LCY Chemical Corp.

Material Safety Data Sheet For Ethyl Acetate

I. Identification of the Substance/ Preparation and Company

Product Information: Ethyl Acetate
Other Information: -
Suggested Use and Prohibitions: ordinary solvents for paints and plastics; organic synthesis; smokeless powder; pharmaceuticals; synthetic fruit essential oils
Information on Producer/Supplier Name, Addresses, Phone: Linyuan Factory, LCY Chemical Corp. / No.11, Shihhua 3rd Rd., Linyuan Township, Kaohsiung City
Emergency Phone / Fax: (07) 6419966-137 / (07) 6410537

II. Hazard Identification:

Hazard Category: Class 2 flammable liquids, class 2 severe injury/eye irritation substance
Labeled Contents:  Symbols: Flame, exclamation point Warning: Danger Hazard Warning Information: Highly flammable liquid and vapor produces eye irritation Hazard Prevention Measures: Place container in a well-ventilated area. Keep away from inflammables. – Smoking prohibited. Avoid contact with eyes.
Other Hazards:-

III. Composition / Information on Ingredients

Single

English Name: Ethyl Acetate
Synonyms: Ethyl Acetate, Acetic Ether, Ethyl Ethanoate, Acetic Acid Ethyl Ester, Acetic Ester, Acetoxyethane, Ethyl Acetic Ester
Chemical Abstracts Number (CAS No.): 141-78-6
Percentage for Chemical Ingredient (%): 100

IV. First Aid Measures:

Emergency and First Aid Procedures:

Inhalation:

1. If the victim is unconscious or unresponsive, take measures to ensure one's own safety before administering first-aid.
2. Remove the pollution source or the patient to a place with fresh air.
3. If breathing has stopped, apply artificial respiration by trained professionals immediately. If the heart has stopped, apply cardiopulmonary resuscitation.
4. Seek medical attention immediately.

Skin Contact:

1. Remove soiled clothes, shoes, and leather accessories (such as watchstraps, belts).
2. Use gentle, running warm water to rinse the injured area for more than 10 minutes as soon as possible.
3. If irritation persists, seek medical attention immediately.
4. The soiled clothes, shoes, and leather accessories should be cleaned before re-use or disposal.

Eye Contact:

1. Quickly and gently absorb or sweep the excess chemical substances.
2. Open the eyelids immediately and wash the injured eye with running warm water for 10 minutes.
3. Take caution when washing. Do not allow the water containing pollutants to come in contact with the injured eye.
4. If irritation persists, seek medical attention immediately.

Ingestion:

1. If the victim is losing consciousness, is unconscious or is having convulsion, do not feed anything through the mouth.
2. Use water to rinse the mouth thoroughly.
3. Do not induce vomiting.
4. Give 240~300 ml of water to the victim.
5. If the victim vomits spontaneously, allow the victim to rinse the mouth and provide water repeatedly.
6. If breathing has stopped, apply artificial respiration by trained professionals immediately. If the heart has stopped, apply cardiopulmonary resuscitation.

Major Disease and Harm Effects: Serious exposure will cause disruption of the central nervous system inhibition such as short of breath, headache, fatigue, and dizziness.

First-Aid Personal Protection: If ingested, gastric lavage and active carbon should be administered.

Prompt to Doctor: -

V. Fire Fighting Measure:

Suitable Extinguishing Media: carbon dioxide, chemical powder, and alcoholic foam
Special Exposure Hazards: 1. Static sparks with sufficient energy may ignite the vapor at the concentration within the explosive range. 2. Vapor is heavier than air and may travel to far places and flashback from ignition sources. 3. The sealed container may rupture when heated. 4. The concentrated aqueous solution is flammable.
Special Extinguishing Procedure: 1. Retreat and extinguish the fire from a safe distance or a protected area. 2. Stay upwind to keep away from hazardous vapor and toxic decomposition. 3. Any leakage should be stopped before extinguishing the fire. If the leakage cannot be stopped and there is no immediate danger in the surrounding area, allow it to burn away. If the leakage is not stopped before extinguishing the fire, the vapor and the air will form an explosive mixture and ignite afterwards. 4. Separate materials that are not on fire and protect the personnel. 5. Move the container away from the fire field under safe conditions. 6. Use water mist to cool the tanks or containers in exposed the fire field. 7. The use of water mist to extinguish fire may be ineffective unless executed by fire fighters trained for extinguishing flammable liquids. 8. If the leakage is not ignited, spray water mist to disperse vapor and protect the personnel who try to stop the leakage. 9. A water spout is ineffective for extinguishing the fire. 10. For a big fire in a large area, use the unmanned water mist stand or the automatic water fire monitor. 11. Retreat from the fire field and allow the fire to burn out. 12. Stay away from the tanks. 13. When the safety valve alarm of the tank sounds or the color changes due to fire, retreat immediately. 14. Personnel without special protective equipment should not enter the fire field.
Special Protection Equipment: Fire fighters must wear air respirators, protective gloves, and fire fighting coats.

