

Product name:	Acetic acid, glacial
MSDS number:	2
Material number:	91000001
Published date:	04/08/2003

MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Product: Acetic acid, glacial
MSDS number: 2
Material number: 91000001

Manufacturer name and address:

Celanese Ltd.
 1601 W. LBJ Freeway
 P.O. Box 819005
 Dallas, TX 75381-9005
 United States
 Phone: 972 443 4000

Celanese Canada, Inc.
 P.O. Box 99 Station Main
 Edmonton, Alberta,
 Canada T5J 2H7

Synonyms: Ethanoic acid; Methanecarboxylic acid.

Transportation emergency phone numbers: In USA, call 800 424 9300 Outside USA, call 703 527 3887, collect calls accepted

2. Composition / Information on Ingredients

Component	CAS Number	Percent %	OSHA hazard category:
ACETIC ACID	64-19-7	99.85	Hazardous

3. Hazards Identification

Emergency Overview:

DANGER!

- Causes skin, eye and digestive tract burns.
- Flammable liquid and vapor.
- Causes respiratory tract irritation.

Product Description

Appearance: Clear, colorless mobile liquid.

Transportation emergency: 800 424 9300 CHEMTREC, 24 hrs/day
 703 527 3887 Outside USA, collect calls accepted, 24 hrs/day
Product emergency: 800 835 5235 Celanese, 24 hrs/day

ASTRO PRODUCT CODE # 6056



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Odor: Strong, acrid, vinegar-like odor.

Potential health effects

Routes of exposure: Skin, eyes, inhalation, ingestion.

Immediate effects:

Skin: Causes skin burns. May be harmful if absorbed through skin. Symptoms of exposure may include: Redness or discoloration, swelling, itching, burning or blistering of skin.

Eyes: Exposure to liquid Causes severe eye burns, damage irreversible. Exposure to vapors Causes eye irritation. Symptoms of exposure may include: Eye irritation, burning sensation, pain, watering, and/or change of vision.

Inhalation: Causes respiratory tract irritation. Harmful if inhaled. Symptoms of exposure may include: Nasal discharge, hoarseness, coughing, chest pain and breathing difficulty. Accumulation of fluid in the lungs (pulmonary edema); symptoms can be delayed for several hours.

Ingestion: Causes digestive tract burns. Symptoms of exposure may include: Nausea, vomiting, loss of appetite, gastrointestinal irritation and/or diarrhea. Inflammation of mouth, throat, esophagus and/or stomach.

Reproductive: No evidence of reproductive effects.

Carcinogenic: No evidence of carcinogenicity.

Mutagenic: Shows mixed results for mutagenic potential in vitro.

Target organ effects:

- Overexposure (prolonged or repeated exposure) may cause:
 - Injury to the eyes
 - Digestive tract damage
 - Respiratory tract damage
 - Skin damage.

Medical conditions which may be aggravated by exposure: Significant exposure to this chemical may adversely affect people with acute or chronic disease of the:
Respiratory Tract
Skin
Eyes

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For further information, see: Section 4 - First Aid Measures
 Section 5 - Fire Fighting Measures
 Section 6 - Accidental Release Measures
 Section 8 - Exposure Controls/Personal Protection
 Section 9 - Physical and Chemical Properties
 Section 10 - Stability and Reactivity

4. First Aid Measures

Skin: Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Wash clothing before reuse. Destroy contaminated shoes.

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes. If easy to do, remove contact lenses, if worn. Get medical attention immediately.

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion: DO NOT induce vomiting. Get medical attention immediately. If victim is fully conscious, give a cupful of water. Never give anything by mouth to an unconscious person.

Note to physician: Observe for latent pulmonary edema.

5. Fire Fighting Measures

NFPA: Health: 3 Flammability: 2 Reactivity: 0

Flammable properties

Flash point (test method): 39 C (103 F) (Closed Cup)

Flammable limits in air, % by volume:

Upper: 19.9%
Lower: 4%

Autoignition temperature: 516 C (961 F)

Products of combustion: Carbon Monoxide.

Extinguishing Media: Use alcohol type aqueous film forming foam for large fires. Use CO₂ or dry chemical for small fires.

