1. PRODUCT AND COMPANY IDENTIFICATION

Product name: Acetic acid
Product Number: 320099
Brand: Sigma-Aldrich
Company: Sigma-Aldrich
3300 Spruce Street
SAINT LOUIS MO 63103
USA
Telephone: +18003585652
Fax: +18003585652
Emergency Phone #: (314) 776-6555

2. HAZARDS IDENTIFICATION

Emergency Overview
OSHA Hazards: Combustible Liquid, Target Organ Effect, Harmful by skin absorption, Corrosive
Target Organs: Teeth, Kidney
GHS Label elements, including precautionary statements
Pictogram:
Signal word: Danger
Hazard statement(s):
H226 Flammable liquid and vapour.
H332 May be harmful if swallowed.
H333 Harmful in contact with skin.
H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H315 Harmful if inhaled.
H401 Harmful to aquatic life.
Precautionary statement(s):
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P260 Wear protective gloves/protective clothing/eye protection/face protection.
P305 + P331 + P332 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediate medical attention is necessary.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms: Glacial acetic acid
Formula: C2H4O2
Molecular Weight: 60.05 g/mol
CAS No.: 64-19-7
EC-No.: 200-580-7
Index-No.: 617-002-00-6

4. FIRST AID MEASURES

General advice:
Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.
In case of skin contact:
Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Consult a physician.
In case of eye contact:
Continue rinsing eyes during transport to hospital. Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
Inhalation:
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media:
For small (incipient) fires, use media such as "alcohol" foam, dry chemical, or carbon dioxide. For large fires, apply water from as far as possible. Use very large quantities (flooding) of water applied as a mist or spray; solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water.

Special protective equipment for fire-fighters:
Wear self-contained breathing apparatus for fire fighting if necessary.

Further information:
Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions:
Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

Environmental precautions:
Do not let product enter drains.

Methods and materials for containment and cleaning up:
Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculites) and place in container for disposal according to local / national regulations (see section 15). Keep in a suitable, closed containers for disposal.
7. HANDLING AND STORAGE

Precautions for safe handling
Avoid inhalation of vapour or mist. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

Conditions for safe storage
Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Store in cool place.

Moisture sensitive.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value</th>
<th>Control parameters</th>
<th>Update</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetic acid</td>
<td>64-19-7</td>
<td>TWA</td>
<td>10 ppm</td>
<td>2007-01-01</td>
<td>USA, ACGIH Threshold Limit Values (TLV)</td>
</tr>
</tbody>
</table>

Remarks: Eye & Upper Respiratory Tract Irritation Pulmonary function

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<th>Components</th>
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<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>STEL</td>
<td>15 ppm</td>
<td>2007-01-01</td>
<td>USA, ACGIH Threshold Limit Values (TLV)</td>
<td></td>
<td></td>
</tr>
</tbody>
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<tbody>
<tr>
<td>TWA</td>
<td>10 ppm</td>
<td>25 mg/m³</td>
<td>1989-01-19</td>
<td>USA, OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000</td>
<td></td>
</tr>
<tr>
<td>TWA</td>
<td>10 ppm</td>
<td>25 mg/m³</td>
<td>1997-08-04</td>
<td>USA, Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants</td>
<td></td>
</tr>
</tbody>
</table>

The value in mg/m³ is approximate.

Personal protective equipment

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection
Hands with gloves.

Eye protection
Tightly fitting safety goggles. Faceshield (8-inch minimum).

Skin and body protection
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hygiene measures
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form: liquid
Colour: colourless
Odour: purgant

10. STABILITY AND REACTIVITY

Chemical stability
Stable under recommended storage conditions.

Possibility of hazardous reactions
Vapours may form explosive mixture with air.

Conditions to avoid
Heat, flames and sparks.

Materials to avoid
Oxidizing agents, Soluble carbones and phosphates, Hydroxides, Metals, Peroxides, permanganates, e.g. potassium permanganate, Amines, Alcohols

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides

11. TOXICOLOGICAL INFORMATION

Acute toxicity
LD50 Oral - rat: 3,310 mg/kg
LC50 Inhalation - mouse: 1 h - 5620 ppm
LD50 Dermal - rabbit: 1,112 mg/kg
Skin corrosion/irritation
Skin - rabbit: Mild skin irritation - 24 h
Serious eye damage/eye irritation
Eyes - rabbit: Corrosive to eyes
Respiratory or skin sensitization
May cause sensitization by skin contact.

Germ cell mutagenicity
no data available

Carcinogenicity
IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

AGCH: No component of this product present at levels greater than or equal to 0.1% is identified as a
carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity
no data available

Specific target organ toxicity - single exposure (GH3)
no data available

Specific target organ toxicity - repeated exposure (GHS)
no data available

Aspiration hazard
no data available

Potential health effects
Inhalation
May be harmful if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.

Ingestion
May be harmful if swallowed. Causes burns.

Skin
May be harmful if absorbed through skin. Causes skin burns.

Eyes
Causes eye burns.

Signs and Symptoms of Exposure
Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin. Inflammation and edema of the larynx, pharynx, trachea, and bronchi. The material can cause respiratory tract irritation, coughing, sneezing, and increased secretions. Long-term exposure may cause chronic respiratory tract irritation.

12. ECOLOGICAL INFORMATION

Toxicity to fish
LC50 - Lethal dose 50 (defined as the concentration of substance that results in death of 50% of test animals): 60.00 mg/l - 96 h

Toxicity to daphnia
EC50 - Lethal dose 50: 60.00 mg/l - 48 h

Persistence and degradability
Biodegradability: Remains. Expected to be biodegradable

Bioaccumulative potential
no data available

Mobility in soil
no data available

PBT and vPvB assessment
no data available

Other adverse effects
Biological Oxygen Demand (BOD): 880 mg/l
Additional ecological information

13. DISPOSAL CONSIDERATIONS

Product
This combustible material may be burned in a chemical incinerator equipped with an afterburner and scrubber. Contact local federal, state, and local environmental regulatory agencies. Contact a licensed professional waste disposal service to dispose of this material.

14. TRANSPORT INFORMATION

DOT (US)
UN-Number: 2769 Class: 8 (3) Packing group: II
Proper shipping name: Acetic acid, glacial
Reportable Quantity (RQ): 5000 lbs
Marine pollutant: No

IMDG
UN-Number: 2769 Class: 8 (3) Packing group: II
EMS-No: F-E, S-C
Proper shipping name: ACETIC ACID, GLACIAL
Marine pollutant: No

IATA
UN-Number: 2769 Class: 8 (3) Packing group: II
Proper shipping name: Acetic acid, glacial

15. REGULATORY INFORMATION

OSHA Hazards
Combustible, Liquid, Target Organ Effect, Harmful by skin absorption, Corrosive

DSL Status
All components of this product are on the Canadian DSL list.

SARA 302 Components
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
Fire Hazard, Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components
Acetic acid
CAS-No: 64-19-7
Revision Date: 2007-03-01

Pennsylvania Right To Know Components
Acetic acid
CAS-No: 64-19-7
Revision Date: 2007-03-01

New Jersey Right To Know Components
Acetic acid
CAS-No: 64-19-7
Revision Date: 2007-03-01
California Prop. 65 Components
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

Further Information
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