



Methyl acetoacetate

Safety Data Sheet

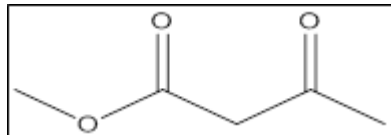
According to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

Date of Compilation : May 09, 2018
Date of Revision : April 01, 2024
Revision due date : March, 2027
Revision Number : 03
Version Name : 0882Gj Ghs03 Div.03 sds Methyl acetoacetate
Supersedes date : May 24, 2021
Supersedes version : 0882Gj Ghs02 Div.07 sds Methyl acetoacetate

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

PRODUCT NAME	: Methyl acetoacetate
CAS RN	: 105-45-3
EC#	: 203-299-8
SYNONYMS	: Methyl acetoacetate, 3-Oxobutanoic acid methyl ester, Methyl 3-oxobutyrate, Acetoacetate methyl ester
SYSTEMATIC NAME	: Methyl 3-oxobutanoate
MOLECULAR FORMULA	: C ₅ H ₈ O ₃
STRUCTURAL FORMULA	



1.2. Relevant identified uses of the substance or mixture and uses advised against

1.2.1. Relevant identified uses

Methyl acetoacetate (MAA) is a starting material for the syntheses of alpha-substituted aceto- acetic esters and cyclic compounds, e.g. pyrazole, pyrimidine and coumarin derivatives

1.2.2. Uses advised against: None

1.3. Details of the supplier of the safety data sheet

Jubilant Ingrevia Limited

FACTORY & REGISTERED OFFICE: Jubilant Ingrevia Limited, Bhartiagram, Gajraula, District: Amroha, Uttar Pradesh-244223, India
T +91-5924-267437& +91-5924-267438

HEAD OFFICE: Jubilant Ingrevia Limited., Plot 1-A, Sector 16-A, Institutional Area, Noida, Uttar Pradesh, 201301 – India
T +91-120-4361000 - F +91-120-4234881 / 84 / 85 / 87 / 95 / 96 support@jubl.com - www.jubilantingrevia.com

1.4. Emergency telephone number

For Chemical Emergency ONLY (in the case of fire, leak, spill, exposure or accident) Call

Chemtrec: 1-800-424-9300 (US), 1-703-527-3887 (Outside U.S.)

Chemtrec (India) : 000-800-100-7141

For ALL other emergencies call Emergency Control Room Gajraula at 99970 22412

SECTION 2: HAZARD(S) IDENTIFICATION

2.1. Classification of the substance or mixture

GHS-US classification

Flammable liquid (Category 4)

Eye damage/irritation (Category 2)

2.2. Label Elements

Hazard Pictogram: GHS07

Signal Word: Warning!



Exclamation mark



Methyl acetoacetate

Safety Data Sheet

According to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

HAZARD AND PRECAUTIONARY STATEMENTS:

HAZARD STATEMENTS

- H227: Combustible liquid
- H319: Causes serious eye irritation.

PRECAUTIONARY STATEMENTS

- P210: Keep away from flames and hot surfaces-No smoking.
- P280: Wear protective gloves/protective clothing/eye protection/face protection
- P305+351+338: IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing.
- P370+P378: In case of Fire: Use for extinction.
- P310: Immediately call a POISON CENTER or doctor/physician.
- P403+P235: Store in a well –ventilated place. Keep cool.
- P501: Dispose of contents/container to local/regional/national/international regulations.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Chemical	CAS #	EC#	Purity
Methyl acetoacetate	105-45-3	203-299-8	99.00%

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

- Remove affected person from danger area. Do not leave affected persons unsupervised. Seek medical treatment. First aid personnel should pay attention to their own safety. Take off all contaminated clothing immediately
- **Eyes:** If in eyes rinse cautiously with water for at least 15 minutes. Remove contact lenses if easy to do so. Continue rinsing. Seek medical attention.
- **Skin:** Immediately take off all contaminated clothing. Wash thoroughly with water for at least 15 minutes. Wash contaminated clothes before reuse. Seek immediate medical attention.
- **Inhalation:** Remove to fresh air and keep at rest in a position comfortable for breathing. Call a physician if you feel unwell.
- **Ingestion:** If swallowed call a poison center if you feel unwell. Rinse mouth. Do NOT induce vomiting by use of emetics. Seek medical attention.

