

# 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                    Benzonitrile

### 1.2 Other means of identification

Product number                -  
Other names                    Benzonitrile

### 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

Acute toxicity - Category 4, Oral  
Acute toxicity - Category 4, Dermal

### 2.2 GHS label elements, including precautionary statements

Pictogram(s)



Signal word                    Warning  
Hazard statement(s)        H302 Harmful if swallowed  
                                      H312 Harmful in contact with skin  
Precautionary statement(s)  
Prevention                    P264 Wash ... thoroughly after handling.

<b>Response</b>	P270 Do not eat, drink or smoke when using this product. P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/... P301+P317 IF SWALLOWED: Get medical help. P330 Rinse mouth. P302+P352 IF ON SKIN: Wash with plenty of water/... P317 Get medical help. P321 Specific treatment (see ... on this label). P362+P364 Take off contaminated clothing and wash it before reuse.
<b>Storage</b>	none
<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
Benzonitrile	Benzonitrile	100-47-0	202-855-7	100%

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## SECTION 4: First-aid measures

### 4.1 Description of necessary first-aid measures

#### If inhaled

Fresh air, rest. Artificial respiration may be needed. Refer for medical attention.

#### Following skin contact

Remove contaminated clothes. Rinse skin with plenty of water or shower. Refer for medical attention .

#### Following eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

#### Following ingestion

Rinse mouth. Rest. Refer for medical attention .

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

Benzonitrile may enter the human body by ingestion, absorption through the skin, or inhalation. The earliest symptoms of cyano compound intoxication may be weakness, headaches, confusion, and occasionally nausea and vomiting. The respiratory rate and depth will usually be increased at the beginning and at later stages become slow and gasping. Blood pressure is usually normal, especially in the mild or moderately severe cases, although the pulse rate is usually more rapid than normal. (USCG, 1999)

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

Immediate first aid: Ensure that adequate decontamination has been carried out. If patient is not breathing, start artificial respiration, preferably with a demand-valve resuscitator, bag-valve-mask device, or pocket mask, as trained. Perform CPR as necessary. Immediately flush contaminated eyes with gently flowing water. Do not induce vomiting. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain an open airway and prevent aspiration. Keep patient quiet and maintain normal body temperature. Obtain medical attention. Cyanide and related compounds

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

### **5.1 Suitable extinguishing media**

Foam, dry chemical, carbon dioxide. Water may be ineffective. Cool exposed containers with water. Wear goggles & self-contained breathing apparatus.

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

Special Hazards of Combustion Products: Toxic hydrogen cyanide and oxides of nitrogen may form in fire. (USCG, 1999)

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

Use powder, AFFF, foam, 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**

Personal protection: chemical protection suit including self-contained breathing apparatus. Do NOT let this chemical enter the environment. Collect leaking liquid in sealable containers. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

### **6.2 Environmental precautions**

Personal protection: chemical protection suit including self-contained breathing apparatus. Do NOT let this chemical enter the environment. Collect leaking liquid in sealable containers. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

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

Remove all ignition sources. Ventilate area of spill or leak. Absorb liquids in vermiculite, dry sand, earth, or a similar material and deposit in sealed containers. It may be necessary to contain and dispose of this chemical as a hazardous waste.

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

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

NO open flames. Above 75°C use a closed system and ventilation. 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**

Separated from food and feedstuffs. Well closed. Keep in a well-ventilated room. Conditions for safe storage, including any incompatibilities: Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Hygroscopic: Handle and store under inert gas.

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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 safety goggles or eye protection in combination with breathing protection.

#### Skin protection

Protective gloves. Protective clothing.

#### Respiratory protection

Use ventilation, local exhaust or breathing protection.

#### Thermal hazards

no data available

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

<b>Physical state</b>	Liquid.
<b>Colour</b>	Colourless.
<b>Odour</b>	Odor of volatile oil of almond
<b>Melting point/freezing point</b>	-12.75 °C. Remarks:Melting Point.;-12.8 °C. Remarks:Freezing point.;-12.75°C. Remarks:Freezing point.
<b>Boiling point or initial boiling point and boiling range</b>	190.7 °C. Remarks:No further details.
<b>Flammability</b>	Combustible. Gives off irritating or toxic fumes (or gases) in a fire.
<b>Lower and upper explosion limit/flammability limit</b>	no data available
<b>Flash point</b>	66 °C.
<b>Auto-ignition temperature</b>	615 °C.
<b>Decomposition temperature</b>	no data available
<b>pH</b>	no data available
<b>Kinematic viscosity</b>	kinematic viscosity (in mm <sup>2</sup> /s) = 1.054. Temperature:37.78°C.
<b>Solubility</b>	1 to 5 mg/mL at 73° F (NTP, 1992)
<b>Partition coefficient n-octanol/water</b>	log Pow = 1.5. Temperature:20 °C. Remarks:PH of the water phases and the saturated buffer solutions.;Pow = 35. Temperature:20 °C. Remarks:PH of the water phases and the saturated buffer solutions.
<b>Vapour pressure</b>	Ca. 0.18 hPa. Temperature:Ca. 0 °C.;Ca. 0.38 hPa. Temperature:Ca. 10 °C.;Ca. 0.78 hPa. Temperature:Ca. 20 °C.
<b>Density and/or relative density</b>	1.01 g/L.
<b>Relative vapour density</b>	3.6 (NTP, 1992) (Relative to Air)
<b>Particle characteristics</b>	no data available

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## SECTION 10: Stability and reactivity

### 10.1 Reactivity

Decomposes on heating and on burning. This produces toxic fumes including hydrogen cyanide and nitrogen oxides. Reacts violently with strong acids. This produces highly toxic hydrogen cyanide. Attacks some plastics.

