

## Chemical Safety Data Sheet MSDS / SDS

## Methyl formate 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: Methyl formate

CAS: 107-31-3

**Relevant identified uses of the substance or mixture and uses advised against**

Relevant identified uses: For R&amp;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  
Acute toxicity - Category 4, Oral

Eye irritation, Category 2  
Acute toxicity - Category 4, Inhalation  
Specific target organ toxicity - single exposure, Category 3

### GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Danger

### Hazard statement(s)

H224 Extremely flammable liquid and vapour  
H302 Harmful if swallowed  
H319 Causes serious eye irritation  
H332 Harmful if inhaled  
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.  
P270 Do not eat, drink or smoke when using this product.  
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+P317 IF SWALLOWED: Get medical help.  
P330 Rinse mouth.  
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.  
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:	Methyl formate
Common names and synonyms:	Methyl formate
CAS number:	107-31-3
EC number:	203-481-7
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. Do NOT induce vomiting. Rest. Refer for medical attention .

**Most important symptoms/effects, acute and delayed**

Inhalation causes irritation of mucous membranes. Prolonged inhalation can produce narcosis and central nervous symptoms, including some temporary visual disturbance. Contact with liquid irritates eyes and may irritate skin if allowed to remain. Ingestion causes irritation of mouth and stomach and central nervous system depression, including visual disturbances. (USCG, 1999)

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

Removal to fresh air, immediate removal of contact lenses and contaminated clothing and washing of the skin followed by adequate rest is recommended. Respiratory irritation may be ameliorated by inhalation of a mist of a 5% sodium bicarbonate solution. If pulmonary edema develops, medical advice should be sought. Oxygen should be administered if the patient exhibits signs of respiratory failure.

**SECTION 5: Firefighting measures****Suitable extinguishing media**

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

**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 powder, alcohol-resistant foam, water spray, 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. Evacuate danger area! Consult an expert! Personal protection: complete protective clothing including self-contained breathing apparatus. Ventilation. 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. Evacuate danger area! Consult an expert! Personal protection: complete protective clothing including self-contained breathing apparatus. Ventilation. 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

1. Remove all ignition sources. 2. Ventilate area of spill or leak. 3. For small quantities, absorb on paper towels. Evaporate in a safe place (such as a fume hood). Allow sufficient time for evaporating vapors to completely clear the hood ductwork. Burn the paper in a suitable location away from combustible materials. Large quantities can be reclaimed or collected and atomized in a suitable combustion chamber.

## 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. Prevent build-up of electrostatic charges (e.g., by grounding). 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 strong oxidants. Cool. Store in cool, dry, well-ventilated location. Separate from alkalis, oxidizing materials, and moisture. Outside or detached storage is preferred.

## SECTION 8: Exposure controls/personal protection

### Control parameters

### Occupational Exposure limit values

TLV: 50 ppm as TWA; 100 ppm as STEL; (skin).MAK: 120 mg/m<sup>3</sup>, 50 ppm; peak limitation category: II(4); skin absorption (H); pregnancy risk group: C.EU-OEL: 125 mg/m<sup>3</sup>, 50 ppm as TWA; 250 mg/m<sup>3</sup>, 100 ppm as STEL; (skin)

### 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.

#### 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 formate is a clear colorless liquid with an agreeable odor. Flash point -27°F. Less dense than water Vapors heavier than air.
Colour:	Colorless liquid [Note: A gas above 89 degrees F].
Odour:	Agreeable

Melting point/freezing point:	78°C(lit.)
Boiling point or initial boiling point and boiling range:	32-34°C(lit.)
Flammability:	Class IA Flammable Liquid: Fl.P. below 73°F and BP below 100°F.
Lower and upper explosion limit/flammability limit:	Lower: 4.5% Upper: 23% (by volume)
Flash point:	-19°C
Auto-ignition temperature:	842°F
Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	0.325 mPa-s at 25 deg C
Solubility:	greater than or equal to 100 mg/mL at 72° F (NTP, 1992)
Partition coefficient n-octanol/water:	log Kow = 0.03
Vapour pressure:	32.91 psi ( 55 °C)
Density and/or relative density:	0.974g/mLat 20°C(lit.)
Relative vapour density:	2.1 (vs air)
Particle characteristics:	no data available

## SECTION 10: Stability and reactivity

**Reactivity**

Reacts violently with strong oxidants. This generates fire and explosion hazard.

**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. METHYL FORMATE reacts with acids to liberate heat along with alcohols and acids. Strong oxidizing acids may cause a vigorous reaction that is sufficiently exothermic to ignite the reaction products. Heat is also generated with caustic solutions. Flammable hydrogen is generated by mixing with alkali metals and hydrides.

**Conditions to avoid**

no data available

**Incompatible materials**

Strong oxidizers [Note: Reacts slowly with water to form methanol and formic acid].

**Hazardous decomposition products**

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

**SECTION 11: Toxicological information****Acute toxicity**

Oral: LD50 Rat oral 1500 mg/kg bw

Inhalation: LC50 Rat inhalation >5.2 mg/L/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**

The substance is irritating to the eyes and respiratory tract. The substance may cause effects on the central nervous system. Exposure far above the OEL could cause lowering of consciousness.

**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: no data available

Toxicity to daphnia and other aquatic invertebrates: EC50 Daphnia magna (Water flea; immobilization) >500 mg/L/24 hr  
/Conditions of bioassay not specified in source examined

Toxicity to algae: EC50 *Scenedesmus subspicatus* (Green algae; cell multiplication inhibition) 240 mg/L/72 hr /Conditions of bioassay not specified in source examined

Toxicity to microorganisms: no data available

#### **Persistence and degradability**

ANAEROBIC: Methyl formate was listed as amenable to anaerobic microbial metabolism(1).

#### **Bioaccumulative potential**

An estimated BCF of 3.2 was calculated for methyl formate(SRC), using a log Kow of 0.03(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 methyl formate is estimated as 25(SRC), using a log Kow of 0.03(1)and a regression-derived equation(2). According to a classification scheme(3), this estimated Koc value suggests that methyl formate 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: UN1243 (For reference only, please check.)

IMDG: UN1243 (For reference only, please check.)

IATA: UN1243 (For reference only, please check.)

**UN Proper Shipping Name**

ADR/RID: METHYL FORMATE (For reference only, please check.)

IMDG: METHYL FORMATE (For reference only, please check.)

IATA: METHYL FORMATE (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: 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](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 odour warning when the exposure limit value is exceeded is insufficient. Do NOT take working clothes home.

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