MATERIAL SAFETY DATA SHEET

ACETIC ACID, GLACIAL

PRODUCT IDENTIFICATION

Chemical Name and Synonyms: Acetic acid, glacial; Ethanoic acid; Vinegar acid; Methanecarboxylic acid

Chemical Family: Saturated aliphatic carboxylic acid

Chemical Formula: CH_3COOH

Product Use: Laboratory reagent

Manufacturers Name and Address: Caledon Laboratories Ltd. 40 Armstrong Avenue Georgetown, Ontario L7G 4R9

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HAZARDOUS INGREDIENTS OF MATERIALS

Ingredients, %, TLV Units, CAS No: Acetic acid, > 99, 10 ppm, 64-19-7

PHYSICAL DATA

Physical State: Liquid

Odour and Appearance: Clear, colourless liquid, strong, pungent, vinegar odour. Below 16 °C, colourless, icelike crystals.

Odour Threshold (ppm): 0.37 ppm - 0.15 ppm (detection) Good warning properties

Vapour Pressure (mm Hg): 11.4 mm Hg at 20 °C

Vapour Density (Air = 1): 2.07

Evaporation Rate (Bu ac = 1): 0.97

Boiling Point (degrees C): 117.9 °C

Freezing Point (degrees C): 16.6 °C

pH: 2.4 (1 M aqueous)

Specific Gravity: 1.05 at 20 °C

Coefficient of Water/Oil distribution: LogP(oct) = 0.31

SHIPPING DESCRIPTION

UN: 2789

T.D.G. Class: 8; (3)

Pkg. Group: II

REACTIVITY DATA

Chemical Stability: Stable, hygroscopic, absorbs water from air.

Incompatibility with other substances: May react violently releasing flammable/explosive hydrogen gas, with most metals, excepting aluminum. Reacts violently with alcohols, amines, soluble carbonates and phosphates, strong alkalies, strong acids, strong oxidizing agents, especially chromium trioxide, bromine pentafluoride, phosphorus trichloride, potassium permanganate, perchloric acid or sodium peroxide, the reactions with which can be explosive. Contact with acetic acid can also cause exothermic polymerization of acetaldehyde. Attacks most common metals, including steel, iron, stainless steels, bronze, brass. Attacks many types of plastics, rubbers, and coatings.

Reactivity: Avoid temperatures above 39 °C, sparks, open flames, any ignition sources, all incompatible materials, generation of mist.

FIRE AND EXPLOSION DATA

Flammability: Combustible liquid and vapour. Can form explosive mixtures with air at or above 39 °C. Vapour is heavier than air and may travel considerable distance to source of ignition and flash back. Containers may rupture violently in heat of fire.

Extinguishing Media: CO_2, dry chemical, alcohol-resistant foam, water spray or fog. Use water spray to cool containers, and disperse vapours. Fight fire from a safe distance and from upwind. Firefighters must wear positive-pressure self-contained breathing apparatus and chemical resistant clothing (chemical splash suit) sufficient to prevent inhalation of mists or fumes and contact with skin and eyes. Withdraw immediately in case of rising sound from vent or discoloration of tank.

Flash Point (Method Used): 39 °C (CC)

Autoignition Temperature: 463 °C to 465 °C

Upper Flammable Limit (% by volume): 16

Lower Flammable Limit (% by volume): 4 to 5.4

Hazardous Combustion Products: CO, CO_2, acid fumes

Sensitivity to Impact: None identified.

Sensitivity to Static discharge: Liquid will not accumulate static charge. Mixtures of vapour with air may be ignited by static discharge under certain conditions.

TOXICOLOGICAL PROPERTIES AND HEALTH DATA

Toxicological Data:

LD50: (oral, rat) 3,310 mg/kg; (dermal, rat) 1,060 mg/kg

LC50: (rat) 5,620 ppm/1 hour

Effects of Acute Exposure to Product:

Inhaled: Inhalation of vapours causes severe irritation of eyes, nose and throat, coughing, choking and difficulty breathing. Severe overexposure may result in bronchopneumonia, pulmonary edema, which can be fatal. Symptoms (shortness of breath, frothy sputum, cyanosis) may be delayed 4-72 hours.

In contact with skin: May cause brownish or yellowish stains, pain or severe burns with tissue death and permanent scarring, depending on concentration and length of exposure. Prolonged or repeated exposure to dilute solutions may cause irritation and dermatitis.

In contact with eyes: Even dilute solutions may cause severe irritation. Concentrated solutions cause corneal burns and conjunctivitis, possible permanent corneal damage and blindness.

Ingested: May cause severe burning and pain in the mouth, throat, and abdomen. Vomiting, diarrhea and perforation of the esophagus or stomach, kidney damage, cardiovascular collapse and death may occur. Aspiration may occur during ingestion or vomiting, causing severe lung damage, pulmonary edema, respiratory failure, cardiac arrest and death.

Effects of Chronic Exposure to Product: Prolonged or repeated exposure to vapours can cause chronic irritation of the upper respiratory tract, chronic eye irritation, darkening and thickening of the skin, chronic digestive disorders, and discolouration and erosion of teeth.

