



Lee & Man Chemical

Safety data sheet for chemical product

Trichloromethane



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Trichloromethane

SECTION 1: Identification of the substance/mixture and of the company/undertaking

Product name:

Trichloromethane; chloroform

Company name:

Jiangsu Lee & Man Chemical Company Limited / Jiangxi Lee & Man Chemical Company Limited

Address:

No. 6-2, Xinggang Road, Changshu Economic and Technological Development Zone, Jiangsu Province
Dock Industrial City, Jiujiang City, Jiangxi Province

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Enterprise emergency number:

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Recommended use:

This product is widely used in organic synthesis, as solvent and anesthetic. Mainly used to produce Freon (F-21, F-22, F-23), dyes and drugs.

Restricted use:

Not for use in drug production, or in the food or feed industry.

SECTION 2: Hazards identification

Emergency Overview:

Harmful if swallowed, toxic if inhaled.

GHS Hazard Category:

Acute toxicity - inhalation, category 3;

Acute Toxicity – Oral, Category 4;

Skin corrosion/irritation, category 2;

Serious eye damage/eye irritation, Category 2;

Carcinogenicity, Category 2;

Reproductive toxicity, category 2;

Specific target organ toxicity – repeated exposure, Category 1;

Hazardous to the Aquatic Environment – Acute Hazard, Category 3.

Label elements:

Pictograms:



Warning word: Danger

Hazard Statements:

Harmful if swallowed, toxic if inhaled, causes skin irritation, causes severe eye irritation, suspected of causing cancer, suspected of causing fertility or fetal harm, causing damage to organs through prolonged or repeated exposure, harmful to aquatic life.

Precautionary Statements:

• Precaution:

- Avoid contact with eyes and skin, and wash thoroughly after operation. Avoid breathing vapors and mists.
- No smoking, eating or drinking in the workplace.
- Operate only outdoors or in a well-ventilated place.
- Wear protective gloves, protective glasses, and a protective face shield.
- Prohibited discharge into the environment.
- Operate after receiving special instructions. Do not operate until all safety precautions have been read and understood. Use personal protective equipment as required.

• Incident Response:

- IF INHALED: Remove victim to fresh air and rest in a position comfortable for breathing.
- Skin (or hair) contact: Immediately remove all contaminated clothing, rinse skin with plenty of soap and water, shower. If skin irritation occurs, seek medical attention. Contaminated clothing must be washed before reuse.

-- Eye contact: Rinse carefully with water for several minutes, if contact lenses are present and easily removed, remove contact lenses and continue rinsing. If eye irritation persists, seek medical attention.

-- Ingestion: Rinse mouth, if you feel unwell, seek medical attention immediately. If exposed or concerned, seek medical attention.

- Safe storage

-- Store in a well-ventilated place and keep it locked. Keep container tightly closed.

- Disposal

-- Dispose of this product, its contents and containers in accordance with national and local regulations (regulations).

Physical and chemical hazards:

Non-flammable, no special explosive characteristics.

Health Hazards:

Route of entry: inhalation, ingestion, percutaneous absorption.

It mainly acts on the central nervous system, has anesthesia effect, and damages the heart, liver and kidney. Acute poisoning: Acute poisoning by inhalation or skin absorption. The initial symptoms include headache, dizziness, nausea, vomiting, excitement, skin heat and mucous membrane irritation. Later, mental disorders, superficial breathing, loss of reflexes, coma, etc. will occur, and in severe cases, respiratory paralysis and ventricular fibrillation will occur. At the same time can be accompanied by liver and kidney damage. When poisoned by mistake, the stomach has a burning sensation, accompanied by nausea, vomiting, abdominal pain, and diarrhea. Symptoms of anesthesia occur later. Liquid can cause dermatitis, eczema, and even skin burns. Chronic effects: mainly cause liver damage, and have indigestion, fatigue, headache, insomnia and other symptoms, a few have kidney damage and chloroform addiction.

