

1. Identification of the substance/preparation and of the company/undertaking**1.1 Identification of the product****Product code:** T2061**Product name:** Tetrahydrofuran**CAS No.:** 109-99-9**1.2 Recommended use and restriction on use**

General use : for experimental, research and industrial use

Restriction on use : Never drink, Not used except for experimental, research and industrial applications.

1.3 Manufacturer / Supplier / Distributor information**Importer/distributors identification**

Company : ASIA CHEMIE (THAILAND) CO., LTD.

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2. Hazards identification**2.1 GHS Classification**

Flammable liquids: Category2

Acute toxicity (oral): Category4

Serious eye damage/irritation: Category2

Carcinogenicity: Category2

Specific target organ toxicity (Single exposure): Category3 (Respiratory tract irritation)

Specific target organ toxicity (Single exposure): Category3 (Narcotic effects)

2.2 GHS label elements**Hazard symbols****Signal Word:** Danger**Hazard Statements**

H225 Highly flammable liquid and vapour.

H302 Harmful if swallowed.

H319 Causes serious eye irritation.

H335 May cause respiratory irritation.

H336 May cause drowsiness or dizziness.

H351 Suspected of causing cancer.

Precautionary Statements

P202 Do not handle until all safety precautions have been read and understood.

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 breathing gas/mist/vapours/spray.

P264+P265 Wash hands, face and any exposed skin thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P271 Use only outdoors or in a well-ventilated area.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P264+P265 Wash hands, face and any exposed skin thoroughly after handling.

P301 + P312 IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell.

P308+P313 IF exposed or concerned: Get medical advice/ attention.

P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P308+P313 IF exposed or concerned: Get medical advice/ attention.

P319 Get medical help if you feel unwell.

P330 Rinse mouth.

P337+P317 If eye irritation persists: Get medical help

P370+P378 In case of fire: Use Suitable extinguishing media for extinction

P403+P233 Store in a well-ventilated place. Keep container tightly closed.

P403+P235 Store in a well-ventilated place. Keep cool.

P405 Store locked up.

P501 Dispose of contents/container in accordance with local/regional/national/international regulation.

2.3 Other hazards which do not result in classification: (NFPA Classification)

NFPA grade (0 ~ 4 level)

- Health: 2, Flammability: 3, Reactivity: 1

3. Composition/information on ingredients

Chemical Name	Synonyms	CAS No.	Concentration (%)
Tetrahydrofuran	THF	109-99-9	100

4. First aid measures

4.1 Eye contact

- Do not rub your eyes.
- Immediately flush eyes with plenty of water for at least 15 minutes and call a doctor/physician.
- Get medical attention immediately.
- Remove contact lenses if worn.

4.2 Skin contact

- Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- Wash contaminated clothing thoroughly before re-using.
- Get medical attention immediately.

4.3 Inhalation contact

- When exposed to large amounts of steam and mist, move to fresh air.
- Get medical attention immediately.
- If breathing is stopped or irregular, give artificial respiration and supply oxygen.

4.4 Ingestion contact

- Clean mouth with water and drink afterwards plenty of water.

4.5 Delayed and immediate effects and also chronic effects from short and long term exposure

- Difficulty in breathing.
- Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting: Causes central nervous system depression

4.6 Notes to physician

- Notify medical personnel of contaminated situations and have them take appropriate protective measures.
- If exposed or concerned, get medical attention/advice.

5. Fire-fighting measures

5.1 Suitable (Unsuitable) extinguishing media

- Dry chemical, carbon dioxide, regular foam extinguishing agent, spray.
- Avoid use of water jet for extinguishing.

5.2 Specific hazards arising from the chemical

- Flammable.
- Containers may explode when heated.
- Vapors may form explosive mixtures with air.
- Vapors may travel to source of ignition and flash back.
- May form explosive peroxides.

5.3 Special protective actions for firefighters

- Stay in danger area only with self-contained breathing apparatus.
- Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

- Advice for non-emergency personnel: Do not breathe vapors, aerosols.
- Avoid substance contact. Ensure adequate ventilation.

- Keep away from heat and sources of ignition.
- Evacuate the danger area, observe emergency procedures, consult an expert.

6.2 Environmental precautions

- Do not let product enter drains. Risk of explosion.

6.3 Methods and materials for containment and cleaning up

- Cover drains. Collect, bind, and pump off spills.
- Observe possible material restrictions.
- Take up carefully with liquid-absorbent material
- Dispose of properly
- Clean up affected area.

7. Handling and storage**7.1 Precautions for safe handling**

- Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.
- Keep away from open flames, hot surfaces and sources of ignition.
- Take precautionary measures against static discharge.
- Immediately change contaminated clothing.
- Apply preventive skin protection.
- Wash hands and face after working with substance.

7.2 Conditions for safe storage, including any incompatibilities

- Keep container tightly closed in a dry and well-ventilated place.
- Keep away from heat and sources of ignition. Protected from light.
- Keep container tightly closed in a dry and well-ventilated place.
- Keep away from heat and sources of ignition.

8. Exposure controls/personal protection**8.1 Exposure limits****ACGIH TLV**

- TWA 50 ppm; STEL 100 ppm Skin

OSHA PEL

- TWA: 590

8.2 Engineering controls

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

8.3 Individual protection measures, such as personal protective equipment**Respiratory protection**

- Under conditions of frequent use or heavy exposure, Respiratory protection may be needed.
- Consider warning properties before use.
- For Unknown Concentration or Immediately Dangerous to Life or Health: Any supplied-air respirator with full 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.

Skin protection

- Wear appropriate chemical resistant protective clothing.

