

**SIGMA-ALDRICH****Material Safety Data Sheet**

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 Version 1.70

**Section 1 - Product and Company Information**

**Product Name** Ethyl acetate, Biotech grade solvent, 99.8+%

**Product Number** 49451B

**Brand** Aldrich Chemical

**Company Address** Sigma-Aldrich  
 3050 Spruce Street  
 SAINT LOUIS, MO 63103 US  
**City, State, Zip, Country**  
 800-325-5832  
**Technical Phone:** 800-325-5052

**Emergency Phone:** 314-776-6555

**Section 2 - Composition/Information on Ingredient**

<b>Substance Name</b>	<b>CAS #</b>	<b>SARA 313</b>	<b>EC no</b>	<b>Annex I Index Number</b>
ETHYL ACETATE	141-78-6	No	205-500-4	607-022-00-5

**Formula** C<sub>4</sub>H<sub>8</sub>O<sub>2</sub>  
**Synonyms** Acetic ether, Acetidin, Acetoxyethane, Ethylacetat (German), Essigester (German), Ethylacetat (Dutch), Ethyl acetate (ACGIH/OSHA), Ethyl acetic ester, Ethyle (acetate d') (French), Ethylester kyseliny octove (Czech), Ethyl ethanoate, Etile (acetato di) (Italian), Octan etylu (Polish), RCRA waste number U112, Vinegar naphtha

**Section 3 - Hazards Identification****Emergency Overview**

Flammable, Irritant.

Irritating to eyes, respiratory system and skin. Repeated exposure may cause skin dryness or cracking. Vapors may cause drowsiness and dizziness.

Target organ(s): Liver, Kidneys.

**HMIS Rating**

Health: 2\* Flammability: 3 Reactivity: 1

**NFPA Rating**

Health: 2 Flammability: 3 Reactivity: 1

\*additional chronic hazards present.

**Section 4 - First Aid Measures****Oral Exposure**

If swallowed, wash out mouth with water provided person is conscious. Call a physician.

**Inhalation Exposure**

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

**Dermal Exposure**

In case of contact, immediately wash skin with soap and copious amounts of water.

**Eye Exposure**

In case of contact, immediately flush eyes with copious amounts of water for at least 15 minutes.

**Section 5 - Fire Fighting Measures****Flammable Hazards:** Yes**Explosion Hazards**

Vapor may travel considerable distance to source of ignition and flash back.

Container explosion may occur under fire conditions.

Forms explosive mixtures in air.

**Flash Point:** 26.6 °F -3 °C

**Explosion Limits:** Lower: 2.2 % Upper: 11.5 %

**Autoignition Temp:** 427 °C **Flammability:** Yes

**Extinguishing Media****Suitable**

For small (incipient) fires, use media such as "alcohol" foam, dry chemical, or carbon dioxide. For large fires, apply water from as far as possible. Use very large quantities (flooding) of water applied as a mist or spray; solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water.

**Firefighting****Protective Equipment**

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

**Specific Hazard(s)**

Flammable liquid. Emits toxic fumes under fire conditions.

**Specific Method(s) of Fire Fighting**

Use water spray to cool fire-exposed containers.

**Section 6 - Accidental Release Measures****Procedure to be Followed in Case of Leak or Spill**

Evacuate area. Shut off all sources of ignition. Use nonsparking tools.

**Procedure(s) of Personal Precaution(s)**

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

**Method(s) for Cleaning Up**

Cover with dry-ice, sand, or soda ash. Place in covered containers using non-sparking tools and transport outdoors. Ventilate area and wash spill site after material pickup is complete.

**Section 7 - Handling and Storage****Handling****User Exposure**

Do not breathe vapor. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure.

**Storage  
Suitable**

Keep tightly closed. Keep away from heat, sparks, and open flame.

**Section 8 - Exposure Controls / PPE****Engineering Controls**

Safety shower and eye bath. Use nonsparking tools. Mechanical exhaust required.

**Personal Protective Equipment****Respiratory**

Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). 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.

**Hand**

Compatible chemical-resistant gloves.

