


Number: 22

Section 1: Product and Company Identification

Product Name: Acetic acid
Recommended use and Restrictions on use: Pharmaceutical production of the following medicines: acetic anhydride, acetic acid cellulosic ester, the monomer of acetic acid vinyl ester, acetic acid esters, chloroacetic acid, plastic products, medical products, dyestuffs, insecticide, photographic chemicals, etc.; food additive (more or less tart flavor) ; cream coagulant; oil well acidifies; textile printing.
Manufacturer or Supplier Name : Shiny Chemical Industrial Co., Ltd. Address: No.5, Yeong Gong 1st Rd., Yeong An Dist., Kaohsiung City 82841, Taiwan, R.O.C. Telephone: +886-7-861-9171 ext.711~714
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Section 2: Hazards Identification

Hazard Material Category: Flammable liquids: Category NO.3, Skin corrosive /irritation: Category NO.1, Serious eye damage/eye irritation: Category NO.1, Corrosive to metals: Category NO.1, Acute toxicity: Category NO.4 (skin), Aquatic toxicity(acute): Category NO.3.
Label Content: 
Label Statements: Flames, Corrosion, Warning, Signal Words: Danger Hazard Statements: <ol style="list-style-type: none">1. Flammable liquid and vapour2. Causes severe skin burns and eye damage3. Causes serious eye damage4. May be corrosive to metals5. Harmful in contact with skin6. Harmful to aquatic life
Precautionary Statements: <ol style="list-style-type: none">1. Do not breathe gas/fumes/vapor/mist.2. Keep containers in a well-ventilated place.3. If contacted with eyes, flush with plenty of water before seek for medical attention.4. Wear eye protect or face protect equipment.
Other Hazards :



Section 3: Composition/Information on Ingredients

Pure Material

Chemical Name: Acetic acid
Synonymous: Glacial acetic acid, Ethanoic acid, Ethylic acid, Methanecarboxylic acid.
CAS NO.: 64-19-7
% By Weight: 100%

Section 4: First Aid Measures

The First aid Measures for Different Exposure Routes:
Inhalation: <ol style="list-style-type: none">1. Ensure self-safety based protection procedures before rescue.2. Remove contamination sources or move victims to fresh air.3. If breathing stops, have trained personnel administer artificial respiration. Administer cardiopulmonary resuscitation (CPR) immediately if the heart has stopped.4. Avoid victim's unnecessary movement.5. Symptoms of lung edema may delay 48 hours.6. Get medical attention immediately.
Skin Contact: <ol style="list-style-type: none">1. Wear leak-proof gloves if necessary to avoid touching such a chemical material.2. Wash contaminated sites tenderly with warm water for 20~30 minutes.3. Flush repeatedly if irritation persists4. Remove contaminated clothing, shoes, and leather when washing.5. Get medical attention immediately.6. Clean contaminated clothing, shoes, and leather thoroughly before reuse or abandon.
Eye Contact: <ol style="list-style-type: none">1. Wear leak-proof gloves if necessary to avoid touching such a chemical material.2. Immediately lift eyelids, flushing eyes with plenty of warm water for at least 20 minutes.3. Immediately lift eyelids, flushing eyes with plenty of water for at least 20 minutes until removing contaminated materials.4. Avoid flushing to unaffected eye.5. Repeat flushing if irritation persists.6. Get medical attention immediately.
Ingestion: <ol style="list-style-type: none">1. Never give anything by mouth to victims will soon lose consciousness or lose consciousness already or with the convulsion.2. Have victims gargle thoroughly with clear water.3. Don't induce vomiting.



4. Have victim drink 240~300ml of water.
5. If vomiting occurs, lean victim forward to reduce the risk of ingesting vomits, repeating administering water.
6. If breathing stops, have trained personnel administer artificial respiration. Administer cardiopulmonary resuscitation (CPR) immediately if the heart has stopped.
7. Get medical attention immediately.

The most Important Symptoms and Hazardous Effects: Irritation, burning sensation. Inhalation may cause fatal lung edema.

The Protection of First-aiders: Use appropriate personal protective equipment such as class C clothing to take first aid in a safety area.

Notes to Physicians:

1. If inhaled, consider oxygen given.
2. Avoid gastric lavage or induce vomiting.

Section 5: Fire Fighting Measures

Suitable Fire Extinguishing Media: Spray water mist, chemical dry, alcohol foam, and carbon dioxide.

