



OCI Company Ltd.

Material Safety Data Sheet

# MSDS

## Tetrahydrofuran

### Section 1 - Chemical Product and Company Identification

Product name : Tetrahydrofuran

Recommended use : Laboratory chemicals, Testing, Research and Industrial use

Restriction of use : Not for use other than for non-drinking, testing, research and industrial purposes

Company Identification

Company : OCI Company Ltd.

Address : 94, Sogong-ro, Jung-gu, Seoul, KOREA

Tel No. : 82 - 2 - 727 - 9494

### Section 2 - Hazards Identification

1) Hazard Classification

- Flammable liquid: 2
- Acute toxic(Oral) : 4
- Serious eye damage / Eye irritation : 1
- Skin Corrosion/Skin Irritation : 2
- Carcinogenicity : 2
- Specific target organ toxicity following single exposure : 3 (Respiratory tract stimulation)

2) Warning signal

Symbol



Signal word

Danger

Hazard-Danger statement

H225 Highly flammable liquid and vapour  
H302 Harmful if swallowed  
H315 Causes skin irritation  
H318 Causes serious eye damage  
H351 Suspected of causing cancer  
H371 May cause damage to organs (Respiratory system)  
H335 May cause respiratory irritation

Precautionary statements

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.
	P280 Wear protective gloves/protective clothing/eye protection/face protection
	P264 Wash ... thoroughly after handling.
	P270 Do not eat, drink or smoke when using this product.
	P201 Obtain special instructions before use
	P202 Do not handle until all safety precautions have been read and understood.
	P260 Do not breathe dust/fume/gas/mist/vapours/spray.
	P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
	P271 Use only outdoors or in a well-ventilated area.
Measures	P303+P361+P353 SKIN (or hair) all contaminated clothing IF ON Take off. Rinse skin with water / shower.
	P370+P378 In case of fire: Use (Powder extinguishing agent, alcohol-resistant foam extinguishing agent, carbon dioxide, water spray) for extinction
	P330 Rinse mouth.
	P301+P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
	P321 Specific treatment (If it gets into your eyes, wash your eyes with plenty of water or saline for at least 15 minutes and seek medical attention immediately. In case of skin contact, immediately remove contaminated clothing and shoes and wash with plenty of water and soap for at least 15 minutes; In case of inhalation, remove patient immediately from exposure to fresh air, in case of respiratory arrest or difficulty breathing, give artificial respiration and seek medical attention; In case of ingestion, seek medical attention immediately.).
	P302+P352 IF ON SKIN: Wash with plenty of water
	P332+P313 If skin irritation occurs: Get medical advice/attention.
	P362+P364 Take off contaminated clothing and wash before reuse
	P310 Immediately call a POISON CENTER or doctor/physician.
	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: Call a POISON CENTER or doctor/physician
	P308+P311 If exposed or concerns, call a poison center or physician
	P312 Call a POISON CENTER or doctor/physician if you feel unwell.
	P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a Position comfortable for breathing.
	P314 Get medical advice/attention if you feel unwell.
Storage	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
Dispose	P501 Dispose of contents/container to the related laws
3) NFPA	
Health Rating	2
Flammability Rating	3
Reactivity Rating	1

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### Section 3 - Composition, Information on Ingredients

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Component : Tetrahydrofuran

CAS No. : 109-99-9

Content : 100%

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### Section 4 - First Aid Measures

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1) Eye contact :

Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention.

2) Skin contact :

Wash skin thoroughly with soap and water. Get medical attention if symptoms occur. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes.

3) Inhalation :

Move to fresh air. Get medical attention if symptoms persist.

4) Ingestion :

Get medical attention if symptoms occur. Rinse mouth. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

5) Indication of immediate medical attention and special treatment needed Treatment :

Treat symptomatically. Symptoms may be delayed.

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### Section 5 - Fire Fighting Measures

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1) Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: Use fire-extinguishing media appropriate for surrounding materials.

Unsuitable extinguishing media: None known.

2) Specific hazards arising from the chemical:

Thermal decomposition products: Carbon oxides

Fire and explosion hazards: Serious fire hazard exists.