4.2. Most important symptoms and effects, both acute and delayed

- To the best of our knowledge of this compound have not been fully investigated.

SECTION 5 : FIRE-FIGHTING MEASURES

5.1. Extinguishing media

- Carbon dioxide (CO2) Dry chemical Water spray
- Unsuitable extinguishing media: Water spray jet

5.2. Special hazards arising from the substance or mixture

- **Fire hazard:** Water may be effective.
- **Explosion hazard:** Vapours may form explosive mixtures with air when the substance is heated above its flash point..
- **Reactivity in case of fire:** May ignite at high temperature. During fire, gases hazardous to health may be formed. Hazardous Combustion Products: carbon dioxide, carbon monoxide.
- **Hazardous decomposition products in case of fire:** Hazardous decomposition products may be released during prolonged heating like smokes, Carbon oxides.

5.3. Advice for firefighters

- **Precautionary measures fire:** Appropriate self-contained breathing apparatus may be required.
- **Firefighting instructions:** Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. In case of major fire, evacuate area.
- **Protective equipment for firefighters:** Do not enter fire area without proper protection equipment, including respiratory protection

SECTION 6 : ACCIDENTAL RELEASE MEASURES

Methyl acetoacetate

Safety Data Sheet

According to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

6.1. Personal precautions, protective equipment and emergency procedures

- Spill should be handled by trained cleaning personnel properly equipped with respiratory and eye protection.
- Avoid breathing vapours, mist or gas. Avoid contact with skin and eyes.
- Wear protective clothing, full boots, impervious gloves, safety glasses and Self Contained Breathing Apparatus (SCBA), as may be deemed appropriate

6.2. Environmental precautions

- Place waste in an appropriately labeled, sealed container for disposal. Care should be taken to avoid environmental release

6.3. Methods and materials for containment and cleaning up

- Clean up all spills immediately following relevant Standard Operating Procedures.
- Wipe up spillage or collect spillage using a high-efficiency vacuum cleaner.
- Place spillage in appropriately labeled container for disposal. Wash spill site.

6.4. Reference to other sections

- For disposal see section 13.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

- Do not breathe dust, vapor or mist.
- If on skin or hair, IMMEDIATELY remove all contaminated clothing and rinse/shower with plenty of water.
- Use in a well-ventilated place/Use protective clothing commensurate with exposure levels.
- Handle in accordance with good industrial hygiene and safety procedures. Avoid Prolonged or repeated exposure. Take precautionary measures against electrostatic discharge

7.2. Storage

- Store at ambient temperature in a well-ventilated place.
- Keep container tightly closed when not in use.
- Do not store in open or unlabeled containers.
- Store away from incompatible materials
- Keep away from all heat sources, including direct sun-light, open flame, source of ignition, sparks etc.

SECTION 8 : EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. Control parameters

- Exposure Limits Values

Chemical name	ACGIH TLV	OSHA PEL	NIOSH
Methyl acetoacetate	Not Listed	Not Listed	Not Listed

Exposure Limits (International):

- Not available.

8.2. Exposure controls

Appropriate Engineering Controls:

- General industrial hygiene practice.
- Provide exhaust ventilation or other engineering controls to keep the relevant airborne concentrations below their respective occupational exposure limits. Local ventilation is usually preferred. Ensure that eyewash stations and safety showers are close to the workstation location.

8.3. Personal Protection

- **Body protection:**
Wear an apron or a lab coat.
The protection clothing should be solvent resistant.
- **Respiratory protection:**
In an emergency (e.g.: unintentional release of the substance) respiratory protection must be worn. Consider the maximum period for wear.
Respiratory protection: Gas filter A, Colour code brown.
Use insulating device for concentrations above the usage limits for filter devices, for oxygen concentrations below 17% volume, or in circumstances which are unclear.
- **Eye protection:**
Sufficient eye protection must be worn.
Wear chemical safety goggles.
If vapours or aerosols that may injure the eyes arise, then safety of the eyes can best be guaranteed by wearing a full mask.
- **Hand protection:**
The use of resistant protective gloves is recommended.
Skin protection cremes do not protect as effectively against the substance as protective gloves. Therefore suitable protective gloves should be preferred as far as possible.

