5000 pounds CERCLA Section 103 Reportable Quantity

PHYSICAL DATA

DESCRIPTION: Clear, colorless liquid with a strong, pungent, characteristic odor of vinegar and when well diluted with water, an acid taste.

BOILING POINT: 244 F (118 C)  MELTING POINT: 62 F (17 C)

SPECIFIC GRAVITY: 1.0492  VAPOR PRESSURE: 11.8 mmHg @ 20 C

EVAPORATION RATE: (butyl acetate=1) 0.97  PH: 2.4 (1.0 M soln)

SOLUBILITY IN WATER: very soluble  ODOR THRESHOLD: 1.0 ppm

VAPOR DENSITY: 2.07

SOLVENT SOLUBILITY: Soluble in ethanol, glycerol, ether, acetone, benzene, carbon tetrachloride; insoluble in carbon disulfide, chloroform, dimethyl sulfoxide.

VISCOITY: 1.22 cP @ 20 C

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD:
Moderate fire hazard when exposed to heat or flame.

Vapor-air mixtures are explosive above flash point.

Vapors are heavier than air and may travel a considerable distance to a source of ignition and flash back.

FLASH POINT: 103 F (39 C) (CC)  UPPER EXPLOSIVE LIMIT: 16.0% @ 92 C

LOWER EXPLOSIVE LIMIT: 4.0% @ 59 C  AUTOIGNITION TEMP.: 867 F (464 C)

FLAMMABILITY CLASS(OSHA): II

FIREFIGHTING MEDIA:
Dry chemical, carbon dioxide, water spray or regular foam
(1990 Emergency Response Guidebook, DOT P 3800.5).

For larger fires, use water spray, fog or regular foam
(1990 Emergency Response Guidebook, DOT P 3800.5).

Alcohol foam

FIREFIGHTING:
Move container from fire area if you can do it without risk. Do not get water inside container. Apply cooling water to sides of containers that are exposed to flames until well after fire is out. Stay away from ends of tanks. Withdraw immediately in case of rising smoke from venting safety device or any...
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**ACETIC ACID, GLACIAL**

MATERIAL SAFETY DATA SHEET

FISHER SCIENTIFIC
CHEMICAL DIVISION
1 REAGENT LANE
FAIR LAWN NJ 07410
(201) 796-7100

EMERGENCY NUMBER: (201) 796-7100
CHEMTEC ASSISTANCE: (800) 424-9300

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SUBSTANCE IDENTIFICATION

SUBSTANCE: **ACETIC ACID, GLACIAL**

CAS-NUMBER 64-19-7

TRADE NAMES/SYNONYMS:
ACETIC ACID; GLACIAL ACETIC ACID; ETHANIC ACID; VINEGAR ACID; ETHYLIC ACID;
PYROLIGNEUS ACID; METHANE CARBOXYLIC ACID; ACETIC ACID, HPLC GRADE;
STIC 4931303; UN 2789;
A37; A38; A39; A39P; A39SI; A39S; A507; A46S; A35; A36FP; BP1105; C2H4O2;

CHEMICAL FAMILY:
Carboxylic acid, aliphatic

MOLECULAR FORMULA: C2H4O2

MOLECULAR WEIGHT: 60.05

CERCLA RATINGS (SCALE 0-3): HEALTH=2  FIRE=2  REACTIVITY=0  PERSISTENCE=0

NFPA RATINGS (SCALE 0-4): HEALTH=2  FIRE=2  REACTIVITY=0

COMPONENTS AND CONTAMINANTS

COMPONENT: ACETIC ACID
CAS#: 64-19-7
PERCENT: 80.0-100.0

COMPONENT: WATER
PERCENT: 0-20.0

OTHER CONTAMINANTS: NONE

EXPOSURE LIMITS:

ACETIC ACID, GLACIAL:
10 ppm (25 mg/m3) OSHA TWA
10 ppm (25 mg/m3) ACGIH TWA; 15 ppm (37 mg/m3) ACGIH STEL
10 ppm (25 mg/m3) NIOSH recommended TWA; 15 ppm (37 mg/m3) NIOSH STEL
10 ppm (25 mg/m3) DFG MAK TWA;
20 ppm (50 mg/m3) DFG MAK 5 minute peak, momentary value, 8 times/shift

Measurement method: Charcoal tube; formic acid; gas chromatography with
flame ionization detector; (NIOSH Vol. III # 1603).
discoloration of tank due to fire. Isolate for 1/2 mile in all directions if tank, rail car or tank truck is involved in fire (1990 Emergency Response Guidebook, DOT P 5800.5, Guide Page 29).

Use flooding amounts of water as a fog; solid streams may be ineffective. Cool containers with flooding amounts of water from as far a distance as possible. Use water spray to absorb corrosive vapors. Avoid breathing corrosive vapors; keep upwind.

Firefighting phrases: Use water spray, dry chemical, alcohol foam, or carbon dioxide. Use water to keep fire-exposed containers cool. If a leak or spill has not ignited, use water spray to disperse the vapors and to protect the men attempting to stop a leak. Water spray may be used to flush spills away from exposures and to dilute spills to nonflammable mixtures (NFPA 49, Hazardous Chemicals Data, 1975).

TRANSPORTATION DATA

U.S. DEPARTMENT OF TRANSPORTATION SHIPPING NAME-ID NUMBER, 49 CFR 172.101:
Acetic acid, glacial-UM 2789

U.S. DEPARTMENT OF TRANSPORTATION HAZARD CLASS OR DIVISION, 49 CFR 172.101:
8 - Corrosive material

U.S. DEPARTMENT OF TRANSPORTATION PACKING GROUP, 49 CFR 172.101:
PG II

AND SUBPART E:
Corrosive

U.S. DEPARTMENT OF TRANSPORTATION PACKAGING AUTHORIZATIONS:
EXCEPTIONS: 49 CFR 173.154
HND-BULK PACKAGING: 49 CFR 173.202
BULK PACKAGING: 49 CFR 173.242

U.S. DEPARTMENT OF TRANSPORTATION QUANTITY LIMITATIONS 49 CFR 172.101:
PASSENGER AIRCRAFT OR RAILCAR: 1 L
CARGO AIRCRAFT ONLY: 30 L

TOXICITY

ACETIC ACID, GLACIAL:
IRRITATION DATA: 50 mg/24 hours skin-human mild; 525 mg/24 hours skin-rabbit severe; 50 mg/24 hours skin-rabbit mild; 20 mg/24 hours skin-rabbit moderate; 50 mg open eye-rabbit severe; 5 mg/30 seconds rinsed eye-rabbit mild.
TOXICITY DATA: 816 ppm/3 minutes inhalation-human TCD; 16,000 ppm/4 hours inhalation-rat LC50; 5620 ppm/1 hour inhalation-mouse LC50; 1060 mg/kg skin-rabbit LD50; 1470 mg/kg oral-rabbit LD50; 3310 mg/kg oral-mouse LD50; 600 mg/kg oral-rabbit LL50; 600 mg/kg subcutaneous-rabbit LL50; 525 mg/kg intravenous-mouse LD50; 600 mg/kg rectal-rabbit LL50; 308 mg/kg unrepeated-man LL50; mutagenic data (RIEGS); reproductive effects data (RIEGS).
CARCINOGEN STATUS: None.
LOCAL EFFECTS: Corrosive- inhalation, skin, eye, ingestion.
ACUTE TOXICITY LEVEL: Moderately toxic by inhalation, dermal absorption.

TARGET EFFECTS: Poisoning may affect the liver, kidneys, and cardiovascular system.

AT INCREASED RISK FROM EXPOSURE: Persons with a history of respiratory, skin or eye disease.

