

# Material Safety Data for: Acetic Acid, glacial

## 1. PRODUCT IDENTIFICATION

<b>Name</b>	acetic acid (glacial)
<b>Synonyms</b>	ethanoic acid, methanecarboxylic acid
<b>CAS#</b>	64-19-7
<b>EC#</b>	200-580-7
<b>Product Uses</b>	manufacture of cellulose acetate, vinyl acetate and a variety of acetate esters

## 2. INGREDIENTS

	%	TWAEV / TLV mg/m <sup>3</sup>	LD <sub>50</sub> ORAL	(mg/kg) SKIN	LC <sub>50</sub> ppm INHALATION
ethanoic acid	100%	10 / 25	3310	1590	2810

## 3. (a) HAZARDS SUMMARY

**Hazards, Quick Guide:** flammable liquid, heavy vapour travels, distant ignition & flashback possible, corrosive to skin & eyes

### Canada – WHMIS

Key:

**B 3, E**

**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 – 3, Fire – 2, Reactivity – 2**

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

## 3. (b) HAZARDS – TOXICITY

### Effects, Acute Exposure

Skin Contact	concentrated product severely corrosive to tissue; may cause permanent scarring; <i>less corrosive with dilution – 10% slightly irritating if not removed</i>
Skin Absorption	unlikely; severe local tissue damage probably prevents absorption
Eye Contact	corrosive to eyes; permanent scarring of cornea and blindness; <i>irritating even when dilute</i>
Inhalation	irritating; may cause delayed bronchoconstriction and difficult breathing; <i>airway hyperreactivity may persist for years after inhalation</i>
Ingestion	concentrated product severely corrosive to mouth, throat and stomach

### Effects, Chronic Exposure

General	several reports of long-lasting bronchial hyper-reactivity following years of exposure to acetic acid vapour; rodents exposed to vapour lost appetite
Sensitising recorded	not a human sensitiser – one report of human respiratory & one of skin sensitisation
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	potentiates the effects of several known carcinogens
LD <sub>50</sub> (oral)	3310 & 3530mg/kg (rat);
LD <sub>50</sub> (skin)	1590mg/kg (rabbit), 3300mg/kg (guinea pig)
LC <sub>50</sub> (inhalation)	6500ppm (rat), 2810ppm (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, hygroscopic liquid with a pungent, penetrating vinegar odour
Odour Threshold	0.07ppm – <i>geometric mean</i>
Vapour Pressure	11.4mmHg / 1.52kPa (20°C / 68°F)
Evaporation Rate ( <i>Butyl Acetate = 1</i> )	1
Vapour Density (air = 1)	2.1
Boiling Range	118°C / 244°F
Freezing Point	16.6°C / 62°F
Specific Gravity	1.05 (20/20°C)
Water Solubility	complete
Also soluble in	acetone, diethyl ether, glycerol, benzene
Viscosity	1.22centipoise (20°C / 68°F)
pH	2.4 (6% solution) – <i>highly acid</i>
Conversion Factor	1ppm = 2.45mg/m <sup>3</sup>
Molecular Weight	60grams per mole

**6. FLAMMABILITY & FIRE FIGHTING**

Flash Point	39°C / 103°F (closed cup)
Autoignition Temperature	464°C / 867°F
Flammable Limits	4% – 16%
Combustion Products	carbon monoxide, nitrogen oxides, unburnt acid, part oxidised hydrocarbon fragments
Fire Fighting Precautions	foam, dry chemical, water fog or spray; 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 alkalies
Also Reactive With phosphorus	reacts with most metals (except aluminium) to produce hydrogen gas; reacts with trichloride and phosphorus isocyanate
Stability	stable; will not normally polymerize – <i>polymerises with acetaldehyde</i>
Decomposes in Presence of	not known
Decomposition Products	none apart from Hazardous Combustion Products
Sensitive to Mechanical Impact	no

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## 8. PROTECTIVE EQUIPMENT / EXPOSURE CONTROL

ACGIH TLV	10ppm / 25mg/m <sup>3</sup> ; STEL 15ppm / 37mg/m <sup>3</sup>
OSHA PEL	10ppm / 25mg/m <sup>3</sup> ; STEL – not listed
Ventilation	mechanical ventilation may be required to maintain airborne titre below TWAEV; a respirator with organic vapour, acid gas cartridge must be available for escape purposes, should ventilation or engineering containment fail ( <i>store respirators in airtight containers [eg: “Tupperware”] to maintain cartridge “freshness”</i> )
Hands	butyl 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	wear impermeable (above) apron, boots, & long sleeves if there is any danger of splashing

## 9. HANDLING & STORAGE

Store below 40°C, but above 17°C. Keep away from sources of ignition and substances listed in Part 7. Always ensure that containers, whether empty or full, or part full, are tightly sealed unless in use.

Avoid breathing product vapour. Use with adequate ventilation. If dealing with a spill, ventilate well *AND* wear a suitable respirator with organic vapour, acid gas 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 always be available near the workplace.

