



# Ethyl Acetate

## Substance Technical Guidelines

UCSC Laboratory Safety Services  
Providing a little slug of information on . . .

### Chemical Information Overview

Ethyl acetate is a low toxic solvent but highly flammable and therefore poses a dangerous fire and explosion hazard. The exposure limit of 400 ppm was established because it is the level where workers find the material irritating.

Ethyl acetate is a colorless liquid with a fragrant, fruity odor. It is used as a solvent, a synthetic flavoring substance, and in making perfumes and dyes. Ethyl acetate is also used as a solvent in nail polish, nail polish removers, basecoats, and other manicuring preparations.

<b>Chemical Name:</b>	Ethyl Acetate	<b>Synonyms:</b>	Acetic acid, ethyl ester;
<b>Chemical Family:</b>	Ester		Acetic ether;
<b>Chemical Formula:</b>	C <sub>4</sub> H <sub>8</sub> O <sub>2</sub>		Ethyl ethanoate;
<b>Molecular Weight:</b>	88.1		Vinegar naphtha;
<b>CAS Number:</b>	141-78-6		Acetidin

### Physical Data

**Description:** Colorless liquid, ether-like, fruity odor, wine-like burning taste.  
**Boiling Point:** 171° F (77° C)  
**Specific Gravity:** 0.9 (H<sub>2</sub>O = 1 @ 20° C)  
**Ionization Potential:** 10.01 eV

**Solubility in Water:** Moderate  
**Solvent Solubility:** Soluble in most organic solvents.  
**Vapor Density:** 3.0 (Air = 1 @ 20° C)  
**Odor Threshold:** 3.9 ppm (NOTE: range of accepted threshold values is broad and caution should be used when relying on odor to determine exposure)

### Exposure Limits

OSHA Permissible Exposure Limit	400 ppm (8 hr TWA)
ACGIH Threshold Limit Value	400 ppm (8 hr TWA)
NIOSH Recommended Exposure Limit	400 ppm (8 hr TWA)

### Fire and Explosion Hazard

Ethyl acetate is a HIGHLY FLAMMABLE MATERIAL with a low flash point (24°F). Ethyl acetate can release vapors that form explosive mixtures at temperatures above the flash point. Vapors can travel to a source of ignition and flash back. Containers of ethyl acetate may explode in the heat of a fire. Vapors may be heavier than air and can spread along the floor collecting in low or confined spaces.

**Flash Point :** 24°F (-4.4°C)  
**Lower Explosion Limit:** 2.2%  
**Upper Explosion Limit:** 9.0%  
**Autoignition Temperature:** 800°F (427°C)  
**Flammability Class (OSHA):** Class 1B Flammable Liquid

**Extinguishing Media:** For small fires, use water spray, dry chemical, carbon dioxide or chemical foam. Water may be ineffective. For large fires, use water spray, fog or alcohol-resistant foam. DO NOT use straight streams of water. Cool containers with flooding quantities of water until well after fire is out.

## **Reactivity and Compatibility**

**Incompatibility (Materials to Avoid):** Keep away from heat, sparks, flames, or any sources of ignition. Avoid contact with nitrates, strong acids, strong bases, and oxidizers.

## **General Effects of Exposure (Health Hazard Data)**

Exposure to ethyl acetate above the 400 ppm threshold limit causes eye and respiratory tract irritation in 3 to 5 minutes. Ingestion of ethyl acetate may cause headache and drowsiness. Prolonged or repeated contact may cause skin irritation and dermatitis. Chronic inhalation may cause effects similar to those of acute exposure. Chronic exposure may produce anemia, swelling, and fatty degeneration of the viscera.

**Carcinogenicity:** There is no data at this time to suggest ethyl acetate is a carcinogen in humans.

### **Acute Animal Toxicity:**

Oral, rats: LD50 = 5620 mg/kg

Inhalation, mouse: LC50 = 45 g/m<sup>3</sup>.

