

Chemical Safety Data Sheet MSDS / SDS

Propoxur

Revision Date:2025-08-23 Revision Number:1

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

Product identifier

Product name : Propoxur
CBnumber : CB1348734
CAS : 114-26-1
EINECS Number : 204-043-8
Synonyms : PROPOXUR,PHC

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
Hazardous to the aquatic environment, short-term (Acute) - Category Acute 1
Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 1

Label elements

Pictogram(s)

Signal word : Danger

Hazard statement(s)

H311 Toxic in contact with skin
H410 Very toxic to aquatic life with long lasting effects

Precautionary statement(s)

P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.

Prevention

P264 Wash ... thoroughly after handling.

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

P273 Avoid release to the environment.

Response

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

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

P330 Rinse mouth.

P391 Collect spillage.

Storage

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

no data available

SECTION 3: Composition/information on ingredients

Substance

Product name	: Propoxur
Synonyms	: PROPOXUR,PHC
CAS	: 114-26-1
EC number	: 204-043-8
MF	: C ₁₁ H ₁₅ NO ₃
MW	: 209.24

SECTION 4: First aid measures

Description of first aid measures

If inhaled

Fresh air, rest. Half-upright position. Refer for medical attention. See Notes.

Following skin contact

Remove contaminated clothes. Rinse skin with plenty of water or shower. Refer 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

Give a slurry of activated charcoal in water to drink. Induce vomiting (ONLY IN CONSCIOUS PERSONS!). Rest. Refer for medical attention .
See Notes.

Most important symptoms and effects, both acute and delayed

Exposure Routes: inhalation, skin absorption, ingestion, skin and/or eye contact Symptoms: Miosis, blurred vision; sweating, salivation; abdominal cramps, nausea, diarrhea, vomiting; headache, lassitude (weakness, exhaustion), muscle twitching Target Organs: central nervous system, liver, kidneys, gastrointestinal tract, blood cholinesterase (NIOSH, 2016)

Indication of any immediate medical attention and special treatment needed

Container identification is important to determine appropriate therapeutic measures, since the vehicle (eg, hydrocarbon, methanol) may be as toxic as the insecticide. ...

SECTION 5: Firefighting measures

Extinguishing media

Use dry chemical, carbon dioxide, water spray, or alcohol foam extinguishers ... If material or contaminated runoff enters waterways, notify downstream users of potentially contaminated waters. Notify local health and fire officials and pollution control agencies. From a secure, explosion-proof location, use water spray to cool exposed containers. If cooling streams are ineffective (venting sound increases in volume and pitch, tank discolors or shows any signs of deforming), withdraw immediately to a secure position ... The only respirators recommended for fire fighting are self-contained breathing apparatuses that have full facepieces and are operated in a pressure-demand or other positive-pressure mode.

Specific Hazards Arising from the Chemical

Excerpt from ERG Guide 151 [Substances - Toxic (Non-combustible)]: Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes. Containers may explode when heated. Runoff may pollute waterways. (ERG, 2016)

Advice for firefighters

Use water spray, foam, powder, carbon dioxide.

NFPA 704

1
2 0

☒ HEALTH 2 Intense or continued but not chronic exposure could cause temporary incapacitation or possible residual injury (e.g. [diethyl ether](#), ammonium phosphate, iodine)

☒ FIRE 1 Materials that require considerable preheating, under all ambient temperature conditions, before ignition and combustion can occur. Includes some finely divided suspended solids that do not require heating before ignition can occur. Flash point at or above 93.3 °C (200 °F). (e.g. [mineral oil](#), ammonia)

☒ REACT 0 Normally stable, even under fire exposure conditions, and is not reactive with water (e.g. helium, [N2](#))

☐ SPEC.
☐ HAZ.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal protection: chemical protection suit including self-contained breathing apparatus. Do NOT let this chemical enter the environment. Sweep spilled substance into sealable containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations.

Environmental precautions

Personal protection: complete protective clothing including self-contained breathing apparatus. Do NOT wash away into sewer. Sweep spilled substance into covered sealable containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations.