## 10. SPILL PROCEDURES

***Summer Fire Potential: in hot (over 39°C) weather blanket spill with foam as a precaution against accidental ignition. Take 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 shovel, & store in closed containers for recycling or disposal; any residue may be <b><i>neutralised with sodium carbonate followed by rinsing to sewer</i></b>

## 11. DISPOSAL

Waste Disposal	<b>do not flush to sewer</b> , recycle if possible, may be incinerated in approved facility
Containers	<b>Drums</b> should be reused. Recondition and pressure test by a licensed reconditioner prior to re-use. <b>Pails</b> must be vented and thoroughly dried prior to crushing and recycling. <b>IBCs</b> (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. <b><i>Never cut, drill, weld or grind on or near this container, even if empty</i></b>

## 12. ENVIRONMENTAL INFORMATION

Bioaccumulation	this product is readily metabolised by all living creatures and cannot bioaccumulate
Biodegradation	this product degrades readily and rapidly in the presence of oxygen; 58% biodegradation in 5 days
Abiotic Degradation	this product reacts with atmospheric hydroxyl radicals; its estimated half-life in air is 22 days; however, rain will knock down any vapour very rapidly
Mobility in soil, water	this product is water soluble and will move readily in soil and water, however, soil biota may well metabolise it before it reaches an aquifer
<b>Aquatic Toxicity</b>	
LC <sub>50</sub> (fish, 96hr)	75mg/litre (bluegill sunfish), 251mg/litre (mosquito fish), neutralised at pH6.9-8.7
EC <sub>50</sub> (crustacea, 24hr)	6000mg/litre (daphnia magna)

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### 13. TRANSPORT REGULATIONS

<i>Canada TDG</i>	<b>PIN</b>	<b>UN-2789</b>
	<b>Shipping Name</b>	<b>acetic acid, glacial</b>
	<b>Class</b>	<b>8</b>
	<b>Packing Group</b>	<b>II</b>
<i>U.S.A. 49 CFR</i>	<b>PIN</b>	<b>UN-2789</b>
	<b>Shipping Name</b>	<b>acetic acid, glacial</b>
	<b>Class</b>	<b>8</b>
	<b>Packing Group</b>	<b>II</b>
<b>Marine Pollutant</b>		<b>not a marine pollutant</b>

### 14. EMERGENCY INFORMATION

<i>Canada</i>	<b>Call CANUTEC (collect)</b>	<b>(613) 996-6666</b>
<i>U.S.A.</i>	<b>Call CHEMTREC</b>	<b>(800) 424-9300</b>

### 15. REGULATIONS

<b>Canada DSL</b>	<b>on inventory</b>
<b>U.S.A. TSCA</b>	<b>on inventory</b>
<b>Europe EINECS</b>	<b>on inventory</b>

**Immediately Dangerous to Life or Health:** 50 ppm [REF-27]

**Allowable Tolerances:** Residues of acetic acid are exempted from the requirement of a tolerance when used as a catalyst 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. Residues of acetic acid are exempted from the requirement of a tolerance when used as a catalyst (Limit: not more than 0.5% of pesticide formulation) in accordance with good agricultural practices as inert (or occasionally active) ingredients in pesticide formulations applied to animals.

**OSHA Standards:** Permissible Exposure Limit: Table Z-1 8-hr Time Weighted Avg: 10 ppm (25 mg/cu m).

**NIOSH Recommendations:** Recommended Exposure Limit: 10 Hr Time-Weighted Avg: 10 ppm (25 mg/cu m). Recommended Exposure Limit: 15 Min Short-Term Exposure Limit: 15 ppm (37 mg/cu m).

**Threshold Limit Values:** 8 hr Time Weighted Avg (TWA): 10 ppm; 15 min Short Term Exposure Limit (STEL): 15 ppm.

**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. Acetic acid is produced, as an intermediate or a final product, by process units covered under this subpart.

**Clean Water Act Requirements:** Acetic acid is designated as a hazardous substance under section 311(b)(2)(A) of the Federal Water Pollution Control Act and further regulated by the Clean Water Act Amendments of 1977 and 1978. These regulations apply to discharges of this substance. This designation includes any isomers and hydrates, as well as any solutions and mixtures containing this substance.

**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).

**TSCA Requirements:** Section 8(a) of TSCA requires manufacturers of this chemical substance to report preliminary assessment information concerned with production, exposure, and use to EPA as cited in the preamble in 51 FR 41329.

**FIFRA Requirements:** Residues of acetic acid are exempted from the requirement of a tolerance when used as a catalyst 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. Residues of acetic acid are exempted from the requirement of a tolerance when used as a catalyst (Limit: not more than 0.5% of pesticide formulation) in accordance with good agricultural practices as inert (or occasionally active) ingredients in pesticide formulations applied to animals. New Active Ingredients ... includes pesticide active ingredients initially registered after November 1, 1984, that currently have active product registrations. By law, these newer pesticides are not subject to the reregistration program. They must, however, meet the new safety standard of the FQPA, and will be reviewed on a 15-year cycle under the registration review program. ... Active Ingredient Number: 044001; Type of Pesticide: biopesticide-herbicide; Use Site: non-food use (ornamental turf); Year: 1997.

**FDA Requirements:** The Approved Drug Products with Therapeutic Equivalence Evaluations List identifies currently marketed prescription drug products, incl acetic acid, approved on the basis of safety and effectiveness by FDA under sections 505 of the Federal Food, Drug, and Cosmetic Act. Substance added directly to human food affirmed as generally recognized as safe. Acetic acid used as a general purpose food additive in animal drugs, feeds, and related products is generally recognized as safe when used in accordance with good manufacturing or feeding practice.

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## 16. PREPARATION INFORMATION

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

File Name: **Acetic100%**

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

Preparation Date: **March 2004** Revision Date: **April 2007, February 2009**

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