VI. Accidental Release Measures:

Personal Protection: 1. Before the polluted area is cleaned up completely, access to the area should be restricted. 2. Make sure the cleaning work is performed by trained personnel. 3. The personnel should wear appropriate personal protective equipment.
Environmental Protection: 1. The air in the area should be well ventilated. 2. All flammable sources should be extinguished or eliminated. 3. Report the accident to the safety, health, and environmental protection authorities of the government.
Methods for Cleaning Up: 1. Do not come in contact with the released chemical. 2. Avoid the released chemical from entering the sewers, drains, or sealed spaces. 3. Stop or reduce the leakage under safe conditions if possible. 4. Use sand, earth, or other absorbents that do not react with the released chemical to block the leakage.

5. Small Quantity: Use an absorbent that does not react with the released chemical to absorb. The polluted absorbent becomes as harmful as the released chemical and should be placed in the appropriate container that is capped and labeled. Use water to clean up the leakage area. The small release may be diluted with a large quantity of water.
6. Large Quantity: Contact the fire fighting department, emergency response department, and the supplier for assistance.

VII. Handling and Storage:

Handling:

1. This substance is a highly flammable and toxic liquid. Therefore, personal protective equipment should be utilized during disposal while the engineer control is operational. The staff should receive relevant trainings on the risk and safe handling of this substance. 2. All flammable sources should be removed and kept away from heat and incompatible substances. 3. The “Smoking Prohibited” sign should be present in the work area. 4. The liquid will accumulate an electric charge. Therefore, a design to increase the conductivity should be taken into consideration. For example, all tanks, transfer containers, and lines should be grounded. Any naked metal should be connected for grounding. During the operation, the flow rate should be reduced to increase the operation time, the duration of the liquid retained in the lines should be increased, and the operation should be performed under low temperature. 5. When the operation is not conducted in the sealed system, the connections between the operation container and the receiving transmission equipment should be at the equivalent electric potential. 6. The empty tanks, containers, and lines may contain harmful residues. Therefore, there should be no welding, cutting, drilling, or heating before they are cleaned. 7. The tanks or containers may be filled with inert gas to reduce the risk of fire and explosion.

8. The ventilation system or equipment that does not produce sparks used in the work area should be explosion-proof. 9. The aisles and exits should be free from obstruction. 10. The installation of the system for detecting leakage and fire, the appropriate fire-fighting system, or emergency operation equipment in the storage area and large quantity operation area should be taken into consideration. 11. The formation of mist or vapor during the operation should be avoided. The operation should be conducted in a well-ventilated area in the smallest quantity possible. The operation area should be separated from the storage area. 12. Wear appropriate personal protective equipment when necessary to avoid contact with this chemical substance or the polluted equipment. 13. Do not use with incompatible chemicals (such as strong oxidants) in order to decrease the risks of fire and explosion. 14. Use containers made from compatible materials. Do not spill during dispensing. 15. Do not use air or inert gas to pressurize the liquid for the transport out of the container. 16. Unless the area is isolated with a fire-resistant structure, do not conduct the handling operation in the storage area. 17. Use a certified flammable liquid storage container and handling equipment. 18. Do not pour polluted liquid back to the original container. 19. The containers should be labeled clearly. Keep the container fastened to avoid damage when not in use.

