

Material Safety Data Sheet

acc. to OSHA and ANSI

Printing date 07/23/2009

Reviewed on 07/22/2009

1 Identification of substance:**Product details:****Product name:** Tetramethylammonium hydroxide, 25% aqueous solution**Stock number:** L09991**Manufacturer/Supplier:**

Alfa Aesar, A Johnson Matthey Company
 Johnson Matthey Catalog Company, Inc.
 30 Bond Street
 Ward Hill, MA 01835-8099
 Emergency Phone: (978) 521-6300
 CHEMTREC: (800) 424-9300
 Web Site: www.alfa.com

Information Department: Health, Safety and Environmental Department**Emergency information:**

During normal hours the Health, Safety and Environmental Department. After normal hours call Chemtrec at (800) 424-9300.

2 Composition/Data on components:**Chemical characterization:****Description: (CAS#)**

Tetramethylammonium hydroxide (CAS# 75-59-2): 25%
 Water (CAS# 7732-18-5): 75%

Identification number(s):**EINECS Number:** 200-882-9**3 Hazards identification****Hazard description:**

T Toxic

Information pertaining to particular dangers for man and environment

R 21 Harmful in contact with skin.

R 25 Toxic if swallowed.

R 34 Causes burns.

R 52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment

Classification system**HMIS ratings (scale 0-4)****(Hazardous Materials Identification System)**

HEALTH	3
FIRE	1
REACTIVITY	1

Health (acute effects) = 3

Flammability = 1

Reactivity = 1

GHS label elements**Danger**

3.1/2 - Fatal if swallowed.

3.1/3 - Toxic in contact with skin.

**Danger**

3.2/1B - Causes severe skin burns and eye damage.

4.1/3 - Harmful to aquatic life with long lasting effects.

Prevention:

Do not breathe dust/fume/gas/mist/vapours/spray.

Wash thoroughly after handling.

Do not eat, drink or smoke when using this product.

Avoid release to the environment.

Wear protective gloves/protective clothing/eye protection/face protection.

Response:

IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

IF SWALLOWED: rinse mouth. Do NOT induce vomiting.

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IF ON SKIN: Wash with plenty of soap and water.
 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.
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 Immediately call a POISON CENTER or doctor/physician.
 Call a POISON CENTER or doctor/physician if you feel unwell.
 Specific treatment (see on this label).
 Specific measures (see on this label).
 Rinse mouth.
 Remove/Take off immediately all contaminated clothing.
 Wash contaminated clothing before reuse.
Storage:
 Store locked up.
Disposal:
 Dispose of contents/container in accordance with local/regional/national/international regulations.

4 First aid measures**General information**

Immediately remove any clothing soiled by the product.
 In case of irregular breathing or respiratory arrest provide artificial respiration.

After inhalation

Supply fresh air. If required, provide artificial respiration. Keep patient warm.
 Seek immediate medical advice.

After skin contact

Immediately wash with water and soap and rinse thoroughly.
 Seek immediate medical advice.

After eye contact

Rinse opened eye for several minutes under running water. Then consult a doctor.
After swallowing Seek immediate medical advice.

5 Fire fighting measures**Suitable extinguishing agents**

Carbon dioxide, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

Special hazards caused by the material, its products of combustion or resulting gases:

In case of fire, the following can be released:

Carbon monoxide and carbon dioxide

Nitrogen oxides (NOx)

Ammonia

Protective equipment:

Wear self-contained respirator.

Wear fully protective impervious suit.

6 Accidental release measures**Person-related safety precautions:**

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

Measures for environmental protection:

Do not allow material to be released to the environment without proper governmental permits.

Measures for cleaning/collecting:

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Use neutralizing agent.

Dispose contaminated material as waste according to item 13.

Ensure adequate ventilation.

Additional information:

See Section 7 for information on safe handling

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

7 Handling and storage**Handling****Information for safe handling:**

Handle under dry protective gas.

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Keep container tightly sealed.
 Store in cool, dry place in tightly closed containers.
 Ensure good ventilation at the workplace.
Information about protection against explosions and fires: No special measures required.

Storage

Requirements to be met by storerooms and receptacles: No special requirements.
Information about storage in one common storage facility:
 Store away from air.
 Aqueous solutions are incompatible with alkali and alkaline earth metals and many reactive organic and inorganic chemicals.
Further information about storage conditions:
 Store under dry inert gas.
 Keep container tightly sealed.
 Store in cool, dry conditions in well sealed containers.
 This product is air sensitive.

8 Exposure controls and personal protection

Additional information about design of technical systems:
 Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

Components with limit values that require monitoring at the workplace: Not required.
Additional information: No data

Personal protective equipment**General protective and hygienic measures**

The usual precautionary measures for handling chemicals should be followed.
 Keep away from foodstuffs, beverages and feed.
 Remove all soiled and contaminated clothing immediately.
 Wash hands before breaks and at the end of work.
 Store protective clothing separately.
 Avoid contact with the eyes and skin.

Breathing equipment: Use suitable respirator when high concentrations are present.

Protection of hands:

Check protective gloves prior to each use for their proper condition.
 Impervious gloves

Material of gloves

The selection of suitable gloves not only depends on the material, but also on quality.
 Quality will vary from manufacturer to manufacturer.

Eye protection:

Safety glasses
 Tightly sealed goggles
 Full face protection

Body protection: Protective work clothing.