### 10.2 Chemical stability

Stable under recommended storage conditions.

### 10.3 Possibility of hazardous reactions

Combustible but burns with difficulty. The cyano group can be readily hydrolyzed in the presence of mineral acids to produce stable, moderately toxic benzoic acid. When heated to decomposition, it emits highly toxic fumes of nitrogen oxides and hydrogen cyanide [Sax, 9th ed., 1996, p. 353].

### 10.4 Conditions to avoid

no data available

### 10.5 Incompatible materials

Strong acids which can liberate hydrogen cyanide. Forms explosive mixture with air.

### 10.6 Hazardous decomposition products

When heated to decomp it emits toxic fumes of /cyanides and nitrogen oxides/.

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## SECTION 11: Toxicological information

### Acute toxicity

- Oral: LD50 - rat (male/female) - 1 000.
- Inhalation: LC0 - rat (male/female) - 0.8 mg/L air.
- Dermal: LD50 - rabbit (male/female) - 1 400 mg/kg bw.

### 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

no data available

### Reproductive toxicity

no data available

### STOT-single exposure

The substance is irritating to the eyes, skin and respiratory tract. The substance may cause effects on the cellular respiration. This may result in cyanosis. The effects may be delayed. Medical observation is indicated.

### STOT-repeated exposure

no data available

### 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: TLm - Pimephales promelas - 116 mg/L - 24 h.
- Toxicity to daphnia and other aquatic invertebrates: EC50; Species: Daphnia magna (Water Flea) age < or =24 hr; Conditions: freshwater, static, 20-22 deg C, pH 7.6-7.7;

Concentration: 200000 ug/L for 24 hr; Effect: intoxication, immobilization /formulation

- Toxicity to algae: *Scenedesmus quadricauda* - 75 mg/L.
- Toxicity to microorganisms: no data available

## 12.2 Persistence and degradability

AEROBIC: Benzonitrile, present at 100 mg/L, reached 63.4% of its theoretical BOD in 2 weeks using an activated sludge inoculum at 30 mg/L in the Japanese MITI test(1). Other screening studies give similar results (63.4-80.8%) and benzonitrile is confirmed to be biodegradable according to the standard test of the Japanese Ministry of Industry and Trade (MITI) that employs a mixed inoculum obtained from freshwater, soil, and sludge(2-4). The theoretical oxygen demand (ThOD) for benzonitrile in Ohio River Water from Cincinnati and/or aged sewage sludge were 0, 60, 90% and/or 0, 40, 80% after 2, 5, and 12 days, respectively(5). The BOD for benzonitrile in a bench-scale activated sludge unit was measured to be 93-98%(6). The BOD for benzonitrile in river water, present at 50 ppm, was 7%(7). Benzonitrile achieved 100% degradation after 280 minutes in a phosphate buffer solution in the soil and after 500 minutes in a soil slurry(8). Benzonitrile also achieved 20% and 44% in ash and ash-amended soil slurries at 2000 minutes, respectively(8). Benzonitrile achieved 88% degradation after 8, 10, and 12.5 hours in char-amended soil, soil and washed-char-amended soil slurries(9).

## 12.3 Bioaccumulative potential

An estimated BCF of 5 was calculated in fish for benzonitrile(SRC), using a measured log Kow of 1.56(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC).

## 12.4 Mobility in soil

The Koc of benzonitrile is estimated as 150(SRC), using a log Kow of 1.56(1) and a regression-derived equation(2). According to a classification scheme(3), this estimated Koc value suggests that benzonitrile is expected to have moderate mobility in 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: UN2224 (For reference only, please check.)

IMDG: UN2224 (For reference only, please check.)

IATA: UN2224 (For reference only, please check.)

## 14.2 UN Proper Shipping Name

ADR/RID: BENZONITRILE (For reference only, please check.)

IMDG: BENZONITRILE (For reference only, please check.)

IATA: BENZONITRILE (For reference only, please check.)

### 14.3 Transport hazard class(es)

ADR/RID: 6.1 (For reference only, please check.)

IMDG: 6.1 (For reference only, please check.)

IATA: 6.1 (For reference only, please check.)

### 14.4 Packing group, if applicable

ADR/RID: II (For reference only, please check.)

IMDG: II (For reference only, please check.)

IATA: II (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
Benzonitrile	Benzonitrile	100-47-0	202-855-7
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)			Listed.

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## SECTION 16: Other information

### Information on revision

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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**

Specific treatment is necessary in case of poisoning with this substance; the appropriate means with instructions must be available.

**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.*