SAFETY DATA SHEET

According to JIS Z 7253:2019
Issue Date 21-Aug-2025
Revision Number 3.08

Section 1: PRODUCT AND COMPANY IDENTIFICATION

Product Name	3Chlorinated Acetic Acids Mixutre Standard Solution (each 1mg/mL t-Butyl Methyl Ether Solution)
Product Code	035-19321

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 2
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2B
Carcinogenicity	Category 1B
Reproductive Toxicity	Category 1B
Specific target organ toxicity (single exposure)	Category 3
Category 3 Respiratory irritation, Narcotic effects	
Acute aquatic toxicity	Category 3
Chronic aquatic toxicity	Category 3

Pictograms

Signal word Danger

Hazard statements
H225 - Highly flammable liquid and vapor
H315 - Causes skin irritation
H320 - Causes eye irritation
H350 - May cause cancer
H360 - May damage fertility or the unborn child
H335 - May cause respiratory irritation
H336 - May cause drowsiness or dizziness
H402 - Harmful to aquatic life
H412 - Harmful to aquatic life with long lasting effects

Precautionary statements-(Prevention)
• Obtain special instructions before use

- Do not handle until all safety precautions have been read and understood
- Use personal protective equipment as required
- Wash face, hands and any exposed skin thoroughly after handling
- Avoid breathing dust/fume/gas/mist/vapors/spray
- Use only outdoors or in a well-ventilated area
- Avoid release to the environment
- 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
- Keep cool

Precautionary statements-(Response)

- IF exposed or concerned: Get medical advice/attention
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
- If eye irritation persists: Get medical advice/attention
- If skin irritation occurs: Get medical advice/attention
- IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
- Wash contaminated clothing before reuse
- IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
- In case of fire: Use suitable extinguishing media for extinction

Precautionary statements-(Storage)

- Store locked up
- Store in a well-ventilated place. Keep container tightly closed

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 Mixture

Chemical Name	Weight-%	Molecular weight	ENCS	ISHL No.	CAS RN
tert-Butyl methyl ether	99.58	88.15	(2)-3220	2-(2)-133 2-(12)-134	1634-04-4
Trichloroacetic acid	0.14	163.39	(2)-1188	*	76-03-9
Chloroacetic Acid	0.14	94.50	(2)-1145	*	79-11-8
Dichloroacetic acid	0.14	128.94	(2)-1161	2-(4)-657	79-43-6

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 (CO2), 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 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 contaminent and methods and materials for cleaning up

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

Recoverly, 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. To cut with care and wear protective gloves and protective goggles to ampoule time of the opening (Cutting method to check the label). 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). Use personal protective equipment as required. Avoid contact with skin, eyes or clothing.

Storage

Safe storage conditions

Storage conditions	Keep container protect from light tightly closed. Store in a cool (2-10 °C) place.
Safe packaging material	Ampoule
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

Chemical Name	JSOH (Japan)	ISHL (Japan)	ACGIH
tert-Butyl methyl ether 1634-04-4	N/A	N/A	TWA: 50 ppm
Trichloroacetic acid 76-03-9	N/A	N/A	TWA: 0.5 ppm
Chloroacetic Acid 79-11-8	N/A	N/A	TWA: 0.5 ppm inhalable fraction and vapor Skin
Dichloroacetic acid 79-43-6	N/A	N/A	TWA: 0.5 ppm Skin

Chemical Name	Concentration standard value set by the Minister of Health, Labor and Welfare (8hr)	Concentration standard value set by the Minister of Health, Labor and Welfare (Short-Term)
tert-Butyl methyl ether 1634-04-4	50 ppm	N/A
Trichloroacetic acid 76-03-9	0.5 ppm	N/A
Chloroacetic Acid 79-11-8	0.5 ppm	N/A

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

Data except for the appearance is described as a tert-Butyl methyl ether.

