1. Identification of the substance/mixture and of the company/undertaking

Product identifier:
- Product name: Tetramethylammonium hydroxide solution, 10% in water
- Product code (SDS NO): 7697E-2

Details of the supplier of the safety data sheet
- Manufacturer/Supplier: KISHIDA CHEMICAL CO., LTD.
- Address: 3-1, Honmachibashi, Chuo-ku, Osaka 540-0029, JAPAN
- Division: Safety Management Dept. of Chemicals
- Telephone number: +81-6-6946-8061
- FAX: +81-6-6946-1607
- e-mail address: kagakuhinanzenkanri@kishida.co.jp

2. Hazards identification

GHS classification and label elements of the product

Classification of the substance or mixture
- 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 (nerve/nervous system)
  - Specific target organ toxicity - repeated exposure: Category 1 (nerve/nervous system)

Label elements

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 after single exposure
- Causes damage to organs through prolonged or repeated exposure

PRECAUTIONARY STATEMENT

Prevention
- Do not breathe dust/fume/gas/mist/vapors/spray.
- Wash contaminated parts thoroughly after handling.
- Wear protective gloves, protective clothing or face protection.
- Wear eye protection/face protection.
- Do not eat, drink or smoke when using this product.

Response
- Get medical advice/attention if you feel unwell.
- IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- IF ON SKIN: Wash with plenty of soap and water.
- IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
3. Composition/information on ingredients
   Mixture/Substance selection:
   Mixture
   Ingredient name: Tetramethylammonium hydroxide
   Content(%): 10
   Chemical formula: C4H13NO
   Chemicals No, Japan: 2-186
   CAS No.: 75-59-2
   MW: 91.15
   EC No.: 200-882-9

   Ingredient name: Water
   Content(%): 90
   Chemical formula: H2O
   CAS No.: 7732-18-5
   MW: 18.02
   EC No.: 231-791-2

   Note: The figures shown above are not the specifications of the product.

4. First-aid measures
   Descriptions of first-aid measures
   General measures
   Get medical attention/advice if you feel unwell.
   IF INHALED
   Remove person to fresh air and keep comfortable for breathing.
   Call a POISON CENTER or doctor/physician if you feel unwell.
   IF ON SKIN (or hair)
   Take off immediately all contaminated clothing. Rinse skin with water/shower.
   Wash with plenty of soap and water.
   If skin irritation or rash occurs: 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 SWALLOWED
   Rinse mouth. Do NOT induce vomiting.
   Call a POISON CENTER or doctor/physician if you feel unwell.
5. Fire-fighting measures
   Extinguishing media
   Suitable extinguishing media
   Use appropriate extinguishing media suitable for surrounding facilities.
   Specific hazards arising from the substance or mixture
   Containers may explode when heated.
   Fire may produce irritating, corrosive and/or toxic gases.
   Advice for firefighters
   Specific fire-fighting measures
   Evacuate non-essential personnel to safe area.
   Special protective equipment and precautions for fire-fighters
   Wear fire/flame resistant/retardant clothing.
   Wear protective gloves/protective clothing/eye protection/face protection.
   Firefighters should wear self-contained breathing apparatus with full face piece operated positive pressure mode.

6. Accidental release measures
   Personnel precautions, protective equipment and emergency procedures
   Ventilate area after material pick up is complete.
   Wear proper protective equipment.
   Methods and materials for containment and cleaning up
   Absorb spill with inert material (dry sand, earth, et al), then place in a chemical waste container.
   Preventive measures for secondary accident
   Collect spillage.

7. Handling and storage
   Precautions for safe handling
   Preventive measures
   (Exposure Control for handling personnel)
   Do not breathe dust/fume/gas/mist/vapors/spray.
   (Protective measures against fire and explosion)
   Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
   Exhaust/ventilator
   Exhaust/ventilator should be available.
   Safety treatments
   Avoid contact with skin.
   Avoid contact with eyes.
   Safety Measures/Incompatibility
   Wear protective gloves, protective clothing or face protection.
   Wear eye protection/face protection.
   When using do not eat, drink or smoke.
   Conditions for safe storage, including any incompatibilities
   Recommendation for storage
   Keep container tightly closed.
   keep under lock and key.
   chilled storage.
8. Exposure controls/personal protection

Exposure controls
- Appropriate engineering controls
  - Do not use in areas without adequate ventilation.
  - Eye wash station should be available.
  - Washing facilities should be available.

Individual protection measures
- Respiratory protection
  - Wear respiratory protection.

Hand protection
- Wear protective gloves.

Eye protection
- Wear eye/face protection.

Safety and Health measures
- Wash … thoroughly after handling.
- Take off immediately all contaminated clothing and wash it before reuse.

9. Physical and Chemical Properties

Information on basic physical and chemical properties

Physical properties
- Appearance: Liquid
- Color: Colorless, Clear

Phase change temperature
- Initial Boiling Point/Boiling point data N.A.
- Melting point/Freezing point data N.A.
- Decomposition temperature data N.A.
- Flash point data N.A.
- Auto-ignition temperature data N.A.

