

# MSDS

## SECTION 1 Chemicals and Enterprise Identification

Product: tetraisopropyl titanate

Company Name: Zibo Linzi Yitong Chemical Factory

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Technical specification code: 001-2020

Product recommendation and restricted use: used for transesterification, coating, rubber adhesive, metal coating, condensation catalyst, etc.

## SECTION 2 HAZARDS OVERVIEW

**Physical and chemical hazards:** flammable, there is a danger of burning and explosion when exposed to open flame, high heat or contact with oxidants. React with water or water vapor to release toxic or flammable gas. In a fire, heated containers may explode. Health Hazard: Inhalation, oral or percutaneous absorption is harmful to the body. Irritating to eyes and skin.

**Environmental hazards:** This substance is harmful to the environment, and special attention should be paid to the pollution of water bodies.

**GHS Hazard Category:** According to the "General Rules for Classification of Chemicals and Hazard Communication" (GB 13690-2009) and the series of standards for chemical classification and labeling specifications, this product belongs to flammable liquid-2, serious eye damage/eye irritation-2A, Aspiration Hazard -2, Skin Corrosion/Irritation -3.

### Label elements:

Pictograms:



**Signal word:** DANGER

Hazard Information: Highly flammable liquid and vapor; causes serious eye irritation; may be harmful if swallowed and enters airways; causes minor skin irritation.

### Precautionary statements:

Preventive measures: airtight operation, full ventilation. Operators must be specially trained and strictly abide by the operating procedures. It is recommended that operators wear self-priming filter gas masks (half masks), chemical safety protective glasses, anti-static overalls, and rubber oil-resistant gloves. Keep away from fire and heat sources,

and smoking is strictly prohibited in the workplace. Use explosion-proof ventilation systems and equipment. Prevent vapors from escaping into workplace air. Avoid contact with strong oxidants, strong acids, and water. When handling, load and unload lightly to prevent damage to packaging and containers. Equipped with fire-fighting equipment and leakage emergency treatment equipment. Empty containers may be harmful residues.

**Accident Response:** In the event of leakage, delineate a warning area according to the area affected by the flow of liquid and diffusion of vapor, and evacuate from the side wind and upwind. Skin Contact: Remove contaminated clothing, wash skin thoroughly with soap and water. Eye contact: Lift the eyelids and rinse with running water or saline. Seek medical attention. Inhalation: Quickly leave the scene to fresh air. Keep airway open. If breathing is difficult, give oxygen. If not breathing, give artificial respiration immediately. Seek medical attention. Ingestion: Drink plenty of warm water, induce vomiting. Seek medical attention.

**Safe storage:** Store in a cool, dry, well-ventilated warehouse. Keep away from fire and heat sources. Storage temperature should not exceed 30°C. The packaging is sealed and kept away from moisture. Store separately from strong oxidants, strong acids, water, etc., and avoid mixed storage. Explosion-proof lighting and ventilation facilities are adopted. Prohibit spark-prone mechanical equipment and tools. The storage area should be equipped with leakage emergency treatment equipment and suitable containment materials.

**Disposal disposal:** It is recommended to dispose by incineration.

### SECTION 3 COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients	Concentration, %	CAS No.
Titanium Tetraisopropanolate	98	546-68-9
Water	2	7732-18-5

### SECTION 4 FIRST AID MEASURES

**Skin Contact:** Remove contaminated clothing, wash skin thoroughly with soap and water. Seek medical attention.

**Eye contact:** Lift the eyelids and rinse with running water or saline. Seek medical attention. Inhalation: quickly leave the scene to fresh air. Keep airway open. If breathing is difficult, give oxygen. If not breathing, give artificial respiration immediately. Seek medical attention.

**Ingestion:** Drink plenty of warm water, induce vomiting. Seek medical attention.

Key symptoms and health effects of exposure to this chemical: Harmful if inhaled, orally or through the skin. Irritating to eyes and skin.

**Advice to rescuers:** Rescuers should wear positive pressure self-contained breathing apparatus and anti-static overalls.

**Doctor's special reminder:** In case of the above-mentioned hazards, the rescuer should first aid the patient according to the above-mentioned first-aid measures, seek medical treatment in time, and follow the doctor's advice.

**Immediate medical attention and specific treatment:** Not available.

## **PART 5 FIRE FIGHTING MEASURES**

Fire extinguishing method and fire extinguishing agent: use carbon dioxide, dry powder, sand to extinguish fire. Do not use water.

