Chemical Safety Data Sheet MSDS / SDS

Propionaldehyde 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: Propionaldehyde

CAS: 123-38-6

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

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SECTION 2: Hazards identification

Classification of the substance or mixture

Flammable liquids, Category 2
Skin irritation, Category 2

Eye irritation, Category 2
Specific target organ toxicity – single exposure, Category 3

GHS label elements, including precautionary statements

Pictogram(s)

Signal word Danger

Hazard statement(s)

H225 Highly flammable liquid and vapour
H315 Causes skin irritation
H319 Causes serious eye irritation
H335 May cause respiratory irritation

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.
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.
P302+P352 IF ON SKIN: Wash with plenty of water/...
P321 Specific treatment (see ... on this label).
P332+P317 If skin irritation occurs: Get medical help.
P362+P364 Take off 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.
P319 Get medical help if you feel unwell.

Storage

P403+P235 Store in a well-ventilated place. Keep cool.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.
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:	Propionaldehyde
Common names and synonyms:	Propionaldehyde
CAS number:	123-38-6
EC number:	204-623-0
Concentration:	100%

SECTION 4: First aid measures

Description of necessary first-aid measures

If inhaled

Fresh air, rest. Refer for medical attention.

Following skin contact

Remove contaminated clothes. 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. Give one or two glasses of water to drink. Refer for medical attention .

Most important symptoms/effects, acute and delayed

Vapors will irritate nose and throat, and may cause nausea and vomiting. Liquid causes eye irritation. (USCG, 1999)

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. Aldehydes and Related Compounds

SECTION 5: Firefighting measures

Suitable extinguishing media

A water spray may dilute to a point where combustion will not be supported. Water may be ineffective. Use alcohol foam, carbon dioxide, or dry chemical.

Specific hazards arising from the chemical

Behavior in Fire: Vapor is heavier than air and may travel considerable distance to a source of ignition and flash back. (USCG, 1999)

Special protective actions for fire-fighters

Use water spray, powder, alcohol-resistant foam, carbon dioxide. In case of fire: keep drums, etc., cool by spraying with water.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Remove all ignition sources. Personal protection: filter respirator for organic gases and vapours adapted to the airborne concentration of the substance. Do NOT wash away into sewer. Collect leaking liquid in sealable containers. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

Environmental precautions

Remove all ignition sources. Personal protection: filter respirator for organic gases and vapours adapted to the airborne concentration of the substance. Do NOT wash away into sewer. Collect leaking liquid in sealable containers. 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

Eliminate all ignition sources. stop or control the leak, if this can be without undue risk. Use water spray to cool and disperse vapors, protect personnel, and dilute spills to form nonflammable mixtures. Control runoff and isolate discharged material for proper disposal.

SECTION 7: Handling and storage

Precautions for safe handling

NO open flames, NO sparks and NO smoking. Closed system, ventilation, explosion-proof electrical equipment and lighting. Do NOT use compressed air for filling, discharging, or 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

Fireproof. Separated from acids, bases and oxidants. Cool. Keep in the dark. Store only if stabilized.Store in cool, dry, well-ventilated location. Store away from heat and oxidizers. Outside or detached storage is preferred. Inside storage should be in a standard flammable liquids storage warehouse, room, or cabinet. Separate from oxidizing materials and other reactive hazards.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

TLV: 20 ppm as TWA

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 safety goggles or eye protection in combination with breathing protection.

Skin protection

Protective gloves.

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:	Propionaldehyde is a clear colorless liquid with an overpowering fruity-like odor. Less dense than water. Flash point 15°F. Vapors are heavier than air.
Colour:	Liquid
Odour:	SUFFOCATING, FRUITY
Melting point/freezing point:	-81°C(lit.)
Boiling point or initial boiling point and boiling range:	46-50°C(lit.)