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Fire Fighting Instructions: Water spray should be used to cool fire-exposed structures and vessels. Water spray can be used to reduce the intensity of flames and to dilute spills to a non-flammable mixture. Keep personnel removed from and upwind of fire. If potential for exposure to vapors or products of combustion exists, wear full fire fighting turnout gear and NIOSH approved self-contained breathing apparatus. Oxidizing chemicals may accelerate the burning rate in a fire situation.

Fire Fighting Environmental Concerns: Water run-off and vapor cloud may be corrosive. Dike and collect water used to fight fire for neutralization before release. Water streams should not be directed to the liquid, as this will cause the liquid to boil and generate more vapor. Thoroughly decontaminate bunker gear and other fire-fighting equipment before re-use.

6. Accidental Release Measures

Spill or Leak Instructions Eliminate ignition sources. See Section 8 for appropriate personal protective equipment. Contain spill with dikes of soil or nonflammable absorbent to minimize contaminated area. If fire potential exists, blanket spill with alcohol type aqueous film-forming foam or use water fog stream to disperse vapors. Avoid run-off into storm sewers and ditches leading to waterways. If required, notify state and local authorities. Place leaking containers in well-ventilated area. Neutralize with lime or sodium bicarbonate. Clean up small spills by using a nonflammable absorbent or flushing sparingly with water. Contain larger spills with nonflammable diking or absorbent. Clean up by vacuuming or sweeping.

Within the United States, call the National Response Center (800-424-8802) and appropriate state and local authorities if the quantity released over 24 hours is equal to or greater than the reportable quantity listed below:

5,000 lbs. of the material as is, based on a Reportable Quantity of 5,000 lbs. of acetic acid.

Keep unnecessary people away; isolate hazard area and deny entry. Stay upwind; keep out of low areas. Isolate for 800 meters or 0.5 miles in all directions if tank, rail car, or tank truck is involved in fire. Evacuate downwind areas as conditions warrant to prevent exposure and to allow vapors or fumes to dissipate. Spills may expose downwind areas to toxic or flammable concentrations over considerable distances in some cases.

7. Handling and Storage

Handling: Use with adequate ventilation. Keep containers closed when not in use. Always open containers slowly to allow any excess pressure to vent. Avoid breathing vapor. Avoid contact with eyes, skin or clothing. Wash thoroughly with soap and water after handling. Decontaminate soiled clothing thoroughly before re-use. Destroy contaminated leather clothing.

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This product may generate a static charge. Ground/bond equipment when transferring material to prevent static accumulation. Electrical equipment and circuits in all storage and handling must conform to requirements of National Electric Code (Article 500 and 501) for hazardous location.

Storage: Keep all containers tightly closed when not in use. Store out of direct sunlight and on an impermeable floor.
Do not store with incompatible materials. See Section 10. Stability and Reactivity.

8. Exposure Controls / Personal Protection

Engineering Controls: General or dilution ventilation is frequently insufficient as the sole means of controlling employee exposure. Local ventilation is usually preferred.

Protective Equipment A safety shower and eyebath should be readily available.

Skin protection: Wear impervious clothing and gloves to prevent contact. Neoprene is recommended. Other protective material may be used, depending on the situation, if adequate degradation and permeation data is available. If other chemicals are used in conjunction with this chemical, material selection should be based on protection for all chemicals present.

Eye/face protection: Wear chemical goggles when there is a reasonable chance of eye contact. In addition to goggles, wear a face shield if there is a reasonable chance for splash to the face.

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Respiratory protection: Based on workplace contaminant level and working limits of the respirator, use a respirator approved by NIOSH. The following is the minimum recommended equipment for an occupational exposure level. To estimate an occupational exposure level see Section 3, Section 8 and Section 11.

For concentrations > 1 and < 10 times the occupational exposure level: Use air-purifying respirator with full facepiece and organic vapor cartridge(s) or air-purifying full facepiece respirator with an organic vapor canister or a full facepiece powered air-purifying respirator fitted with organic vapor cartridge(s). The air purifying element must have an end of service life indicator, or a documented change out schedule must be established. Otherwise, use supplied air.

For concentrations more than 10 times the occupational exposure level and less than the lower of either 100 times the occupational exposure level or the IDLH: Use Type C full facepiece supplied-air respirator operated in positive-pressure or continuous-flow mode.

For concentrations > 100 times the occupational exposure level or greater than the IDLH level or unknown concentrations (such as in emergencies): Use self-contained breathing apparatus with full facepiece in positive-pressure mode or Type C positive-pressure full facepiece supplied-air respirator with an auxiliary positive-pressure self-contained breathing apparatus escape system.

