Chemical Safety Data Sheet MSDS / SDS

Butenone 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: Butenone

CAS: 78-94-4

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 2
Acute toxicity - Category 2, Oral

Acute toxicity - Category 1, Dermal
Skin corrosion, Sub-category 1B
Skin sensitization, Category 1
Serious eye damage, Category 1
Acute toxicity - Category 1, Inhalation
Specific target organ toxicity – repeated exposure, Category 2
Hazardous to the aquatic environment, short-term (Acute) - Category Acute 1
Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 1

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
H314 Causes severe skin burns and eye damage
H317 May cause an allergic skin reaction
H330 Fatal if inhaled
H400 Very toxic to aquatic life
H410 Very 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/...
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.

P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P272 Contaminated work clothing should not be allowed out of the workplace.
P271 Use only outdoors or in a well-ventilated area.
P284 [In case of inadequate ventilation] wear respiratory protection.
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.
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.
P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P363 Wash contaminated clothing before reuse.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P333+P317 If skin irritation or rash occurs: Get medical help.
P362+P364 Take off contaminated clothing and wash it before reuse.
P305+P354+P338 IF IN EYES: Immediately rinse with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P317 Get medical help.
P320 Specific treatment is urgent (see ... on this label).
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:	Butenone
Common names and synonyms:	Butenone
CAS number:	78-94-4
EC number:	201-160-6
Concentration:	100%

SECTION 4: First aid measures

Description of necessary first-aid measures

If inhaled

Fresh air, rest. Half-upright position. Artificial respiration may be needed. Refer for medical attention.

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

Rinse mouth. Do NOT induce vomiting. Give one or two glasses of water to drink. Refer for medical attention .

Most important symptoms/effects, acute and delayed

This material is readily absorbed through the skin, causing general poisoning, similar to other ketones; inhalation has central nervous system depressant effects. It is irritating to mucous membranes and respiratory tract and to the skin; it is a lachrymator and can cause eye injury. (EPA, 1998)

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 . For 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 . Ketones and related compounds

SECTION 5: Firefighting measures

Suitable extinguishing media

Use dry chemical, "alcohol resistant" foam, carbon dioxide, or water spray. Water may be ineffective. Use water spray to keep fire-exposed containers cool. fight fire from protected location or maximum possible distance. Approach fire from upwind to avoid hazardous vapors and toxic decomp products.

Specific hazards arising from the chemical

Vapors form flammable mixtures with air, and may travel a considerable distance to a source of ignition and flash back. Polymerization may take place in containers, possibly with violent rupture of containers. Upon exposure to heat or flame, it emits toxic and irritating fumes. Container may explode in heat of fire. Vapor explosion and poison hazard indoors, outdoors, or in sewers. Polymerizes on standing. Hazardous polymerization may occur. Avoid heat or sunlight. (EPA, 1998)

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: chemical protection suit including self-contained breathing apparatus. 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

Remove all ignition sources. Personal protection: chemical protection suit including self-contained breathing apparatus. 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

Environmental considerations: air spill: Apply water spray or mist to knock down vapors. Methyl vinyl ketone, stabilized

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. 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. Cool. Keep in the dark. Separated from strong reducing agents, strong oxidants and strong bases. Store only if stabilized. 3-Buten-2-one can only be stored in stabilized form at room temperature.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

TLV: 0.2 ppm as STEL; (skin); (SEN).MAK skin absorption (H); MAK sensitization of skin (SH)

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:	Methyl vinyl ketone is a clear colorless liquid with a pungent odor. Flash point 20° F. May polymerize with the release of heat under exposure to heat or contamination. Less dense than water. Highly toxic by inhalation. Causes burns to skin, eyes and mucous membranes.
Colour:	Colorless liquid
Odour:	Pungent odor
Melting point/freezing point:	-7°C
Boiling point or initial boiling point and boiling range:	80°C
Flammability:	Highly flammable.
Lower and upper explosion limit/flammability limit:	Lower flammable limit: 2.1% by volume; Upper flammable limit: 15.6% by volume
Flash point:	-7°C
Auto-ignition temperature:	915° F (USCG, 1999)

Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	0.807 Cp at 70 deg F
Solubility:	greater than or equal to 100 mg/mL at 72° F (NTP, 1992)
Partition coefficient n-octanol/water:	log Kow = 0.41 (est)
Vapour pressure:	310 mm Hg (55 °C)
Density and/or relative density:	0.864
Relative vapour density:	1.3 (vs air)
Particle characteristics:	no data available

SECTION 10: Stability and reactivity

Reactivity

The substance polymerizes under the influence of peroxides, heat, light and oxidants. Reacts with strong bases, strong reducing agents and strong oxidants.

Chemical stability

Polymerizes on standing

Possibility of hazardous reactions

Dangerous fire hazard when exposed to hest, flame, or oxidizers.The vapour is heavier than air and may travel along the ground; distant ignition possible. Vapours are uninhibited and may polymerize, causing blockage of vents.METHYL VINYL KETONE is incompatible with strong oxidizers and strong bases. It polymerizes spontaneously upon exposure to heat or sunlight. This polymerization may cause violent ruptures in containers. (NTP, 1992).

Conditions to avoid

no data available

Incompatible materials

can react with oxidizing materials.

Hazardous decomposition products

Combustion may produce irritants and toxic gases.

SECTION 11: Toxicological information

Acute toxicity

Oral: LD50 Mouse oral 23.3 mg/kg

Inhalation: LC50 Mouse inhalation 8 mg/cu m/4 hr

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

Lachrymation. The substance is corrosive to the eyes and skin. Corrosive on ingestion. The vapour is severely irritating to the eyes and respiratory tract. Inhalation may cause lung oedema. See Notes. The substance may cause effects on the central nervous system.

STOT-repeated exposure

Repeated or prolonged contact may cause skin sensitization.

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: no data available

Toxicity to daphnia and other aquatic invertebrates: no data available

Toxicity to algae: EC50; Species: Pseudokirchneriella subcapitata (Green algae); Conditions: freshwater; static; Concentration: 120 ug/L (95% confidence limit: 0 to 610 ug/L) for 96 hr; Effect: population, biomass /active ingredient

Toxicity to microorganisms: no data available

Persistence and degradability

AEROBIC: A theoretical BOD of 10% was determined for methyl vinyl ketone over a 5-day incubation period using the French AFNOR test(1). Using a standard BOD technique with acclimated sewage inoculum, a theoretical BOD of 0% was measured for methyl vinyl ketone over a 5-day incubation period(2).

Bioaccumulative potential

An estimated BCF of 3.2 was calculated in fish for methyl vinyl ketone(SRC), using an estimated log Kow of 0.41(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

Using a structure estimation method based on molecular connectivity indices(1), the Koc of methyl vinyl ketone can be estimated to be 3.8(SRC). According to a classification scheme(2), this estimated Koc value suggests that methyl vinyl ketone 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: UN1251 (For reference only, please check.)
IMDG: UN1251 (For reference only, please check.)
IATA: UN1251 (For reference only, please check.)

UN Proper Shipping Name

ADR/RID: METHYL VINYL KETONE, STABILIZED (For reference only, please check.)
IMDG: METHYL VINYL KETONE, STABILIZED (For reference only, please check.)
IATA: METHYL VINYL KETONE, STABILIZED (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

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

The occupational exposure limit value should not be exceeded during any part of the working exposure. 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 is therefore essential. An added stabilizer or inhibitor can influence the toxicological properties of this substance, consult an expert. Do NOT take working clothes home.