Special Hazards: Flammable, there is a danger of burning and explosion when exposed to fire, high heat or contact with oxidants. React with water or water vapor to release toxic or flammable gas. In a fire, heated containers may explode.

Special Fire Fighting Methods: Remove container from fire area to open area if possible. Protective equipment for firefighters: Wear self-contained positive pressure breathing apparatus and anti-static overalls.

## **SECTION 6 ACCIDENTAL RELEASE MEASURES**

Protective measures, protective equipment and emergency treatment procedures for operators: It is recommended that emergency personnel wear self-contained positive pressure respirators and anti-static overalls. All equipment used while working should be grounded. Do not touch or step over the spill. Cut off the source of the leak as much as possible.

Environmental protection measures: prevent leakage from entering restricted spaces such as sewers and flood drains.

Containment and removal methods and disposal materials used for spilled chemicals: Small spills: Absorb with activated carbon or other inert materials. It can also be brushed with an emulsion made of a non-flammable dispersant, and the lotion is diluted and put into the wastewater system. Large amount of leakage: Construct dikes or dig pits for containment. Use an explosion-proof pump to transfer to a tank truck or a special collector, recycle or transport to a waste disposal site for disposal.

Precautions to prevent secondary hazards: All equipment used while working should be grounded. Do not touch or step over the spill. Cut off the fire source. Prevent leakage from entering restricted spaces such as sewers and flood drains.

## **SECTION 7 HANDLING AND STORAGE**

Handling and disposal: airtight operation, full ventilation. Operators must be specially trained and strictly abide by the operating procedures. It is recommended that operators wear self-priming filter gas masks (half masks), chemical safety protective glasses, anti-static overalls, and rubber oil-resistant gloves. Keep away from fire and heat sources, and smoking is strictly prohibited in the workplace. Use explosion-proof ventilation systems and equipment. Prevent vapors from escaping into workplace air. Avoid contact with strong oxidants, strong acids, and water. When handling, load and unload lightly to

prevent damage to packaging and containers. Equipped with fire-fighting equipment and leakage emergency treatment equipment. Empty containers may be harmful residues.

**Storage:** Store in a cool, dry, well-ventilated warehouse. Keep away from fire and heat sources. Storage temperature should not exceed 30°C. The packaging is sealed and kept away from moisture. Store separately from strong oxidants, strong acids, water, etc., and avoid mixed storage. Explosion-proof lighting and ventilation facilities are adopted. Prohibit spark-prone mechanical equipment and tools. The storage area should be equipped with leakage emergency treatment equipment and suitable containment materials.

## **SECTION 8 EXPOSURE CONTROLS AND PERSONAL PROTECTION**

Occupational Exposure Limit: China MAC (mg/m<sup>3</sup>): No standard established.

US TLV-TWA: No standard developed.

US TLV-STEL: No standard established.

Monitoring method: silver nitrate titration.

Biological limit value: no information

Engineering control methods: The production process is airtight and fully ventilated. Provide safety showers and eyewash facilities.

Respiratory protection: When you may be exposed to its vapor, you should wear a self-priming filter respirator (half mask). When emergency rescue or evacuation, wear air respirators.

Hand Protection: Wear rubber oil-resistant gloves. Eye Protection: Wear chemical safety goggles.

Skin and Body Protection: Wear antistatic overalls.

Special protective measures: Smoking is strictly prohibited at the work site. After work, take a shower. Pay attention to personal hygiene. Conduct pre-employment and regular physical examinations. Work in restricted spaces or other high-concentration areas must be supervised by someone.

## **Part 9 Physical and Chemical Properties**

Appearance and properties: colorless to light yellow liquid, fumes in moist air. Odor: No information available.

pH value: about 6 Melting point/freezing point (°C): 15

Boiling point, initial boiling point and boiling range (°C): 240 Flash point (°C): 30.5

Upper explosion limit % (V/V): No information Lower explosion limit % (V/V): No information

Vapor pressure (KPa): 1.33 (104°C) Vapor density (air=1): 9.8

Relative density (water=1): 0.95 Solubility: soluble in most organic solvents.

Octanol/water partition coefficient: No information available

Ignition temperature (°C): no information

Decomposition temperature (°C): No data available Odor threshold: No data available

Evaporation rate: No information available Flammability: Flammable

Critical temperature (°C): no information Critical pressure (MPa): no information

## **Section 10 Stability and Reactivity**

Stability: Stable

Hazardous reactions: It can react violently with strong oxidants, strong acids, and water.

