

# SAFETY DATA SHEETS

According to the UN GHS revision 9

Version: 1.0  
Creation Date: July 15, 2019  
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## SECTION 1: Identification

### 1.1 GHS Product identifier

**Product name** 3-hydroxypropiononitrile

### 1.2 Other means of identification

**Product number** -  
**Other names** Ethylene Cyanohydrin; Hydracrylonitrile; Propanenitrile, 3-hydroxy-

### 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 Yansheng Internet Technology Co., Ltd  
**Address** 513, A3 / F, green space future center, Fengxian District, Shanghai, 201400, China  
**Telephone** +86-4000-6969-66

### 1.5 Emergency phone number

**Emergency phone number** +86-4000-6969-66  
**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

Not classified.

### 2.2 GHS label elements, including precautionary statements

**Pictogram(s)** No symbol.  
**Signal word** No signal word  
**Hazard statement(s)** none  
**Precautionary statement(s)**  
**Prevention** none  
**Response** none  
**Storage** none  
**Disposal** none

### 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
3-hydroxypropiononitrile	3-hydroxypropiononitrile	109-78-4	203-704-8	100%

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## SECTION 4: First-aid measures

### 4.1 Description of necessary first-aid measures

#### If inhaled

Fresh air, rest.

#### Following skin contact

Rinse skin with plenty of water or shower.

#### 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.

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

Liquid causes eye irritation. If swallowed, may cause severe kidney injury. (USCG, 1999)

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

no data available

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## SECTION 5: Fire-fighting measures

### 5.1 Suitable extinguishing media

Use water spray, dry chemical, "alcohol resistant" foam, or carbon dioxide. Water or foam may cause frothing. Use water spray to keep fire-exposed containers cool. Fight fire from protected location or maximum possible distance. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products.

### 5.2 Specific hazards arising from the chemical

Special Hazards of Combustion Products: Toxic gases are generated when heated. Behavior in Fire: Decomposes, generating toxic gases (USCG, 1999)

### 5.3 Special protective actions for fire-fighters

Use powder, alcohol-resistant foam, carbon dioxide.

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## SECTION 6: Accidental release measures

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

Personal protection: filter respirator for organic gases and vapours adapted to the airborne concentration of the substance. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

### 6.2 Environmental precautions

Personal protection: filter respirator for organic gases and vapours adapted to the airborne concentration of the substance. Collect leaking and spilled liquid in sealable containers as far as possible. 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

Stop or control the leak, if this can be done without undue risk. Use water spray to cool and disperse vapors, protect personnel, and dilute spills to form nonflammable mixtures. Absorb in noncombustible material for proper disposal.

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## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

NO open flames. 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 acids, bases and oxidants. Cool. Dry. Keep in a well-ventilated room. Store in a cool, dry, well-ventilated location. Separate from oxidizing materials. Outside or detached storage is preferred.

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## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

#### Occupational Exposure limit values

Component	3-hydroxypropiononitrile			
CAS No.	109-78-4			
	Limit value - Eight hours		Limit value - Short term	
	ppm	mg/m <sup>3</sup>	ppm	mg/m <sup>3</sup>
Latvia		10		
	Remarks			

#### 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.

#### Skin protection

Protective gloves.

#### Respiratory protection

Use ventilation.

#### Thermal hazards

no data available

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

Physical state	Liquid.
Colour	Clear, colourless to yellowish.
Odour	no data available
Melting point/freezing	-51 °C. Atm. press.: 1 020 hPa. Remarks: Measured at ambient

<b>point</b>	atmospheric pressure.
<b>Boiling point or initial boiling point and boiling range</b>	228 °C. Atm. press.:1 020 hPa. Remarks:Measured at ambient atmospheric pressure.
<b>Flammability</b>	Combustible. Gives off irritating or toxic fumes (or gases) in a fire.
<b>Lower and upper explosion limit/flammability limit</b>	Lower flammable limit: 2.3% by volume; Upper flammable limit: 12.1% by volume
<b>Flash point</b>	129 °C. Atm. press.:1 013 hPa.
<b>Auto-ignition temperature</b>	494 °C. Atm. press.:No data, atmospheric press. assumed. Remarks:No data available.
<b>Decomposition temperature</b>	228°C
<b>pH</b>	3 - 4.5.
<b>Kinematic viscosity</b>	no data available
<b>Solubility</b>	greater than or equal to 100 mg/mL at 68° F (NTP, 1992)
<b>Partition coefficient n-octanol/water</b>	log Pow = -0.94. Temperature:25 °C. Remarks:No pH data available.
<b>Vapour pressure</b>	0.02 hPa. Temperature:20 °C. Remarks:The vapour pressure at 20 °C was calculated by mathematical extrapolation using the Antoine equation.
<b>Density and/or relative density</b>	1.06 g/cm <sup>3</sup> . Temperature:0 °C.
<b>Relative vapour density</b>	2.5 (vs air)
<b>Particle characteristics</b>	no data available

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## SECTION 10: Stability and reactivity

### 10.1 Reactivity

The substance may polymerize under the influence of organic bases. Decomposes on heating and on contact with acids, acid fumes and water. This produces highly toxic fumes including hydrogen cyanide. Reacts violently with strong oxidants.

