3 Special protective actions for fire-fighters**

Use foam, dry powder, carbon dioxide. In case of fire: keep drums, etc., cool by spraying with water.

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## **SECTION 6: Accidental release measures**

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

Remove all ignition sources. Do NOT wash away into sewer. Do NOT let this chemical enter the environment. Collect leaking and spilled liquid in covered containers as far as possible.

### **6.2 Environmental precautions**

Remove all ignition sources. Do NOT wash away into sewer. Do NOT let this chemical enter the environment. Collect leaking and spilled liquid in covered containers as far as possible.

### **6.3 Methods and materials for containment and cleaning up**

PRECAUTIONS FOR "CARCINOGENS": A high-efficiency particulate arrestor (HEPA) or charcoal filters can be used to minimize amt of carcinogen in exhausted air ventilated safety cabinets, lab hoods, glove boxes or animal rooms ... Filter housing that is designed so that used filters can be transferred into plastic bag without contaminating maintenance staff is avail commercially. Filters should be placed in plastic bags immediately after removal ... The plastic bag should be sealed immediately ... The sealed bag should be labelled properly ... Waste liquids ... should be placed or collected in proper containers for disposal. The lid should be secured & the bottles properly labelled. Once filled, bottles should be placed in plastic bag, so that outer surface ... is not contaminated ... The plastic bag should also be sealed & labelled. ... Broken glassware ... should be decontaminated by solvent extraction, by chemical destruction, or in specially designed incinerators. Chemical Carcinogens

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## **SECTION 7: Handling and storage**

### **7.1 Precautions for safe handling**

NO open flames, NO sparks and NO smoking. Above 56°C use a closed system, ventilation and explosion-proof electrical equipment. Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

### **7.2 Conditions for safe storage, including any incompatibilities**

Fireproof. Well closed. Cool.PRECAUTIONS FOR "CARCINOGENS": Storage site should be as close as practical to lab in which carcinogens are to be used, so that only small quantities required for ... expt need to be carried. Carcinogens should be kept in only one section of cupboard, an explosion-proof refrigerator or freezer (depending on chemophysical properties ...) that bears appropriate label. An inventory ... should be

kept, showing quantity of carcinogen & date it was acquired ... Facilities for dispensing ... should be contiguous to storage area. Chemical Carcinogens

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## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

#### Occupational Exposure limit values

no data available

#### Biological limit values

no data available

### 8.2 Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

### 8.3 Individual protection measures, such as personal protective equipment (PPE)

#### Eye/face protection

Wear tightly fitting safety goggles with side-shields conforming to EN 166(EU) or NIOSH (US).

#### Skin protection

Wear fire/flame resistant and impervious clothing. Handle with gloves. Gloves must be inspected prior to use. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

#### Respiratory protection

If the exposure limits are exceeded, irritation or other symptoms are experienced, use a full-face respirator.

#### Thermal hazards

no data available

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## SECTION 9: Physical and chemical properties and safety characteristics

<b>Physical state</b>	PHYSICAL DESCRIPTION: Clear oily yellow liquid with an aromatic odor. (NTP, 1992)
<b>Colour</b>	Not solid @ -18 deg C; oil
<b>Odour</b>	Aromatic odor
<b>Melting point/freezing point</b>	191°C(dec.)(lit.)
<b>Boiling point or initial boiling point and boiling range</b>	160°C/0.5mmHg(lit.)
<b>Flammability</b>	Flammable.
<b>Lower and upper explosion limit/flammability limit</b>	no data available
<b>Flash point</b>	56°C(lit.)
<b>Auto-ignition temperature</b>	no data available
<b>Decomposition temperature</b>	no data available
<b>pH</b>	no data available
<b>Kinematic viscosity</b>	no data available
<b>Solubility</b>	0.1 to 1 mg/mL at 64° F (NTP, 1992)
<b>Partition coefficient n-octanol/water</b>	log Kow= 2.67

<b>Vapour pressure</b>	1.65mmHg at 25°C
<b>Density and/or relative density</b>	1.07
<b>Relative vapour density</b>	no data available
<b>Particle characteristics</b>	no data available

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## **SECTION 10: Stability and reactivity**

### **10.1 Reactivity**

The substance slowly polymerizes at ambient temperatures. The substance more rapidly polymerizes under the influence of heat and under the influence of acidic catalyst.

### **10.2 Chemical stability**

no data available

### **10.3 Possibility of hazardous reactions**

Flammable; flash point: 56 deg C, 2,3-BENZOFURAN slowly polymerizes on standing. It may be sensitive to prolonged exposure to air. This compound is polymerized by H<sub>2</sub>SO<sub>4</sub>. (NTP, 1992)

### **10.4 Conditions to avoid**

no data available

### **10.5 Incompatible materials**

This compound is polymerized by H<sub>2</sub>SO<sub>4</sub>.

### **10.6 Hazardous decomposition products**

no data available

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## **SECTION 11: Toxicological information**

### **Acute toxicity**

- Oral: no data available
- Inhalation: no data available
- Dermal: no data available

### **Skin corrosion/irritation**

no data available

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

no data available

### **Respiratory or skin sensitization**

no data available

### **Germ cell mutagenicity**

no data available

### **Carcinogenicity**

Evaluation: There is inadequate evidence in humans for the carcinogenicity of benzofuran. There is sufficient evidence in experimental animals for the carcinogenicity of benzofuran. Overall evaluation: Benzofuran is possibly carcinogenic to humans (Group 2B).