Environmental hazards:

Harmful to aquatic life.

SECTION 3: Composition/information on ingredients

Substance: ✓

Mixture: ×

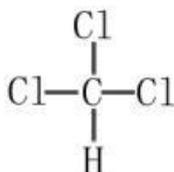
Main ingredient: trichloromethane

Molecular weight: 119.38

CAS-No.: 67-66-3

Formula: CHCl₃

Structural formula:



SECTION 4: First aid measures

Inhalation:

Quickly leave the scene to fresh air. Keep the airway open. If breathing is difficult, give oxygen. If breathing or heartbeat stops, perform CPR immediately. Seek medical attention.

Skin Contact:

Immediately remove contaminated clothing and rinse thoroughly with plenty of running water. Seek medical attention.

Eye Contact:

Immediately lift the eyelids and rinse thoroughly with plenty of running water or saline. Seek medical attention.

Ingestion:

Rinse mouth, drink plenty of warm water, and seek medical attention.

SECTION 5: Firefighting measures

Fire-fighting precautions and protective measures:

Firefighters must wear air respirators, full-body fire-proof and gas-proof clothing, and put out the fire in the upwind direction. Move the container from the fire area to an open area as much as possible. Keep fire containers cool by spraying water until the fire is over. If the container suddenly makes an abnormal noise or has abnormal phenomena, it should be evacuated immediately.

Extinguishing media:

Water mist, carbon dioxide, sand.

Hazardous properties:

Can produce highly toxic phosgene when in contact with open flames or hot objects. Under the action of air, moisture and light, the acidity increases, so it is strongly corrosive to metals.

SECTION 6: Accidental release measures

Protective measures, protective equipment and emergency procedures for operators:

Delineate a warning area according to the impact area of liquid flow and vapor diffusion, and evacuate unrelated personnel to a safe area from the crosswind and upwind directions. It is recommended that emergency responders wear positive pressure self-contained breathing apparatus,

protective clothing, and chemical-resistant gloves. Do not touch ruptured containers or spills until appropriate protective clothing is worn. Cut off sources of leaks as much as possible.

Environmental protection measures:

Prevent leakage from entering restricted spaces such as sewers and flood drains.

Containment and removal of spilled chemicals:

For small spills, absorb or cover with dry sand or other non-combustible materials, and collect in containers. Large spills: Construct dikes or dig pits for containment. Absorb large quantities of liquids with sand, vermiculite or other inert material. Transfer to a tanker or a special collector with a pump.

Precautions to Prevent Secondary Hazards:

Collected material should be recycled or transported to a waste disposal site for disposal.

SECTION 7: Handling and storage

Handling:

Closed operation, local exhaust. Operators must undergo special training and strictly abide by operating procedures. It is recommended that operators wear direct gas masks (half masks), chemical safety goggles, anti-gas permeable work clothes, and chemical-resistant gloves. Prevent vapors from leaking into the workplace air. Avoid contact with alkalis and aluminum. When handling, it should be lightly loaded and unloaded to prevent damage to packaging and containers. Equipped with leakage emergency treatment equipment. Empty containers may be harmful residues.

Storage:

Store in a cool, ventilated warehouse. Keep away from fire and heat sources. The storage temperature should not exceed 35°C, and the relative humidity should not exceed 85%. Keep container tightly closed. It should be stored separately from alkalis, aluminum, and edible chemicals, and should not be mixed. Storage areas should be equipped with emergency release equipment and suitable containment materials.

SECTION 8: Exposure controls/personal protection

Occupational Hygiene Exposure Limits:

China PC-TWA	20 mg/m ³ 【G2B】
U. S (ACGIH)	TLV-TWA:10 ppm

Biological Exposure Limits:

No standard established.

Monitoring method:

Determination method of toxic substances in air: Solvent desorption-gas chromatography.

Biomonitoring test methods: No standard established.

Engineering control:

Closed operation, local exhaust. Safety showers and eyewash facilities are provided.