Conditions to avoid: Exposure to air.

Incompatible Materials: Strong oxidizing agents, strong acids, water.

Hazardous decomposition products: carbon monoxide, carbon dioxide, titanium oxide.

Intended use: Used for transesterification reaction, coating, rubber adhesive, metal coating, condensation catalyst, etc.

Foreseeable Misuse: Prohibited for food processing.

## **SECTION 11 TOXICOLOGICAL INFORMATION**

Acute toxicity: LD50: 7460 mg/kg (rat oral);

LC50: No information available.

Skin irritation or corrosion: Rabbit percutaneous: (24h), mild skin irritation.

Eye irritation or corrosion: rabbit eyes: (24h), eye irritation.

Respiratory or skin sensitization: No information available.

Germ Cell Mutagenicity: No information available.

Reproductive Toxicity: No information available.

Specific target organ toxicity - single exposure: No information available.

Specific target organ toxicity - repeated exposure: Not available.

Aspiration Hazard: Harmful if inhaled.

Toxicokinetic, Metabolism and Distribution Information: Not available.

## **SECTION 12 ECOLOGICAL INFORMATION**

Ecotoxicity: No information available.

Persistence and degradability: No information available.

Bioaccumulative Potential: No information available.

Mobility in soil: No information available.

## **Section 13 Disposal considerations**

Disposal methods:

- Residual waste: It is recommended to dispose of by incineration.
- CONTAMINATED CONTAINERS AND PACKAGING: It is recommended to contact the manufacturer and return empty containers to the manufacturer.

Precautions for Disposal: Refer to relevant national and local regulations before disposal.

## **Section 14 Transport Information**

United Nations Dangerous Goods Number (UN Number): 2413

UN Proper Shipping Name: Tetraisopropyl titanate

UN Hazard Class: 3

Packaging marking: flammable liquid.

Packing category: Class III packing

## **Part 15 Regulatory Information**

Regulatory Information: The following laws, regulations and standards have corresponding regulations on the safe use, storage, transportation, handling, classification and marking of chemicals:

Chemical classification and labeling specification series standards (GB 30000).

"Inventory of Highly Toxic Chemicals": Not listed.

"List of Dangerous Goods" (GB 12268-2012): Included, the substance is classified as a Class 3 flammable liquid.

## **SECTION 16 OTHER INFORMATION**

Date of last revision: April 5, 2020

Form filling department: Zibo Linzi Yitong Chemical Factory

Form filling time: April 5, 2020

Data review unit: Security Section

Modification Note: This SDS is compiled in accordance with the "Chemical Safety Data Sheet Contents and Item Sequence" (GB/T16483-2008) standard; as the country has not yet promulgated the chemical GHS classification catalog, the GHS classification of chemicals in this SDS is based on the chemical classification of enterprises. The product classification and labeling specification series standards (GB 30000) self-category, and the corresponding adjustments will be made after the promulgation of the national chemical GHS classification catalog.

Explanation of acronyms:

MAC: Refers to the concentration of toxic chemical substances that should not be exceeded at the workplace, within a working day, and at any time.

PC-TWA: refers to the average allowable exposure concentration of 8h working day and 40h working week stipulated by time as the weight.

PC-STEL: Refers to the concentration allowed for short-term (15min) exposure under the premise of complying with PC-TWA.

TLV-C: Limit value that must not be exceeded even momentarily. It is specifically prescribed for certain substances such as irritating gases or substances with acute effects.

TLV-TWA: refers to the time-weighted average concentration of 8 hours of work per day or 40 hours of work per week. At this concentration, repeated exposure to lifetime working hours will not cause adverse effects on almost all workers.

TLV-STEL: It is the maximum concentration that allows workers to be exposed to it continuously for 15 minutes under the condition of ensuring compliance with TLV-TWA. This concentration shall not exceed 4 times in each working day, and the interval between two contacts shall be at least 60 minutes. It is a supplement to TLV-TWA.

IARC: Refers to the International Institute for Cancer Research.

RTECS: Refers to the National Institute for Occupational Safety and Health's Toxicity of

Chemical Substances Database.

HSDB: Refers to the Hazardous Substances Database of the U.S. National Library of Medicine.

ACGIH: Refers to the American Conference of Governmental Industrial Hygienists.