

Chemical Safety Data Sheet MSDS / SDS

2-methylbutane SDS

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

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

Product name: 2-methylbutane

CAS: 78-78-4

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 1

Aspiration hazard, Category 1

Specific target organ toxicity - single exposure, Category 3
Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 2

GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Danger

Hazard statement(s)

H224 Extremely flammable liquid and vapour
H304 May be fatal if swallowed and enters airways
H336 May cause drowsiness or dizziness
H411 Toxic to aquatic life with long lasting effects

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/...
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P271 Use only outdoors or in a well-ventilated area.
P273 Avoid release to the environment.

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.
P331 Do NOT induce vomiting.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P319 Get medical help if you feel unwell.
P391 Collect spillage.

Storage

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

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 which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

Substance

Chemical name: 2-methylbutane

Common names and synonyms: 2-methylbutane

CAS number: 78-78-4

EC number: 201-142-8

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

First rinse with plenty of water for at least 15 minutes, then remove contaminated clothes and rinse again.

Following eye contact

Rinse with plenty of water (remove contact lenses if easily possible).

Following ingestion

Rinse mouth. Do NOT induce vomiting. Refer immediately for medical attention.

Most important symptoms/effects, acute and delayed

Inhalation causes irritation of respiratory tract, cough, mild depression, irregular heartbeat. Aspiration causes severe lung irritation, coughing, pulmonary edema; excitement followed by depression. Ingestion causes nausea, vomiting, swelling of abdomen, headache, depression. (USCG, 1999)

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

Basic treatment: Establish a patent airway (oropharyngeal or nasopharyngeal airway, if needed). Suction if necessary. Watch for signs of respiratory insufficiency and assist ventilations if necessary. Administer oxygen by nonrebreather mask at 10 to 15 L/min. Monitor for pulmonary edema and treat if necessary . Anticipate seizures and treat if necessary . For eye contamination, flush eyes immediately with water. Irrigate each eye continuously with 0.9% saline (NS) during transport . Do not use emetics. For ingestion, rinse mouth and administer 5 ml/kg up to 200 ml of water for dilution if the patient can swallow, has a strong gag reflex, and does not drool. Administer activated charcoal . Treat frostbite with rapid rewarming techniques . /Aliphatic hydrocarbons and related compounds/

SECTION 5: Firefighting measures

Suitable extinguishing media

If material on fire or involved in fire: Do not extinguish fire unless flow can be stopped. Use water in flooding quantities as fog. Solid streams of water may spread fire. Cool all affected containers with flooding quantities of water. Apply water from as far a distance as possible. Use foam, dry chemical, or carbon dioxide. Pentanes

Specific hazards arising from the chemical

Behavior in Fire: Highly volatile liquid. Vapors may explode when mixed with air. (USCG, 1999)

Special protective actions for fire-fighters

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

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Evacuate danger area! Consult an expert! Personal protection: filter respirator for organic gases and vapours of low boiling point adapted to the airborne concentration of the substance. Remove all ignition sources. Do NOT let this chemical enter the environment. 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. Do NOT wash away into sewer.

Environmental precautions

Evacuate danger area! Consult an expert! Personal protection: filter respirator for organic gases and vapours of low boiling point adapted to the airborne concentration of the substance. Remove all ignition sources. Do NOT let this chemical enter the environment. 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. Do NOT wash away into sewer.

Methods and materials for containment and cleaning up

Environmental considerations: air spill: Apply water spray or mist to knock down vapors. Pentanes

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. Prevent build-up of electrostatic charges (e.g., by grounding). 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. Well closed. Separated from strong oxidants. Store in an area without drain or sewer access. Provision to contain effluent from fire extinguishing. Fireproof. Well closed.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

TLV: 1000 ppm as TWA. MAK: 3000 mg/m³, 1000 ppm; peak limitation category: II(2); pregnancy risk group: C. EU-OEL: 3000 mg/m³,

1000 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 spectacles 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:	Liquid. Volatile liquid.
Colour:	Colourless.
Odour:	PLEASANT ODOR
Melting point/freezing point:	-159.77 °C. Atm. press.:No data. Remarks:There was no information reported as to whether the substance decomposed or sublimated.
Boiling point or initial boiling point and boiling range:	27.8 °C. Atm. press.:760 mm Hg. Remarks:(101.325 kPa).