Specific Hazards may be Encountered During Fire-fighting:

1. Flammable liquids, with air will produce explosive mixtures.
2. Vapors heavier than air will propagate to distant places. It may cause flash back when meeting fire sources.
3. May accumulate in low-lying areas to increase risk of burning and toxicity.
4. Heated containers may break in a fire scene.

Specific Fire-fighting Method:

1. Evacuate and extinguish fire from safe distance or protected areas.
2. Place in windward areas to avoid dangerous vapor and poisonous decomposing materials.
3. Stop the leak first before extinguishing fire. Let it burn if leaks cannot be stopped and have on harm in surroundings. If extinguishing fire in advance without stopping leaks, vapors with the air will form explosive mixtures and ignite again.
4. Isolate unfired materials and protect personnel.
5. Move containers away from the fire scene in safe condition.
6. Cool exposed storage tanks or containers with water mist.
7. If leaks have not ignited, spray water mist to disperse vapors and protect the personnel stop spill.
8. It is invalid to extinguish fire with spouts.
9. Large fire of large-scale area, use auto-operated control shelf of water mist or auto-waved extinguishing water aims.
10. Evacuate from a fire scene as possible and let the fire burn thoroughly.
11. Keep away from storage tanks.
12. When safety valves of storage tanks alarm or change color, evacuate



immediately.

Specific Equipment for the Protection of Fire-Fighters: Extinguishing staffs should wear coverall-type chemical protective clothing, and respirators (wear flash-resistant aluminum coats if necessary).

Section 6: Accidental Release Measures

Personal Precautions:

1. Restrain personnel close to the spill area before totally cleaning out.
2. Confirm the cleaning work be responsible by trained staffs.
3. Wear appropriate personal protective equipments.

Environment Needing Attention:

1. Ventilate this area.
2. Remove all sources of ignition.
3. Report to governmental safety and hygiene institutes and related units.

Spill Cleanup Measure:

1. Do not touch spilled material.
2. Avoid leakages flushing to sewers or confined areas.
3. Try to stop or reduce leaks in safety condition.
4. Use sand, soil, and inert absorbing agents to block leaks.
5. Small spill: Use the material, not react with spill, to absorb. Contaminated absorbing agents have same risk as spill. Place in covered and labeled containers. Spray water on spilled areas. Use plenty of water to dilute small spill.
6. Large spill: Contact fire control, urgent handling units and suppliers to seek aid.

Section 7: Handling and Storage

Handling:

1. This material is corrosive and flammable liquid. Engineering control should be applied and make the best use of personal protective equipments when handling. Educate risk of this material and safety training of use.
2. Remove all ignition sources away from heat and incompatible substances.
3. There should be a "No smoking" sign in workspace.
4. If leaks or adverse ventilation occur, report immediately.
5. Check whether containers spill before operating.
6. Use storage containers suggested by the manufacturers.
7. All barrels, containers, and pipelines must set earth and contact with naked metal.
8. Use corrosion-resistant transshipment apparatus to allocate. Connect containers with same electric potential.
9. Empty tanks, containers, and pipelines may have risk residuals. Don't weld, cut, hole or do other heat work before clearing up.
10. Have corrosive solutions add into water while mixing with water, but not



- add water into corrosive solutions. Slowly add raw material under stir and use cold water to avoid surplus of heat producing.
11. Avoid mist or vapors. Operate in well-ventilated assigned place and adopt the minimum consumption. Separate operation and storage areas.
 12. Wear appropriate personal protective equipments to avoid contacting with this chemical or contaminated apparatus if necessary.
 13. Don't use with incompatible substances to avoid increasing risk of fire and explosion.
 14. Don't pour contaminated liquids back to original storage containers.
 15. Containers should be labeled, confined and prevented from damage while not using.