Form

Color colorless
Turbidity clear
Appearance liquid
Odor Slight pungent odor
Melting point/freezing point -109 °C
Boiling point, initial boiling point and boiling range 55 °C
Flammability Highly flammable liquid and vapor
Evaporation rate: no data available
Flammability (solid, gas): no data available
Upper/lower flammability or explosive limits
Upper： 15.1vol%
Lower： 1.6vol%
Flash point -32 °C

Auto-ignition temperature:	224 °C
Decomposition temperature:	no data available
pH	no data available
Viscosity (coefficient of viscosity)	no data available
Dynamic viscosity	no data available
Solubilities	water : insoluble . organic solvents : soluble .
n-Octanol/water partition coefficient:(log Pow)	0.94
Vapour pressure	no data available
Specific Gravity / Relative density	0.741
Vapour density	3.1 (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

Reacts with strong oxidants causing fire/explosion hazard.

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 monooxide (CO), Carbon dioxide (CO2), Halides

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

Acute toxicity

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
tert-Butyl methyl ether	> 2000 mg/kg (Rat)	> 2000 mg/kg (Rat) > 7400 mg/kg (Rabbit)	23576 ppm (Rat) 4 h
Trichloroacetic acid	3320 mg/kg (Rat)	> 2000 mg/kg (Rat)	N/A
Chloroacetic Acid	55 mg/kg (Rat)	250 mg/kg (Rabbit)	180 mg/m³ (Rat) 4 h
Dichloroacetic acid	2820 mg/kg (Rat)	510 mg/kg (Rabbit)	N/A

Chemical Name	Acute toxicity -oral- source information	Acute toxicity -dermal- source information	Acute toxicity -inhalation gas- source information
tert-Butyl methyl ether	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Trichloroacetic acid	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Chloroacetic Acid	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Dichloroacetic acid	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
tert-Butyl methyl ether	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Trichloroacetic acid	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Chloroacetic Acid	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Dichloroacetic acid	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
tert-Butyl methyl ether	Based on the NITE GHS classification results.
Trichloroacetic acid	Based on the NITE GHS classification results.
Chloroacetic Acid	Based on the NITE GHS classification results.
Dichloroacetic acid	Based on the NITE GHS classification results.

Serious eye damage/ irritation

Chemical Name	Serious eye damage/irritation source information
tert-Butyl methyl ether	Based on the NITE GHS classification results.
Trichloroacetic acid	Based on the NITE GHS classification results.
Chloroacetic Acid	Based on the NITE GHS classification results.
Dichloroacetic acid	Based on the NITE GHS classification results.

Respiratory or skin sensitization

Chemical Name	Respiratory or Skin sensitization source information
tert-Butyl methyl ether	Based on the NITE GHS classification results.
Trichloroacetic acid	Based on the NITE GHS classification results.
Chloroacetic Acid	Based on the NITE GHS classification results.
Dichloroacetic acid	Based on the NITE GHS classification results.

Reproductive cell mutagenicity

Chemical Name	germ cell mutagencity source information
tert-Butyl methyl ether	Based on the NITE GHS classification results.
Trichloroacetic acid	Based on the NITE GHS classification results.
Chloroacetic Acid	Based on the NITE GHS classification results.
Dichloroacetic acid	Based on the NITE GHS classification results.

Carcinogenicity

Chemical Name	Carcinogenicity source information
tert-Butyl methyl ether	Based on the NITE GHS classification results.
Trichloroacetic acid	Based on the NITE GHS classification results.
Chloroacetic Acid	Based on the NITE GHS classification results.
Dichloroacetic acid	Based on the NITE GHS classification results.

Chemical Name	NTP	IARC	ACGIH	JSOH
tert-Butyl methyl ether 1634-04-4	N/A	Group 3	A3	N/A
Trichloroacetic acid 76-03-9	N/A	Group 2B	A3	-
Chloroacetic Acid 79-11-8	N/A	N/A	N/A	-
Dichloroacetic acid 79-43-6	-	Group 2B	A3	-

Reproductive toxicity

Chemical Name	Reproductive toxicity source information
tert-Butyl methyl ether	Based on the NITE GHS classification results.
Trichloroacetic acid	Based on the NITE GHS classification results.
Chloroacetic Acid	Based on the NITE GHS classification results.
Dichloroacetic acid	Based on the NITE GHS classification results.

STOT-single exposure

Chemical Name	STOT -single exposure- source information
tert-Butyl methyl ether	Based on the NITE GHS classification results.
Trichloroacetic acid	Based on the NITE GHS classification results.
Chloroacetic Acid	Based on the NITE GHS classification results.
Dichloroacetic acid	Based on the NITE GHS classification results.

