

## SAFETY DATA SHEET

According to JIS Z 7253:2019

Issue Date 04-Jul-2025

Revision Number 2.05

## Section 1: PRODUCT AND COMPANY IDENTIFICATION

Product Name	Triethyl Orthoformate
Product Code	054-01583,058-01586

Supplier	FUJIFILM Wako Pure Chemical Corporation 1-2 Doshomachi 3-Chome, Chuo-ku, Osaka 540-8605, Japan Phone: +81-6-6203-3741 Fax: +81-6-6203-2029
Emergency telephone number	+81-6-6203-3741 / +81-3-3270-8571
Recommended uses	For research use only
Restrictions on use	Seek expert judgment when using for purposes other than those recommended.

## Section 2: HAZARDS IDENTIFICATION

## GHS classification

## Classification of the substance or mixture

## Flammable liquids

Category 3

## Acute toxicity - Inhalation (Vapors)

Category 4

## Pictograms



## Signal word

Warning

## Hazard statements

H226 - Flammable liquid and vapour

H332 - Harmful if inhaled

## Precautionary statements-(Prevention)

- Avoid breathing dust/fume/gas/mist/vapors/spray
- Use only outdoors or in a well-ventilated area
- Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
- Keep container tightly closed
- Ground/bond container and receiving equipment
- Use explosion-proof electrical/ ventilating / lighting / equipment
- Use only non-sparking tools
- Take precautionary measures against static discharge
- Wear protective gloves/protective clothing/eye protection/face protection

## Precautionary statements-(Response)

- IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
- IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
- Call a POISON CENTER or doctor/physician if you feel unwell
- In case of fire: Use suitable extinguishing media for extinction

## Precautionary statements-(Storage)

- Store in a well-ventilated place. Keep cool

## Precautionary statements-(Disposal)

- Dispose of contents/container to an approved waste disposal plant

**Others****Other hazards** Not available**Section 3: COMPOSITION/INFORMATION ON INGREDIENTS****Single Substance or Mixture** Substance**Formula** CH(OCH<sub>2</sub>CH<sub>3</sub>)<sub>3</sub>

Chemical Name	Weight-%	Molecular weight	ENCS	ISHL No.	CAS RN
Triethyl orthoformate	95.0	148.20	(2)-683	*	122-51-0

**Note on ISHL No.:** \* in the table means announced chemical substances.**Section 4: FIRST AID MEASURES****Inhalation**

Remove to fresh air. If symptoms persist, call a physician.

**Skin contact**

Wash off immediately with soap and plenty of water. If symptoms persist, call a physician.

**Eye contact**

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediate medical attention is required.

**Ingestion**

Rinse mouth. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately. Do not induce vomiting without medical advice.

**Protection of first-aiders**

Use personal protective equipment as required.

**Section 5: FIRE FIGHTING MEASURES****Suitable extinguishing media**Carbon dioxide (CO<sub>2</sub>), Foam, Extinguishing powder, Sand**Unsuitable extinguishing media**

No information available

**Specific hazards arising from the chemical product**

Thermal decomposition can lead to release of irritating and toxic gases and vapors. Vapors may form explosive mixture with air Vapors may form explosive mixtures with air

**Special extinguishing method**

No information available

**Special protective actions for fire-fighters**

Use personal protective equipment as required. Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear.

**Section 6: ACCIDENTAL RELEASE MEASURES****Personal precautions, protective equipment and emergency procedures**

For indoor, provide adequate ventilation process until the end of working. Deny unnecessary entry other than the people involved by, for example, using a rope. While working, wear appropriate protective equipments to avoid adhering it on skin, or inhaling the gas. Work from windward, and retract the people downwind.

**Environmental precautions**

To be careful not discharged to the environment without being properly handled waste water contaminated.

**Methods and materials for contaminant and methods and materials for cleaning up**

Absorb dry sand, earth, sawdust and the waste. Collect empty container that can be sealed.

#### **Recovery, neutralization**

No information available

#### **Secondary disaster prevention measures**

Clean contaminated objects and areas thoroughly observing environmental regulations.

## **Section 7: HANDLING AND STORAGE**

### **Handling**

#### **Technical measures**

Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Use with local exhaust ventilation. Use with local exhaust ventilation.

#### **Precautions**

Do not rough handling containers, such as upsetting, falling, giving a shock, and dragging. Prevent leakage, overflow, and scattering. Not to generate steam and dust in vain. Seal the container after use. After handling, wash hands and face, and then gargle. In places other than those specified, should not be smoking or eating and drinking. Should not be brought contaminated protective equipment and gloves to rest stops. Deny unnecessary entry of non-emergency personnel to the handling area.