Steam or gas may be ignited from a distant source of ignition and may diffuse in an instant.

Vapors are heavier than air and may spread along floors.

Vapors may form explosive mixtures with air.

3) Special protective equipment and precautions for firefighters

Move containers from fire area if you can do it without risk.

When extinguishing a fire, be sure to wear personal protective equipment.

If it is not possible to extinguish the fire, withdraw immediately.

Keep containers cool by spraying with water for a long time, even after the fire is out. Isolate hazardous areas and deny access to people.

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### Section 6 - Accidental Release Measures

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1) Personal precautions, protective equipment and emergency procedures :

Don't touch leakages and avoid inhale and skin contact, ventilate and use air respiratory in closed room, remove ignition source.



## 2) Environmental precautions

Use appropriate containment to avoid environmental contamination.

Put on sand, earth or other appropriate barrier to prevent spreading or entering into drains, ditches or rivers.

## 3) Methods and material for containment and cleaning up :

Absorb spilled material with sand, clay, and other adsorbents.

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### **Section 7 - Handling and Storage**

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#### 1) Precautions for safe handling:

DO NOT handle, store or open near an open flame, sources of heat or sources of ignition.

Protect material from direct sunlight. Take precautionary measures against static discharges.

Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting/equipment.

Use only non-sparking tools. Wear protective gloves/protective clothing/eye protection/face protection.

Avoid contact with eyes, skin, and clothing. Avoid breathing high vapor concentrations. Do not taste or swallow.

Use only with adequate ventilation. Wash hands thoroughly after handling.

#### 2) Conditions for safe storage, including any incompatibilities :

Keep away from food, drink and animal feeding stuffs. Keep container tightly closed in a cool, well-ventilated place. Ground container and transfer equipment to eliminate static electric sparks. Comply with all national, state, and local codes pertaining to the storage, handling, dispensing, and disposal of flammable liquids.

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### **Section 8 - Exposure Controls, Personal Protection**

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#### 1) Occupational exposure limit, biological exposure limit

Domestic regulations : TWA 50 ppm STEL 100 ppm

ACGIH : TWA 200 ppm STEL 250 ppm

Biological exposure limit : No data available

#### 2) Appropriate Engineering Controls :

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. An eye wash and safety shower must be available in the immediate work area. Use explosion-proof ventilation equipment.

#### 3) Personal protective equipment

Respiratory protection : Because it is concerned about the harmfulness of human body due to chemical substances, it is recommended to wear respiratory protective equipment with canister mask or gas filter in consideration of physical and chemical characteristics when handling.

Respiratory protection should be certified by the Health and Safety Authority.

It is concerned about the harmfulness of the human body depending on the working environment, it should wear respirator, air-purifying respirator

Eye protection : Wear safety glasses with side shields (or goggles).

Hand Protection: Chemical resistant gloves

Skin & Body Protection : Wear suitable protective clothing

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### **Section 9 - Physical and Chemical Properties**

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## Appearance

Physical state: Liquid

Form: Liquid

Color: colorless

Odor : Sweet odor

Odor threshold : No data available

pH : No data available.

Melting point/freezing point : -108.4 °C

Initial boiling point and boiling range: 65 °C

Flash Point : -14.5 °C

Evaporation rate : No data available.

Flammability (solid, gas) : Not applicable

Upper/lower limit on flammability or explosive limits : 11.8%/2%

Vapor pressure : 162 mmHg (25°C)

Solubility(ies) : Soluble

Vapor density : 2.49

Relative density : 0.89

Partition coefficient (n-octanol/water) : 0.46

Auto-ignition temperature : 321 °C

Decomposition temperature : No data available.

Viscosity : 0.53 cP (20 °C)

Molecular weight : 72.1

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## Section 10 - Stability and Reactivity

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- 1) Chemical stability and Possibility of hazardous reactions : Material is stable under normal conditions.
- 2) Conditions to avoid : Avoid heat, sparks, flames and other sources of ignition.
- 3) Incompatible materials : Acids, bases, halogens, metals, oxidants, combustible materials, metal oxides, metal salts
- 4) Hazardous decomposition products : Thermal decomposition may release oxides of carbon.