Methyl acetoacetate

Safety Data Sheet

According to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

The following materials are suitable for protective gloves (Permeation time \geq 8 hours):

Butyl rubber - Butyl (0,5 mm)

Protective gloves of the following materials should not be worn longer than 1 hour continually (Permeation time \geq 1 hour):

Polychloroprene - CR (0,5 mm)

Following materials are unsuitable for protective gloves because of degradation, severe swelling or low permeation time:

Natural rubber/Natural latex - NR

Nitrile rubber/Nitrile latex - NBR

Fluoro carbon rubber - FKM

Polyvinyl chloride - PVC

The times listed are suggested by measurements taken at 22 °C and constant contact. Temperatures raised by warmed substances, body heat, etc. and a weakening of the effective layer thickness caused by expansion can lead to a significantly shorter breakthrough time. In case of doubt contact the gloves' manufacturer. A 1.5-times increase / decrease in the layer thickness doubles / halves the breakthrough time. This data only applies to the pure substance. Transferred to mixtures of substances, these figures should only be taken as an aid to orientation.

Occupational hygiene:

Take heed of usual occupational hygiene measures when handling chemical substances, especially wash the skin with soap and water before breaks and at the end of work and apply fatty skin-care products after washing.

Avoid contact with eyes. In case of contact rinse the affected eye(s).

Change clothing that has become wet and do not reuse until completely dry.

Increased risk of combustion from wicking.

Additional Information

- Only use protective equipment in accordance with national/international regulations. Follow the national regulation about wearing personal protective equipment and the warranty given.
- Apply skin protective barrier cream
- Do not inhale substances, work under hood.

Control of environmental exposure

- Do not let product enter drains.
- Wash hands and face after working with the substance.
- Under no circumstances eat or drink at the workplace.
- Do not inhale substances, work under hood.

SECTION 9 : PHYSICAL AND CHEMICAL PROPERTIES

- Information on basic physical and chemical properties.

Sr.No.	Parameter	Typical value
1.	Appearance	Clear colorless liquid
2.	Molecular weight	116.12
3.	Odor	Characteristic
4.	Odor Threshold	Not available
5.	pH	4.1 Concentration: 10 g/l
6.	Melting point	-80°C at 1013 hPa.
7.	Boiling point	169.4±8.0 °C Press: 760 Torr
8.	Flash point	63.5°C at 1013 hPa
9.	Evaporation rate (n-BuAc=1)	Not available
10.	Flammability (Liquid)	Combustible substance, poorly flammable
11.	Upper/lower flammability or Explosive limits	Upper explosion limit:16%(v) Lower explosion limit :3.1%(v)
12.	Vapor pressure	0.187 hPa at 20 °C, 1.54 torr at 25 °C 4.34 hPa at 50 °C
13.	Vapor density (air=1)	4.01 (Air = 1.0)
14.	Density	1.039±0.06 g/cm ³ Temp: 20 °C Press: 760 Torr
15.	Solubility	Miscible in water (>1000 g/l at 20 °C.) Miscible with alcohol and ether
16.	Partition coefficient (Octonol /water)	-0.4 at 20°C



Methyl acetoacetate

Safety Data Sheet

According to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

17.	Auto-ignition temperature	280 °C
18.	Decomposition temperature	Not available
19.	Viscosity	Dynamic: 1.74 mPa.s (20 °C) kinematic: 1.61 mm ² /s (20 °C)
20.	Explosive property	Not available
21.	Oxidizing property	Not available

SECTION 10: STABILITY AND REACTIVITY

- **Reactivity:** No data available
- **Chemical Stability:** Stable under recommended storage condition
- **Conditions to avoid:** Keep away from heat, sparks, flame, high temperature and incompatible, strong oxidants.
- **Incompatible chemicals:** Strong acids and strong bases, Reducing agents, Strong oxidizing agents
- **Hazardous decomposition:** Hazardous decomposition products formed under fire conditions.-Carbon monoxide & Carbon dioxide
- **Hazardous Polymerization:** Not reported.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Acute toxicity