#### **Safety handling precautions**

Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Avoid contact with skin, eyes or clothing. Use personal protective equipment as required.

### **Storage**

#### **Safe storage conditions**

##### **Storage conditions**

Keep container protect from light, store in well-ventilated place at room temperature (preferably cool). Keep container tightly closed.

##### **Safe packaging material**

Glass

##### **Incompatible substances**

Strong oxidizing agents

## **Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**

### **Engineering controls**

In case of indoor workplace, seal the source or use a local exhaust system. Provide the safety shower facility, and hand- and eye-wash facility. And display their position clearly.

### **Exposure limits**

This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

### **Personal protective equipment**

#### **Respiratory protection**

gas mask for organic gas ( JIS T 8152 )

#### **Hand protection**

chemical protective gloves ( JIS T 8116 )

#### **Eye protection**

protective eyeglasses or chemical safety goggles (JIS T 8147)

#### **Skin and body protection**

Long-sleeved work clothes

### **General hygiene considerations**

Handle in accordance with good industrial hygiene and safety practice.

If this product is classified as "Chemical Substances Hazardous to Skin, etc.", use appropriate protective equipment to them.

## **Section 9: PHYSICAL AND CHEMICAL PROPERTIES**

### **Form**

#### **Color**

colorless

#### **Turbidity**

clear

#### **Appearance**

liquid

### **Odor**

characteristic odor

### **Melting point/freezing point**

-76 °C

Boiling point, initial boiling point and boiling range	145 °C
Flammability	Flammable liquid and vapor
Evaporation rate:	no data available
Flammability (solid, gas):	no data available
Upper/lower flammability or explosive limits	
Upper:	no data available
Lower:	no data available
Flash point	36 °C
Auto-ignition temperature:	180 °C
Decomposition temperature:	no data available
pH	no data available
Viscosity (coefficient of viscosity)	no data available
Dynamic viscosity	no data available
Solubilities	Ethanol , acetone : Very soluble . water : slightly soluble .
n-Octanol/water partition coefficient:(log Pow)	no data available
Vapour pressure	no data available
Specific Gravity / Relative density	0.892 - 0.896 g/mL ( 20°C )
Vapour density	5.14 ( air=1 )
Particle characteristics	no data available

## Section 10: STABILITY AND REACTIVITY

### Stability

Reactivity	no data available
Chemical stability	May be altered by light.

### Hazardous reactions

Easily decomposes by bases.

### Conditions to avoid

Extremes of temperature and direct sunlight, Heat, flames and sparks, static electricity, spark

### Incompatible materials

Strong oxidizing agents

### Hazardous decomposition products

Carbon monoxide (CO), Carbon dioxide (CO<sub>2</sub>)

## Section 11: TOXICOLOGICAL INFORMATION

\*NITE: National Institute of Technology and Evaluation (JAPAN)

[https://www.chem-info.nite.go.jp/en/chem/chrip/chrip\\_search/srhInput](https://www.chem-info.nite.go.jp/en/chem/chrip/chrip_search/srhInput)

### Acute toxicity

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Triethyl orthoformate	3.2 - 6.4 g/kg ( Rat )	18,000 mg/kg ( Rabbit )	5656 ppm ( Rat ) 4 h

Chemical Name	Acute toxicity -oral- source information	Acute toxicity -dermal- source information	Acute toxicity -inhalation gas- source information
Triethyl orthoformate	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.

Chemical Name	Acute toxicity -inhalation vapor- source information	Acute toxicity -inhalation dust- source information	Acute toxicity -inhalation mist- source information
Triethyl orthoformate	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.

### Skin irritation/corrosion

Chemical Name	Skin corrosion/irritation source information
Triethyl orthoformate	Based on the NITE GHS classification results.

### Serious eye damage/ irritation

Chemical Name	Serious eye damage/irritation source information
Triethyl orthoformate	Based on the NITE GHS classification results.

### Respiratory or skin sensitization

Chemical Name	Respiratory or Skin sensitization source information
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Triethyl orthoformate	Based on the NITE GHS classification results.
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**Reproductive cell mutagenicity**

Chemical Name	germ cell mutagenicity source information
Triethyl orthoformate	Based on the NITE GHS classification results.

**Carcinogenicity**

Chemical Name	Carcinogenicity source information
Triethyl orthoformate	Based on the NITE GHS classification results.

**Reproductive toxicity**

Chemical Name	Reproductive toxicity source information
Triethyl orthoformate	Based on the NITE GHS classification results.

**STOT-single exposure**

Chemical Name	STOT -single exposure- source information
Triethyl orthoformate	Based on the NITE GHS classification results.

