

## Chemical Safety Data Sheet MSDS / SDS

**2-HYDROXYPROPIONITRILE**Revision Date:2023-05-13 Revision Number:1

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

Product name : 2-HYDROXYPROPIONITRILE  
CBnumber : CB9446861  
CAS : 42492-95-5  
EINECS Number : 255-852-8  
Synonyms : 2-HYDROXYPROPIONITRILE,DL-lactonitrile

**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

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**SECTION 2: Hazards identification****Classification of the substance or mixture**

Acute toxicity - Category 3, Oral  
Acute toxicity - Category 2, Dermal  
Acute toxicity - Category 3, Inhalation

**Label elements****Pictogram(s)**

□

Signal word Danger

**Hazard statement(s)**

H301 Toxic if swallowed  
H310 Fatal in contact with skin  
H331 Toxic if inhaled

**Precautionary statement(s)****Prevention**

P264 Wash ... thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P262 Do not get in eyes, on skin, or on clothing.

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

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P271 Use only outdoors or in a well-ventilated area.

#### **Response**

P301+P316 IF SWALLOWED: Get emergency medical help immediately.

P321 Specific treatment (see ... on this label).

P330 Rinse mouth.

P302+P352 IF ON SKIN: Wash with plenty of water/...

P316 Get emergency medical help immediately.

P361+P364 Take off immediately all contaminated clothing and wash it before reuse.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

#### **Storage**

P405 Store locked up.

P403+P233 Store in a well-ventilated place. Keep container tightly closed.

#### **Disposal**

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.

#### **Other hazards**

no data available

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## SECTION 3: Composition/information on ingredients

### **Substance**

Product name	: 2-HYDROXYPROPIONITRILE
Synonyms	: 2-HYDROXYPROPIONITRILE,DL-lactonitrile
CAS	: 42492-95-5
EC number	: 255-852-8
MF	: C3H5NO
MW	: 71.08

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## SECTION 4: First aid measures

### **Description of 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.

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

Extremely toxic by oral, skin, or eye contact. (EPA, 1998)

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

Rapid support of respiration and circulation is essential to successful treatment of cyanide intoxication. Massive cyanide overdoses have survived with only good supportive care. Immediate attention should be directed toward assisted ventilation, administration of 100% oxygen, insertion of intravenous lines, and institution of cardiac monitoring. Obtain an arterial blood gas immediately and correct any severe metabolic acidosis (pH below 7.15). Oxygen (100%) should be used routinely in moderate or severely symptomatic patients even in the presence of a normal pO<sub>2</sub>, since 100% O<sub>2</sub> increases O<sub>2</sub> delivery, may reactivate cyanide-inhibited mitochondrial enzymes, and potentiates the effect of thiosulfate. Avoid mouth to mouth resuscitation during CPR in order to prevent self poisoning. Cyanides

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## SECTION 5: Firefighting measures

**Extinguishing media**

Foam, carbon dioxide, dry chemical. (EPA, 1998)

**Specific Hazards Arising from the Chemical**

Cyanide fumes released when heated to decomposition. Avoid alkali, oxidizing material. (EPA, 1998)

**Advice for firefighters**

Wear self-contained breathing apparatus for firefighting if necessary.

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## SECTION 6: Accidental release measures

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

Avoid dust formation. Avoid breathing mist, gas or vapours. Avoid contacting with skin and eye. Use personal protective equipment. Wear chemical impermeable gloves. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

**Environmental precautions**

Prevent further spillage or leakage if it is safe to do so. Do not let the chemical enter drains. Discharge into the environment must be avoided.

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

Collect and arrange disposal. Keep the chemical in suitable and closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment. Adhered or collected material should be promptly disposed of, in accordance with appropriate laws and regulations.

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## SECTION 7: Handling and storage

### Precautions for safe handling

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.

### Conditions for safe storage, including any incompatibilities

Store the container tightly closed in a dry, cool and well-ventilated place. Store apart from foodstuff containers or incompatible materials.

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## SECTION 8: Exposure controls/personal protection

### Control parameters

#### Occupational Exposure limit values

no data available

#### Biological limit values

no data available

### Exposure controls

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

### Individual protection measures

#### Eye/face protection

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

#### Skin protection

Wear fire/flammable 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

### Information on basic physicochemical properties

Physical state	Straw colored liquid. Used as a solvent /intermediate in production of ethyl lactate and lactic acid. (EPA, 1998)
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Colour	YELLOW LIQUID
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Odour	no data available
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Melting point/freezing point	-40°C
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Boiling point or initial boiling point and	90°C/17 mm Hg(lit.)
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boiling range	
Flammability	no data available
Lower and upper explosion	no data available
limit/flammability limit	
Flash point	64.7°C
Auto-ignition temperature	no data available
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	no data available
Solubility	greater than or equal to 100 mg/mL at 73° F (NTP, 1992)
Partition coefficient n-octanol/water	log Kow= -0.94
Vapour pressure	10 mm Hg at 165.2° F (EPA, 1998)
Density and/or relative density	0.991 g/mL at 20°C(lit.)
Relative vapour density	2.45 (EPA, 1998) (Relative to Air)
Particle characteristics	no data available

