



## Ethyl acetoacetate

### Safety Data Sheet

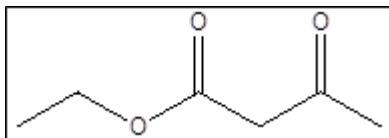
According to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

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

#### 1.1. Product identifier

PRODUCT NAME	: Ethyl acetoacetate
CAS RN	: 141-97-9
EC#	: 205-516-1
SYNONYMS	: Ethyl acetoacetate; 3-Oxobutanoic acid ethyl ester; Acetoacetic acid, ethyl ester; Ethyl 2-methyl-3-oxopropionate, Ethyl 3-oxobutanoate, Ethyl ester aceto-acetic acid, Ethyl acetyl acetate
SYSTEMATIC NAME	: Ethyl 3-oxobutanoate
MOLECULAR FORMULA	: C <sub>6</sub> H <sub>10</sub> O <sub>3</sub>
STRUCTURAL FORMULA	



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

##### 1.2.1. Relevant identified uses

Ethyl acetoacetate is a clear colourless liquid. It is used as Food additive & Flavouring agent.

##### 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](mailto:support@jubl.com) - [www.jubilantingrevia.com](http://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)

#### 2.2. Label Elements

Hazard Pictogram: No Pictogram.

Signal Word: Warning!

#### HAZARD AND PRECAUTIONARY STATEMENTS:

##### HAZARD STATEMENTS

- H227: Combustible liquid

##### PRECAUTIONARY STATEMENTS

- P210: Keep away from flames and hot surfaces-No smoking.
- P280: Wear protective gloves/protective clothing/eye protection/face protection
- P370+P378: In case of Fire: Use water for extinction.
- P403: Store in a well –ventilated place.
- P501: Dispose of contents/container to local/regional/national/international regulations.



# Ethyl acetoacetate

## Safety Data Sheet

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

### SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Chemical	CAS #	EC#	Purity
Ethyl acetoacetate	141-97-9	205-516-1	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.

#### 4.3 Advice

- Notes to physician :** Treat symptomatically

### SECTION 5 : FIRE-FIGHTING MEASURES

#### 5.1. Extinguishing media

- Suitable extinguishing media : Carbon dioxide (CO<sub>2</sub>), Dry chemical, Water spray. Use water spray to cool unopened containers.
- Unsuitable extinguishing media : Water spray jet

#### 5.2. Special hazards arising from the substance or mixture

- Fire hazard:** Emits toxic fumes under fire conditions. Water may be ineffective. The product will float on water and can be reignited on surface water.
- Explosion hazard:** Risk of explosion with vapors in confined spaces, drainage and sewage system.
- Reactivity in case of fire:** May ignite at high temperature. During fire, gases hazardous to health may be formed. Risk of chemical pneumonia after aspiration. 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:** Wear an approved positive pressure self-contained breathing apparatus in addition to standard fire fighting gear.

### SECTION 6 : ACCIDENTAL RELEASE MEASURES

#### 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. Avoid release to the environment.

## Ethyl acetoacetate

### Safety Data Sheet

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

#### 6.3. Methods and materials for containment and cleaning up

- Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13). After cleaning, flush away traces with water. Eliminate all ignition sources if safe to do so.

#### 6.4. Reference to other sections

- For disposal see section 13.

### SECTION 7: HANDLING AND STORAGE

#### 7.1. Precautions for safe handling

- Keep away from fire (No Smoking).
- Keep away from fire, sparks and heated surfaces.
- Do not use sparking tools.
- 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
Ethyl 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:**  
Impervious clothing, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.
- Respiratory protection:**  
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).
- Eye protection:**  
Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).
- 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.  
The following materials are suitable for protective gloves (Permeation time  $\geq$  8 hours):  
Butyl rubber - Butyl (0,5 mm)  
Following materials are unsuitable for protective gloves because of degradation, severe swelling or low permeation time:  
Natural rubber/Natural latex - NR  
Polychloroprene - CR  
Nitrile rubber/Nitrile latex - NBR  
Fluoro carbon rubber - FKM



## Ethyl acetoacetate

### Safety Data Sheet

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

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 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	130.14
3.	Odor	Fruity, Ester like.
4.	Odor Threshold	Not available
5.	pH	4.0 at 110g/l 20°C
6.	Melting point	-45°C
7.	Boiling point	180.6°C at 1013.3 hPa
8.	Flash point	71.9 °C Method: Seta closed cup
9.	Evaporation rate (n-BuAc=1)	Not available
10.	Flammability (Liquid)	Combustible substance, poorly flammable
11.	Upper/lower flammability or Explosive limits	Lower Explosion Limit: 1.0%(V) Upper Explosion Limit: 54% (V)
12.	Vapor pressure	0.1 kpa at 20°C 0.42 hPa at 25 °C - OECD Test Guideline 104 3.5 hPa at 50 °C - OECD Test Guideline 104
13.	Relative vapor density (air=1)	4.5 (Air = 1.0)
14.	Density	1.03 g/ml at 20 °C
15.	Solubility	Miscible in water (130 g/l at 20 °C - OECD Test Guideline 105.) Soluble in benzene & chloroform Miscible with ether & acetone
16.	Partition coefficient ( Octonol /water)	0.8 at 20°C
17.	Auto-ignition temperature	295°C
18.	Decomposition temperature	270 °C (HPDTA) (highest temperature tested; no exotherm observed)
19.	Viscosity (Kinematic)	1.696 mPa.s at 20°C
20.	Explosive property	Not available



# Ethyl acetoacetate

## Safety Data Sheet

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21.	Oxidizing property	Not available
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### SECTION 10: STABILITY AND REACTIVITY

- **Reactivity:** stable
- **Chemical Stability:** Stable under normal condition
- **Conditions to avoid:** Keep away from heat, sparks, flame, high temperature and incompatible, strong oxidants.
- **Incompatible chemicals:** 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) 12300 mg/kg for males and 10800 mg/kg for females.