Explosive properties data N.A.

Vapor pressure data N.A.

Vapor density data N.A.

Relative density of the Vapor/air–mixture at 20°C (Air = 1) data N.A.

Specific gravity/Density: 1.01

Solubility
- Solubility in water: Miscible
- n-Octanol /water partition coefficient data N.A.

10. Stability and Reactivity

Chemical stability
- Stable under normal storage/handling conditions.

Possibility of hazardous reactions
- The substance form corrosive, toxic and explosible gases by heat (e.g. trimethylamine, methanol and nitrogen oxide). React violently with acid. Corrosive to metals such as aluminium, tin, copper and zinc. This produces flammable/explosive gas (hydrogen). React violently with strong oxidant agent. Reacts with ammonium salts. This produces ammonia that is corrosive and flammable.

Conditions to avoid
- Contact with incompatible materials.
- Contact with fire source.

Incompatible materials
11. Toxicological Information

Information on toxicological effects

Acute toxicity

Acute toxicity (Oral)

[GHS Cat. Japan, base data]
(Tetramethylammonium hydroxide)
rat LD50=34~50mg/kg (MHLW report, 2000)

Acute toxicity (Dermal)

[GHS Cat. Japan, base data]
(Tetramethylammonium hydroxide)
rat LD50=112mg/kg (SIAP, 2006)

Irritant properties

Skin corrosion/irritation

[GHS Cat. Japan, base data]
(Tetramethylammonium hydroxide)
guinea pig extremely severe corrosive (SIAP, 2006)

Serious eye damage /irritation

[GHS Cat. Japan, base data]
(Tetramethylammonium hydroxide)
guinea pig extremely severe corrosive (SIAP, 2006)

No Allergenic and sensitizing effects data available
No Mutagenic effects data available
No Carcinogenic effects data available
No Teratogenic effects data available
No reproductive toxicity data available

Delayed and immediate effects and also chronic effects from short- and long-term exposure

STOT

STOT—single exposure
[cat.1]

[Japan published data]
(Tetramethylammonium hydroxide)
nerve/nervous system (SIAP, 2006)

STOT—repeated exposure
[cat.1]

[Japan published data]
(Tetramethylammonium hydroxide)
nerve/nervous system (SIAP, 2006)

No Aspiration hazard data available

12. Ecological Information

Ecotoxicity

No Aquatic toxicity data available
No Persistence and degradability data available
No Bioaccumulative potential data available
No Mobility in soil data available
Ozone depleting chemical data not available
13. Disposal considerations
   Waste treatment methods
   Dispose of contents/container in accordance with local/national regulation.

14. Transport Information
   UN number: 1835
   UN proper shipping name: TETRAMETHYLAMMONIUM HYDROXIDE SOLUTION
   Transport hazard class(es): 8
   Packing group: III
   ERG GUIDE NO.: 153
   Special provisions NO.: 223; A3; A803
   Environmental hazards
   MARPOL Annex V - Substances Harmful to Marine Environment
      Specific target organ toxicity - repeated exposure: cat.1
      Tetramethylammonium hydroxide
   Transport in bulk according to Annex II of MARPOL73/78 and IBC Code
      Non Noxious Liquid ; Cat. OS
      Water

15. Regulatory Information
   Safety, health and environmental regulations/legislation specific for the substance or mixture
   US major regulations
      TSCA
      Tetramethylammonium hydroxide; Water
   Other regulatory information
      Ensure this material in compliance with federal requirements and ensure conformity to local regulations.

16. Other information
   GHS classification and labelling
      Acute Tox. 3: H301 Toxic if swallowed
      Acute Tox. 3: H311 Toxic in contact with skin
      Skin Corr. 1: H314 Causes severe skin burns and eye damage
      Eye Dam. 1: H318 Causes serious eye damage
      STOT SE 1: H370 Causes damage to organs after single exposure
      STOT RE 1: H372 Causes damage to organs through prolonged or repeated exposure
   Reference Book
      Globally Harmonized System of classification and labelling of chemicals, (5th ed., 2013), UN Recommendations on the TRANSPORT OF DANGEROUS GOODS 19th edit., 2015 UN Classification, labelling and packaging of substances and mixtures (table3-1 ECN06182012) 2016 EMERGENCY RESPONSE GUIDEBOOK (US DOT) 2018 TLVs and BEIs. (ACGIH) http://monographs.iarc.fr/ENG/Classification/index.php
      Supplier's data/information
   General Disclaimer
      This information contained in this data sheet represents the best information currently available to us. However, no warranty is made with respect to its completeness and we assume no liability resulting from its use. It are advised to make their own tests to determinate the safety and suitability of each such product or combination for their own
purposes.
The data given here is based on current knowledge and experience. The purpose of this
Safety Data Sheet is to describe the products in terms of their safety requirements. The
data does not signify any warranty with regard to the products’ properties.
The GHS classification data given here is based on current Japan official data (NITE published in
2017).