## SECTION 10: Stability and reactivity

### Reactivity

no data available

### Chemical stability

no data available

### Possibility of hazardous reactions

IT HAS MODERATE FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME ...LACTONITRILE is incompatible with strong acids, strong bases and strong reducing agents. It is also incompatible with strong oxidizers. In the presence of alkali, it evolves toxic compounds. (NTP, 1992).

### Conditions to avoid

no data available

### Incompatible materials

Evolves hydrocyanic acid in presence of alkali.

### Hazardous decomposition products

When heated to decomp, it releases highly toxic cyanide fumes.

## SECTION 11: Toxicological information

### Acute toxicity

- Oral: LD50 Rat oral 21 mg/kg
- 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**

no data available

### **Reproductive toxicity**

no data available

### **STOT-single exposure**

no data available

### **STOT-repeated exposure**

no data available

### **Aspiration hazard**

no data available

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## **SECTION 12: Ecological information**

### **Toxicity**

Toxicity to fish: TLm *Pimephales promelas* (fathead minnow) 0.9 mg/l/96 hr. /Conditions of bioassay not specified

Toxicity to daphnia and other aquatic invertebrates: no data available

Toxicity to algae: no data available

Toxicity to microorganisms: no data available

### **Persistence and degradability**

**AEROBIC:** The relatively low molecular weight hydrocarbon structure of 2-hydroxypropanenitrile suggests that biodegradation in soil and water is expected to be an important fate process(1). One screening study has demonstrated that 2-hydroxypropanenitrile was readily degraded in Ohio River water in the US(2), although this process could have been hydrolysis. Using Ohio River water as inoculum (with no special acclimation) and an aerobic test system, theoretical BODs of 50% and 70% were measured for 2-hydroxypropanenitrile after 2 and 5 day inoculation periods, respectively, at concns of 0.4-15 mg/l(2); re-dosing the system resulted in a 60% theoretical BOD(2). An activated sludge system that was acclimated to 2-hydroxypropanenitrile experienced a 87-98% BOD removal over a 4 week operation period while receiving influent 2-hydroxypropanenitrile levels that averaged 88 mg/l(3).

## Bioaccumulative potential

An estimated BCF of 3 was calculated for 2-hydroxypropanenitrile(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. 2-Hydroxypropanenitrile hydrolyzes in water(4) which suggests that bioconcentration in aquatic organisms should not be environmentally important(SRC).

## Mobility in soil

Using a structure estimation method based on molecular connectivity indices(1), the Koc for 2-hydroxypropanenitrile can be estimated to be about 1(SRC). According to a classification scheme(2), this estimated Koc value suggests that 2-hydroxypropanenitrile is expected to have very high mobility in soil. 2-Hydroxypropanenitrile hydrolyzes in water(3) which suggests that leaching in soil is likely to occur(SRC).

## Other adverse effects

no data available

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# SECTION 13: Disposal considerations

## 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

## UN Number

ADR/RID: UN3276 (For reference only, please check.)

IMDG: UN3276 (For reference only, please check.)

IATA: UN3276 (For reference only, please check.)

## UN Proper Shipping Name

ADR/RID: NITRILES, LIQUID, TOXIC, N.O.S. (For reference only, please check.)

IMDG: NITRILES, LIQUID, TOXIC, N.O.S. (For reference only, please check.)

IATA: NITRILES, LIQUID, TOXIC, N.O.S. (For reference only, please check.)

## 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.)

**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.)

**Environmental hazards**

ADR/RID: No

IMDG: No

IATA: No

**Special precautions for user**

no data available

**Transport in bulk according to IMO instruments**

no data available

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## SECTION 15: Regulatory information

**Safety, health and environmental regulations specific for the product in question****European Inventory of Existing Commercial Chemical Substances (EINECS)**

Listed.

**EC Inventory**

Listed.

**United States Toxic Substances Control Act (TSCA) Inventory**

Not Listed.

**China Catalog of Hazardous chemicals 2015**

Not Listed.

**New Zealand Inventory of Chemicals (NZIoC)**

Not Listed.

**PICCS**

Not Listed.

**Vietnam National Chemical Inventory**

Not Listed.

**IECSC**

Not Listed.

**Korea Existing Chemicals List (KECL)**

Not 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

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?pageSize=0&request\\_locale=en](http://www.echemportal.org/echemportal/index?pageSize=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/>

### 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.