Ethyl Acetate

GODO CHEMICAL

1. identification

A. Product name
- Ethyl Acetate

B. Recommended use and restriction on use
- ○ Recommended Use : Solvent(paints, resin, inks, adhesives), Organic synthesis, etc(detergent, synthetic leather)
- ○ Restrictions on Use : Restrict except for recommended use

C. Manufacturer / Supplier / Distributor information
- ○ Supplier information
  - Supplier : GODO CHEMICAL Corporation
  - Address : #1017, 10F Suseo Hyundai Ventureville 10 Bamgogae-ro 1-gil Gangnam-gu Seoul 06349 Korea
  - Telephone : (82)2 417 2555~6
  - Email : godochem@godochem.com

2. hazard identification

A. Classification

Flammable Liquid	Category 2 (Flash Point < 23℃, Boiling point > 35℃)
Serious eye damage/irritation	Category 2
Specific Target Organ Toxicity(Single Exposure)	Category 3 (Narcotic efects)

B. Warning
- ○ Label

- ○ Hazard Communication : DANGER!
- ○ Label Element
  - H225 Highly flammable Liquid and Vapor
  - H319 Cause eye irritation.
  - H336 May cause drowsiness or dizziness
- ○ Terms for Precaution
  - Precaution
    - P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
    - P233 Keep container tightly closed.
    - P240 Ground/Bond container and receiving equipment.
    - P241 Use explosion-proof electrical/ventilating/lighting/.../equipment.
    - P242 Use only non-sparking tools.
    - P243 Take precautionary measures against static discharge.

P261 Avoid inhalation vapor/spray
P264 Wash hands thoroughly after handling
P271 Keep handling outdoors or in a wall – ventilated area
P280 Wear protective gloves/protective clothing/eye protection/face protection

– Response

P303+P361+P353 If on skin(or hair) Take of immediately all contaminated clothing Rinse skin with water/shower.
P304+P340 Move to the place in fresh air in case of Inhalation and take a rest by good posture to inhale.
P305+P351+P38 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312 Cal a POISON CENTRE or doctor/physician if you fel unwell.
P337+P313 If eye iritation persists: Get medical advice/atention.
P370+P378 In case of fire, use water spray/alcohol resistant foam for extinction.

– Storage

P403+P233 Store in a wel– ventilated place and kep the container tightly closed.
P403+P235 Store in a wel ventilated place. Kep cool.
P405 Store in a secure manner.

– Disposal

P501 Dispose of contents/container by incineration or recycle.

C. Other

○ NFPA

– Health 1
– Flammability 3
– Reactivity 0

3. composition/information on ingredients

Chemical name : Ethyl Acetate
Synonyms : Acetic Acid Ethyl Ester
CAS number : 141-78-6
Content(%) :

Name	Trade names and Synonyms	KE No.	Content (%)
Ethyl Alcohol	Acetic acid ethyl ester	KE-00047	99.8
Water	Dihydrogen oxide ; Oxidane	KE-35400	0.03
Other Organic Compound	–	–	0.17

4. first aid measures

A. Eye contact
Do not rub your eyes.
Immediately flush eyes with plenty of water for at least 15 minutes.
If symptoms develop (rednes, iritation, etc.), go to hospital immediately.
If you wear a contact lens, remove the lens first.

B. Skin contact
Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Laundering enough contaminated clothing before reuse.
Get medical attention immediately.

C. Inhalation
When exposed to large amounts of steam and mist, move to fresh air.
If not breathing, give artificial respiration.
If inhaled, sek medical advice immediately and sek medical notice.

D. Ingestion
Please be advised by doctor whether induction of vomit is demanded or not.
Rinse your mouth with water immediately.
Get medical attention immediately.

E. Note to Physician
Notify medical personel of contaminated situations and have them take appropriate protective measures.

5. fire fighting measures

A. Suitable(or Unsuitable) Extinguish Media
Dry chemical, carbon dioxide, regular foam extinguishing agent, spray
Avoid use of water jet for extinguishing
Wear fire fighting clothing, fire fighting helmets, fire fighting gear, fire fighting gloves, and respirator when fighting fire.