Methods and materials for containment and cleaning up

Evacuate persons not wearing protective equipment from area of spill or leak until cleanup is complete. Remove all ignition sources. Collect powdered material in the most convenient and safe manner and deposit in sealed containers. Ventilate area after cleanup is complete. It may be necessary to contain and dispose of this chemical as a hazardous waste. If material or contaminated runoff enters waterways, notify downstream users of potentially contaminated waters. Contact your Department of Environmental Protection or your regional office of the federal EPA for specific recommendations.

SECTION 7: Handling and storage

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.

Conditions for safe storage, including any incompatibilities

Provision to contain effluent from fire extinguishing. Separated from food and feedstuffs. Keep in a well-ventilated room. Store in original container, preferably in locked area, away from children, food, feed.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

TLV: 0.5 mg/m³, as TWA; A3 (confirmed animal carcinogen with unknown relevance to humans); BEI issued. MAK: (inhalable fraction): 2 mg/m³; peak limitation category: II(8)

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 safety spectacles or eye protection in combination with breathing protection if powder.

Skin protection

Protective gloves. Protective clothing.

Respiratory protection

Use local exhaust or breathing protection.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties

Information on basic physicochemical properties

Physical state	Minute Crystals
Colour	Minute crystals
Odour	Odorless
Melting point/freezing point	91°C
Boiling point or initial boiling point and boiling range	295.4°C at 760mmHg
Flammability	Class IIIB Combustible Liquid: Fl.P. at or above 200°F.
Lower and upper explosion limit/flammability limit	no data available
Flash point	132.5°C
Auto-ignition temperature	no data available
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	no data available
Solubility	0.2 % (NIOSH, 2016)
Partition coefficient n-octanol/water	log Kow = 1.52
Vapour pressure	1.3 x 10 ⁻³ Pa (20 °C)
Density and/or relative density	1.082g/cm ³
Relative vapour density	no data available
Particle characteristics	no data available

SECTION 10: Stability and reactivity

Reactivity

Decomposes on heating and on burning. This produces toxic fumes including methyl isocyanate and nitrogen oxides.

Chemical stability

Hydrolyzed by strong alkali; 50% loss @ 20 deg C in 40 min @ pH 10

Possibility of hazardous reactions

PROPOXUR is incompatible with the following: Strong oxidizers, alkalis [Note: Emits highly toxic methyl isocyanate fumes when heated to decomposition.] (NIOSH, 2016).

Conditions to avoid

no data available

Incompatible materials

Believed compatible with most insecticides, fungicides, except alkalines.

Hazardous decomposition products

When heated to decomposition it emits toxic fumes of /nitrogen oxide/.

SECTION 11: Toxicological information

Acute toxicity

- Oral: LD50 Rat acute oral 95 to 104 mg/kg
- Inhalation: LC50 Rat inhalation >0.5 mg/L/4 hr (aerosol); >0.654 mg/L air/4 hr (dust)
- 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

Cancer Classification: Group B2 Probable Human Carcinogen

Reproductive toxicity

No information is available on the reproductive or developmental effects of propoxur in humans. No adverse reproductive or developmental effects were observed in an oral study of rabbits exposed to propoxur. In a few studies of rats orally exposed to propoxur, fetotoxic effects, decreased numbers of pups, and depressed fetal weight have been reported.

STOT-single exposure

The substance may cause effects on the nervous system by a cholinesterase inhibiting effect. This may result in convulsions and respiratory depression. Exposure could cause death.

STOT-repeated exposure

Cholinesterase inhibition. Cumulative effects are possible. See Acute Hazards/Symptoms. Tumours have been detected in experimental animals but may not be relevant to humans.

Aspiration hazard

A harmful concentration of airborne particles can be reached quickly on spraying or when dispersed, especially if powdered.

