Chemical Safety Data Sheet MSDS / SDS

Propiononitrile SDS

Revision Date:2024-04-25 Revision Number:1

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

Product identifier

Product name: Propiononitrile

CAS: 107-12-0

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.in

Address: 5 vasavi Layout Basaveswara Nilayam Pragathi Nagar Hyderabad, India -500090

Telephone: +91 9550333722

SECTION 2: Hazards identification

Classification of the substance or mixture

Flammable liquids, Category 2
Acute toxicity - Category 2, Oral

Acute toxicity - Category 2, Dermal
Eye irritation, Category 2
Acute toxicity - Category 4, Inhalation

GHS label elements, including precautionary statements

Pictogram(s)

Signal word Danger

Hazard statement(s)

H225 Highly flammable liquid and vapour
H300 Fatal if swallowed
H310 Fatal in contact with skin
H319 Causes serious eye irritation
H332 Harmful if inhaled

Precautionary statement(s)

Prevention

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/...
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.
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P271 Use only outdoors or in a well-ventilated area.

Response

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.
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.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P317 Get medical help.

Storage

P403+P235 Store in a well-ventilated place. Keep cool.
P405 Store locked up.

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 which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

Substance

Chemical name:	Propiononitrile
Common names and synonyms:	Propiononitrile
CAS number:	107-12-0
EC number:	203-464-4
Concentration:	100%

SECTION 4: First aid measures

Description of necessary first-aid measures

If inhaled

Fresh air, rest. Artificial respiration may be needed. No mouth-to-mouth artificial respiration. Refer immediately for medical attention. See Notes.

Following skin contact

Remove contaminated clothes. Rinse skin with plenty of water or shower. Refer immediately 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. Do NOT induce vomiting. Give one or two glasses of water to drink. Refer immediately for medical attention.

Most important symptoms/effects, acute and delayed

It is highly toxic. This super toxic compound has a probable oral lethal dose in humans of less than 5 mg/kg or a taste (less than 7 drops) for a 70 kg (150 lb.) person. It is a mild to moderate skin and eye irritant. (EPA, 1998)

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

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. Cyanides

SECTION 5: Firefighting measures

Suitable extinguishing media

To fight fire, use water spray, foam, mist, carbon dioxide, dry chemical.

Specific hazards arising from the chemical

When heated to decomposition, it emits toxic fumes of nitrogen oxides and cyanide. It is a flammable/combustible material and may be ignited by heat, sparks or flames. Vapors may travel to a source of ignition and flash back. Container may explode in heat of fire. Vapor explosion and poison hazard indoors, outdoors or in sewers. Runoff to sewer may create fire or explosion hazard.

Generates cyanide ions. Poisonous on contact with acids. stable, but may become unstable at elevated temperatures and pressures. (EPA, 1998)

Special protective actions for fire-fighters

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

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Consult an expert! Evacuate danger area! Personal protection: chemical protection suit including self-contained breathing apparatus. Ventilation. Remove all ignition sources. 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.

Environmental precautions

Consult an expert! Evacuate danger area! Personal protection: chemical protection suit including self-contained breathing apparatus. Ventilation. Remove all ignition sources. 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.

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

NO open flames, NO sparks and NO smoking. NO contact with hot surfaces or strong oxidizing agents. Closed system, ventilation, explosion-proof electrical equipment and lighting. Do NOT use compressed air for filling, discharging, or handling. Use non-sparking handtools. 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

Fireproof. Keep in a well-ventilated room. Separated from strong oxidants, acids and food and feedstuffs.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

Component	Propiononitrile			
CAS No.	107-12-0			
	Limit value - Eight hours		Limit value - Short term	
	ppm	mg/m^3	ppm	mg/m^3
USA - NIOSH	6	14	?	?
	Remarks			

Biological limit values

no data available

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.