B. Specific hazards arising from the chemical
Highly flammable liquids and vapors, Violent polymerization may cause fire and explosion.
Vapors can be transferred to the ignition sources of ignition.
May form explosive mixture at or above flash point.
Containers may explode on heating.
Highly flammable : Easily ignited by heat, sparks and flames.
Leaks may present a fire/explosion hazard.
Vapors are explosive at room, outdoors, and at the sewers.
Vapors may form explosive mixtures with air.
Vapors may travel to the source of ignition and backfire.
Inhalation and contact may iritate or burn the skin and eyes.

C. Special protective actions for fire-fighting

Cool containers with plenty of water until the fire has completely extinguished.
Keep unauthorized people away, isolate hazard area and deny entry.
Evacuate immediately if there is sound of the safety device or if the tank becomes discolored due to fire.
Wear appropriate protective equipment if necesary.
Vapor or gas is burned at distant igniton sources can be spread quickly.
Due to the extremely low flash point, irigating fire extinguishing may be les efective when put out a fire.

6. additional release measures

A. Personal Precautions
Ventilate closed spaces before entering.
Be sure to work your way back and evacuate someone holding the wind.
Do not touch spilled material. Stop leak if you can do it without risk.
Handling the damaged containers or spilled material after wearing protective equipment.
Do not direct water at spill or source of leak.
Avoid skin contact and inhalation.

B. Environment Precautions
Prevent runoff and contact with waterways, drains or sewers.
If large amounts have ben spilled, inform the relevant authorities.

C. Methods for cleaning up
- Large spill : Stay upwind and kewp out of low areas. Dike for later disposal.
  Notification to central government, local government. When emissions at least of the standard amount
  Dispose of waste in accordance with local regulation.
  Appropriate container for disposal of spiled material colected.
- Small leak : sand or other non-combustible material, please let use absorption.
  Wipe of the solvent.
  Dike for later disposal.
  Do not use plastic containers.

7. handling and storage

A. Precaution for safe handling
Avoid contact with incompatible materials.
Get the manual before use.
Refer to Engineering controls and personal protective equipment.
Do not handle until al safety precautions have ben read and understood.
Do not inhale the steam prolonged or repeated.
Avoid contact with heat, sparks, flame or other ignition sources.

B. Conditions for safe storage, including any incompatibilities
Store in a cool, dry, well-ventilated place.
Check regularly for leaks.

Note the substances and conditions to avoid.
Keep sealed when not in use.
Caution : Flammables.
Collected them in sealed containers.

8. exposure controls/personal protection

A. Control parameters – Occupational Exposure Limits
- ○ Domestic regulation : TWA - 400ppm
- ○ ACGIH : TWA - 400ppm
- ○ Biological exposure standard : Not available

B. Engineering Control

Business owner is recommended to maintain below recommended exposure limits for the working place with general exhaust of gas/vapour/mist/fume.

C. Personal protection
- ○ Respiratory protection

  Under conditions of frequent use or heavy exposure, Respiratory protection may be needed.
  Respiratory protection is ranked in order from minimum to maximum.
  Consider warning properties before use.
  Any chemical cartridge respirator with organic vapor cartridge(s).
  Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s).
  For Unknown Concentration or Immediately Dangerous to Life or Health : Any supplied-air respirator with ful facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply. Any self-contained breathing apparatus with a full facepiece.
- ○ Eye protection

  Wear primary eye protection such as splash resistant safety goggles with a secondary protection face shield.
  Provide an emergency eye wash station and quick drench shower in the immediate work area.
- ○ Hand protection

  Wear appropriate chemical resistant glove.
- ○ Body protection

  Wear appropriate chemical resistant protective clothing.

9. physical and chemical properties

A. Appearance	:	Liquid, Clear, Colorless
B. Odor	:	Fruit odor
C. Odor threshold	:	6-686 ㎎/㎥
D. pH	:	No data
E. Melting/Frezing point	:	-84℃
F. Boiling point	:	77℃
G. Flah point	:	- 4℃(c.c.)
H. Evaporation ratio	:	6.2

I. Flammable(Solid, Gas)	: Not applicable
J. Ignition or Explosion range	: 2.2 / 11.5%
K. Vapor	: 93.2 mmHg (25℃)
L. Solubility	: 6.4g/ 100ml at 25℃(water), Solvent Solubilty : Alcohol, Benzene, Ether, Aceton, Chloroform
M. Vapor Density	: 3
N. n-oktanol/ water partion coeficient	: 0.73
O. Specifc gravity	: 0.9003
P. Autoigniton Temperature	: 427℃
Q. Decompositon Temperature	: No data
R. Viscosity	: 0.44cP at 25℃
S. Molecular formular / Weight	: CH3COOC2H5 / 88.11

10. stability and reactivity

A. Chemical Stability & Possibility of hazardous reactions
: This material is stable under recommended storage and handling conditions.
Hazardous Polymerization will not occur.