Others

- Not available

9. Physical and chemical properties

A. Appearance	
- Appearance	Liquid
- Color	colorless
B. Odor	sweet odor
C. Odor threshold	Not available
D. pH	Not available

E. Melting point/Freezing point	-108 °C
F. Initial Boiling Point/Boiling Ranges	65.4 °C
G. Flash point	-21.5 °C
H. Evaporation rate	Not available
I. Flammability (solid, gas)	Not available
J. Upper/Lower Flammability or explosive limits	11.8 / 2 %
K. Vapour pressure	162 mmHg (20°C)
L. Solubility	miscible
M. Vapour density	2.49
N. Specific gravity (Relative density)	0.8880 g/cm3
O. Partition coefficient of n-octanol/water	0.46 (= log Pow)
P. Autoignition temperature	321 °C
Q. Decomposition temperature	Not available
R. Viscosity	0.53 cP (20 °C)
S. Molecular weight	72.11
T. Molecular formula	C4H8O

10. Stability and reactivity

10.1 Chemical Stability

- Sensitivity to light
- Sensitive to air.
- The product is chemically stable under standard ambient conditions (room temperature).

10.2 Possibility of hazardous reactions

- A risk of explosion and/or of toxic gas formation exists with the following substances:
Alkali hydroxides, Bromine hydrides, Potassium, lithium aluminium hydride thionyl chloride, Oxidizing agents
Oxygen aminophenol with Peroxides
- Exothermic reaction with:
Acids halides, Peroxi compounds

10.3 Conditions to avoid

- Distillation (Risk of explosion).
- Warming.
- Moisture.

10.4 Incompatible materials

- Not available

10.5 Hazardous decomposition products

- May emit flammable vapour if involved in fire.

11. Toxicological information

11.1 Information on the likely routes of exposure

Respiratory tracts

- Not available.

Oral

- Harmful if swallowed

Eye/Skin

- Causes serious irritation

11.2 Delayed and immediate effects and also chronic effects from short and long term exposure

Acute toxicity

* Oral

- [Tetrahydrofuran]: LD50 1650 mg/kg (Rat)

* Dermal

- [Tetrahydrofuran]: LD50 >2000 mg/kg (Rabbit)

* Inhalation

- [Tetrahydrofuran]: LC50 14.7 mg/L – vapor (Rat- male and female) 6 hr

Skin corrosion/irritation

- Not available

Serious eye damage/irritation

- Causes serious eye damage

Respiratory sensitization

- Not available

Skin sensitization

- Not available

Carcinogenicity

- Suspected of causing cancer

Germ cell mutagenicity

- Not available

Reproductive toxicity

- Not available

STOT-single exposure

- May cause respiratory irritation.
- May cause drowsiness or dizziness.

STOT-repeated exposure

- Not available

Aspiration hazard

- Not available

12. Ecological information**12.1 Ecotoxicity****Fish**

- [Tetrahydrofuran]: LC50 2160 mg/l 96 hr Pimephales promelas (Flow-through, OECD Guideline 203) (ECHA)

Crustaceans

- [Tetrahydrofuran]: LC50 3485 mg/l 48 hr Daphnia magna (OECD TG 202) (ECHA)

Algae

- Not available

12.2 Persistence and degradability

- Not available

12.3 Bioaccumulative potential

- Not available

12.4 Mobility in soil

- Not available

12.5 Other adverse effects

- Not available

13. Disposal considerations**13.1 Disposal methods**

- It shall be treated by incineration.
- Oil water separation technology shall be applied as pre-waste treatment if it is applicable
- Stabilization and minimization treatment by incineration or similar method can be applied, if more than two kinds of designated wastes are in mixture state and it is impractical to separate them.

13.2 Special precautions for disposal

- Anyone with business license number who generates industrial wastes shall treat the waste by him/herself or by entrusting to the legal entities who treat the wastes, recycle the wastes of others or install and operate the waste treatment facilities according to the Wastes Control Act.
- Dispose of waste in accordance with all applicable laws and regulations.

14. Transport information**14.1 UN No. (IMDG CODE/IATA DGR)**

- 2056

14.2 Proper shipping name

- TETRAHYDROFURAN

14.3 Hazard Class

- 3

14.4 IMDG CODE/IATA DGR Packing group

- II

14.5 Marine pollutant

- Not applicable

14.6 Special precautions for user related to transport or transportation measures

- Local transport follows in accordance with Dangerous goods Safety Management Law.

- Package and transport follow in accordance with Department of Transportation (DOT) and other regulatory agency requirements.
- EmS FIRE SCHEDULE: F-E (Non-water-reactive flammable liquids)
- EmS SPILLAGE SCHEDULE: S-D (Flammable liquids)

15. Regulatory information

15.1 National and/or international regulatory information

POPs Management Law

- Not applicable

Information of EU Classification

* Classification

- [Tetrahydrofuran]: H225, H302, H319, H335, H336, H351

U.S. Federal regulations

* OSHA PROCESS SAFETY (29CFR1910.119)

- Not applicable

* CERCLA Section 103 (40CFR302.4)

- [Tetrahydrofuran]: 453.599 kg 1000 lb

* EPCRA Section 302 (40CFR355.30)

- Not applicable

* EPCRA Section 304 (40CFR355.40)

- Not applicable

* EPCRA Section 313 (40CFR372.65)

- Not applicable

Rotterdam Convention listed ingredients

- Not applicable

Stockholm Convention listed ingredients

- Not applicable

Montreal Protocol listed ingredients

- Not applicable

16. Other information

Reason for the revision: General update.

Date: 07/08/2014

Revision 7

Date: 09/01/2024

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