STOT-repeated exposure

Chemical Name	STOT -repeated exposure- source information
tert-Butyl methyl ether	Based on the NITE GHS classification results.
Trichloroacetic acid	Based on the NITE GHS classification results.
Chloroacetic Acid	Based on the NITE GHS classification results.

Dichloroacetic acid	Based on the NITE GHS classification results.

Aspiration hazard

Chemical Name	Aspiration Hazard source information
tert-Butyl methyl ether	Based on the NITE GHS classification results.
Trichloroacetic acid	Based on the NITE GHS classification results.
Chloroacetic Acid	Based on the NITE GHS classification results.
Dichloroacetic acid	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

Ecotoxicity

Chemical Name	Algae/aquatic plants	Fish	Crustacea
tert-Butyl methyl ether	*EC50 : Pseudokirchneriella subcapitata > 110 mg/L 72 h*	*LC50 : Oryzias latipes >120 mg/L 96 h*	*EC50 : Daphnia magna 542 mg/L 48 h*
Chloroacetic Acid	*ErC50 : Scenedesmus 0.033 mg/L 72 h*	*LC50 : Pimephales promelas 145 mg/L 96 h*	*EC50 : Daphnia magna 77 mg/L 48 h*
Dichloroacetic acid	*ErC50 : Raphidocelis 17 mg/L 72 h*	*N/A*	*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
tert-Butyl methyl ether	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Trichloroacetic acid	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Chloroacetic Acid	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.
Dichloroacetic acid	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.

Persistence and degradability No information available
Bioaccumulative potential No information available
Mobility in soil No information available
Hazard to the ozone layer 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
UN number UN2398
Proper shipping name: Methyl tert-butyl ether
UN classfication 3
Subsidiary hazard class
Packing group II

Marine pollutant Not applicable

IMDG

UN number	UN2398
Proper shipping name:	Methyl tert-butyl ether
UN classfication	3
Subsidiary hazard class	
Packing group	II
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	UN2398
Proper shipping name:	Methyl tert-butyl ether
UN classfication	3
Subsidiary hazard class	
Packing group	II
Environmentally Hazardous Substance	Not applicable

Section 15: REGULATORY INFORMATION

Japanese regulations

Fire Service Act	Category IV, Class I petroleums, dangerous grade 2
Poisonous and Deleterious Substances Control Law	Not applicable
Industrial Safety and Health Act	Harmful Substances Whose Names Are to be Indicated on the Label (Law Art.57) Notifiable Substances (Law Art.57-2) Dangerous Substances - Flammable Substance (Enforcement Order Attached Table 1 Item 4) Chemical Substances Hazardous to Skin, etc.(Regulations Article 594-2 Paragraph 1)
Industrial Safety and Health Act (2027~)	【2027.4.1~】Substances designated by the Minister of Health, Labor and Welfare as carcinogenic(Ordinance on Industrial Safety and Health Art.577, Para.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 Nortification for Air Transportation of Explosives etc., Attached Table 1)
Marine Pollution Prevention Law	Enforcement ordinance Appendix No. 1 Noxious liquid substance Category Z
Pollutant Release and Transfer Register Law (2023.4.1-)	Not applicable
Water Pollution Control Act	Specified substances(Law Art.2 Para.4, Enforcement Order Art.3-3)
Air Pollution Control Law	Hazardous Air Pollutants

Chemical Name	Poisonous and Deleterious Substances Control Law	Industrial Safety and Health Act Substances (Law Art.57-2)	Pollutant Release and Transfer Register Law (2023.4.1-)
tert-Butyl methyl ether 1634-04-4 (99.58)	-	Applicable	-
Trichloroacetic acid 76-03-9 (0.14)	-	Applicable	-
Dichloroacetic acid 79-43-6 (0.14)	-	Applicable	-

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
IATA dangerous Goods Regulations
RTECS:Registry of Toxic Effects of Chemical Substances
Japan Industrial Safety and Health Association GHS Model SDS
Dictionary of Synthetic Oraganic Chemistry , SSOCJ, Koudansha Scientific Co.Ltd.
Chemical Dictionary, Kyouritsu Publishing Co., Ltd.
etc

Record of SDS revisions

The following contents were revised. 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