Flammability:	Extremely flammable. Heating will cause rise in pressure with risk of bursting.
Lower and upper explosion limit/flammability limit:	Lower flammable limit: 1.4% by volume; Upper flammable limit: 7.6% by volume
Flash point:	-51 °C. Atm. press.:1 013 hPa.
Auto-ignition temperature:	420 °C. Atm. press.:1 013 hPa. Remarks:Pressure not stated, therefore assumed standard.
Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	dynamic viscosity (in mPa s) = 0.214. Temperature:25.0°C.
Solubility:	less than 1 mg/mL at 73° F (NTP, 1992)
Partition coefficient n-octanol/water:	log Pow = 4. Temperature:25 °C.;Pow = 9 930. Temperature:25 °C.
Vapour pressure:	100 kPa. Temperature:27.5 °C.
Density and/or relative density:	0.62 g/cm ³ . Temperature:20 °C.
Relative vapour density:	2.6 (vs air)
Particle characteristics:	no data available

SECTION 10: Stability and reactivity

Reactivity

May explode on heating. Reacts with strong oxidants. This generates fire or explosion hazard.

Chemical stability

no data available

Possibility of hazardous reactions

A very dangerous fire hazard when exposed to heat, flame or oxidizers. The vapour is heavier than air and may travel along the ground; distant ignition possible. The vapour is heavier than air and may accumulate in lowered spaces causing a deficiency of oxygen. ISOPENTANE is a fire and explosion hazard when in contact with oxidizing agents. (NTP, 1992).

Conditions to avoid

no data available

Incompatible materials

Can react with oxidizing materials.

Hazardous decomposition products

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

SECTION 11: Toxicological information

Acute toxicity

Oral: no data available

Inhalation: Isoeffective air concentration - rat (males) and mouse (females) (male) - 21 000 ppm.

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

If swallowed the substance easily enters the airways and could result in aspiration pneumonitis. Inhalation of high concentrations of the vapour may cause depression of the central nervous system.

STOT-repeated exposure

The substance defats the skin, which may cause dryness or cracking.

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: LL50 - *Oncorhynchus mykiss* (previous name: *Salmo gairdneri*) - 34.05 mg/L - 96 h.

Toxicity to daphnia and other aquatic invertebrates: EL50 - *Daphnia magna* - 59.44 mg/L - 48 h.

Toxicity to algae: EL50 - *Pseudokirchneriella subcapitata* (previous names: *Raphidocelis subcapitata*, *Selenastrum capricornutum*) - 25.12 mg/L - 72 h.

Toxicity to microorganisms: NOEL - *Tetrahymena pyriformis* - 29.28 mg/L - 48 h.

Persistence and degradability

AEROBIC: Organisms isolated from groundwater contaminated by a gasoline spill were found to grow when inoculated with pure samples of isopentane; however, no biodegradation of isopentane was observed when a mixed culture of these organisms was

inoculated with gasoline(1). A mixture containing isopentane, pentane, cyclopentane, 2,3-dimethylbutane, 2-methylpentane, 3-methylpentane, and cyclohexane, showed little degradation over the course of 30 days in a sediment/groundwater obtained from a contaminated jet fuel site in Oscoda, MI(2). Following a 6.1 day lag period, isopentane was completely degraded using an activated sludge over the course of a 20 day incubation period under aerobic conditions(3). The half-life of a mixture containing isopentane, pentane, and cyclopentane in seawater was 2.4 days(4).

Bioaccumulative potential

An estimated BCF of 70 was calculated in fish for isopentane(SRC), using a water solubility of 48 mg/L(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is moderate(SRC).

Mobility in soil

The Koc of isopentane is estimated as 520(SRC), using a water solubility of 48 mg/L(1) and a regression-derived equation(2). According to a classification scheme(3), this estimated Koc value suggests that isopentane is expected to have low 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: UN1265 (For reference only, please check.)

IMDG: UN1265 (For reference only, please check.)

IATA: UN1265 (For reference only, please check.)

UN Proper Shipping Name

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

IMDG: PENTANES, liquid (For reference only, please check.)

IATA: PENTANES, liquid (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: 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

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

High concentrations in the air cause a deficiency of oxygen with the risk of unconsciousness or death. Check oxygen content before entering the area.

Disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. We as supplier shall not be held liable for any