C. Conditions to avoid : Avoid contact with incompatible materials and condition.
Avoid contact with heat, sparks, flame or other ignition sources.

D. Incompatible materials : Not available

E. Hazardous decomposition products : Not available

11. toxicological information

A. Information on the likely routes of exposure

○ Respiratory tracts : Not available

○ Oral : Not available

○ Eye, Skin contact : Cause eye irritation

B. Delayed and immediate effects and also chronic effects from short and long term exposure

○ Acute toxicity

- Oral : LD50 5620 mg/kg Rat ※ Source : IUCLID
- Dermal : LD50 > 18000 mg/kg (Rabit) ※ Source : IUCLID
- Inhalation : Steam LC50 100 mg/L 4 hr Rat (LC50 = 200 mg/L/1hr) ※ Source : IUCLID

○ Skin corrosive or Irritation : Skin corrosion / irritation test using rabbit, irritation not fully recovered in 7 days. Slightly irritating. Erythema index =1.3, Edema index=0.4, OECD TG 404
※ Source : ECHA

○ Acute eye damages	: According to Toxicological Notification, the substance is classified as Category 2 due to severe eye damage / eye irritation. Severe damage / irritation test results (OECD Guideline 405) using rabbits completely relieved within 7 days. No irritant. Conjunctival index : 0.5, iris index : 0.17, Conjunctival edema index : 1.33, Corneal index : 0.67 ※ Source : ECHA
○ Respiratory hypersensitvity	: No data.
○ Skin hypersensitvity	: Skin irritability test using guinea pig females, non-irritant. OECD TG 406 ※ Source : ECHA
○ Carcinogenic	: Not available
○ Germ Cels Mutagenicity	: Results of mutation test(OECD TG 471) on in vitro microorganism showed that regardless of metabolic activity, chromosomal aberration test(OECD TG 473) using negative cultured mammalian cells showed that the metabolism of sister chromatid exchanges in mammalian cells, Negative when there is no active system. Chromosomal aberration(Aneuploidy in Saccharomyces cerevisiae) test in positive test tube when metabolic activity test was caried out, chromosome aberration test(OECD TG 473) using positive test tube mammalian culture cel in absence of metabolic activity test ambiguity in the absence of metabolic activity test in vivo Mortality test result using in vivo mammalian red blood cells.(OECD TG 474). Negative - In vivo micronucleus test results, negative
○ Reproductive Toxicity	: Results of 13-wek inhalation reproductive toxicity test using rats(Other guideline : US EPA Health Efects Testing Guidelines 40 CFR Part 7982450). No efect on sperm count, motility. (NOAEL(P. COCK)=1,500ppm) - Results of inhalation fetal development test using rats(OECD TG 414). Maternal toxicity reduces anesthesia and food consumption(NOAEL (Maternal toxicity) =16,000ppm, NOAEL (Teratogenic)≥20,000ppm, NOAEL(Maternal toxicity) =20,000ppm) (Analogous substance CAS No. 64-17-5) ※ Source : ECHA

○ Specific Target Organ Toxicity (single exposure)
Specific Target Organ Toxicity 1 exposure: Causes upper respiratory tract irritation in humans. Exposure to concentrations close to lethal concentrations may cause anesthesia and lung damage.
※ Source : HSDB

○ Specific Target Organ Toxicity (repeated exposure)
As a result of subchronic repeated oral toxicity test using rat arm / water, saliva secretion, irregular breathing and coma were observed in high concentration group.
(NOAEL = 90 mg/kg bw/day nominal, NOAEL = 3,60 mg/kg bw/day nominal) - Results of subchronic repeated inhalation toxicity test using rats, respiratory irritation efect LOEC=350ppm, NOEC Human body toxicity=350ppm) (EPA OTS 798.2450, GLP) ※ Source : ECHA

○ Aspiration hazards : No data.

