

Material Safety Data for: Ethyl Acetate

1. PRODUCT IDENTIFICATION

Name acetic acid, ethyl ester
Synonyms ethyl acetate, ethyl acetic ester, ethyl ethanoate
CAS# 141-78-6
Product Uses solvent in coatings, inks; extraction of fatty materials in food processing, etc

2. INGREDIENTS

	%	TWAEV / TLV mg/m ³	LD ₅₀ ORAL	(mg/kg) SKIN	LC ₅₀ ppm INHALATION
ethyl acetate	100%	400 / 1440	4100	>18,000	10,600

3. (a) HAZARDS SUMMARY

Hazards, Quick Guide: flammable, heavy vapour may travel, distant ignition & flashback are possible; may irritate skin & eyes

Canada – WHMIS

Key:

B 2

B 2 – Flash Point <38°C, B 3 – Flash Point >38°C & <93°C

D 1 – Immediately Toxic, D 2 – Chronic Toxicity

C – Oxidising Substance, E – Corrosive

U.S.A. – HMIS

Key:

Health – 0/1, Fire – 3, Reactivity – 0

0=minimal, 1=slight, 2=moderate, 3=serious, 4=severe

3. (b) HAZARDS – TOXICITY

Effects, Acute Exposure

Skin Contact	little to no effect
Skin Absorption	slight; no toxic effects likely by this route
Eye Contact	may be slightly irritating; vapour irritating at 400ppm
Inhalation	irritating at 400ppm; may cause headache, dizziness, drowsiness, nausea
Ingestion	low toxicity; symptoms similar to inhalation may occur as ethyl acetate hydrolyses to ethanol; ingestion toxicity could only be seen if ethyl acetate is deliberately ingested in quantity

Effects, Chronic Exposure

General	prolonged exposure may cause dermatitis due to removal of protective oils from skin
Sensitising	not a sensitiser in humans or animals
Carcinogen/Tumorigen	not considered a tumorigen or a carcinogen in humans or animals
Reproductive Effect	no known effect in humans or animals
Mutagen	no known effect on humans or animals
Synergistic With	formaldehyde toxicity increases with ethyl acetate
LD ₅₀ (oral)	5620 & 10,200mg/kg (rat), 4100mg/kg (mouse), 4935mg/kg (rabbit), 5500mg/kg (guinea pig),
LD ₅₀ (skin)	>18,000mg/kg (rabbit)
LC ₅₀ (inhalation)	19,600 & 55,000ppm (rat), 10,600 & 12,500ppm (mouse)

Please ensure that this MSDS is given to, and explained to people using this product.

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4. FIRST AID

- SKIN: Wash with plenty of water. Remove contaminated clothing and do not reuse until thoroughly laundered.
 EYES: Wash eyes with plenty of water, holding eyelids open. Seek medical assistance promptly if there is irritation.
 INHALATION: Remove from contaminated area promptly. **CAUTION: Rescuer must not endanger himself!** If breathing stops, administer artificial respiration and seek medical aid promptly.
 INGESTION: Give plenty of water to dilute product. Do not induce vomiting (NOTE below). Keep victim quiet. If vomiting occurs, lower victim's head below hips to prevent inhalation of vomited material. Seek medical help promptly.

Inadvertent inhalation of vomited material may seriously damage the lungs. The danger of this is greater than the risk of poisoning through absorption of this relatively low-toxicity substance. The stomach should only be emptied under medical supervision, and after the installation of an airway to protect the lungs.

5. PHYSICAL PROPERTIES

Odour & Appearance	clear, colourless liquid with sharp, fruity odour
Odour Threshold	18–32ppm
Vapour Pressure	73mmHg / 9.7kPa (20°C / 68°F)
Evaporation Rate (<i>Butyl Acetate = 1</i>)	6.2
Vapour Density (air = 1)	3
Boiling Range	77°C / 171°F
Freezing Point	-83°C / -118°F
Specific Gravity	0.902 (20/20°C)
Water Solubility	86 grams per litre (20°C / 68°F)
Also soluble in	highly soluble in most organic solvents
Viscosity	0.44 centipoise (25°C / 77°F)
pH	none – (<i>does not liberate hydrogen ions when dissolved</i>)
NOTE: Pure anhydrous product is neutral. Small amounts of acetic acid from hydrolysis may lower pH.	
Conversion Factor	1ppm = 3.6mg/m ³
Molecular Weight	88grams per mole

6. FLAMMABILITY & FIRE FIGHTING

Flash Point	-4°C / 24°F (closed cup)
Autoignition Temperature	427°C / 800°F
Flammable Limits	2% – 11.5%
Combustion Products	carbon monoxide, nitrogen oxides, smoke, part oxidised hydrocarbon fragments
Fire Fighting Precautions	alcohol foam, dry chemical, water fog or spray to cool & dilute, product floats on water – water jet spreads flames; fire fighters must wear SCBA
Static Charge Accumulation	cannot accumulate a static charge on agitation or pumping

