

## Safety Data Sheet

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### 1. Chemical product and company identification

Product name : TMAH-22

#### Company information

Name of manufacturer : KANTO CHEMICAL CO., INC.  
 Address : 2-1, Nihonbashi, Muromachi 2-Chome, Chuo-Ku, Tokyo, 103-0022, Japan  
 Name of section : Electronic materials division technical department  
 Telephone number : +81-3-6214-1080  
 Facsimile number : +81-3-3241-1043  
 Mail address : el-info@kanto.co.jp  
 Reference No : GE00072 1.2  
 Recommended uses and restrictions : Electronic chemicals

### 2. Hazards identification

#### GHS classification

Health hazards	Acute toxicity (oral)	Category 3
	Acute toxicity (dermal)	Category 3
	Skin corrosion/irritation	Category 1
	Serious eye damage/eye irritation	Category 1
	Specific target organ toxicity (single exposure)	Category 1 (nervous system)
	Specific target organ toxicity (repeated exposure)	Category 1 (nervous system)

Hazard pictograms



Signal word : Danger

Hazard statements : Toxic if swallowed or in contact with skin  
 Causes severe skin burns and eye damage  
 Causes damage to organs (nervous system)  
 Causes damage to organs (nervous system) through prolonged or repeated exposure

#### Precautionary statements

Prevention : Do not breathe mist, vapors.  
 Wash hands, forearms and face thoroughly after handling.  
 Do not eat, drink or smoke when using this product.  
 Wear protective gloves/protective clothing/eye protection/face protection.

Response : IF SWALLOWED: Immediately call a POISON CENTER or doctor.  
 IF SWALLOWED: Rinse mouth. Do not induce vomiting.  
 IF ON SKIN: Wash with plenty of water.  
 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water .

IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
 IF exposed or concerned: Call a POISON CENTER or doctor. Immediately call a POISON CENTER or doctor.  
 Call a POISON CENTER or doctor if you feel unwell.  
 Get medical advice/attention if you feel unwell.  
 Take off immediately all contaminated clothing and wash it before reuse.

Storage : Store locked up.

Disposal : Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

### 3. Composition/information on ingredients

Distinction of substance or mixture : Substance

Chemical name	Concentration (%)	Formula	TSCA	EC-No.	CAS RN
Tetramethylammonium hydroxide	22	(CH <sub>3</sub> ) <sub>4</sub> NOH	Listed	200-882-9	75-59-2

### 4. First aid measures

#### First aid measures

First-aid measures after inhalation : Remove the victim to fresh air, and make him blow his nose and gargle. If necessary, get medical treatment.  
 First-aid measures after skin contact : Wash the affected areas under running water, get medical treatment as soon as possible.  
 First-aid measures after eye contact : Wash the affected areas under running water for at least 15 minutes. Get medical treatment.  
 First-aid measures after 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.  
 Personal Protection in First Aid and Measures : Rescuers should wear proper protective equipment like rubber gloves, goggles.

### 5. Fire fighting measures

Suitable extinguishing media : This product is noncombustible.  
 Unsuitable extinguishing media : None  
 Firefighting instructions : 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.  
 Personal protection (Emergency response) : Wear breathing apparatus.



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## 6. Accidental release measures

### Personal Precautions, Protective Equipment and Emergency Procedures

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

### Environmental precautions

Environmental precautions : 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.

### Methods and Equipment for Containment and Cleaning up

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

## 7. Handling and storage

### Handling

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

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

### Storage

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

Material used in packaging/containers : Fluorine resin, Polyethylene, Polypropylene, etc.

## 8. Exposure controls / Personal protection equipment

Appropriate engineering controls : Use with an enclosed system or a local exhaust ventilation.

### Protective equipment

Respiratory protection : If necessary, wear gas mask for organic solvents or airline respirator.

Hand protection : Impervious protective gloves

Eye protection : Safety goggles

Skin and body protection : Protective clothing, protective boots

## 9. Physical and chemical properties

Physical state : Liquid  
Color : Colorless.  
Odor : Ammonia like  
pH : Strong alkalinity  
Melting point : No data available  
Freezing point : No data available  
Boiling point : No data available  
Flash point : Non flammable.



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Auto-ignition temperature	: Non flammable.
Decomposition temperature	: No data available
Flammability	: Non flammable.
Vapor pressure	: No data available
Relative density	: No data available
Density	: 1.01 (20°C) (Specific gravity)
Relative gas density	: No data available
Solubility	: Water: Miscible.
Partition coefficient n-octanol/water (log Pow)	: No data available
Explosive limits (vol %)	: No data available
Viscosity, kinematic:	: No data available
Particle characteristics	: No data available

## 10. Stability and reactivity

Reactivity	: May react with acids.
Chemical stability	: Stable under normal conditions.
Possibility of hazardous reactions	: Stable under normal conditions of use.
Conditions to avoid	: Light, heat.
Incompatible materials	: Acids.
Hazardous decomposition products	: Carbon monoxide, nitrogen oxides.

