

SAFETY DATA SHEET

1. IDENTIFICATION

Chemical product name: **AH-3000-2**

Name of manufacture: Hitachi Chemical Co., Ltd. (Yamazaki Works)

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Recommended use of the chemical and restrictions on use: Material for semiconductor.

2. HAZARDS IDENTIFICATION

[GHS CLASSIFICATION] According to SS586-2008 (Singapore)

PHYSICAL HAZARDS:	Flammable liquids ;	Category 3
HEALTH HAZARDS:	Acute toxicity Oral ;	Not classified
	Dermal ;	Not classified
	Inhalation;	Classification not possible
	Skin corrosion/irritation ;	Category 2
	Serious eye damage/eye irritation ;	Category 1
	Respiratory sensitization ;	Classification not possible
	Skin sensitization ;	Category 1
	Germ cell mutagenicity ;	Classification not possible
	Carcinogenicity ;	Classification not possible
	Reproductive toxicity ;	Classification not possible
	Specific target organ toxicity – Single exposure;	Category 3 (Respiratory tract irritation)
	Specific target organ toxicity – Repeated exposure;	Classification not possible
	Aspiration hazard ;	Classification not possible

ENVIRONMENTAL HAZARDS:

Hazardous to the aquatic environment: Acute;	Classification not possible
	Long term; Classification not possible
Hazardous to the ozone layer:	Classification not possible

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[GHS LABEL ELEMENTS]

Symbols:



Signal word: Danger

Hazard statements:

- Flammable liquid and vapour.
- Causes skin irritation.
- Causes serious eye damage.
- May cause an allergic skin reaction.
- May cause respiratory irritation.

Precautionary statements:

Prevention:

- Keep container tightly closed.
- Keep away from heat/sparks/open flame – No smoking.
- Ground/Bond container and receiving equipment.
- Use explosion-proof electrical/ventilating/lighting/equipment.
- Take precautionary measures against static discharge.
- Use only non-sparking tools.
- Wear protective gloves/protective clothing/eye protection/face protection.
- Avoid breathing mist/vapours/spray.
- Contaminated work clothing should not be removed out of the workplace.
- Wash hands thoroughly after handling.
- Use only outdoors or in a well-ventilated area.

Response:

- In case of fire : Use dry chemical powder, carbon dioxide, foam, water spray and dry sand.
- IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- IF ON SKIN (or hair) : Take off immediately all contaminated clothing. Rinse skin with water/shower.
- If skin irritation or rash occurs: Get medical advice/attention.
- Take off contaminated clothing and wash before reuse.
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- Immediately call a POISON CENTER or doctor/physician.
- Call a POISON CENTER/doctor/physician if you feel unwell.

Storage:

- Store locked up.
- Store in a well-ventilated place. Keep cool.
- Store container tightly closed.

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Disposal:

- Dispose of contents/container in according with local/regional/national/international regulations.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance/Mixture: Mixture

General product description: Resin for solution.

Ingredients and composition:

Chemical name	Composition (wt. %)	Chemical formula	CAS No.
Thermoset resin	20 - 30	-	Registered
Additive	10 - 20	-	Registered
Ethyl lactate	55 - 65	$\text{CH}_3\text{CH}(\text{OH})\text{COOC}_2\text{H}_5$	97-64-3

UN Class: 3 (Flammable Liquids)

UN No.: 1993 (Flammable Liquid, N.O.S.)

4. FIRST-AID MEASURES

Inhalation: Remove the victim from the contamination immediately to fresh air when mist is inhaled.

When the signs of abnormalities are accepted, Get medical attention immediately.

Skin contact: Remove all contaminated clothing. Wash the affected area with plenty of water with mild soap. If irritation persists, get medical attention.

Eye contact: Gently rinse the affected eyes with clean water for at least 15 minutes. Ask the victim to look up, down and side-to-side in order to better reach all parts of eyes. Get medical attention.

Ingestion: Do not induce vomiting. Rinse mouth with plenty of water and get medical attention. When vomiting happens naturally, incline the body not to enter into the trachea.

5. FIRE-FIGHTING MEASURES

Flammable properties: Flash point 56.5°C (Product)

Suitable extinguishing media: Dry chemical powder, carbon dioxide, foam, water spray and dry sand.

Unsuitable extinguishing media: Water jet

Specific hazards regarding with fire-fighting measure

- Initial fires are best controlled by dry chemical powder, carbon dioxide and dry sand.
- Large fires are best controlled by foam.
- In case of neighboring fire, cool containers and surroundings by water spray. Move containers from fire area if possible.
- Be careful not to cause environmental pollution by an outflow of fire extinguishing water and the dilution water.
- Firefighters should wear proper protective equipment and self-breathing apparatus.

Hazardous combustion products: Carbon monoxide, smoke, fumes and hydrocarbons.

Toxic gases (carbon monoxide) will form upon combustion.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions:

- Evacuate people to safe area. Evacuate non-essential personnel.
- Wear proper protective equipment.
- Do not work at the lee.

Environmental precautions:

- Do not wash away into sewers, watercourses or rivers.
- Do not infiltrate it into the soil.

Methods and materials for containment and cleaning up:

- Remove firing sources nearby for prevention of the fire outbreak.
- For small spill, absorb spills with inert materials(e.g. dry sand or earth), then place in a chemical waste containers.
- For large spill, dike for later disposal, cover spills with foam, then place into a chemical waste container.
- Use non-sparking tools.
- The waste shall be disposed according to "13.DISPOSAL CONSIDERATIONS"..