Flammability:	Highly flammable.
Lower and upper explosion limit/flammability limit:	Lower flammable limit: 2.6% by volume; Upper flammable limit: 17% by volume
Flash point:	-40°C
Auto-ignition temperature:	404°F
Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	0.3167 cP at 26.7 deg C
Solubility:	50 to 100 mg/mL at 64° F (NTP, 1992)
Partition coefficient n-octanol/water:	log Kow = 0.59
Vapour pressure:	18.77 psi (55 °C)
Density and/or relative density:	0.805g/mLat 25°C(lit.)
Relative vapour density:	2 (vs air)
Particle characteristics:	no data available

SECTION 10: Stability and reactivity

Reactivity

The substance can presumably form explosive peroxides. The substance may polymerize under the influence of acids, bases, amines and oxidants. This generates fire or explosion hazard. Decomposes on burning. This produces toxic gases and irritating fumes.

Chemical stability

no data available

Possibility of hazardous reactions

Flammable Liquid. The vapour is heavier than air and may travel along the ground; distant ignition possible. PROPIONALDEHYDE may form explosive peroxides. Reacts vigorously with oxidizing agents. Explosive in the form of vapor when exposed to heat or flame [Lewis]. Incompatible with strong bases and strong reducing agents. Vigorous polymerization reaction with methyl methacrylate. Polymerization may also occur in the presence of acids or caustics (NTP, 1992).

Conditions to avoid

no data available

Incompatible materials

Reacts vigorously with oxidizing materials.

Hazardous decomposition products

When heated to decomposition it emits acrid smoke and irritating fumes.

SECTION 11: Toxicological information

Acute toxicity

Oral: LD50 Rat oral 800 to 1,600 mg/kg

Inhalation: LC50 Rat inhalation 26,000 ppm/30 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 information is available on the reproductive or developmental effects of propionaldehyde in humans or animals.

STOT-single exposure

The vapour is irritating to the eyes and respiratory tract. The substance is severely irritating to the eyes and skin.

STOT-repeated exposure

no data available

Aspiration hazard

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

SECTION 12: Ecological information

Toxicity

Toxicity to fish: LC50; Species: Lepomis macrochirus (Bluegill, length 33-75 mm); Conditions: freshwater, static, 23 deg C, pH 7.6-7.9, hardness 55 mg/L CaCO3; Concentration: 130000 ug/L for 96 hr

Toxicity to daphnia and other aquatic invertebrates: no data available

Toxicity to algae: EC50; Species: Pseudokirchneriella subcapitata (Green algae, exponential growth phase, 15000 cells/mL, UTEX 1648); Conditions: static, 24 deg C, dissolved oxygen 1-2 mg/L; Concentration: 11380 ug/L for 48 hr; Effect: decreased photosynthesis

Toxicity to microorganisms: no data available

Persistence and degradability

AEROBIC: Propionaldehyde, present at 100 mg/L, reached 94% of its theoretical BOD in 4 weeks using an activated sludge inoculum at 30 mg/L and the Japanese MITI test(1). Laboratory tests confirm the degradability of propionaldehyde by acclimated sludge and sewage(1-5) with theoretical BODs of 38% in 5 days(2), 100% in 5 hrs(3), and 29% in 24 hrs(4). Propionaldehyde is generally degraded to propionic acid and then further degraded to carbon dioxide and water(5). Six day BOD:ThOD ratios for propionaldehyde ranged from 0.35 to 0.53 using an activated sludge inocula(5). Percentages of ThOD biodegraded after 6, 12, and 24 hrs were 14.4, 24.9, and 28.8, respectively(5).

Bioaccumulative potential

An estimated BCF of 3 was calculated in fish for propionaldehyde(SRC), using a log Kow of 0.59(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 propionaldehyde is estimated as 50(SRC), using a log Kow of 0.59(1) and a regression-derived equation(2). According to a classification scheme(3), this estimated Koc value suggests that propionaldehyde is expected to have very high mobility in soil.

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: UN1275 (For reference only, please check.)
IMDG: UN1275 (For reference only, please check.)
IATA: UN1275 (For reference only, please check.)

UN Proper Shipping Name

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

Check for peroxides prior to distillation; eliminate if found.An added stabilizer or inhibitor can influence the toxicological properties of this substance, consult an expert.