## 11. Toxicological information

Acute toxicity (oral)	: Toxic if swallowed ATEmix=151.1mg/kg
Acute toxicity (dermal)	: Toxic in contact with skin ATEmix=497.8mg/kg
Acute toxicity (inhalation)	: No classification (gas) Classification not possible (vapor) Classification not possible (dust, mist)
Skin corrosion/irritation	: Causes severe skin burns Tetramethylammonium hydroxide : Strong alkaline with 10% aqueous solution. Therefore, it was classified as category 1.
Serious eye damage/irritation	: Causes serious eye damage Tetramethylammonium hydroxide : Strong alkaline with 10% aqueous solution. Therefore, it was classified as category 1.
Respiratory sensitization	: Classification not possible
Skin sensitization	: Classification not possible
Germ cell mutagenicity	: Classification not possible
Carcinogenicity	: Classification not possible
Reproductive toxicity	: Classification not possible



- STOT-single exposure : Causes damage to organs (nervous system)  
Tetramethylammonium hydroxide : As a result of an acute oral toxicity test using rats, deaths at 34mg/kg or higher and signs of a decrease in locomotor activity, hypothermia, incomplete eyelid opening/eyelid closure, ataxic gait, clonic convulsions, salivation, and bradypnea at 23mg/kg or higher were observed. And an LD50 value of 34 to 50 mg/kg bw was reported. And as a result of an acute dermal toxicity test using rats, 100mg/kg, signs of a decrease in locomotor activity, irregular respiration, narrow palpebral fissure, and tonic-clonic convulsions were observed. And an LD50 value of 112mg/kg was reported. From signs such as ataxic gait, clonic convulsions, and salivation at 23mg/kg in oral exposure and a sign of tonic-clonic convulsions at 100mg/kg in dermal exposure in the above reports, it was classified as category 1 (nervous system).
- STOT-repeated exposure : Causes damage to organs (nervous system) through prolonged or repeated exposure  
Tetramethylammonium hydroxide : As a result of a repeated dose 28-day oral toxicity test using rats, a sign of salivation at 10mg/kg/day (converted to a 90-day equivalent: 3.1mg/kg/day) or higher was observed. And a dose-dependent decrease in heart weight at 5mg/kg/day(converted to a 90-day equivalent: 1.55mg/kg/day) or higher but histopathological changes were not observed. In addition, as a result of a 28-day repeated dermal administration toxicity test using rats, convulsions and tremors followed by signs of lethargy were shown. And deaths at 50mg/kg/day (converted to a 90-day equivalent: 15.5mg/kg/day) or higher but no deaths and no clear toxic signs at 10mg/kg/day or lower were observed. Because salivation, convulsions, and tremors were observed within a range of category 1 in Guidance values in both oral and dermal routes in the above reports, it was classified as category 1 (nervous system).
- Aspiration hazard : Classification not possible

## 12. Ecological information

### Ecotoxicity

- Aquatic acute : Classification not possible  
Aquatic chronic : Classification not possible

### Persistence and degradability

No additional information available

### Bioaccumulative potential

No additional information available

### Mobility in soil

No additional information available

### Hazardous to the ozone layer

- Ozone : Classification not possible

## 13. Disposal considerations

- Ecological waste information : Dilute with copious water and adjust the pH to neutral, then flush in drains. Or entrust approved waste disposal companies

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Contaminated container and packaging : with the disposal.  
: In case of disposal of empty bottles, dispose bottles after removing the content thoroughly.

## 14. Transport information

### International Regulations

#### Transport by sea(IMDG)

UN-No. (IMDG) : 1835  
Proper Shipping Name (IMDG) : TETRAMETHYLAMMONIUM HYDROXIDE SOLUTION  
Packing group (IMDG) : II  
Transport hazard class(es) (IMDG) : 8

#### Air transport(IATA)

UN-No. (IATA) : 1835  
Proper Shipping Name (IATA) : Tetramethylammonium hydroxide, solution  
Packing group (IATA) : II  
Transport hazard class(es) (IATA) : 8

Marine pollutant : Not applicable  
MFAG-No : 153

## 15. Regulatory information

Regulatory information with regard to this substance in your country or region should be examined by your own responsibility.

## 16. Other information

Data sources : Handbook of Dangerous Substances Springer-Verlag Tokyo (1991) .  
Handbook of 17322 Chemical Products, The Chemical Daily Co. (2022) .  
NITE Chemical Risk Information Platform (NITE-CHRIP), National Institute of Technology and Evaluation.

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.