**Eye**

Chemical safety goggles.

**General Hygiene Measures**

Remove and wash contaminated clothing promptly. Wash thoroughly after handling.

**Exposure Limits**

Country	Type	Value
Poland	NDS	200 MG/M3
Poland	NDSCh	600 MG/M3
Poland	NDSP	-

**Exposure Limits, RTECS**

Country	Source	Type	Value
USA	ACGIH	TWA	400 PPM
USA	MSHA Standard-air	TWA	400 PPM (1400 MG/M3)
USA	OSHA.	PEL	8H TWA 400 PPM (1400 MG/M3)
USA	NIOSH	TWA	400 PPM

**Section 9 - Physical/Chemical Properties****Appearance****Physical State**

Liquid

**Molecular Weight:** 88.11 AMU

Property	Value	At Temperature or Pressure
pH	N/A	
BP/BP Range	76.5 - 77.5 °C	760 mmHg
MP/MP Range	-84 °C	
Freezing Point	N/A	
Vapor Pressure	73 mmHg	20 °C
Vapor Density	3 g/l	
Saturated Vapor Conc.	N/A	
SG/Density	0.9 g/cm3	
Bulk Density	N/A	
Odor Threshold	0.96 - 176.9 ppm	
Volatile%	N/A	
VOC Content	N/A	

<b>Water Content</b>	< 0.05 %	
<b>Solvent Content</b>	N/A	
<b>Evaporation Rate</b>	N/A	
<b>Viscosity</b>	0.44 Pas	25 °C
	24 mN/m	20 °C
<b>Surface Tension</b>	Log Kow: 0.73	
<b>Partition Coefficient</b>	N/A	
<b>Decomposition Temp.</b>		
<b>Flash Point °F</b>	26.6 °F	
<b>Flash Point °C</b>	-3 °C	
<b>Explosion Limits</b>	Lower: 2.2 %	
	Upper: 11.5 %	38 °C
<b>Flammability</b>	N/A	
<b>Autoignition Temp</b>	427 °C	
<b>Refractive Index</b>	1.372	
<b>Solubility</b>		
<b>Solubility in Water:</b>	Soluble.	
<b>Other Solvents:</b>	SOLUBLE IN ALCOHOL, ETHER, ACETONE, BENZENE, MISCELLANEOUS WITH CHLOROFORM, OILS.	
<b>N/A = not available</b>		

Method: closed cup  
Method: closed cup

**Section 10 - Stability and Reactivity****Stability****Stable**

Stable.

**Conditions to Avoid**

Moisture

**Materials to Avoid**

Strong oxidizing agents.

**Hazardous Decomposition Products****Hazardous Decomposition Products**

Carbon monoxide, Carbon dioxide.

**Hazardous Polymerization****Hazardous Polymerization**

Will not occur.

**Section 11 - Toxicological Information****Route of Exposure****Skin Contact**

Causes skin irritation.

**Skin Absorption**

May be harmful if absorbed through the skin.

**Eye Contact**

Causes eye irritation.

**Inhalation**

Material is irritating to mucous membranes and upper respiratory tract. May be harmful if inhaled.

**Ingestion**

May be harmful if swallowed.

**Target Organ(s) or System(s)**

Central nervous system. Liver. Kidneys. Blood.

**Signs and Symptoms of Exposure**

Can cause CNS depression. Exposure can cause: Drowsiness. Narcotic effect. Anemia.

**RTECS Number:** AH5425000

**Toxicity Data**

Oral - Rat: 5620 mg/kg (LD50)  
Inhalation - Rat: 200,000 mg/m<sup>3</sup> (LC50)  
Remarks: Behavioral: Somnolence (general depressed activity).  
Lungs, Thorax, or Respiration: Acute pulmonary edema.  
Gastrointestinal: Changes in structure or function of salivary glands.

Oral - Mouse: 4100 mg/kg (LD50)  
Remarks: Behavioral: Somnolence (general depressed activity).  
Behavioral: Change in motor activity (specific assay).  
Behavioral: Coma.

