

Safety Data Sheet

1. Product and company identification

Product name : TMAH-25
Name of manufacturer : KANTO CHEMICAL CO., INC.
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SDS No. : GE00073

2. Summary of danger and Hazard

GHS classification

Physical and chemical hazard

Flammable liquids : Out of category
Pyrophoric liquids : Out of category
Self-heating substances and mixtures : Out of category

Human health hazard

Acute toxicity(oral) : Category 3
Acute toxicity(dermal) : Category 3
Skin corrosion/irritation : Category 1A
Serious eye damage/eye irritation : Category 1
Specific target organ systemic toxicity(single exposure) : Category 1
Specific target organ systemic toxicity(repeated exposure) : Category 1

Pictogram or symbol



Signal word : Danger
Hazard statement : Toxic if swallowed
Toxic in contact with skin
Causes severe skin burns and eye damage
Causes serious eye damage
Causes damage to organs (nervous system)

	Causes damage to organs (nervous system) through prolonged or repeated exposure
Cautions	
Safety measurements	: Do not breathe dust, mist, and vapor. Do not eat, drink or smoke when using this product. Wear appropriate protective gloves, glasses, clothing, face shield, or mask. Wash protective equipment thoroughly after use. Wash hands thoroughly after handling.
First-aid measures	: If inhaled : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical treatment if you feel unwell. If swallowed: Induce vomiting, if possible, and rinse mouth. Immediately get medical treatment. If in eyes : Rinse cautiously with water for several minutes. Get medical treatment. If on skin : Remove contaminated clothing and the substance. Immediately get medical treatment. If exposed, get medical treatment. Get medical treatment, if you feel unwell.
Storage	: Store locked up.
Disposal	: Dispose of contents and containers appropriately in accordance with related regulations.

3. Composition/Information on ingredients

Substance/Mixture	: Substance
Chemical name or commercial name	: Tetramethylammonium hydroxide
Ingredients and composition	: Water solution contains 25% tetramethylammonium hydroxide
Chemical formula	: $(\text{CH}_3)_4\text{NOH}$
CAS No.	: 75-59-2
TSCA Inventory	: Registered
EINECS No.	: 2008829
Dangerous and hazardous ingredients	: Tetramethylammonium hydroxide

4. First aid measures

Inhalation	: Remove the victim to fresh air, and make him blow his nose and gargle.
Skin contact	: Wash the affected areas under running water.
Eye contact	: Wash the affected areas under running water for at least 15 minutes. Get medical treatment.
Ingestion	: Rinse mouth with water. Give the victim one or two glasses of water or milk. Do not induce vomiting. Get medical treatment as soon as possible.

Protection for first aid person

: Rescuers should wear proper protective equipment like rubber gloves, goggles.

5. Fire fighting measures

Extinguishing media : This product is noncombustible.

Prohibited extinguishing media

: None

Particular fire fighting : Move containers from fire area if it can be done without risk, if not possible, apply water from a safe distance to cool and protect surrounding area.

Dry chemical powder, carbon dioxide or dry sand should be used for small fires. Foam extinguisher is effective for a large scale fire.

Protection for firefighters

: Wear breathing apparatus.

6. Accidental release measures

Cautions for personnel : Wear proper protective equipment and avoid contact with skin and inhalation of vapor. Conduct operations from upwind and evacuate people downwind. Remove all sources of ignition. Keep away personnel except for authorized ones from spillage area by stretching ropes.

Cautions for environment : Attention should be given to avoid discharge of spilled product into rivers and resulting environmental damage. When diluting spill with large amounts of water, discharge of untreated wastewater into the environment must be avoided.

Removal measure : Absorb spill with inert material (e.g., diatomaceous earth, sand) and flush spillage area with copious amounts of water.

7. Cautions of handling and storage

Handling

Engineering measures : Wear proper protective equipment to avoid contact with skin or inhalation of vapor.

Ventilate well at working places.

Cautions for safety handling

: Use with an enclosed system or a local exhaust ventilation. Use in well-ventilated areas.

Cautions : Do not contact with acids.

Storage

Adequate storage condition

: Store in a dark, cool place and tightly closed.

Safety adequate container materials

: Fluorine resin, Polyethylene, Polypropylene, etc

8. Exposure control/Personal protection

Engineering measures : Use with an enclosed system or a local exhaust ventilation.

Control parameters

ACGIH(2015) : Not established

Protective equipment

Respiration protective equipment

: If necessary, wear chemical cartridge respirator with an organic vapor cartage

Hands protective equipment

: Impervious protective gloves

Eyes protective equipment

: Safety goggles

Skin and body protective equipment

: Protective clothing, protective boots

9. Physical and chemical properties

Appearance : Liquid

Color : Colorless

Odor : Ammonia like odor

pH : Strong alkalinity

Boiling point : Not available

Melting point : Not available

Flash point : Noncombustible

Density : 1.02g/cm³ (20°C)

Solubility

Solubility in solvents : Water ; Miscible

Organic solvents : Soluble in ethanol

10. Stability and reactivity

Stability : Stable under normal conditions.

Reactivity : May react with acids.

Incompatible conditions : Light, heat

Incompatible materials : Acids

Hazardous decomposition products

: Carbon monoxide, nitrogen oxides

11. Toxicological information

Acute toxicity : Toxic if swallowed(category 3)

Toxic in case of contact with skin(category 3)

Inhalation(vapor) : Not possible to classify because of insufficient data.