HEALTH EFFECTS AND FIRST AID

INHALATION:
ACETIC ACID, GLACIAL:
1000 ppm Immediately Dangerous to Life or Health.

CORROSIVE:
ACUTE EXPOSURE— May cause severe irritation of the respiratory tract. 50 ppm or more is intolerable to most persons and results in pharyngeal edema and chronic bronchitis. Other symptoms may include coughing, dyspnea, shortness of breath, laryngitis, pulmonary edema, bronchopneumonia and hypotension.

CHRONIC EXPOSURE— Workers repeatedly exposed to concentrations up to 200 ppm have been found to suffer from palpebral edema with hypertrophy of the lymph nodes, chronic pharyngitis, chronic bronchitis and in some cases, asthmatic bronchitis and traces of erosion of the teeth. Complaints of digestive disorders with pyrosis and constipation have also been reported.

FIRST AID— Remove from exposure area to fresh air immediately. If breathing has stopped, give artificial respiration. Maintain airway and blood pressure and administer oxygen if available. Keep affected person warm and at rest. Treat symptomatically and supportively. Administration of oxygen should be performed by qualified personnel. Get medical attention immediately.

SKIN CONTACT:
ACETIC ACID, GLACIAL:
CORROSIVE:
ACUTE EXPOSURE— Direct contact may cause severe irritation with pain, erythema, blisters, burns and superficial destruction of the skin with slow healing. The skin may become blackened, hyperkeratotic and fissured. Readily absorbed through the skin.

CHRONIC EXPOSURE— Repeated and prolonged contact may cause darkening of the skin, irritation and dermatitis.

FIRST AID— Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (at least 15-20 minutes). In case of chemical burns, cover area with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention immediately.

EYE CONTACT:
ACETIC ACID, GLACIAL:
CORROSIVE:
ACUTE EXPOSURE— Direct contact causes severe irritation, lacrimation, corneal erosion, opacification, iritis and possibly loss of sight in humans. Regeneration of the epithelium may take many months, but corneal anesthestia and opacity will usually be permanent. In less severe cases, conjunctivitis, photophobia and hyperemia of the conjunctiva occurred. The vapor and dilute solutions may cause conjunctival hyperemia and sometimes
injury to the corneal epithelium.

CHRONIC EXPOSURE- Depending on the concentration and duration of exposure, effects similar to acute exposure may occur.

FIRST AID- Wash eyes immediately with large amounts of water, occasionally lifting upper and lower lids, until no evidence of chemical remains (at least 15-20 minutes). Continue irrigating with normal saline until the pH has returned to normal (30-60 minutes). Cover with sterile bandages. Get medical attention immediately.

INGESTION:
ACETIC ACID, GLACIAL:

ACUTE EXPOSURE- In cases of accidental ingestion, severe ulceronecrotic lesions of the upper digestive tract, strictures of the esophagus, and perforation of the esophagus and pylorus have been observed with hematemesis, diarrhea, shock, hemoglobinuria followed by anuria and uremia. Other symptoms may include vomiting, abdominal spasm, thirst, difficulty in swallowing, hypothermia, rapid and weak pulse, slow and shallow breathing, laryngitis, bronchitis, pulmonary edema, pneumonia, hemolysis, albuminuria, hematuria, twitching, convulsions, cardiovascular collapse, shock and death. Reproductive effects have been reported in animals.

CHRONIC EXPOSURE- No data available.

FIRST AID- Do not use gastric lavage or emesis. Dilute the acid immediately by drinking large quantities of water or milk. If vomiting persists, administer fluids repeatedly. Ingested acid must be diluted approximately 100 fold to render it harmless to tissues. Maintain airway and treat shock (Greishch, Handbook of Poisoning, 12th Ed.). Get medical attention immediately. If vomiting occurs, keep head below hips to help prevent aspiration.

ANTIDOTE:
No specific antidote. Treat symptomatically and supportively.