ORAL (LD50): Acute: 3980 mg/kg [Rat]

ORAL (LD50): Acute:5105 mg/kg [Mouse]

Dermal-

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

Inhalation-

LC50 inhalation (Albino rabbit)= > 49.2 mg/l/4h

RTECS # AK5250000

Skin corrosion/irritation	:	Rabbit-slight irritation.
Serious eye damage/irritation	:	Rabbit- severe irritation (Causes serious eye irritation)
Respiratory or skin sensitization	:	Non sensitizer(negative).
Germ cell Mutagenicity	:	negative.
Carcinogenicity	:	Not listed by NTP, IARC and OSHA.
Reproductive toxicity	:	No data available.
STOT-single exposure	:	May cause respiratory irritation
STOT- repeated exposure	:	No data available
Aspiration Hazards	:	No data available.

### SECTION 12: ECOLOGICAL INFORMATION

#### 12.1. Toxicity

- Acute/short term toxicity to fish (Danio rerio)- LC50 (96 hr) = >100 mg/l
- Acute/short term toxicity to aquatic invertebrates (daphnia) Daphnia magna-EC50 (48 hr) = > 100 mg/l
- Toxicity to aquatic algae and cyanobacteria e. g. algae Desmodesmus subspicatus-EC50 (72 hr) = >100 mg/l, NOEC = 100 mg/l
- Toxicity to microorganisms activated sludge, domestic- EC0 (24 hrs) = 3000 mg/l

#### 12.2. Persistence and degradability

##### Ethyl acetoacetate (141-97-9)

Persistence and degradability	Mean biodegradation rate of 66% after 28 days (Biodegradation in water)
It is considered as readily biodegradable in water	

#### 12.3. Bio accumulative potential



# Ethyl acetoacetate

## Safety Data Sheet

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

<b>Ethyl acetoacetate (141-97-9)</b>	
Bio concentration factor (BCF REACH)	2.60 (predicted), 2.40 to 2.84 (range)
Log Pow	0.8 at 20°C

" The study does not need to be conducted because the substance has a low potential for bioaccumulation based on log Kow <=3

### 12.4. Mobility in soil

<b>Ethyl acetoacetate (141-97-9)</b>	
Soil Adsorp. Coeff.	31.45 L/Kg
Henry's Law Constant	1.57E-007 atm-m3/mol

### 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

- 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
<b>14.1. UN number</b>		
Not applicable	Not applicable	Not applicable
<b>14.2. UN proper shipping name</b>		
Not dangerous goods	Not dangerous goods	Not dangerous goods
<b>14.3. Transport hazard class(es)</b>		
Not applicable	Not applicable	Not applicable
<b>14.4. Packing group</b>		
Not applicable	Not applicable	Not applicable
<b>14.5. Environmental hazards</b>		
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:** Flammable liquid (Category 4)

**Hazard Statements:** H227

<i>Chemical Inventory Lists:</i>	<i>Status</i>
<i>TSCA:</i>	<i>Listed</i>
<i>EINECS:</i>	<i>Listed</i>
<i>EC Inventory</i>	<i>205-516-1</i>



## Ethyl acetoacetate

### Safety Data Sheet

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

<b>Canada(DSL/NDSL):</b>	<b>Listed (DSL)</b>
<b>China Catalog of Hazardous chemicals 2015</b>	<b>Not Listed</b>
<b>New Zealand Inventory of Chemicals (NZIoC)</b>	<b>Listed</b>
<b>Philippines Inventory of Chemicals and Chemical Substances (PICCS)</b>	<b>Listed</b>
<b>Inventory of Existing and New Chemical Substances (ENCS)</b>	<b>Listed.</b>
<b>Japan ISHL Existing Substances List (ISHL)</b>	<b>Listed</b>
<b>China: IECSC</b>	<b>Listed</b>
<b>Existing Chemicals List (KECI)</b>	<b>Listed</b>
<b>Australian Inventory of Chemical Substances (AICS)</b>	<b>Listed</b>

#### US information

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

SARA 302/304 : Ethyl acetoacetate is not listed

SARA 311/312 : See section 2 for more information

California Prop. 65: Ethyl acetoacetate is not listed

CAA (Clean Air Act): Ethyl acetoacetate is not listed

CWA (Clean Water Act): Ethyl acetoacetate is not listed

#### EU Information

Water hazard class (WGK): WGK 1 (low hazards to water)

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

#### **SECTION 16: OTHER INFORMATION**

##### **a) Compilation information of safety data sheet**

Date of compilation : April 20, 2018  
Chemical : Ethyl acetoacetate  
CAS # : 141-97-9  
File Name : 0877 Gj Ghs03 Div.7 sds Ethyl acetoacetate  
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##### **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.



## Ethyl acetoacetate

### Safety Data Sheet

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- 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)