Storage:

1. Store in shady, cool, dry, and well-ventilated place that sunshine cannot directly illuminate, and keep away from heat, ignition sources, and incompatible substances.
2. Storage apparatus should be constructed with the refractory materials.
3. Storage areas should be labeled clearly with no barriers. Permit assigned or trained personnel to enter.
4. Keep storage areas away from workspace, lifts, building, room exits, and main passages.
5. Have appropriate fire extinguisher and leak cleaning apparatus near storage areas.
6. Check containers regularly whether damage or leak.
7. Check all new containers whether appropriately labeled and no damage.
8. Limit storage.
9. The floor should be constructed with the impermeable materials to avoid absorbing from the floor. Store in appropriate and labeled containers. Avoid piling up and damaging containers. Keep airtight.
10. Containers may have risk residues. Those should be airtight and stored separately.
11. Store in accordance with the storage temperature suggested by chemical manufacturers or suppliers.
12. Storage tanks should be surface tanks. Seal whole area on the bottom to avoid seepage surrounded with liquid dikes, which can block the whole capacity.

Section 8: Exposure Controls and Personal Protection

Engineering Controls:

1. Use spark-resistant and earth-connection ventilation system separately.
2. Use corrosion-proof ventilation systems separately.
3. Direct outside exhaust vents.
4. Supply adequate fresh air to replenish the exhausted air.

Guideline Information

TWA	TLV-STEL	CEILING	BEIs
10ppm	15ppm	-	-



Personal Protective Equipment:
<p>Respiratory Protection:</p> <ol style="list-style-type: none"> < 50ppm: Stable flow air-feed type respiratory protective equipments, dynamical air purifying type or chemical full-type with organic vapor cartridges respiratory protective equipments, portable full-type or air-feed respiratory protective equipments. Unknown: Portable positive-pressure type respiratory protective equipments, positive-pressure full and air-feed type respirator. Escape: Mask with organic vapor cartridges, portable escape-type respiratory protective equipments. <p>Hand Protection Description: Leak-proof glove materials of Butyl rubber, Teflon, Viton, Saranex, Responder, 4H, and Tychem10000 are better.</p> <p>Eye/Face Protection: Chemical safety goggles and masks.</p> <p>Skin and Body Protection Description: Coveralls, work boots.</p>
<p>Hygiene Practices:</p> <ol style="list-style-type: none"> Remove contaminated clothing quickly as possible after work. Clean clothing before reuse or abandon. Tell cleaning staffs the harmfulness. Forbid smoking or eating in workplace. After handling this material, wash hands thoroughly. Keep workplace clean.

Section 9: Physical and Chemical Properties

Physical State/Appearance: Colorless solids lower than 16°C; colorless, deliquescence liquids higher than 16°C.	Odor: Strong vinegar smell, shed tears.
Odor Threshold: 0.037-0.15ppm (monitor)	Melting Point: 16.6°C
pH Value: 2.4 (1M/1L water)	Boiling Point: 117.9°C
Flammability: -	Flash point: 39°C
Decompose Temperature: -	Test method: close cup
Auto-ignition Temperature: 516°C	Explosion limits: 4%~19.9% (ice crystal)
Vapor Pressure: 15.7 mmHg @ 25°C	Vapor Density: 2.07 (air=1)
Density: 1.5 (water=1)	Solubility: Soluble in water.
Log Kow: -0.17	Evaporation Rate: 0.97 (N-butyl acetate=1)

Section 10: Stability and Reactivity

Chemical Stability: Stable under ordinary conditions.
<p>Possible Danger Reacts Under the Special State:</p> <ol style="list-style-type: none"> Strong oxidants (chromic acid, hydrogen peroxide, nitric acid, perchloric acid, potassium permanganate, sodium peroxide)-Intense reaction

<p>increases fire and explosion risk.</p> <ol style="list-style-type: none">2. Strong alkaline or caustic alkaline (such as sodium peroxide and oxidizing sodium or hydrogen) or alkaline – May cause intense reaction.3. Most metals (except for aluminum) -May release flammable gas.4. Aldehyde - Polymerization releases heat.5. 2- aminoethanol, ethylenediamine, Ethylenimine - Mixing in the airtight containers causes elevated temperature and pressure.6. Aluminium nitric acid - Heated may guide and fire.7. Bromine pentafluoride, chlorine trifluoride - May cause intense reaction, fire and explosion.8. Isocyanic phosphate - Intense reaction.9. Phosphorus trichloride - Produce spontaneous-combustion phosphorus, may explode.10. Tertiary butyl potassium. – Ignite after mixing for 3 minutes.11. Xylene - May produce explosive mixtures.12. Most metals (stainless steel, aluminum, nickel and alloy) have strong corrosion related to the concentration, temperature, purity.
<p>Conditions to Avoid: Higher than 39°C, open flames, statics, sparks and ignition sources.</p>
<p>Incompatible with Other Materials: Strong oxidant, strong alkalizes most metals, aldehyde, aminoethanol, bromine pentafluoride, chlorine trifluoride, isocyanic phosphate, phosphorus trichloride, tertiary butyl potassium.</p>
<p>Hazardous Decomposition Products: -</p>