----------------------------- REACTIVITY

REACTIVITY:
Stable under normal temperatures and pressures.

INCOMPATIBILITIES:
ACETIC ACID, GLACIAL:
ACETALDEHYDE: Violent, exothermic polymerization reaction.
ACETIC AMIDE + WATER: Violent, exothermic reaction.
2-AMINETHANOL: Temperature and pressure increase in closed container.
AMMONIUM NITRATE: Ignites on warming, especially if concentrated.
5-AMINOETRAZOLE: Possible explosive reaction.
BASES: Exothermic reaction.
BROMINE PENTAFLUORIDE: Fire and explosion hazard.
CARBONATES: Incompatible.
CHLORINE TRIFLUORIDE: Violent, possibly explosive reaction.
CHLOROSULFONIC ACID: Temperature and pressure increase in closed container.
CHROMIC ACID: Explosive reaction if not kept cold.
CHROMIUM TRIoxide: Possible fire and explosion hazard.
DIISALPHENYLNITRIMETHYL CARBINOL AND OZONE: Explosive reaction.
ETHYLENE DIAMINE: Temperature and pressure increase in closed container.
ETHYLENEIMINE: Temperature and pressure increase in closed container.
HYDROGEN PEROXIDE: Exothermic reaction on heating with the production of peracetic acid which will explode at 110 C.
HYDROCHLORIC ACID: Explosive reaction.
LEAD: Corrodas.
METALS: Attacks most metals, including zinc.
NITRIC ACID: Explosive reaction if not kept cold.
NITRIC ACID AND ACETONE: Explosive reaction (delayed) in closed container.
OLEUM: Temperature and pressure increase in closed container.
OXIDIZERS: Fire and explosion hazard.
PERCHLORIC ACID: Explosive reaction.
PERMANGANATES: Explosive reaction if not kept cold.
PHOSPHATES: Incompatible.
PHOSPHORUS ISOCYANATE: Violent reaction.
PHOSPHORUS TRICHLORIDE: Explosive reaction.
POTASSIUM HYDROXIDE: Violent reaction.
POTASSIUM PERMANGANATE: Possible explosion if inadequately cooled.
POTASSIUM TERT-BUTOXIDE: Ignition reaction.
SODIUM HYDROXIDE: Temperature and pressure increase in closed container.
SODIUM PEROXIDE: Explosive reaction if not kept cold.
XYLENE: May form detonable mixtures during terphthalic acid production, the presence of water may decrease the hazard.

DECOMPOSITION:
Thermal decomposition products may include toxic oxides of carbon.

POLYMERIZATION:
Hazardous polymerization has not been reported to occur under normal temperatures and pressures.

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STORAGE AND DISPOSAL

Observe all federal, state and local regulations when storing or disposing of this substance.

**Storage**

Protect against physical damage. Detached storage is preferred. Separate from oxidizing materials and avoid storage near combustible materials. Keep above its freezing point (62 F) to avoid rupture of carboys and glass containers (NFPA 49, Hazardous Chemicals Data, 1975).

Bonding and grounding: Substances with low electroconductivity, which may be ignited by electrostatic sparks, should be stored in containers which meet the bonding and grounding guidelines specified in NFPA 77-1983, Recommended Practice on Static Electricity.

Store away from incompatible substances.

Store in accordance with 29 CFR 1910.106.

**Disposal**

Disposal must be in accordance with standards applicable to generators of hazardous waste, 40 CFR 262. EPA Hazardous Waste Number 0002.
Disposal must be in accordance with standards applicable to generators of hazardous waste, 40 CFR 262. EPA Hazardous Waste Number 8001. 100 pound CERCLA Section 103 Reportable Quantity.

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CONDITIONS TO AVOID

Avoid contact with heat, sparks, flames or other ignition sources. Vapors may be explosive. Material is corrosive; avoid contact with skin or eyes. Do not allow contamination of water sources.