Inhalation(dust, mist) : Not possible to classify because of insufficient data.

rat oral LD₅₀=136-200mg/kg(as calculated value)

rat skin LD₅₀=448mg/kg(as calculated value)

Skin corrosion/irritation : Causes severe skin burns and eye damage(category 1A)

Since this product is strong alkaline, causes severe irritation to the skin.

Serious eye damage/eye irritation

: Causes serious eye damage(category 1)

Since this product is strong alkaline, causes corrosion to the eyes.

Respiratory sensitization or Skin sensitization

: Respiratory sensitization : Not possible to classify because of insufficient data.
Skin sensitization : Not possible to classify because of insufficient data.

Mutagenicity

: Not possible to classify because of insufficient data.
Although Ames test is negative, there is no data of in vivo. It is not possible to classify because of insufficient data.

Carcinogenic effects

: Not possible to classify because of insufficient data

Effects on the reproductive system

: Not possible to classify because of insufficient data.

Specific target organ systemic toxicity single exposure

: Cause damage to organs (nervous system) (category 1)

The result of acute oral toxicity test using rats(dose:10, 15, 23, 34, 50mg/kg(male), 23mg/kg(female); OECD TG401, GLP) showed that the dose of more than 34mg/kg caused the deaths, the dose of more than 23mg/kg caused the symptoms such as decreased locomotor activity, decreased body temperature, a half-closed lid/closed eyes, ataxia of gait, clonic convulsion, salivation, bradypnea. The value of LD50 was estimated 34-50mg/kg. Moreover, the result of acute skin toxicity test using rats(dose:50, 100, 125mg/kg(female), 100mg/kg(male), GLP) showed decreased activity, irregular breathing, narrowed palpebral fissure, tonic-clonic and convulsion. The value of LD50 was estimated 112mg/kg (female).

Based on the above report that ataxia, clonic convulsions, symptoms such as salivation were observed at dose of 23mg/kg by oral exposure, and also symptoms of tonic-clonic convulsions was observed at dose of 100mg/kg. So, it was classified into category 1(nervous system).

Specific target organ systemic toxicity repeated exposure

: Cause damage to organs (nervous system) through prolonged or repeated exposure(category 1)

The result of 28-day repeated oral administration toxicity test (dose:5, 10, 20mg/kg/day, OECD TG 407, GLP) using rats, symptom of salivation was observed at the dose of more than 10mg/kg/day(corresponding value of 90 days :3.1mg/kg/day). And heart weight of males was reduced in a dependent of dose by dose of 5mg/kg/day or more(90 days, corresponding to 1.55mg/kg/day), however, histological changes were not observed.

Moreover, the result of 28-day repeated skin administration toxicity test(dose:5.5, 50, 120, 250mg/kg/day(male), 2.5, 5.5, 10, 50mg/kg/day(female), OECD TG 410, GLP) using rats, lethargy followed by convulsion, tremulousness were observed, and death was observed at the dose of more than 50mg/kg/day (corresponding value of 90 days :15.5mg/kg/day) but cases of death and clear toxicity symptoms, were not observed at the dose of less than 10mg/kg/day.

Based on the above results, since salivation, convulsion, and tremulousness were observed at the dose of guidance value of Category 1, it is classified into category 1 (nervous system).

Aspiration hazard

: Not possible to classify because of insufficient data.

12. Ecological information

Ecotoxicity

Fish toxicity

: Acute aquatic toxicity : Not possible to classify because of insufficient data.

Chronic aquatic toxicity : Not possible to classify because of insufficient data.

Persistence and degradability

: Rapid biodegradability.

Bioaccumulative potential : Not available

Mobility in soil : Not available

13. Disposal consideration

Residual disposal : Neutralize with acid substances and dilute with plenty of water, then decompose with activated sludge.

Containers : In case of disposal of empty bottles, dispose bottles after removing the content thoroughly.

14. Transport information

UN class : Class 8(Corrosive substances) P. G. II

UN number : 1835

Marine regulation information

UN No. : 1835

Proper shipping name : TETRAMETHYLAMMONIUM HYDROXIDE SOLUTION

Class : 8

Sub risk : -

Packing group : II

Marine pollutant : Not applicable

Aviation regulation information

UN No. : 1835

Proper shipping name : Tetramethylammonium hydroxide solution

Class : 8

Sub risk : -

Packing group : II

15. Regulatory information

Ensure this material in compliance with federal requirements and ensure conformity to local regulations.

16. Other information

References Dangerous Properties of Industrial Materials, 6th ed. N. I. Sax Van Nostrand Reinhold Company(1984)
Handbook of 16817 Chemical Products, The Chemical Daily Co. (2017)

The information contained herein is based on several references and the present state of our knowledge. However the SDS does not always cover all information about the product, handle the product carefully. The information is intended to ordinary usage, in case of particular handlings, conduct appropriate safety measurements. The information herein is only provision of information, and it does not represent a guarantee the properties of the product. The Safety Data Sheet (SDS) is prepared based on JIS Z7253, and it has the same required elements on the Material Safety Data Sheet (MSDS) which is prepared based on JIS Z7250:2010.