### **Reproductive toxicity**

no data available

### **STOT-single exposure**

no data available

### **STOT-repeated exposure**

The substance may have effects on the kidneys and liver. This substance is possibly carcinogenic to humans.

### **Aspiration hazard**

No indication can be given about the rate at which a harmful concentration of this substance in the air is reached on evaporation at 20°C.

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## **SECTION 12: Ecological information**

### **12.1 Toxicity**

- Toxicity to fish: no data available
- Toxicity to daphnia and other aquatic invertebrates: no data available
- Toxicity to algae: no data available
- Toxicity to microorganisms: no data available

### **12.2 Persistence and degradability**

**AEROBIC:** Benzofuran has been shown to biodegrade in the presence of creosote-adapted microorganisms(SRC). Benzofuran biodegraded using a enriched culture from a creosote contaminated site(1) where biodegradation of benzofuran was enhanced by the degradation of other creosote compounds(1). Benzofuran was completely removed in combination with toluene, p-xylene, m-xylene, naphthalene, 1-methylnaphthalene within the first 12 days of incubation, compared with a 7% loss in the acidified control microcosm(1). After 27 days, complete removal of benzofuran was observed in combination with other primary creosote substituents except 1-methylnaphthalene where 95% removal was observed(1). In a study using aerobic groundwater microcosms, benzofuran at 3.3 mg/l degraded completely after 95 days (lag period = 70 days) from an aquifer contaminated with creosote compounds while from a background aquifer, benzofuran degraded after 285 days (lag period = 278 days)(2).

### **12.3 Bioaccumulative potential**

The BCF of benzofuran in guppies exposed to 100-250 ul of a hetero PAH in 3 liters of 1:1 tapwater/deionized water for 48 hours was 360(1). According to a classification scheme(2), this BCF suggests bioconcentration in aquatic organisms is moderate(SRC).

### **12.4 Mobility in soil**

The Koc of benzofuran is estimated as 680(SRC), using a log Kow of 2.67(1) and a regression-derived equation(2). According to a classification scheme(3), this estimated Koc value suggests that benzofuran is expected to have low mobility in soil(SRC). Sorption of creosote compounds (including benzofuran) were measured on natural clayey till soil column(4). A Kd of 1.4 l/kg was measured for benzofuran (in presence of other creosote compounds) with a time for 50% breakthrough on the column nearly equivalent to non-adsorbing bromide ions (e.g., 37 days)(4). This data suggests that benzofuran is weakly sorbed on clayey till soil(SRC).

### **12.5 Other adverse effects**

no data available

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## **SECTION 13: Disposal considerations**

### **13.1 Disposal methods**

#### **Product**

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

#### **Contaminated packaging**

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and

then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

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## SECTION 14: Transport information

### 14.1 UN Number

ADR/RID: UN1993 (For reference only, please check.)      IMDG: UN1993 (For reference only, please check.)      IATA: UN1993 (For reference only, please check.)

### 14.2 UN Proper Shipping Name

ADR/RID: FLAMMABLE LIQUID, N.O.S. (For reference only, please check.)      IMDG: FLAMMABLE LIQUID, N.O.S. (For reference only, please check.)      IATA: FLAMMABLE LIQUID, N.O.S. (For reference only, please check.)

### 14.3 Transport hazard class(es)

ADR/RID: 3 (For reference only, please check.)      IMDG: 3 (For reference only, please check.)      IATA: 3 (For reference only, please check.)

### 14.4 Packing group, if applicable

ADR/RID: I (For reference only, please check.)      IMDG: I (For reference only, please check.)      IATA: I (For reference only, please check.)

### 14.5 Environmental hazards

ADR/RID: No      IMDG: No      IATA: No

### 14.6 Special precautions for user

no data available

### 14.7 Transport in bulk according to IMO instruments

no data available

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## SECTION 15: Regulatory information

### 15.1 Safety, health and environmental regulations specific for the product in question

Chemical name	Common names and synonyms	CAS number	EC number
Benzofuran	Benzofuran	271-89-6	205-982-6
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
EC Inventory			Listed.
United States Toxic Substances Control Act (TSCA) Inventory			Listed.
China Catalog of Hazardous chemicals 2015			Listed.
New Zealand Inventory of Chemicals (NZIoC)			Listed.
Philippines Inventory of Chemicals and Chemical Substances (PICCS)			Listed.
Vietnam National Chemical Inventory			Listed.
Chinese Chemical Inventory of Existing Chemical Substances (China IECSC)			Listed.
Korea Existing Chemicals List (KECL)			Not Listed.

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## SECTION 16: Other information

### Information on revision

Creation Date      July 15, 2019  
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## 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

- IPCS - The International Chemical Safety Cards (ICSC), website: <http://www.ilo.org/dyn/icsc/showcard.home>
- HSDB - Hazardous Substances Data Bank, website: <https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>
- IARC - International Agency for Research on Cancer, website: <http://www.iarc.fr/>
- 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)
- CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>
- ChemIDplus, website: <http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>
- ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: <http://www.phmsa.dot.gov/hazmat/library/erg>
- Germany GESTIS-database on hazard substance, website: <http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp>
- ECHA - European Chemicals Agency, website: <https://echa.europa.eu/>

## Other Information

Explosive limits are unknown in literature, although the substance is combustible and has a flash point < 61°C. Do NOT take working clothes home. Insufficient data are available on the effect of this substance on human health, therefore utmost care must be taken.

**Any questions regarding this SDS, Please send your inquiry to [sds@xixisys.com](mailto:sds@xixisys.com)**

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*Disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. We as supplier shall not be held liable for any damage resulting from handling or from contact with the above product.*