### 10.2 Chemical stability

no data available

### 10.3 Possibility of hazardous reactions

DANGEROUS, WHEN EXPOSED TO HEAT OR FLAME. ...WILL REACT WITH WATER OR STEAM TO PRODUCE...FLAMMABLE VAPORS.ETHYLENE CYANOHYDRIN reacts violently with mineral acids, amines and inorganic bases. It also reacts violently with chlorosulfonic acid, sulfuric acid, oleum and sodium hydroxide. It is incompatible with bases, oxidizing agents, moisture and heat. It is corrosive to mild steel. (NTP, 1992)

### 10.4 Conditions to avoid

no data available

### 10.5 Incompatible materials

Will react with water or steam to produce toxic...vapors; can react vigorously with oxidizing materials

### 10.6 Hazardous decomposition products

When heated or on contact with acid or acid fumes, it emits highly toxic fumes of cyanides.

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## SECTION 11: Toxicological information

### Acute toxicity

- Oral: LD50 Rabbit oral 0.9 to 1.4 g/kg
- Inhalation: inhalation - rat (male).

- 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**

no data available

#### **Reproductive toxicity**

no data available

#### **STOT-single exposure**

The substance is irritating to the eyes and skin.

#### **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: LC50 - Danio rerio (previous name: Brachydanio rerio) - > 10 000 mg/L - 96 h. Remarks:- No mortality observed in the fish population at a test concentration of 10000 mg/l.
- Toxicity to daphnia and other aquatic invertebrates: EC50 - Daphnia magna - > 100 mg/L - 48 h.
- Toxicity to algae: EC50 - Desmodesmus subspicatus (previous name: Scenedesmus subspicatus) - > 100 mg/L - 72 h.
- Toxicity to microorganisms: EC50 - activated sludge of a predominantly domestic sewage - > 10 000 mg/L - 30 min. Remarks:Respiration rate.

### **12.2 Persistence and degradability**

AEROBIC: Ethylene cyanohydrin 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(1).

### **12.3 Bioaccumulative potential**

An estimated BCF of 3.2 was calculated for ethylene cyanohydrin(SRC), using a log Kow of -0.94(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.

### **12.4 Mobility in soil**

Using a structure estimation method based on molecular connectivity indices(1), the Koc for ethylene cyanohydrin can be estimated to be about 1(SRC). According to a classification scheme(2), this estimated Koc value suggests that ethylene cyanohydrin is expected to have very high mobility in soil.

### **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: Not dangerous goods. (For reference only, please check.)

IMDG: Not dangerous goods. (For reference only, please check.)

IATA: Not dangerous goods. (For reference only, please check.)

### 14.2 UN Proper Shipping Name

ADR/RID: Not dangerous goods. (For reference only, please check.)

IMDG: Not dangerous goods. (For reference only, please check.)

IATA: Not dangerous goods. (For reference only, please check.)

### 14.3 Transport hazard class(es)

ADR/RID: Not dangerous goods. (For reference only, please check.)

IMDG: Not dangerous goods. (For reference only, please check.)

IATA: Not dangerous goods. (For reference only, please check.)

### 14.4 Packing group, if applicable

ADR/RID: Not dangerous goods. (For reference only, please check.)

IMDG: Not dangerous goods. (For reference only, please check.)

IATA: Not dangerous goods. (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
3-hydroxypropiononitrile	3-hydroxypropiononitrile	109-78-4	203-704-8
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
EC Inventory			Listed.

<b>United States Toxic Substances Control Act (TSCA) Inventory</b>	Listed.
<b>China Catalog of Hazardous chemicals 2015</b>	Not Listed.
<b>New Zealand Inventory of Chemicals (NZIoC)</b>	Listed.
<b>Philippines Inventory of Chemicals and Chemical Substances (PICCS)</b>	Listed.
<b>Vietnam National Chemical Inventory</b>	Listed.
<b>Chinese Chemical Inventory of Existing Chemical Substances (China IECSC)</b>	Listed.
<b>Korea Existing Chemicals List (KECL)</b>	Listed.

## 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

This substance is less hazardous than some other nitriles which easily form hydrogen cyanide in the body.

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

*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.*