7. STABILITY / REACTIVITY

Dangerously Reactive With	strong oxidising agents; strong alkalis can provoke sudden hydrolysis & heat release may explode if exposed to lithium aluminium hydride
Also Reactive With	strong mineral acids; attacks some plastics
Stability	stable; will not polymerize
Decomposes in Presence of	alkalies
Decomposition Products	ethanol, acetic acid
Sensitive to Mechanical Impact	no

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8. PROTECTIVE EQUIPMENT / EXPOSURE CONTROL

ACGIH TLV	400ppm / 1440mg/m ³
OSHA PEL	400ppm / 1400mg/m ³
STEL	not listed
Ventilation	mechanical ventilation may be required to maintain airborne titre below TWAEV; if product is handled in a sealed apparatus at elevated temperature, respirators with an organic vapour cartridge should be available for
	all personnel for “escape” purposes; <i>these respirators should be kept from air in a Tupperware or similar container to preserve cartridge “freshness”.</i>
Hands	“Barrier”, “Silver Shield”, “Tychem” gloves recommended – <i>other types may also protect; consult supplier to confirm suitability</i>
Eyes	safety glasses with side shields – <i>always protect the eyes</i>
Clothing	no special protective clothing required, but impermeable (above) apron, boots, & long sleeves are recommended if splashing is likely

9. HANDLING & STORAGE

Store in a cool, dry environment, away from sources of ignition, heat and oxidising agents. Always use non-sparking bronze or aluminium hand tools. All electrical and mechanical equipment (including lighting, switchgear and forklift trucks) used with or around this product must be explosion-proof.

Although this product cannot retain a static charge on agitation or transfer from one container to another, its flash point is low and it is prudent to ground or electrically bond the source container, the receiving container, & transfer pump before transferring contents. Avoid splashing by ensuring that the product nozzle is below the surface in the receiving container. Empty containers may contain a flammable or explosive vapour. Always ensure that containers, empty or full, are tightly sealed unless in use.

Avoid breathing product vapour. Use with adequate ventilation. If dealing with a spill, and ventilation is impossible or impractical, wear a respirator with an organic vapour cartridge.

Never cut, drill, weld or grind on or near this container. Avoid contact with skin and wash work clothes frequently. An eye bath and safety shower must be available near the workplace.

10. SPILL PROCEDURES

Serious Fire Potential: blanket spill with foam as a precaution against accidental ignition. Take extreme care to avoid sparks – do not operate (turn on OR off) electrical appliances near spill, unless explosion proof.

Leak Precaution	dyke to control spillage and prevent environmental contamination
Handling Spill	ventilate contaminated area; recover free liquid with suitable pumps; absorb residue on an inert sorbent, sweep & pick up using plastic or aluminium shovel, & store in closed containers for recycling or disposal

11. DISPOSAL

Waste Disposal	do not flush to sewer , recycle solvent if possible, may be incinerated in approved facility
Containers	Drums should be reused. Recondition and pressure test by a licensed reconditioner prior to re-use. Pails must be vented and thoroughly dried prior to crushing and recycling. IBCs (intermediate bulk containers): polyethylene bottle must be pressure tested & recertified at 30 months. Replace at 60 months (5yrs). Steel containers must be inspected, pressure tested & recertified every 5 years. <i>Never cut, drill, weld or grind on or near this container, even if empty</i>

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12. ENVIRONMENTAL INFORMATION

Bioaccumulation	this product is both metabolised and excreted very quickly and cannot bioaccumulate
Biodegradation	this product degrades readily and rapidly in the presence of oxygen; 50-90% degradation in 5 days
Abiotic Degradation pH=7	this product reacts with atmospheric hydroxyl radicals; its estimated half-life in air is 10 days; in water, ½-life for hydrolysis is 2 years
Mobility in soil, water	this product is water soluble and will move readily in soil and water
Aquatic Toxicity	
LC ₅₀ (Fish, 96hr) gairdneri),	484mg/litre (oncorhynchus mykiss), 230mg/litre (pimephales promelas), 455mg/litre (salmo gairdneri), 212mg/litre (heteropneustes fossilis)
EC ₅₀ (Crustacea, 48hr)	164mg/litre (daphnia cucullata), 717mg/litre (daphnia magna), 262 & 295mg/litre (daphnia pulex), 750mg/litre (gammarus pulex)
EC ₅₀ (Algae)	>1000mg/litre (chlorella aeruginosa & scenedesmus pannonicus), 3300mg/litre (scenedesmus subspicatus)

13. TRANSPORT REGULATIONS

Canada TDG	PIN	UN-1173
AND	Shipping Name	ethyl acetate
U.S.A. 49 CFR	Class	3
	Packing Group	II
Marine Pollutant		not a marine pollutant

14. EMERGENCY INFORMATION

Canada	Call CANUTEC (collect)	(613) 996-6666
U.S.A.	Call CHEMTREC	(800) 424-9300

15. REGULATIONS

Canada DSL	on inventory
U.S.A. TSCA	on inventory
Europe EINECS	on inventory (EC# 205-500-4)

Immediately Dangerous to Life or Health: 2000 ppm (Based on 10% of the lower explosive limit for safety considerations even though the relevant toxicological data indicated that irreversible health effects or impairment of escape existed only at higher concentrations.)