**STOT-repeated exposure**

Chemical Name	STOT -repeated exposure- source information
Triethyl orthoformate	Based on the NITE GHS classification results.

**Aspiration hazard**

Chemical Name	Aspiration Hazard source information
Triethyl orthoformate	Based on the NITE GHS classification results.

**Section 12: ECOLOGICAL INFORMATION**

\*NITE: National Institute of Technology and Evaluation (JAPAN)  
[https://www.chem-info.nite.go.jp/en/chem/chrip/chrip\\_search/srhInput](https://www.chem-info.nite.go.jp/en/chem/chrip/chrip_search/srhInput)

**Ecotoxicity**

Chemical Name	Algae/aquatic plants	Fish	Crustacea
Triethyl orthoformate	N/A	LC50 : <i>Leuciscus idus</i> 592 mg/L 48 h	N/A

**Other data**

Chemical Name	Short-term (acute) hazardous to the aquatic environment source information	Long-term (chronic) hazardous to the aquatic environment source information
Triethyl orthoformate	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.

<b>Persistence and degradability</b>	No information available
<b>Bioaccumulative potential</b>	No information available
<b>Mobility in soil</b>	No information available
<b>Hazard to the ozone layer</b>	No information available

**Section 13: DISPOSAL CONSIDERATIONS****Waste from residues**

Disposal should be in accordance with applicable regional, national and local laws and regulations.

**Contaminated container and contaminated packaging**

Disposal should be in accordance with applicable regional, national and local laws and regulations.

**Section 14: TRANSPORT INFORMATION****ADR/RID**

<b>UN number</b>	UN2524
<b>Proper shipping name:</b>	Ethyl orthoformate
<b>UN classification</b>	3
<b>Subsidiary hazard class</b>	
<b>Packing group</b>	III

Marine pollutant Not applicable

**IMDG**

UN number UN2524  
 Proper shipping name: Ethyl orthoformate  
 UN classification 3  
 Subsidiary hazard class  
 Packing group III  
 Marine pollutant (Sea) Not applicable  
 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code No information available

**IATA**

UN number UN2524  
 Proper shipping name: Ethyl orthoformate  
 UN classification 3  
 Subsidiary hazard class  
 Packing group III  
 Environmentally Hazardous Substance Not applicable

## Section 15: REGULATORY INFORMATION

**Japanese regulations**

Fire Service Act Category IV, Class II petroleum, dangerous grade 3  
 Poisonous and Deleterious Substances Control Law Not applicable  
 Industrial Safety and Health Act Dangerous Substances - Flammable Substance (Enforcement Order Attached Table 1 Item 4)  
Industrial Safety and Health Act (2026~) 【2026.4.1~】 Harmful Substances Whose Names Are to be Indicated on the Label (Law Art.57)  
【2026.4.1~】 Notifiable Substances (Law Art.57-2)  
 Regulations for the carriage and storage of dangerous goods in ship Flammable Liquids (Ordinance Art.3, Ministry of Transportation Ordinance Regarding Transport by Ship and Storage, Attached Table 1)  
 Civil Aeronautics Law Flammable Liquids (Ordinance Art.194, MITL Notification for Air Transportation of Explosives etc., Attached Table 1)  
 Pollutant Release and Transfer Register Law (2023.4.1-) Not applicable

**Industrial Safety and Health Law**

Law Name	Chemical Name in Regulation	Weight %	Scheduled enforcement date
Notifiable Substances (Law Art.57-2)	Triethoxymethane	95.0	2026/4/1

## Section 16: OTHER INFORMATION

**Key literature references and sources for data etc.**

NITE: National Institute of Technology and Evaluation (JAPAN)  
[https://www.chem-info.nite.go.jp/en/chem/chrip/chrip\\_search/srhInput](https://www.chem-info.nite.go.jp/en/chem/chrip/chrip_search/srhInput)  
 IATA dangerous Goods Regulations  
 RTECS:Registry of Toxic Effects of Chemical Substances  
 Japan Industrial Safety and Health Association GHS Model SDS  
 Dictionary of Synthetic Organic Chemistry, SSOCJ, Koudansha Scientific Co.Ltd.  
 Chemical Dictionary, Kyouritsu Publishing Co., Ltd.  
 etc

**Record of SDS revisions**

The following contents were revised. Product and company Identification. Fire fighting measures. Exposure controls/personal protection. Physical and chemical properties. Toxicological information. Ecological information. Regulatory information.

**Disclaimer**

This SDS is according to JIS Z 7253: 2019. The information provided in this Safety Data Sheet is correct to the best of our

knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

GHS Classification is according to JIS Z 7252:2019. \*JIS: Japanese Industrial Standards

**End of Safety Data Sheet**