Oral- LD50 oral (Albino rats) 2580 mg/kg for males and 3370 mg/kg for females.
ORAL (LD50): Acute: 3228mg/kg [Rat]

Dermal-
LD50 dermal (Wistar strain rat) >2000 mg/kg

Inhalation-
LC50 inhalation (Albino rabbit)= > 49.2 mg/L
LC50 Rat inhalation >6.6 mg/L/4 hr
LC50 Rat inhalation >26.4 mg/L/1 hr

RTECS # AK5775000

Skin corrosion/irritation	:	Not irritating
Serious eye damage/irritation	:	Causes serious eye irritation.
Respiratory or skin sensitization	:	not sensitizing
Germ cell Mutagenicity	:	Negative
Carcinogenicity	:	Not listed by NTP, IARC and OSHA.
Reproductive toxicity	:	No data available.
STOT-single exposure	:	No data available
STOT- repeated exposure	:	No data available
Aspiration Hazards	:	No data available.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

- Acute/short term toxicity to fish (Pimephales promelas)- LC50 (96 hr) = >111.4 mg/l
- Acute/short term toxicity to aquatic invertebrates (daphnia) Daphnia magna-EC50 (48 hr) = 236.9 mg/L
- Toxicity to aquatic algae and cyanobacteria e. g. algae Desmodesmus subspicatus-EC50 (72 hr) = >100 mg/l,
- Toxicity to microorganisms activated sludge, domestic- EC0 (24 hrs) = 500 mg/l

Methyl acetoacetate

Safety Data Sheet

According to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

12.2. Persistence and degradability

Methyl acetoacetate (105-45-3)

Persistence and degradability	Mean biodegradation rate of 94% after 28 days. (Biodegradation in water)
It is considered as readily biodegradable in water	

12.3. Bio accumulative potential

Methyl acetoacetate (105-45-3)

Bio concentration factor (BCF REACH)	1.08 (predicted),
Log Pow	-0.4 at 20 ⁰ C

"low bioaccumulation potential

12.4. Mobility in soil

Methyl acetoacetate (105-45-3)

Soil Adsorp. Coeff.	Log Koc: 0.015, Koc: 1.035
Henry's Law Constant	2.7X10 ⁻⁷ atm-cu m/mole

- **Methyl acetoacetate** is expected to have very high mobility in soil.
- **Methyl acetoacetate** would be expected to hydrolyze in moist soil under basic conditions.
- **Methyl acetoacetate** is not expected to volatilize from dry soil surfaces

12.5. Other adverse effects

- **Environment Fate:**
This material is not expected to be toxic to the animals or aquatic life. It is recommended that the material should not be disposed into the environment. The material should never be disposed into the sewage.

In conclusion on the basis of the known facts and properties, a low concern for risk is to be expected to the human health or the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

- This combustible material may be burned in a chemical incinerator equipped with an afterburner and scrubber. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dispose in a safe manner in accordance with local/national regulation. Observe all federal, state and local environmental regulation
- Collection of small amounts of substance: Place in a collection container for halogen-free organic solvents and solutions of halogen-free organic substances.
- Collection vessels must be clearly labelled with a systematic description of their contents. Store the vessels in a well-ventilated location. Entrust them to the appropriate authorities for disposal.

SECTION 14: TRANSPORT INFORMATION

- This substance is considered to be non Hazardous for transport by Air/Rail/Road and Sea and thus not regulated by IATA/ICAO/US DOT /IMO/IMDG.

