

Chemical Safety Data Sheet MSDS / SDS

2-HYDROXYPROPIONITRILERevision Date:2026-05-31 Revision Number:1

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 : Acetaldehyde Cyanohydrin,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

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

SECTION 3: Composition/information on ingredients

Substance

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

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 pO₂, since 100% O₂ increases O₂ 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

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.

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.

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.

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/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

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)
Colour	YELLOW LIQUID
Odour	no data available
Melting point/freezing point	-40°C
Boiling point or initial boiling point and	90°C/17 mm Hg(lit.)

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

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

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.

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

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.

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?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/>

Disclaimer:

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