Inhalation - Mouse: 45,000 mg/m<sup>3</sup> (LC50)  
Intraperitoneal - Mouse: 709 MG/KG (LD50)

Subcutaneous - Cat: 3 GM/KG (LD50)  
Remarks: Behavioral: Somnolence (general depressed activity).  
Gastrointestinal: Nausea or vomiting.  
Blood: Other changes.

Oral - Rabbit: 4935 mg/kg (LD50)  
Skin - Rabbit: >20 MU/KG (LD50)

Oral - Guinea pig: 5500 mg/kg (LD50)  
Remarks: Behavioral: Somnolence (general depressed activity).  
Behavioral: Change in motor activity (specific assay).  
Behavioral: Coma.

Subcutaneous - Guinea pig: 3 GM/KG (LD50)  
Remarks: Behavioral: Somnolence (general depressed activity).

#### Irritation Data

Eyes - Human: 400 ppm

#### Chronic Exposure - Carcinogen

Result: This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

#### Chronic Exposure - Mutagen

<u>Species</u>	<u>Dose</u>	<u>Cell Type</u>	<u>Mutation test</u>
Hamster	9 GM/L	fibroblast	Cytogenetic analysis

#### Section 12 - Ecological Information

**Physical Properties Affecting Ecotoxicity**  
**BOD:** BOD after 5 Days: 26.6 - 57.1 %

#### Acute Ecotoxicity Tests

**Test Type**  
EC50 Algae  
**Time:** 24.0 h **Value:** 4,300 mg/l

**Test Type**  
EC50 Algae  
**Species**  
SELENASTRUM  
**Time:** 72.0 h **Value:** 1,800 - 3,200 mg/l

**Test Type**  
EC50 Daphnia  
**Species**  
Daphnia magna  
**Time:** 24.0 h **Value:** 2,300 - 3,090 mg/l

**Test Type**  
LC50 Fish  
**Species**  
Onchorynchus mykiss (Rainbow trout)  
**Time:** 96.0 h **Value:** 350 - 600 mg/l  
**Test Type**  
LC50 Fish  
**Species**  
Pimephales promelas (Fathead minnow)  
**Time:** 96.0 h **Value:** 220 - 260 mg/l

#### Section 13 - Disposal Considerations

##### Appropriate Method of Disposal of Substance or Preparation

Contact a licensed professional waste disposal service to dispose of this material. Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Observe all federal, state, and local environmental regulations.

#### Section 14 - Transport Information

**DOT**  
Proper Shipping Name: Ethyl acetate  
UN#: 1173  
Class: 3  
Packing Group: Packing Group II  
Hazard Label: Flammable liquid  
PIH: Not PIH

**IATA**  
Proper Shipping Name: Ethyl acetate  
IATA UN Number: 1173  
Hazard Class: 3  
Packing Group: II

#### Section 15 - Regulatory Information

**EU Directives Classification**  
Symbol of Danger: F XI  
**Indication of Danger**  
Highly Flammable, Irritant.  
**Risk Statements** R: 11 36 66 67  
Highly flammable. Irritating to eyes. Repeated exposure may cause skin dryness or cracking. Vapors may cause drowsiness and dizziness.  
**Safety Statements** S: 16 26 33  
Keep away from sources of ignition - no smoking. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Take precautionary measures against static discharges.

**US Classification and Label Text**  
**Indication of Danger**  
Flammable. Irritant.  
**Risk Statements**  
Irritating to eyes, respiratory system and skin. Repeated exposure may cause skin dryness or cracking. Vapors may cause drowsiness and dizziness.  
**Safety Statements**  
Keep away from sources of ignition - no smoking. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Take precautionary measures against static discharges.  
**US Statements**  
Target organ(s): Liver, Kidneys.

**United States Regulatory Information**  
SARA Listed: No

TSCA Inventory Item: Yes

**Canada Regulatory Information**  
**WHMIS Classification**

This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.

DSL: Yes

NDSL: No

#### **Section 16 - Other Information**

##### **Disclaimer**

For R&D use only. Not for drug, household or other uses.

##### **Warranty**

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. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2006 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.