Allowable Tolerances: Residues of ethyl acetate are exempted from the requirement of a tolerance when used as a solvent or cosolvent in accordance with good agricultural practices as inert (or occasionally active) ingredients in pesticide formulations applied to growing crops or to raw agricultural commodities after harvest.

OSHA Standards: Permissible Exposure Limit: Table Z-1 8-hr Time Weighted Avg: 400 ppm (1400 mg/cu m).

NIOSH Recommendations: Recommended Exposure Limit: 10 Hr Time-Weighted Avg: 400 ppm (1400 mg/cu m).

Threshold Limit Values: 8 hr Time Weighted Avg (TWA): 400 ppm. Excursion Limit Recommendation: Excursions in worker exposure levels may exceed 3 times the TLV-TWA for no more than a total of 30 minutes during a work day, and under no circumstances should they exceed 5 times the TLV-TWA, provided that the TLV-TWA is not exceeded.

Atmospheric Standards: This action promulgates standards of performance for equipment leaks of Volatile Organic Compounds (VOC) in the Synthetic Organic Chemical Manufacturing Industry (SOCMI). The intended effect of these standards is to require all newly constructed, modified, and reconstructed SOCMI process units to use the best demonstrated system of continuous emission reduction for equipment leaks of VOC, considering costs, non air quality health and environmental impact and energy requirements. Ethyl acetate is produced, as an intermediate or final product, by process units covered under this subpart.

CERCLA Reportable Quantities: Persons in charge of vessels or facilities are required to notify the National Response Center (NRC) immediately, when there is a release of this designated hazardous substance, in an amount equal to or greater than its reportable quantity of 5000 lb or 2270 kg. The toll free number of the NRC is (800) 424-8802; In the Washington D.C. metropolitan area (202) 426-2675. The rule for determining when notification is required is stated in 40 CFR 302.4 (section IV. D.3.b).

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15. REGULATIONS, cont'd

TSCA Requirements: A testing consent order is in effect for ethyl acetate for health effects testing. FR citation: 1/23/95.

RCRA Requirements: As stipulated in 40 CFR 261.33, when ethyl acetate, as a commercial chemical product or manufacturing chemical intermediate or an off-specification commercial chemical product or a manufacturing chemical intermediate, becomes a waste, it must be managed according to Federal and/or State hazardous waste regulations. Also defined as a hazardous waste is any residue, contaminated soil, water, or other debris resulting from the cleanup of a spill, into water or on dry land, of this waste. Generators of small quantities of this waste may qualify for partial exclusion from hazardous waste regulations (40 CFR 261.5). When ethyl acetate is a spent solvent, it is classified as a hazardous waste from a nonspecific source, as stated in 40 CFR 261.31, and must be managed according to State and/or Federal hazardous waste regulations.

FIFRA Requirements: Residues of ethyl acetate are exempted from the requirement of a tolerance when used as a solvent or cosolvent in accordance with good agricultural practices as inert (or occasionally active) ingredients in pesticide formulations applied to growing crops or to raw agricultural commodities after harvest. As the federal pesticide law FIFRA directs, EPA is conducting a comprehensive review of older pesticides to consider their health and environmental effects and make decisions about their future use. Under this pesticide reregistration program, EPA examines health and safety data for pesticide active ingredients initially registered before November 1, 1984, and determines whether they are eligible for reregistration. In addition, all pesticides must meet the new safety standard of the Food Quality Protection Act of 1996. Pesticides for which EPA had not issued Registration Standards prior to the effective date of FIFRA, as amended in 1988, were divided into three lists based upon their potential for human exposure and other factors, with List B containing pesticides of greater concern and List D pesticides of less concern. Ethyl acetate is found on List D. Case No: 4005; Pesticide type: insecticide, herbicide, antimicrobial; Case Status: OPP is reviewing data from the pesticide's producers regarding its human health and/or environmental effects, or OPP is determining the pesticide's eligibility for reregistration and developing the Reregistration Eligibility Decision document.

FDA Requirements: Certification of this color additive when used as a diluent (in inks for marking fruit & vegetables) is not necessary for the protection of the public health and therefore batches thereof are exempt from the requirements of section 706(c) of the Federal Food, Drug, and Cosmetic Act. /Restrictions incl no residue./ Synthetic flavoring substances and adjuvants /for human consumption/ that are generally recognized as safe for their intended use, within the meaning of section 409 of the Act. Ethyl acetate is included on this list. Synthetic flavoring substances and adjuvants /for animal drugs, feeds, and related products/ that are generally recognized as safe for their intended use, within the meaning of section 409 of the Act. Ethyl acetate is included on this list.

16. PREPARATION INFORMATION

Prepared for Megaloid Laboratories by Peter Bursztyn, (705) 734-1577

File Name: ethyl-acc

With data from RTECS, Haz. Substance Data Base, Cheminfo (CCOHS), IUCLID Datasheets (European Chem. Substance Info. System), & others, as available

Preparation Date: **December 2003** Revision Date: **October 2006, October 2009**

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