ADR/ RID/ DOT	IMDG	IATA
14.1. UN number		
Not a dangerous good	Not a dangerous good	Not a dangerous good
14.2. UN proper shipping name		
Not dangerous goods	Not dangerous goods	Not dangerous goods
14.3. Transport hazard class(es)		
Not applicable	Not applicable	Not applicable
14.4. Packing group		
Not applicable	Not applicable	Not applicable
14.5. Environmental hazards		
Dangerous for the environment : No	Dangerous for the environment : No Marine pollutant : No	Dangerous for the environment : No
No supplementary information available		

SECTION 15: REGULATORY INFORMATION

Classification as per CLP Regulation 1272/2008:

- **Hazards Class and Category:** Eye damage/irritation (Category 2),



Methyl acetoacetate

Safety Data Sheet

According to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

Hazard Statements: H319

Chemical Inventory Lists:	Status
TSCA:	Listed
EINECS:	Listed
EC Inventory	203-299-8
Canada(DSL/NDSL):	Listed (DSL)
China Catalog of Hazardous chemicals 2015	Not Listed
New Zealand Inventory of Chemicals (NZIoC)	Listed
Philippines Inventory of Chemicals and Chemical Substances (PICCS)	Listed
Inventory of Existing and New Chemical Substances (ENCS)	Listed.
Japan ISHL Existing Substances List (ISHL)	Listed
China: IECSC	Listed
Existing Chemicals List (KECI)	Listed
Australian Inventory of Chemical Substances (AICS)	Listed

US information

CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act): Methyl acetoacetate not listed

SARA 302/304 : Methyl acetoacetate not listed

SARA 311/312 : See section 2 for more information

California Prop. 65: Methyl acetoacetate not listed

CAA (Clean Air Act): Methyl acetoacetate not listed

CWA (Clean Water Act): Methyl acetoacetate not listed

EU Information

Water hazard class (WGK) 1, Slightly hazardous to waters

Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006: Methyl acetoacetate not listed

SECTION 16: OTHER INFORMATION

a) Compilation information of safety data sheet

Date of compilation : May 09, 2018
Chemical : Methyl acetoacetate
CAS # : 105-45-3
File Name : 0882Gj Ghs03 Div.7 sds Methyl acetoacetate
Revision Number : 03



Methyl acetoacetate

Safety Data Sheet

According to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

Date of Revision : April 01, 2024
Revision Due Date : March, 2027
Supersedes date : May 24, 2021

b) A key or legend to aberrations and acronyms used in the safety data sheet

- PBT =Persistent Bio accumulative and Toxic.
- vPvB= Very Persistent and Very Bio accumulative.
- SCBA= Self Contained Breathing Apparatus.
- NIOSH REL= National Institute for Occupational Safety and Health Recommended Exposure Limit.
- OSHA PEL=Occupational Safety and Health Administration Permissible Exposure Limit.
- OELTWA= Occupational Exposure Limit Time Weighted Averages.
- IDLH= Immediately Dangerous to Life or Health.
- UEL= Upper Explosive Limit.
- LEL= Lower Explosive Limit.
- RTECS= Registry of Toxic Effects of Chemical Substances.
- NTP=National Toxicology Program.
- IARC= International Agency for Research on Cancer.
- EPA=Environmental Protection Agency.
- TSCA= Toxic Substances Control Act.
- CERCLA= Comprehensive Environmental Response, Compensation, and Liability Act.
- SARA= Superfund Amendments and Reauthorization Act.
- NFPA= National Fire Protection Association.
- WHIMS= Workplace Hazardous Materials Information System.
- DSL/NDSL= Domestic/Non-Domestic Substances List.
- BCF = Bio Concentration Factor.
- DNEL = Derived No Effect Level.
- PNEC = Predicted No Effect Concentration.
- TLV = Threshold Limit Value.
- ACGIH = American Conference of Governmental Industrial Hygienists.
- REACH = Registration, Evaluation .Authorization and Restriction of Chemicals.
- CLP = Classification, Labeling and Packaging.
- LD / LC = Lethal Doses / Lethal Concentration.
- GHS = Globally Harmonized System.
- IMDG-Code = International Maritime Code for Dangerous Goods.
- EmS = Emergency measures on Sea.
- ICAO = International Civil Aviation Organization.
- IATA/DGR= International Air Transport Association/Dangerous Goods Regulation.

c) Key Literature reference and sources for data

Biographical reference and data sources

- Globally Harmonized System of Classification and Labelling of Chemicals.
- CLP REG (regulation) (EC) no. 1272/2008, last modification by regulation (EC) no. 790/2009
- REG (EC) no. 1907/2006, last modification by REG (EC) Nr. 830/2015

SDS US (GHS HazCom 2012)

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

(End of Safety Data Sheet)