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

Eye/face protection

Wear face shield 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

SECTION 9: Physical and chemical properties and safety characteristics

Physical state:	Propionitrile is a colorless liquid with an ether-like odor. Density 0.683 g / cm3. Flash point 61°F. Toxic by inhalation, skin absorption, and ingestion. Vapors are heavier than air. Used as a solvent, and to make other chemicals.
Colour:	Colorless liquid
Odour:	Pleasant, sweetish, ethereal odor.
Melting point/freezing point:	-93°C
Boiling point or initial boiling point and boiling range:	97°C
Flammability:	Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.
Lower and upper explosion limit/flammability limit:	Lower flammable limit: 3.1% by volume
Flash point:	6°C
Auto-ignition temperature:	510°C
Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	0.454 cP @ 15 deg C; 0.389 cP @ 30 deg C
Solubility:	50 to 100 mg/mL at 73° F (NTP, 1992)
Partition coefficient n-octanol/water:	log Kow= 0.16
Vapour pressure:	54.2mmHg at 25°C
Density and/or relative density:	0.77

Relative vapour density:	1.9 (EPA, 1998) (Relative to Air)
Particle characteristics:	no data available

SECTION 10: Stability and reactivity

Reactivity

Decomposes on heating or on burning and on contact with hot surfaces. This produces toxic fumes including nitrogen oxides and hydrogen cyanide. Reacts violently with strong oxidants. This generates fire and explosion hazard. Reacts with acids, steam and warm water. This produces toxic and flammable hydrogen cyanide.

Chemical stability

no data available

Possibility of hazardous reactions

DANGEROUS FIRE HAZARD WHEN EXPOSED TO HEAT, FLAME (SPARKS), OXIDIZERS.The vapour mixes well with air, explosive mixtures are easily formed. The vapour is heavier than air and may travel along the ground; distant ignition possible.PROPIONITRILE is incompatible with strong acids, strong bases, strong oxidizing agents and strong reducing agents. After refluxing for 24 hours at 221°F, a mixture of this compound with N-bromosuccinimide exploded. (NTP, 1992)

Conditions to avoid

no data available

Incompatible materials

Strong oxidizers & reducing agents, strong acids & bases [Note: Hydrogen cyanide is produced when propionitrile is heated to decomposition].

Hazardous decomposition products

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

SECTION 11: Toxicological information

Acute toxicity

Oral: LD50 Rat oral 39 mg/kg

Inhalation: LC50 Mice inhalation 163 ppm/60 min

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 moderately irritating to the eyes and skin. The vapour is irritating to the upper respiratory tract. The substance may cause effects on the cellular respiration. This may result in metabolic acidosis, central nervous system depression, cardiac disorders and death. Medical observation is indicated.

STOT-repeated exposure

The substance may have effects on the blood. This may result in anaemia. Ingestion may cause effects on the gastrointestinal tract.

This may result in ulceration. The substance may have effects on the kidneys, liver and thyroid. This may result in impaired functions.

Aspiration hazard

A harmful contamination of the air can be reached rather quickly on evaporation of this substance at 20°C.

SECTION 12: Ecological information

Toxicity

Toxicity to fish: LC50 Pimephales promelas (fathead minnow) 1520 mg/l/96 hr (confidence limit 1450 - 1580 mg/l), flow-through bioassay with measured concentrations, 24.4 deg C, dissolved oxygen 7.3 mg/l, hardness 47.0 mg/l calcium carbonate, alkalinity 40.1 mg/l calcium carbonate, and pH 7.6.

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

The fungal strain Nocardia rhodochrous LL100-21 completely hydrolyzed propionitrile to propionic acid and ammonia.[DiGeronemo MT, Antoine AD; Appl Environ Microbiol 31 (6): 900-6 (1976)] Full text: PMC169854

Bioaccumulative potential

An estimated BCF of 3 was calculated for propionitrile(SRC), using log Kow of 0.16(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).

Mobility in soil

The Koc of propionitrile is estimated as 29(SRC), using a measured log Kow of 0.16(1) and a regression-derived equation(2). According to a classification scheme(3), this estimated Koc value suggests that propionitrile is expected to have very high mobility in soil(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: UN2404 (For reference only, please check.)
IMDG: UN2404 (For reference only, please check.)
IATA: UN2404 (For reference only, please check.)

UN Proper Shipping Name

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

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.)

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.)

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

Listed.

China Catalog of Hazardous chemicals 2015

Listed.

New Zealand Inventory of Chemicals (NZIoC)

Listed.

(PICCS)

Listed.

Vietnam National Chemical Inventory

Listed.

IECSC)

Listed.

Korea Existing Chemicals List (KECL)

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/

Other Information

Specific treatment is necessary in case of poisoning with this substance; the appropriate means with instructions must be available. Oxygen should be administered exclusively by specially trained first aid or medical personnel. Do NOT take working clothes home. The symptoms of lung oedema often do not become manifest until a few hours have passed and they are aggravated by physical effort. Rest and medical observation are therefore essential. See ICSCs 0088, 0492, 0671 and 1118.