C. Numerical measures of toxicity (Acute toxicity estimates) : No data.

12. ecological information

A. Ecotoxicity
- ○ Fish : LC50 230 ㎎/L 96 hr Pimephales promelas (US EPA method E03-05) ※ Source : ECHA
- ○ Crustaceans : EC50 2,500 ㎎/L 24 hr Daphnia magna(other guidelinen: DIN 38412 pt 11) ※ Source : ECHA
- ○ Algae : No data

B. Persistence and degradability
- ○ Persistence : No data
- ○ Biodegradability : (COD:1.69 g O2/g test mat) ※ Source : ECHA

C. Bioaccumulation
- ○ Biodegradability : No data
- ○ Bioaccumulation : No data

D. Soil mobility : No data

E. Ozone Hazard : No data

F. Other hazardous : No data

13. disposal considerations

A. Method of Disposal
Since more than two kinds of designed waste is mixed, it is difficult to treat seperatly, then can be reduction or stabilization by incineration or similar process
If water separation is possible, pre-proces with Water separation process
Dispose by incineration.

B. Caution
The user of this product must disposal by oneself or entrust to waste disposer or person who other's waste recycle and dispose, person who establish and operate waste disposal facilities.
Dispose of waste in accordance with al applicable laws and regulations.

14. transport information

A. UN Number : 1173
B. UN Shipping Name : ETHYL ACETATE
C. ADR / RID Class : 3
D. Packing Group : II
E. Marine Polutant : Not applicable
F. EmS code
○ Fire : F- E
○ Spill : S- D

15. regulatory information

A. Occupational Safety and Health Law
○ Working environment measurement materials : Ethyl Acetate (Cycle : 6 month),
○ Exposure standard setting materials : Applicable (Ethyl Acetate)
○ Managed Hazardous Materials : Ethyl Acetate
○ Special medical examination material : not applicable
○ Manufacture Restriction Materials : not applicable
○ Need Permission Materials : not applicable
○ Need PSM Materials : Product, applicable(Flammable liquids)

B. Toxic Chemicals Control Law
○ Toxic Materials : Ethyl Acetate
○ Emission Survey Materials : applicable (Ethyl Acetate)
○ Accident Prepare Materials : applicable (Ethyl Acetate)
○ Restriction Materials : not applicable
○ Permision Materials : not applicable
○ Prohibiton Materials : not applicable
○ Related Law For Chemicals Registration, evaluation : Existing Chemicals (Ethyl Acetate, Water)

C. Hazardous Safety Control Law : 4 class Petroleum (insoluble liquid), 200 liter

D. Wastes Control Law : This Product is Industrial Waste(except for appointed Waste) in accordance with Waste Control Acts

E. Other regulation and foreign regulation.
○ Persistent Organic Polutants Control Law : Not application
○ EU Regulations
- Classification results : Flam. Liq. 2 STOT SE 3 Eye Irrit. 2
- Hazard Phases : H225 H319 H336
- Precaution Phases : not applicable

○ US Regulations2
- OSHA Regulation (29CFR1910.119) : Not application
- CERCLA 103 Reulation (40CFR302.4) : 2267.95(kg) 5000(lb)
- EPCRA 302 Regulation (40CFR355.30) : Not application
- EPCRA 304 Regulation (40CFR355.40) : Not application
- EPCRA 313 Regulation (40CFR372.65) : Not application

○ Rotterdam Convention	: Not application
○ Stockholm Convention	: Not application
○ Montreal Protocol	: Not application

16. other information

A. References : This MSDS is prepared in accordance with Article 41 of the Industrial Safety and Health Act and Article 2016-19 of the Ministry of Employment and Labor (standards on the provision of material safety data).
MSDS of " Korea Occupational Safety and health Agency" TOXNET, U.S. National Library of Medicine
International Chemical Safety Cards(ICSC)
ECS- ESIS(European chemical Substances Information System)
IUCLID Chemical Data Sheet, EC- ECB
Chemical substances Information System, National Institute of Environmental Research
Korea Information System for Chemical Safety Management
ECHA, HSDB

B. Original Preparation Date : 2010, 5, 7

C. Revision number and Revision date : 5 / 2017, Jan. 23.
6 / 2017, Mar. 14. - Application Of NO.2016-19 Revised Regulation(2016, April, 6. MOEL Notice)
7 / 2017. Aug. 2 - Revised MSDS in Korea Safety and Health Corporation
8 / 2019. Mar. 14 - Review the revision of the MSDS provided by the Occupational Safety and Health Agency for different item identifications.

D. Other No data : This information is based on current available DB to protect workers' health, environment and safety.