Usual shipping containers:

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SPILL AND LEAK PROCEDURES

SOIL SPILL:
Dig a holding area such as a pit, pond or lagoon to contain spill and dike surface flow using barrier of soil, sandbags, foamed polyurethane or foamed concrete. Absorb liquid mass with fly ash or cement powder.

Neutralize with caustic soda (NaOH) or soda ash (Na2CO3)

AIR SPILL:
Knock down vapors with water spray. Keep upwind.

Water used to knock down vapors may become corrosive or toxic and should be contained properly for later disposal.

WATER SPILL:
Neutralize with caustic soda.

OCCUPATIONAL SPILL:
Shut off ignition sources. Do not touch spilled material. Stop leak if you can do it without risk. Use water spray to reduce vapors. Do not get water inside container. For small spills, take up with sand or other absorbent material and place into containers for later disposal. For larger spills, dike far ahead of spill for later disposal. No smoking, flames or flares in hazard area. Keep unnecessary people away; isolate hazard area and deny entry.

Reportable Quantity (RQ): 5000 pounds
The Superfund Amendments and Reauthorization Act (SARA) Section 304 requires that a release equal to or greater than the reportable quantity for this substance be immediately reported to the local emergency planning committee and the state emergency response commission (40 CFR 355.40). If the release of this substance is reportable under CERCLA Section 103, the National Response Center must be notified immediately at (800) 424-8802 or (202) 426-2675 in the metropolitan Washington, D.C. area (40 CFR 302.6).

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PROTECTIVE EQUIPMENT

VENTILATION:
Provide local exhaust ventilation to meet published exposure limits.
Ventilation equipment should be explosion-proof if explosive concentrations of dust, vapor or fume are present.

**RESPIRATOR:**
The following respirators and maximum use concentrations are recommendations by the U.S. Department of Health and Human Services, NIOSH Pocket Guide to Chemical Hazards; NIOSH criteria documents or by the U.S. Department of Labor, 29 CFR 1910 Subpart Z.
The specific respirator selected must be based on contamination levels found in the workplace, must not exceed the working limits of the respirator and be jointly approved by the National Institute for Occupational Safety and Health and the Mine Safety and Health Administration (MSHA).

**ACETIC ACID, GLacial:**
- **250 ppm**—Any supplied-air respirator operated in continuous flow mode.
  - Any powered air-purifying respirator with organic vapor cartridge(s).
- **500 ppm**—Any chemical cartridge respirator with full facepiece and organic vapor cartridge(s).
  - Any self-contained breathing apparatus with full facepiece.
  - Any supplied-air respirator with full facepiece.
  - Any air-purifying full facepiece respirator (gas mask) with chin-style, front- or back-mounted organic vapor canister.
  - Any powered air-purifying respirator with a tight-fitting facepiece and organic vapor cartridge(s).
- **1000 ppm**—Any supplied-air respirator with full facepiece and is operated in a pressure-demand or other positive pressure mode.
  - Escape—Any air-purifying full facepiece respirator (gas mask) with chin-style, front- or back-mounted organic canister.
  - Any appropriate, escape-type self-contained breathing apparatus.

**FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:**
- Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.
- Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

**CLOTHING:**
Employee must wear appropriate protective (impervious) clothing and equipment to prevent any possibility of skin contact with this substance.

**GLOVES:**
Employee must wear appropriate protective gloves to prevent contact with this substance.

**EYE PROTECTION:**
Employee must wear splash-proof or dust-resistant safety goggles and a faceshield to prevent contact with this substance.

**Emergency wash facilities:**
Where there is any possibility that an employee's eyes and/or skin may be
exposed to this substance, the employer should provide an eye wash fountain and quick drench shower within the immediate work area for emergency use.

AUTHORIZED - FISHER SCIENTIFIC, INC.
CREATION DATE: 09/06/84
REVISION DATE: 03/03/94

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