For escape: Use self-contained breathing apparatus with full facepiece or any respirator specifically approved for escape.

Exposure guidelines

Component	Percent %	ACGIH TWA	ACGIH STEL	ACGIH CEILING	OSHA TWA	OSHA STEL	OSHA CEILING	Celanese WEL *
ACETIC ACID 64-19-7	99.85	10 ppm	15 ppm	-	10 ppm	-	-	

Component	Mexico TWA	Mexico STEL
ACETIC ACID 64-19-7	10 ppm	15 ppm

Component	1990 NIOSH IDLH (Recognized by OSHA)	1994 NIOSH IDLH
ACETIC ACID 64-19-7	1,000 PPM	50 ppm

Comments: Celanese has adopted the ACGIH TLVs

9. Physical and Chemical Properties

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Appearance:	Clear, colorless mobile liquid.
Odor:	Strong, acid, vinegar-like odor.
Vapor Pressure:	15.7 mm Hg @ 25 deg C
Vapor Density (Air=1 @ 20 C):	2.07
Boiling Point (760 mmHgA):	118 C (244 F)
Freezing Point:	16.6 C (61.9 F)
Solubility in Water @ 20 C:	100 %
Specific Gravity:	1.0492 at 20 deg C
Molecular Weight:	60.05
Evaporation Rate (n-Butyl acetate = 1):	0.97

10. Stability and Reactivity

Stability:	Stable.
Conditions to Avoid:	Avoid exposure to heat; may cause containers to rupture or explode.
Incompatibility:	Keep away from caustic soda, lime and strong alkalis, oxidizing agents such as nitric acid, peroxides, amines, sulfuric acid, perchloric acid or chromium trioxide.
Hazardous Combustion or Decomposition Products:	Thermal decomposition products may include oxides of carbon.
Hazardous Polymerization:	Hazardous polymerization will not occur.

11. Toxicological Information

Component Toxicological Information

Component	ACETIC ACID
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Acute Exposure:

Oral LD50: 3.2-5.6 g/kg (rats); slightly toxic to animals.

Inhalation LC50: > 16000 ppm (rats, 4 hours); practically nontoxic to animals.

Skin: Corrosive to rabbit skin. Moderately toxic to animals (LD50, rabbits: 1.1 g/kg).

Eyes: Corrosive to rabbit eyes.

Mutagenicity: Mixed results *in vitro* (negative in the Ames and Chinese hamster ovary assay; positive in human lymphocytes for SCEs and in some DNA damage assays). The positive results are thought to be due to artifacts caused by acidification of the culture media.

Carcinogenicity: No studies conducted according to accepted scientific principles.

Reproductive/Developmental Effects: No reproductive effects were found after oral administration of 1.6 g apple cider vinegar per day (5% acetic acid) to pregnant rabbits, rats or mice.

Repeated Exposure: Acetic acid was administered to rats in the drinking water at concentrations up to 0.5% (up to 390 mg/kg) for 2 to 4 months. Reduced food intake and growth were noted in the 390 mg/kg group but no effects were noted in concentrations of 8 to 195 mg/kg. Administration of 0.5 ml of 3% acetic acid to rats (approx. 60 mg/kg/treatment) in water by stomach tube 3 times/week for 8 months induced cell proliferation of the gullet and forestomach.

12. Ecological Information

Component Ecological Information

Component	ACETIC ACID
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Ecotoxicity: The aquatic toxicity and biodegradation of acetic acid are expected to be influenced by its potential to lower pH.

Acetic acid exhibits slight acute toxicity to aquatic species. The 24-, 48- and 96-hour LC50 values for the fathead minnow are 106-122, 92-106 and 79-88 ppm, respectively. The 48-hour LC50 values for rainbow trout and carp are 105 and 49 ppm, respectively. The 96-hour LC50 for mosquitofish is 251 ppm. The 24-hour EC50 for the water flea (daphnid) is 6000 ppm. Toxicity thresholds for green algae (*Scenedesmus quadricauda*), blue-green algae (*Anacystis aeruginosa*), and euglenoid (*Entosiphon sulcatum*) are 4000, 90 and 78 ppm, respectively.

Environmental Fate:

Degradation: Acetic acid will biodegrade readily if released to water (e.g., 5-Day BOD's 63-81%) or soil. The atmospheric photochemical degradation half-life is estimated to be 26.7 days.