Storage:

1. The chemical should be stored in cool, dry, and well-ventilated area away from direct sunlight. Keep away from heat sources, flammable sources, and incompatibles. 2. Storage equipment should be constructed with fire-resistant materials. 3. The floor should be constructed with impermeable material to avoid absorption by the floor. 4. Set up slopes, doorsills or furrows at doorways so that leaking substances are discharged to a safe place. 5. The storage area should have clear signs and be free from impediments. Only designated or trained personnel are allowed to enter. 6. The storage area and the work area should be separated. The chemical should be stored away from lifts, buildings, room entrances, or major accesses. 7. Appropriate fire extinguishers and leak clean-up equipment should be available near the storage area. 8. Containers should be checked for damages or leakage regularly. 9. All new containers should be checked for the appropriate labels and any damage. 10. The quantity of chemical to be stored should be limited. 11. The containers make from compatible materials should be used to store the released chemical. 12. The storage tanks should be grounded and connected to other equipment at equivalent electric potential. 13. Tanks used for storing inflammable liquids must be installed with relief valve and vacuum relief valve. 14. The chemical should be stored at the temperature suggested by the chemical manufacturer or supplier. If necessary, the temperature detection alarm should be installed to alert if the temperature is too high or too low. 15. The storage of large quantities should be avoided. The chemical should be stored in the isolated fireproof building. 16. The exhaust pipes of tanks should be installed with flame arresters. 17. The storage tanks should be built on the ground level with the entire bottom sealed to prevent leakage. The liquid control dam able to hold the entire volume should be present in the surrounding area.

VIII. Exposure Control / Personal Protection:

Engineering Control:

1. A ventilation system that does not create sparks and is grounded should be used separately.
2. The ventilation exits should be directly connected to the outside area.
3. The local ventilation equipment should be used. The airtight procedure should be used if necessary in order to control mists.
4. Provide sufficient fresh air to replenish the air exhausted by the exhaust system.

Control Factor			
TWA	STEL	CEILING	BEIs
400 ppm	500 ppm	-	-

Personal Protection Equipment:

Respiratory Protection:

1. Below 2000ppm: full respiratory protectors equipped with chemical filter cartridge for organic vapors, respiratory protectors with organic vapor filters powered for air purification, gas masks with organic vapor filters, respiratory protectors with full self-contained, full air supply or continuous air supply.
2. Unknown Concentration: positive-pressure self-contained respiratory apparatus, positive-pressure full air-supply respiratory apparatus with positive-pressure self-contained respiratory apparatus.
3. Escape: Gas mask with organic vapor filter cartridge, life escape self-contained breathing apparatus.

Hand Protection:

1. Impermeable gloves made from 4H, Barricade, Responder, CPF3, Trellchem HPS, Tychem 10000 preferred.

Eye Protection:

1. Chemical goggles, facial shields.

Skin & Body Protection:

1. The above-mentioned one-piece protective rubber clothing, work boots and safety showers.

Hygiene Procedures:

1. Polluted clothes should be removed as soon as the work is completed. The clothes should be worn or discarded only after being washed. The washing staff should be informed of the harmful effects of the pollution.
2. Eating, drinking, and smoking are strictly prohibited in the work area.
3. Wash hands thoroughly after handling the substance.
4. Keep the work area clean.

IX. Physical and Chemical Properties / Characteristics:

Appearance: Colorless and transparent liquid	Odor: Fruity
Odor threshold: 6.4-50 ppm (detected), 13.3-75 ppm (sensed)	Melting point：-83~83.6℃
pH value: Neutral	Boiling Point / Boiling Range: 77℃
Flammability (solid, gas):	Flash Point: -4.4℃
Decomposition Temperature: -	Test Method: Close Cup
Spontaneous Temperature: 427 ℃	Exposure Limits: 2.0%~11.5%
Vapor Pressure: 73 mmHg	Vapor Density: 3.04
Specific Gravity：0.902@20℃	Solubility in Water：8.6g/100ml (water)
Log Kow: 0.66-0.73	Percent volatile: 6.2 (n-Butyl Acetate = 1)

X. Stability and Reactivity:

Stability: Stable under normal conditions
Special Conditions of Hazardous Reaction:

1. Strong oxidants (nitrate, perchlorate): increased risks of fire and explosion 2. Strong acids (sulfuric acid, fuming sulfuric acid, chlorosulfonic acid): decomposition reaction to release heat 3. Potassium t-butoxide: flammable. 4. Lithium aluminum hydride, 2-chloro methyl furan: explosive
Conditions to Avoid: sparks, static electricity, fire source, moisture
Incompatibility: strong oxidants, strong acids, potassium t-butoxide, lithium aluminum hydride, 2-chloro methyl furan
Hazardous Decomposition Products: ethanol, acetic acid

XI. Toxicological Information

Exposure route: inhalation, skin contact, eye contact, ingestion
Symptoms: irritation, headache, dizziness, sensation of intoxication, dry skin
Acute Toxicity: Skin: 1. No irritation Inhalation: 1. Vapor irritating to nose, gums, and pharynx. 2. Exposure to 400 ppm for 3-5 minutes will cause irritation to human body. 3. Significant exposure will cause symptoms of the central nervous system problems such as short of breath, headache, drowsiness, and dizziness. 4. One case of death was caused by luminous paint containing 80% ethyl acetate in a truck. It was discovered that the exposure caused hyperemia of upper respiratory tract, spleen, kidney, and lungs. Ingestion: 1. Nausea, vomiting, short of breath, headache, drowsiness, dizziness, and other symptoms of the central nervous system problems. 2. Due to the release of ethanol in the body, the ingestion of a large quantity will cause shock and death. Eye: 1. Vapor and liquid will irritate the eyes. 40 ppm of the vapor will lead to irritation. LD50 (test animal, absorption route): 5600mg/kg (rat, ingestion) LC50 (test animal, absorption route): 16000 ppm /6H (rat, inhalation) 400ppm/(human, eyes): irritation
Chronic: 1. Chronic exposure at the concentration of 4,200~13,900 ppm will cause slight irritation to the eyes. 2. 10% solution does not cause skin irritation to the general public, but will to hyper-allergenic people. 3. Ethyl acetate causes chronic injury to mammals.

XII. Ecological Information:

Eco-toxicity: LC50 (Fish): - EC50 (aquatic invertebrates): -

Bio-concentration Factor (BCF):
Durability and Degradability: - 1. Ethyl acetate is fairly easy to be decomposed biologically. 2. Mainly evaporates when released to water. Half-life (air): 35.3~353 hr Half-life (water surface): 24~168 hr Half-life (underground water): 24~1683 hr Half-life (soil): 24~168 hr
Biological Accumulation: evaporation or dissolution in ground water when ethyl acetate is released on the ground.
Other adverse effects: -

XIII. Disposal Information:

Disposal Information: 1. Related regulations of the government. 2. Waste to be disposed of according to the warehouse storage conditions. 3. Designated incineration or sanitary landfills.

XIV. Transport Information:

The United Nations Number (Un-No): 1173
UN Transport Name: Ethyl Acetate
Transport Hazard Classification: Class 3 Flammable Liquids
Packaging Category: II
Marine Pollutant (Yes/No): No
Special Transport Way and Note: -

XV. Regulation Information:

Apply Regulation: 1. Enforcement Rules of the Labor Safety and Health Act 2. Regulations of Hazard Communication on Dangerous and Harmful Material 3. Ordinance on Prevention of Organic Solvent Poisoning 4. Standards of Tolerable Hazardous Substance Concentration in the Air of Labor Working Environment 5. Traffic Safety Regulations 6. Standards for the Storage, Clearance, and Disposal of Industrial Waste 7. Public Hazardous Materials and Flammable Pressurized Gases Establishment Standards and Safety Control Regulations

Material Safety Data Sheet For Ethyl Acetate

XVI. Other Information:

Reference	1. CHEMINFO Database, CCINFO CD, 2005-2 2. RTECS Database, TOMES PLUS CD, Vol.63, 2005 3. HSDB Database, TOMES PLUS CD, Vol.63, 2005 4. Hazardous Chemicals Database, Environmental Protection Agency 5. ChemWatch Database, 2004-4	
Responsible Department	Name: Linyuan Factory, LCY Chemical Corp.	
	Address/Tel: No.11, Shihhua 3rd Rd., Linyuan District Kaohsiung City / (07) 6419966-137	
Prepared by	Job title： Industrial Safety Engineer.	Name(signature and seal)： Cash Chuang
Date	March 1, 2011	
Note	This MSDS version is intended for reference only.	