Carcinogenicity: Not listed as a carcinogen by NTP.

Teratogenicity: No human or animal information available.

Reproductive Effects: No information available.

Mutagenicity: No evidence of mutagenicity.

Synergistic Products: Increased incidence of carcinomas in animal testing in combination with N-nitrosarcosin ethyl ester (NSEE), or 7,12-dimethylbenz(a) anthracene.

PREVENTIVE MEASURES

Engineering Controls: Corrosion-resistant exhaust ventilation, separate from other ventilation systems.

Respiratory Protection: Up to 50 ppm - NIOSH/MSHA approved full facepiece respirator with organic vapour cartridge, or full face-piece self-contained breathing apparatus, or full face-piece supplied-air respirator. Higher or unknown concentrations, as in fire or spill conditions - positive-pressure, full face-piece self-contained breathing apparatus, or positive-pressure, full face-piece supplied-air respirator with an auxiliary postive-pressure self-contained breathing apparatus.

Eye Protection: Chemical safety goggles and/or face shield.

Skin Protection: Butyl rubber, Teflon, Viton. Saranex, 4H, Tychem 10000, or Responder gloves.

Other Personal Protective Equipment: Safety shower and eye wash fountain readily available in work area.

Leak and Spill Procedure: Evacuate area. Shut off all sources of ignition. Ventilate area. Cleanup personnel must be thoroughly trained in the hazards of this material and must wear protective equipment and clothing sufficient to prevent inhalation of mists or vapours and contact with skin and eyes. Do not touch spilled material. Stop and contain discharge by constructing barriers and applying inert absorbent. Do not get water on spilled material. Neutralize with sodium bicarbonate or a mixture of soda ash/slaked lime. Collect neutralized product for recovery or disposal. Contaminated absorbent may pose the same hazards as the spilled product; treat with caution.

Waste Disposal: Follow all federal, provincial and local regulations for disposal.

Handling Procedures and Equipment: CORROSIVE, COMBUSTIBLE LIQUID AND VAPOUR. Personnel working with this product must be thoroughly trained in its hazards and its safe use, and must wear appropriate protective clothing and equipment. Keep away from all sources of ignition. Ground and bond equipment and containers to prevent a static charge buildup. Avoid generating mists. Avoid inhalation of mists or vapours. Avoid all contact. Use the smallest amount possible for the purpose in a designated area with adequate ventilation. Use corrosion-resistant materials for containers and equipment. Keep soda ash or lime nearby for emergency use. When diluting, always add acid to water, slowly, while stirring carefully. Practice good housekeeping - keep work area free of extraneous materials. Caution - empty containers may contain hazardous residues.

Storage Requirements: Store in suitable labelled, glass or polyethylene containers, a cool, dry, well-ventilated area, out of direct sunlight and away from incompatible materials. Store above 18 °C to prevent crystallization. Inspect containers frequently for signs of damage, leaking or corrosion. Provide storage area with raised sills to contain leaks. Keep containers upright. Treat empty containers with caution - they may contain hazardous residues.

FIRST AID MEASURES

Specific Measures:

Eyes: IMMEDIATELY flush eyes with gently running water for at least thirty (30) minutes, holding eyelids open while flushing. Take care not to flush contaminated water into the unaffected eye. Wear protective gloves and other clothing to avoid contact during first aid procedures. Get medical attention immediately. Flushing may be continued while casualty is transported to medical facility.

Skin: Under running water, remove contaminated clothing (including rings, watches, belts and shoes). Wear protective gloves and other clothing to avoid contact during first aid procedures IMMEDIATELY flush the exposed area with large amounts of water for at least twenty (20) minutes. REPEAT flushing if irritation persists. Obtain medical attention IMMEDIATELY. Discard contaminated clothing, incl. shoes.

Inhalation: IMMEDIATELY remove to fresh air (caution must be used by rescuers to avoid exposure to the contaminating fumes). Give oxygen for breathing difficulty. If breathing has stopped give artificial respiration and GET MEDICAL ATTENTION IMMEDIATELY. Avoid contact by using mouth guards or shields. Stay with casualty until medical help arrives. If severe exposure is suspected hospitalization and observation for 72 hours for delayed onset of pulmonary edema is advised.

Ingestion: Do not induce vomiting. If casualty is alert and not convulsing; rinse mouth with water and give 1 to 2 cups of water or milk to dilute material and IMMEDIATELY transport to medical facility. If SPONTANEOUS VOMITING occurs; have casualty lean forward with head down to avoid breathing in of vomitus. Rinse mouth and administer 1/2 cup of water or milk.

REFERENCES USED

Budavari: The Merck Index, 12th ed., 1997

CCINFO disc: MSDSs, March 2007

Royal Society of Chemistry: Chemical Safety Data Sheets, Vol 3., 1990

Sax, Lewis: Hawleys Condensed Chemical Dictionary, 11th ed., 1987

Suppliers Material Safety Data Sheets:

ADDITIONAL INFORMATION

Date Issued: 10/03/1989

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Proposed WHMIS Designation: B3; E

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