Section 11: Toxicological Information

<p>Exposure Route: Skin, inhalation, ingestion, eye.</p>
<p>Signs/Symptoms: Irritation, bronchitis, lung pleural effusion, burning, blood spitting, renal damage, conjunctivitis, enamel erosion.</p>
<p>Acute Toxicity:</p> <p>Skin Contact:</p> <ol style="list-style-type: none">1. High-concentration solution or pure acetic acid will cause corrosive tissue damages of deep burning, organic necrosis and persistent scars.2. Low-concentration solution will cause slight to severe irritation.
<p>Inhalation:</p> <ol style="list-style-type: none">1. High-concentration vapors inhalation will irritate nose and throat, and cause short breath, cough, asthma and lung damage.
<p>Ingestion:</p> <ol style="list-style-type: none">1. 100~200 ml ingestion of 80~100% acetic acid causes severe corrosive injury to digestive tract and stomach.2. Event a small amount of inhalation causes fatal lung edema. It may cause severe lung injury, respiratory failure, heartbeat stop and death.
<p>Eye Contact:</p> <ol style="list-style-type: none">1. Will cause the serious irritation even if it is a diluted solution.2. The solution will corrode eyes and cause permanent injury, including



blindness. LD50: 3530 mg/kg (rat, swallow); 1060 mg/kg (rabbit, skin) LC50: 16000 ppm/4H (rat, inhalation) 525 mg/ open test (rabbit, skin): cause severe irritation. 50 mg/24H (rabbit, skin): cause mild irritation.
Chronic Toxicity or Long Term Effects on Humans: <ol style="list-style-type: none">1. Inhalation: Vapors will cause chronic irritation of nose, pharyngeal and trachea.2. Skin: Frequent-exposure causes irritation, skin thickness and darkness.3. Eye: Vapors irritate eyes (conjunctivitis) chronically.4. Tooth: Vapors will cause enamel erosion of the front and canine teeth5. Acetic acid will not accumulate and store in the body. It is normal component and metabolize rapidly

Section 12: Ecological Information

Ecotoxicity : LC50 (fish) : 75-88mg/1/96H EC50 (aquatic invertebrate) : 32mg/1/48H (water fleas) BCF: <1
The Persistence and Degradability: <ol style="list-style-type: none">1. The existence of acetic acid spreads all over the whole nature as general metabolites of animals and plants.2. When released into the air, this material may react with photochemically produced hydroxyl radicals.
Half-life (Air): - Half-life (Water surface): - Half-life (Groundwater): - Half-life (Soil): -
Bio-accumulative Potential: Acetic acid may biodegrade in the soil and water quickly.
Mobility in Soil: Acetic acid may evaporate in the atmosphere via the dry surface of soil.
Other Adverse Effects:-

Section 13: Disposal Considerations

Methods of waste Disposal: <ol style="list-style-type: none">1. Consult references to regulations.2. Adopt particular incineration or sanitary burying.

Section 14: Transport Information

United Nations Number (UN No): 2789
UN Proper Shipping Name: Acetic acid, Glacial acetic acid, heavier than 80% (acid).
Transport Hazard class (es): Corrosive materials category No. 8,



secondary risk is flammable liquids category No.3.
Packaging Group: II
Marine Pollutants (Yes/No): No
Specific Transport Measures and Precautionary Conditions: -

Section 15: Regulatory Information

<p>Applicable regulation: Labor Safety and Health Law. Dangerous Chemical Material Symbol Act. Fire Services Act.</p>

Section 16: Additional Information

References	<p>1. CHEMINFO database, CCINFO CD-RAW, 2005-1 2. RTECS database, TOMES PLUS CD-RAW, Vol.63, 2005 3. ChemWatch database, 2004-4</p>
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SDS Revision Date	2016/09/01
Notes	Above symbol in data "- "stand for at present check have not relative to data, But symbol "/" stand for this' field to should material application.