Bioaccumulation: The log n-octanol water partition coefficient for acetic acid is -0.17. This suggests that acetic acid has low potential to bioaccumulate.

13. Disposal Considerations

Dispose of spilled material in accordance with state and local regulations for hazardous waste. Recommended methods are incineration or biological treatment at a federally or state-permitted disposal facility. Note that this information applies to the material as manufactured; processing, use, or contamination may make this information inappropriate, inaccurate, or incomplete.

Note that this handling and disposal information may also apply to empty containers, liners and rinsate. State or local regulations or restrictions are complex and may differ from federal regulations. This information is intended as an aid to proper handling and disposal; the final responsibility for handling and disposal is with the owner of the waste. See Section 9 - Physical and Chemical Properties.

EPA Hazardous Waste Code(s): D001, D002

14. Transport Information

US Department of Transportation:

Shipping name:	ACETIC ACID, GLACIAL
Hazard class:	8 (Corrosive Material)
UN/NA Number:	UN 2789
Packing Group:	II

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Subsidiary hazard: 3 (Flammable Liquid)
DOT Reportable Quantity (RQ): 5000 lbs./ 2270 kg
Emergency Response Guide: 132

ICAO/IATA:

Proper Shipping Name: ACETIC ACID, GLACIAL
Hazard Classification: 8 (Corrosive Material)
IATA UN Number: UN 2789
Packing group: II
Subsidiary Hazard: 3 (Flammable Liquid)
Label: (Corrosive) (Flammable Liquid)

IMDG:

Proper Shipping Name: ACETIC ACID, GLACIAL
Hazard Class: 8 (Corrosive Material)
International Marine UN Number: UN 2789
Packing Group: II
Subsidiary Hazard: 3 (Flammable Liquid)
Flash point (test method): 39 C (103 F) (Closed Cup)

Transport Canada

Proper Shipping Name: Acetic acid, glacial
Subsidiary Risk: 3

Trade Information

Schedule B Code (export): 2915.21.0000
Harmonization Code (import): 29152100

15. Regulatory Information

U.S. STATE REGULATIONS

Chemicals associated with the product which are subject to the state right-to-know regulations are listed along with the applicable state(s):

ACETIC ACID 64-19-7 99.85

Pennsylvania	Listed
New York	Listed
New Jersey	Listed
Illinois	Listed
Massachusetts	Listed
Rhode Island	Listed

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U.S. FEDERAL REGULATIONS

TSCA Inventory: We certify that all components are either on the TSCA inventory or qualify for an exemption.

Environmental Regulations:

ACETIC ACID 64-19-7 99.85
CERCLA Hazardous Substance Listed

SARA 311:

Acute health:	Yes
Chronic health:	No
Fire:	Yes
Sudden release of pressure:	No
Reactive:	No

INTERNATIONAL REGULATIONS

International Chemical Inventory

Listed on the chemical inventories of the following countries or qualifies for an exemption:

AUSTRALIA,CHINA,CANADA,EUROPE,KOREA,PHILIPPINES, JAPAN

CANADIAN REGULATIONS

WHMIS Classification:

Class B, Division 3. Class E. Class D, Division 2, Subdivision B.

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.

16. Other Information

Prepared by: Product Stewardship Department
Celanese Ltd.

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Hazard ratings This information is intended solely for the use of individuals trained in the NFPA and/or HMIS systems.

NFPA: Health: 3 Flammability: 2 Reactivity: 0

HMIS: Health: 3 Flammability: 2 Reactivity: 0

Revisions: The following sections have been revised since the last issue of this MSDS.

14. Transport Information

For industrial use only. The information contained herein is accurate to the best of our knowledge. We do not suggest or guarantee that any hazards listed herein are the only ones which exist. Celanese makes no warranty of any kind, express or implied, concerning the safe use of this material in your process or in combination with other substances. Effects can be aggravated by other materials and/or this material may aggravate or add to the effects of other materials. This material may be released from gas, liquid, or solid materials made directly or indirectly from it. User has the sole responsibility to determine the suitability of the materials for any use and the manner of use contemplated. User must meet all applicable safety and health standards. Material safety data sheets are provided on the Internet by Celanese as a service to its customers. Possession of an Internet MSDS does not indicate that the possessor of the MSDS was a purchaser or user of the subject product.

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