SECTION 12: Ecological information

Toxicity

Toxicity to fish: LC50; Species: *Pimephales promelas* (Fathead minnow); Conditions: flow-through bioassay with measured concentrations, 22.5 deg C, dissolved oxygen 7.5 mg/L, hardness 45.4 mg/L CaCO₃, alkalinity 40.0 mg/L CaCO₃, pH 7.6; Concentration: 8.8 mg/L for 96 hr (confidence limit 7.4 - 10.5 mg/L)

Toxicity to daphnia and other aquatic invertebrates: EC50; Species: *Daphnia magna* (Water flea); Conditions: freshwater, static; Concentration: 11 ug/L for 48 hr (95% confidence interval: 9-12 ug/L); Effect: intoxication, immobilization /98.8% purity

Toxicity to algae: EC50; Species: *Pseudokirchneriella subcapitata* (Green algae); Conditions: freshwater, static, 24 deg C; Concentration: 2848.4 ug/L for 96 hr; Effect: decreased population biomass /95% purity

Toxicity to microorganisms: no data available

Persistence and degradability

AEROBIC: The primary mode of biodegradation for propoxur appears to be hydrolysis of the carbamate linkage(1). The biodegradation of propoxur under aerobic conditions in silt loam and sandy loam soils followed first order kinetics for the first 112 and 180 days, respectively(1). The half-life values were 80 days for the silt loam and 210 days for the sandy loam(1). Propoxur was the major extractable residue found in the studies(1). One day after propoxur was applied to a sandy loam soil with no history of insecticidal treatment, 94% remained(2). However, when soil was previously treated four times with carbofuran (a methylcarbamate), only 20% of the propoxur remained after 1 day; this shows that acclimation markedly affects the rate of biodegradation of propoxur in soil(2). In another laboratory study, the biodegradation half-life of propoxur in Montardon soil, not previously treated with carbofuran, was 146 days, while in previously treated soil, the half-life was 9.3 days(3). Propoxur is reported to biodegrade quite rapidly in water, particularly when the bacterial activity and temperature are high(4). In a biodegradation test which used a combination of activated sludge, silt loam soil, and sediment as an inoculum, the half-life of propoxur was 44 days under aerobic conditions(5). When glucose and peptone was added as a source of carbon and energy, the half-life decreased to 19 days under aerobic conditions(5). Using a mixture of non-acclimated sludge, field soil, and river sediment as inoculum, the aerobic biodegradation half-life was 0.6 day at an initial concentration of 2 ppm at 18-22 deg C(6).

Bioaccumulative potential

An estimated BCF of 5 was calculated in fish for propoxur(SRC), using log Kow of 1.52(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 propoxur ranges from <1 to 103(1,2). In batch equilibrium studies, propoxur was very mobile, with Koc values of 3.4, 11.2, and 102.6 for sandy loam, silt loam, and silty clay soils, respectively(2). In other studies, Koc values ranged from 28-68, and for silt loam, sandy loam, sand, and clay loam soils, the Koc values were 39 (Kd = 0.597, 2.9 %OM, pH 5.9), 0.76 (Kd = 0.004, 1.1 %OM, pH 6.6), 34 (Kd = 0.181, 1.0 %OM, pH 4.3), and 28 (Kd = 0.329, 2.2 %OM, pH 6.4), respectively(1). According to a classification scheme(3), these Koc values suggest that propoxur has very high to high mobility in soil(SRC). In soil thin-layer mobility studies on six soils, propoxur was found to be mobile, with Rf

values of 0.70 to 0.89(2).

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: UN2811 (For reference only, please check.)

IMDG: UN2811 (For reference only, please check.)

IATA: UN2811 (For reference only, please check.)

UN Proper Shipping Name

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

IMDG: TOXIC SOLID, ORGANIC, N.O.S. (For reference only, please check.)

IATA: TOXIC SOLID, ORGANIC, 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: Yes

IMDG: Yes

IATA: Yes

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)

Listed.

PICCS

Listed.

Vietnam National Chemical Inventory

Listed.

IECSC

Not 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?pagelD=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

Decomposition of compound starts at 220°C. Depending on the degree of exposure, periodic medical examination is suggested. Specific treatment is necessary in case of poisoning with this substance; the appropriate means with instructions must be available. If the substance is formulated with solvents also consult the ICSCs of these materials. Carrier solvents used in commercial formulations may change physical and toxicological properties.

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.