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## Section 11 - Toxicological Information

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- 1) Information on likely routes of exposure :
  - Ingestion: May cause irritation of the gastrointestinal tract.
  - Inhalation: May cause irritation to the respiratory system.
  - Skin contact: May cause irritation.
  - Eye contact: Causes serious eye irritation.
- 2) Information on health hazards
  - Acute toxicity
    - Oral : LD50 1650 mg/kg Rat
    - Dermal : LD50 >2000 mg/kg Rat (OECD TG 402)
    - Inhalation : Vapor LC50 >14.7 mg/l 6 hr Rat (US EPA, GLP)
  - Skin Corrosion/Irritation : Causes mild skin irritation
  - Serious Eye Damage/Eye Irritation : Causes serious eye damage (blurred vision)
  - Respiratory Sensitization : No data available.

Skin Sensitization : Not a skin sensitizer.

Carcinogenicity

Occupational Safety and Health Act : No data available.

Notice of Ministry of Employment and Labor : 2

IARC : No data available.

OSHA : No data available.

ACGIH : A3

NTP : No data available.

EU CLP : 2

Germ Cell Mutagenicity : Germ cell mutagenicity in in vitro and in vivo assays: negative

Reproductive toxicity : No effects on reproductive and reproductive performance in rats were reported

Symptoms such as weight loss and decreased food intake are observed

Specific Target Organ Toxicity - Single Exposure : In rats, coma, septic spasms and dyspnea are present.

It causes irritation of the mucous membranes in humans

Specific Target Organ Toxicity - Repeated Exposure : People report kidney failure, liver failure and central spasm

Aspiration Hazard Product : No data available

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## Section 12 - Ecological Information

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1) Ecotoxicity:

Fish : LC50 2160 mg/ℓ 96 hr Pimephales promelas(OECD Guideline203)

Invertebrates : LC50 3485 mg/ℓ 48 hr Daphnia magna(OECD TG 202)

Aquatic algae : No data available.

2) Persistence and degradability

Persistence : log Kow 0.46

Degradability : No data available.

3) Bioaccumulative potential

Concentrations : No data available.

Biodegradability : 39 % 28 day (OECD TG 301 D)

4) Mobility in soil: No data available.

5) Other adverse effects: No data available.

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## Section 13 - Disposal Considerations

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1) Waste methods : If specified in the Waste Management Act, waste contents and containers in accordance with the regulations.

2) Precautions for Waste : Consider the precautions specified in the regulations when specified in the Waste Management Act

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## Section 14 - Transport Information

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1) UN Number : 2056

2) Shipping Name : TETRAHYDROFURAN

3) Hazard Class : 3

4) Packing Group : II



- 5) Marine pollutant : No data available
- 6) Particular safety Measures for transportation :
  - Fire emergency measures : F-E
  - Leakage emergency measures : S-D

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### **Section 15 - Regulatory Information**

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- 1) Occupation safety and health acts Standard material of exposure :
    - Standard material of exposure
    - Test material of working environment(Test period; 6months)
    - Special diagnosis material of health(Diagnosis period; 12months)
    - Hazardous material of administration objective
    - Substances subjecter to Process Safety Management report(PSM) submission
  - 2) Chemical Substances Control Act : Not applicable
  - 3) National law of Safety management of hazardous material : Class 1 Petroleum water-soluble liquid 400L
  - 4) National law of management of Wastes : Designated Waste
  - 5) Other domestic and foreign law : Not applicable
- EU classification information (confirmed classification result) : F; R11-19 Xi; R36/37  
EU classification information (risk statements) ; R11, R19, R36/37  
EU classification information (safety statements) : S2, S16, S29, S33

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### **Section 16 - Other Information**

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- 1) Source of data :
  - A chemical information MSDS Safety and Health Agency
  - National Institute of Environmental Research Chemical Information Systems
  - Korea Industrial Technology National Fire Hazardous Materials Information System
- 2) 1st Write date : 09/03/2015
- 3) Revision and The final revision
  - Revision number : 07/05/2022

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