Inhalation, rats: LC50 = 200 g/m<sup>3</sup>

## **Emergency and First Aid Procedures**

**Ingestion (Swallowing):** Rinse mouth with water. Do not induce vomiting. If the victim is conscious, dilute the ingested ethyl acetate by giving 2 to 4 cupfuls water or milk. Keep affected person warm and at rest. Get medical attention immediately.

**Inhalation (Breathing):** Remove the victim from the exposure area to fresh air immediately. If breathing has stopped, give artificial respiration. Keep the affected person warm and at rest. Qualified first-aid or medical personnel should administer care until the victim can be transported to a medical facility.

**Skin Contact.** Remove contaminated clothing (including shoes) immediately. Wash the affected area of your body with soap or mild detergent and large amounts of water until no evidence of the chemical remains (at least 10 to 20 minutes). Get medical attention if you experience appreciable skin, eye or respiratory irritation.

**Eye Contact:** Wash the eyes immediately with large amounts of water occasionally lifting lower and upper lids, until no evidence of chemical remains (at least 15 to 20 minutes). Remove contact lenses if they are not rinsed by eyewash. Get medical attention immediately. If you have experienced appreciable eye irritation from a splash or excessive exposure, you should be referred promptly to an ophthalmologist for evaluation.

## **Emergency Procedures**

**Emergencies:** If a spill of appreciable quantity occurs, leave the area quickly unless you are a designated person who has been given specific emergency response training and duty assignments. Do not touch spilled material. Designated persons may stop the leak and shut off ignition sources if these procedures can be done without risk. Designated persons should isolate the hazard area and deny entry except for necessary people protected by suitable protective clothing and respirators adequate for the exposure.

### **Spill, Leak, and Disposal Procedures**

**Occupational Spill:** For small containers, place the leaking container in your chemical fume hood or other well ventilated area. Clean-up small spills with absorbent material if this can be done safely. For larger spills, leave the area immediately and dial 911 or contact EH&S at 459-2553 directly.

**Waste Disposal:** Dispose of all hazardous chemical waste through the campus hazardous waste disposal program. Contact EH&S at 459-3086 if you need assistance.

## **Protective Equipment and Clothing**

**Respiratory Protection:** You must participate in the UCSC respiratory protection program if you use a respirator. Contact EH&S at 459-5394 for more information.

NIOSH approved half and full facepiece negative pressure respirators equipped with approved cartridges or canisters (organic vapor) may be used for protection from ethyl acetate.

**Protective Gloves:** Wear protective (impervious) gloves to prevent skin contact with ethyl acetate. Silver shield gloves provide the greatest protection but offer little dexterity due to their design. Nitrile gloves offer poor resistance to ethyl acetate and are not recommended. Most gloves used in laboratories are thin and provide a contact barrier only. These types of gloves should never be used for immersion and should be disposed of immediately when contamination is suspected.

**Eye Protection:** If you might be splashed in the eyes with ethyl acetate, wear safety glasses with side shields or splash goggles. When working with larger volumes, you may also need a face shield to supplement the protection provided by goggles. Never use just a face shield without other eye protection.

**Other Protective Equipment:** You must wear appropriate lab attire to prevent repeated or prolonged contact with ethyl acetate. This should include long pants, closed toe shoes, and a lab coat.

If you are splashed with a large volume of ethyl acetate, immediately use the *emergency showers and eyewash fountains* to prevent serious injury. Report the incident to your supervisor and obtain necessary medical support.

## **Engineering Controls**

Ventilation is the most widely applied engineering control method for reducing the concentration of airborne substances in the breathing zones of workers. There are two distinct types of ventilation.

**Local Exhaust:** Local exhaust ventilation is designed to capture airborne contaminants as near to the point of generation as possible. To protect you, the direction of contaminant flow must always be toward the local exhaust system inlet and away from you. Laboratory chemical fume hoods are a good example of local exhaust ventilation.

**General Dilution:** General dilution ventilation involves continuous introduction of fresh air into the workroom to mix with the contaminated air and lower your breathing zone concentration of a material. Effectiveness depends on the number of air changes per hour and where devices emitting contaminants are located in the area. In some circumstances, general dilution ventilation may be the only practical method of control but it is the least effective.