9 Physical and chemical properties:**General Information**

Form:	Solution
Color:	Colorless
Odor:	Odorless

Change in condition

Melting point/Melting range:	Not determined
Boiling point/Boiling range:	Not determined
Sublimation temperature / start:	Not determined

Flash point:	Not determined
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Ignition temperature:	Not determined
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Decomposition temperature:	Not determined
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Danger of explosion:	Product does not present an explosion hazard.
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Explosion limits:

Lower:	Not determined
Upper:	Not determined

Vapor pressure at 20°C (68°F):	23.3 hPa (17 mm Hg)
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Density at 20°C (68°F):	1.016 g/cm ³
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Solubility in / Miscibility with
Water: Fully miscible

pH-value (neat g/l) at 20°C (68°F): >13

10 Stability and reactivity**Thermal decomposition / conditions to be avoided:**

Decomposition will not occur if used and stored according to specifications.

Materials to be avoided:

Aqueous solutions are incompatible with alkali and alkaline earth metals and many reactive organic and inorganic chemicals.

Acids

Air

Carbon dioxide

Dangerous reactions

Reacts with alkali metals.

Reacts with alkaline earth metals.

Dangerous products of decomposition:

Carbon monoxide and carbon dioxide

Nitrogen oxides

Ammonia

11 Toxicological information**Acute toxicity:****LD/LC50 values that are relevant for classification:**

Dermal	LD50	449 mg/kg (rat)
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Primary irritant effect:

on the skin: Corrosive effect on skin and mucous membranes.

on the eye:

Irritating effect.

Strong corrosive effect.

Sensitization: No sensitizing effects known.

Subacute to chronic toxicity:**Subacute to chronic toxicity:**

The Registry of Toxic Effects of Chemical Substances (RTECS) reports the following effects in laboratory animals:

Skin and Appendages - dermatitis, other (after systemic exposure).

Vascular - BP elevation not characterized in autonomic section.

Behavioral - changes in motor activity (specific assay).

Lungs, Thorax, or Respiration - pulmonary emboli.

Related to Chronic Data - death.

Subacute to chronic toxicity:

Solutions of quaternary ammonium hydroxides are extremely corrosive and destructive to tissues that they come in contact with. They cause severe burns on contact with the skin and may cause blindness in contact with the eyes. Inhalation of the solution would be expected to cause burns of the upper respiratory tract along with symptoms such as coughing, wheezing, and shortness of breath. Will cause burns of the digestive tract if ingested. Symptoms of chronic exposure are not known. Dilute solutions have similar but less severe effects.

Additional toxicological information:

To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

Danger through skin absorption.

Swallowing will lead to a strong corrosive effect on mouth and throat and to the danger of perforation of esophagus and stomach.

No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.

12 Ecological information:**Ecotoxicological effects:**

Remark: Harmful to fish

General notes:

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

Do not allow material to be released to the environment without proper governmental permits.

Harmful to aquatic organisms

Rinse off of bigger amounts into drains or the aquatic environment may lead to increased pH-values. A high pH-value harms aquatic organisms. In the dilution of the use-level the pH-value is considerably reduced, so that after the use of the product the aqueous waste,

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emptied into drains, is only low water-dangerous.

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13 Disposal considerations

Product:

Recommendation Consult state, local or national regulations to ensure proper disposal.

Uncleaned packagings:

Recommendation: Disposal must be made according to official regulations.

Recommended cleansing agent: Water, if necessary with cleansing agents.

14 Transport information

DOT regulations:



Hazard class: 8
Identification number: UN1835
Packing group: II
Proper shipping name (technical name): TETRAMETHYLAMMONIUM HYDROXIDE, SOLUTION
Label: 8

Land transport ADR/RID (cross-border)



ADR/RID class: 8 (C7) Corrosive substances
Danger code (Kemler): 80
UN-Number: 1835
Packaging group: II
Description of goods: 1835 TETRAMETHYLAMMONIUM HYDROXIDE, SOLUTION

Maritime transport IMDG:



IMDG Class: 8
UN Number: 1835
Label: 8
Packaging group: II
Marine pollutant: No
Proper shipping name: TETRAMETHYLAMMONIUM HYDROXIDE, SOLUTION

Air transport ICAO-TI and IATA-DGR:



ICAO/IATA Class: 8
UN/ID Number: 1835
Label: 8
Packaging group: II
Proper shipping name: TETRAMETHYLAMMONIUM HYDROXIDE, SOLUTION

UN "Model Regulation": UN1835, TETRAMETHYLAMMONIUM HYDROXIDE, SOLUTION, 8, II

15 Regulations

Product related hazard informations:

Hazard symbols:

T Toxic

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Risk phrases:

- 21 Harmful in contact with skin.
 25 Toxic if swallowed.
 34 Causes burns.
 52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment

Safety phrases:

- 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
 45 In case of accident or if you feel unwell, seek medical advice immediately.
 61 Avoid release to the environment. Refer to special instructions/Safety data sheets

National regulations

All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.

All components of this product are listed on the Canadian Domestic Substances List (DSL).

Information about limitation of use: For use only by technically qualified individuals.

16 Other information:

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

Department issuing MSDS: Health, Safety and Environmental Department.

Contact: Zachariah Holt

Abbreviations and acronyms:

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)

ICAO: International Civil Aviation Organization

ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

HMSIS: Hazardous Materials Identification System (USA)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

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