7. HANDLING AND STORAGE

Handling:

- Use in the closed apparatus. Work under local exhaustion.
- In case of handling, wear proper protective equipment to avoid contact and inhalation.
- Avoid long term handling or repeated exposure.
- Wash face and hands after handling.
- If you feel abnormality in the body or abnormality on the body observed, make sure to get medical advice/attention after taking the emergency measures refer to section 4.

Storage:

- Keep containers tightly closed and store in dark and well-ventilated location.
- Follow all regulation on the transport in your country or region.
- Store locked up.
- Specific materials to be avoided: Strong acids, strong bases and strong oxidizing materials.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure control: Use this product only in a totally enclosed systems or local exhaust ventilation. Make available in the work area with emergency shower and eyes washer.

Control parameters: ACGIH (2014) ¹⁾: Not established.

Engineering measure: Singapore PEL : Not established.

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Personal protection equipment:

- Respiratory protection: Industrial canister gas masks.
- Eye protection: Safety goggles or face shield.
- Hand, skin and body protection: Chemical-resistant gloves, impervious boots and apron or full-body suit.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Pale yellow liquid

Odor: Ester odor

Flash point: 56.5°C

Auto-ignition temperature: 450°C

Specific gravity: 1.00 – 1.15

Solubility in water: Insoluble

(Reference²⁾)

Boiling point: 154°C (Ethyl lactate)

Flash point: 53.5°C (Ethyl lactate)

Auto-ignition temperature: 400°C (Ethyl lactate)

Vapor pressure: 2.79hPa (20°C) (Ethyl lactate)

Vapor density (air=1): 4.07 (Ethyl lactate)

Explosion limit (in air, vol.%): Lower 1.5 Upper 11.4 (Ethyl lactate)

10. STABILITY AND REACTIVITY

Stability: Stable under normal condition and anticipated storage.

Materials to avoid: Strong acids, strong bases and strong oxidizing materials

Hazardous decomposition products: Carbon monoxide

Hazardous polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Route of entry: May cause absorption in the body by oral and dermal.

Acute toxicity:

Additive ORAL LD₅₀ 12300 µl/kg (rat)³⁾

Ethyl lactate ORAL LD₅₀ >2000 mg/kg (rat)⁴⁾

DERMAL LD₅₀ >5000 mg/kg (rabbit)⁴⁾

LD₅₀: Lethal dose 50% kill

Skin corrosion/irritation: This product may irritate skin.

Ethyl lactate causes skin irritation.⁴⁾

Serious eye damage/eye irritation: This product may damage eyes.

Ethyl lactate damages eyes.⁵⁾

Respiratory sensitization: No relevant information found.

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Skin sensitization: This product may have skin sensitization

Thermoset resin and ethyl lactate have skin sensitization. ^{4), 6)}

Germ cell mutagenicity: No relevant information found.

Carcinogenicity: Components of this product are not classified in IARC and ACGIH.

Reproductive toxicity: No relevant information found.

Specific target organ toxicity – Single exposure:

Ethyl lactate may cause respiratory irritation. ⁴⁾

Specific target organ toxicity – Repeated exposure: No relevant information found.

Aspiration hazard: No relevant information found.

12. ECOLOGICAL INFORMATION

Biodegradability: Ethyl lactate is biodegradability. ²⁾

Bioaccumulation: No relevant information found.

Eco-toxicity: This product may cause adverse effects to aquatic environments.

- | | | | |
|--------------|----------------|------------------------|---------------------------------------|
| • Fishes; | Danio rerio; | LC ₅₀ (96h) | 320mg/l (Ethyl lactate) ⁴⁾ |
| • Crustacea; | Daphnia magna; | EC ₅₀ (48h) | 560mg/l (Ethyl lactate) ⁴⁾ |

LC₅₀: Lethal concentration 50% kill, EC₅₀: 50% effective concentration

Hazardous to the ozone layer: No relevant information found.

13. DISPOSAL CONSIDERATIONS

Information on their safe handling of disposal:

- Do not dump into sewers, on the ground or into any body of water.

Appropriate methods of disposal:

- Waste liquid should be recovered in a closed container and handed over to a special merchant for waste disposal.
- Follow all regulation in your country or region.

14. TRANSPORT INFORMATION

Any especial precaution on the transport or conveyance:

- Keep away from strong acids, strong bases and strong oxidizing materials
- United Nation's recommendation and other international agreements on the transport and packaging.

UN Class: 3 (Flammable Liquids)

UN Number: 1993 (Flammable Liquid, N.O.S.)

Packing Group: III

Marine Pollutant: No

- Follow all regulation on the transport in your country or region.

15. REGULATORY INFORMATION

Classification and labeling in accordance with SS586-2008 (Specification for hazard communication for hazardous chemicals and dangerous goods (Singapore)): See Section 2

- Regulatory information with regard to this preparation in your country or region should be examined by your own responsibility.

16. OTHER INFORMATION

References:

- 1) TLV and BEIs (ACGIH 2014)
- 2) SDS published by manufacturer of ethyl lactate (2012)
- 3) Registry of Toxic Effects of Chemical Substances (CCOHS)
- 4) GHS Classification Data Base (National Institute of Technology and Evaluation, Japan)
- 5) REGULATION (EC) No 1272/2008
- 6) SDS published by manufacturer of thermoset resin (2005)

Inquiry of the information contained herein:

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It is the user's responsibility to determine the suitability of this information for the adoption of necessary safety precautions.

We reserve the right to revise SDS periodically as new information becomes available.