Respiratory protection:

When the concentration in the air exceeds the standard, you should wear a filter gas mask (half mask). Wear air breathing apparatus during emergency rescue or evacuation.

Hand Protection:

Wear chemical resistant gloves.

Eye Protection:

Wear chemical safety goggles.

Skin and body protection:

Wear protective clothing.

Others:

Smoking, eating and drinking are prohibited at the workplace. After work, take a shower and change clothes. Store poison-contaminated clothes separately and wash them for later use. Pay attention to personal hygiene.

SECTION 9: Physical and chemical properties

Appearance and properties: colorless transparent heavy liquid, very volatile

Odor: special odor

pH value: No relevant information found

Melting point (°C): -64

Boiling point (°C): 62

Flash point (°C): No relevant information found

Upper explosion limit [% (V/V)]: meaningless

Lower explosion limit [% (V/V)]: meaningless

Saturated vapor pressure (kPa): 21.2 (20 °C)

Relative vapor density (air=1): 4.12

Relative density (water=1): 1.50

Viscosity (mPa s): 0.563 (20°C)

Octanol/water partition coefficient: 1.97

Auto-ignition temperature (° C): Meaningless

Critical temperature (°C): 263.4

Critical pressure (MPa): 5.47

Solubility: insoluble in water, miscible in ethanol, ether, benzene, acetone, carbon disulfide, carbon tetrachloride

SECTION 10: Stability and reactivity

Stability:

Stable

Incompatibility:

Alkali, Aluminum

Conditions to avoid:

Heat, light

Hazardous (decomposition) products:

Hydrogen chloride

Dangerous reaction:

It is easy to produce highly toxic phosgene when heated; it will react with incompatible substances such as alkalis. Trichloromethane can react chemically with oleum at room temperature (about 22° C) to produce phosgene.

SECTION 11: Toxicological information

Acute toxicity:

LD50: 908 mg/kg (rat oral); LC50: 47702 mg/m³ (rat inhalation, 4h)

Skin irritation or corrosion:

Rabbit percutaneous: 500mg (24h), mild irritation.

Eye irritation or corrosion:

Rabbit via eye: 20mg (24h), moderate irritation.

Respiratory or Skin Sensitization:

No information available.

Germ cell mutagenicity:

DNA inhibition: human HeLa cells 19 mmol/L. Sister chromatid exchange: human lymphocytes 10mmol/L. Micronucleus test: rat orally 4mmol/kg. Unscheduled DNA synthesis: 1 g/kg orally in rats. DNA damage: human lung 100 μmol/L (3h).

Carcinogenicity:

IARC Carcinogenicity Review: Group 2B, Suspected Human Carcinogen. There is limited evidence of carcinogenicity in humans and insufficient evidence of carcinogenicity in animals.

Reproductive toxicity:

Oral administration of the lowest toxic dose (TDLo) 1260 mg/kg in rats 6 to 15 days after pregnancy can cause developmental malformations of the musculoskeletal system. Rat inhalation of the lowest toxic dose (TCLo) 100ppm (7h) from 6 to 15d after pregnancy can cause malformation of the gastrointestinal tract. Inhalation of the lowest toxic dose (TCLo) of 100ppm (7h) in mice 8 to 15 days after pregnancy caused craniofacial (including nose, tongue) developmental malformations. The lowest toxic dose (TDLo) of 41 mg/kg was orally administered to rats for multiple generations, which caused developmental malformations of the urogenital system.

Specific target organ toxicity - single exposure:

No relevant information was found.

Specific target organ system toxicity----- Repeated exposure:

Rats inhaled 2ppm of this product, 7h/d, 5d a week for 6 months, with liver and kidney tissue damage.

Aspiration Hazards:

See Health Hazards.

SECTION 12: Ecological information

Ecotoxicity:

LC50: 43.8mg/L (96h) (rainbow trout, static); 100 mg/L (96h) (bluegill, static); 117 mg/L (48h) (medaka); 81.5mg/L/(96h) (Pink Shrimp); 28.9mg/L/48h (Daphnia).

Persistence and degradability:

Biodegradability: easy and rapid biodegradation; non-biodegradability: photolysis Maximum light absorption wavelength range (nm): 220.9 ~ 296.3; photooxidation half-life in water (h): $6.90 \times 10^5 \sim 2.80 \times 10^7$; photooxidation half-life in air (h): 623~6231; first-order hydrolysis half-life (h): 3500.

Bioaccumulative potential:

The bioaccumulation potential of this substance may be low as predicted by the Kow value.

Mobility in soil:

This substance may be susceptible to migration, as predicted by the Koc value.

SECTION 13: Disposal considerations

Waste Chemicals:

Dispose of by incineration. After mixing with fuel, it is incinerated. The hydrogen halide discharged from the incinerator is removed by an acid scrubber.

Contaminated Packaging:

Return container to manufacturer or dispose of in accordance with national and local regulations.

Disposal Precautions:

Please refer to relevant national and local regulations before disposal. Return the emptied container to the manufacturer or bury it in a designated place.

SECTION 14: Transport information

United Nations Dangerous Goods Number (UN Number): 1888

UN shipping name: trichloromethane

United Nations hazard class: Class 6.1

Packing class: Class III packaging

Packaging logo:



Marine Pollutants: No

Packing method:

small opening steel drum; ordinary wooden box outside ampoules; ordinary wooden box outside screw-top glass bottles, iron-capped glass bottles, plastic bottles or metal barrels (cans); screw-top glass bottles, tank trucks, shipping .

Transportation precautions:

Before transportation, check whether the packaging container is complete and sealed. During transportation, make sure that the container does not leak, collapse, fall or be damaged. It is strictly forbidden to mix with acids, oxidants, food and food additives. The transport vehicle shall be equipped with leakage emergency treatment equipment during transportation. During transportation, it should be protected from exposure to sunlight, rain, and high temperature. When transporting by road, it is necessary to drive according to the prescribed route, and do not stop in residential areas and densely populated areas. This product belongs to the second category of precursor chemicals. When consigning, you must hold the transportation license of precursor chemicals that is valid for 3 months and approved by the public security organ of the people's government at the county level where it is shipped.

SECTION 15: Regulatory information

The following laws, regulations and standards have made corresponding provisions on the safe use, storage, transportation, handling, classification and marking of this chemical:

Production Safety Law of the People's Republic of China;

Law of the People's Republic of China on the Prevention and Control of Occupational Diseases
Classification and Catalogue of Occupational Diseases: Not listed;

The Environmental Protection Law of the People's Republic of China;

Regulations on the Safety Management of Hazardous Chemicals Catalogue of hazardous chemicals:
Listed. Inventory of explosive hazardous chemicals: not listed. List of Hazardous Chemicals
under Key Supervision: Included. GB18218-2018 "Identification of Major Hazardous Sources of
Hazardous Chemicals" (Table 1): not listed;

Labor Protection Regulations for Workplaces Using Toxic Substances List of Highly Toxic
Substances: Not listed;

Regulations on the Administration of Precursor Chemicals Classification and Variety List of
Precursor Chemicals: Listed;

Dangerous goods classification and product name number (GB6944-2012) classifies this substance
as Category 6.1 toxic substances;

General Rules for Chemical Classification and Hazard Publicity (GB13690-2009).

SECTION 16: Other information

References:

- (1) The latest practical manual for chemical dangerous goods;
- (2) Complete book on safety technology of hazardous chemicals;

Disclaimer:

The information in this SDS applies only to the specified product, unless otherwise specified, all substances in this product have unknown hazards and should be used with care. While certain hazards are described in this SDS, we do not guarantee that these are the only hazards. This SDS provides information on the safety of product use only for those users of this product who have received appropriate professional training. The relevant data is only used as a guide for safe handling, use, processing, storage, disposal and leakage, etc., and cannot be used as an indicator of guarantee and quality.