

MATERIAL SAFETY DATA SHEET

Section 1 - Chemical Product and Company Identification

MSDS Name: 0.1M Tetra-n-butyl ammonium hydroxide solution
Catalog Numbers: T/0486/07
Synonyms:
Company Identification: Fisher Scientific UK
Bishop Meadow Road, Loughborough
Leics. LE11 5RG
For information in Europe, call: (01509) 231166
Emergency Number, Europe: 01509 231166

Section 2 - Composition, Information on Ingredients

CAS#: 2052-49-5
Chemical Name: Tetra-n-butyl ammonium hydroxide
%: <3.0
EINECS#: 218-147-6
Hazard Symbols: C
Risk Phrases:

CAS#: 7664-38-2
Chemical Name: Orthophosphoric acid
%: <1.0
EINECS#: 231-633-2
Hazard Symbols: C
Risk Phrases:

CAS#: 7732-18-5
Chemical Name: Water
%: >96
EINECS#: 231-791-2
Hazard Symbols:
Risk Phrases:

Text for R-phrases: see Section 16

Hazard Symbols: XI



Risk Phrases: 36/38

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Warning! May cause severe respiratory and digestive tract irritation with possible burns. May cause severe eye and skin irritation with possible burns. Target Organs: None known.

Potential Health Effects

- Eye:** May cause eye irritation and possible burns.
- Skin:** May cause severe irritation and possible burns.
- Ingestion:** May cause severe gastrointestinal tract irritation with nausea, vomiting and possible burns.
- Inhalation:** May cause severe irritation of the respiratory tract with possible burns.
- Chronic:** No information found.

Section 4 - First Aid Measures

- Eyes:** Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.
- Skin:** Get medical aid immediately. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- Ingestion:** Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.
- Inhalation:** Get medical aid immediately. Remove from exposure and move to fresh air immediately. If breathing is difficult, give oxygen.

Notes to Physician:

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.

Extinguishing Media: Use foam, dry chemical, or carbon dioxide.

- Autoignition:** Not available
- Temperature:**
- Flash Point:** Not available
- Explosion Limits:** Not available
- Lower:**
- Explosion Limits:** Not available
- Upper:**
- NFPA Rating:** Not published

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Use with adequate ventilation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.

Storage: Store in a cool, dry place. Store in a tightly closed container.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Use adequate ventilation to keep airborne concentrations low.

Exposure Limits	ACGIH	NIOSH	OSHA -
Chemical Name			
Final PELs			
Tetra-n-butyl ammon	none listed	none listed	none

listed			
ium hydroxide			
Orthophosphoric acid	1 mg/m ³ ; 3 mg/m ³	1 mg/m ³ TWA 1000	1 mg/m ³
d	STEL	mg/m ³ IDLH	
Water	none listed	none listed	none listed

OSHA Vacated PELs: Tetra-n-butyl ammonium hydroxide: None listed Orthophosphoric acid: 1 mg/m³ TWA Water: None listed

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Liquid

Color: colorless

Odor: Not available

pH: Not available

Vapor Pressure: Not available

Vapor Density: Not available

Evaporation Rate: Not available

Viscosity: Not available

Boiling Point: Not available

Freezing/Melting Point: Not available

Decomposition Temperature: Not available

Solubility in water: Miscible

Specific Gravity/Density:

Molecular Formula:

Molecular Weight:

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures.

Conditions to Avoid: Incompatible materials.

Incompatibilities with Other Materials: Oxidizing agents, strong acids, strong bases, acid chlorides, alkali metals, finely powdered metals, acid anhydrides.

Hazardous Decomposition Products: Nitrogen oxides, carbon monoxide, carbon dioxide, tributylamine.

Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#: CAS# 2052-49-5: BS5425000

CAS# 7664-38-2: TB6300000
CAS# 7732-18-5: ZC0110000

LD50/LC50:

RTECS: Not available. RTECS:
CAS# 7664-38-2: Draize test, rabbit, eye: 119 mg Severe;
Draize test, rabbit, skin: 595 mg/24H Severe;
Inhalation, mouse: LC50 = 25.5 mg/m³;
Inhalation, rat: LC50 = >850 mg/m³/1H;
Inhalation, rat: LC50 = 25.5 mg/m³;
Oral, mouse: LD50 = 1.25 gm/kg;
Oral, rat: LD50 = 1530 mg/kg;
Oral, rat: LD50 = 1.25 gm/kg;
Skin, rabbit: LD50 = 2740 mg/kg;

RTECS:

CAS# 7732-18-5: Oral, rat: LD50 = >90 mL/kg;

Carcinogenicity: Tetra-n-butyl ammonium hydroxide - Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.
Orthophosphoric acid - Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.
Water - Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: Not available
Teratogenicity: Not available
Reproductive: Not available
Neurotoxicity: Not available
Mutagenicity: Not available
Other: Not available

Section 12 - Ecological Information

Not available

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification. RCRA P-Series: None listed. RCRA U-Series: None listed.

Section 14 - Transport Information

US DOT

Shipping Name: Not regulated as a hazardous material

Hazard Class:

UN Number:

Packing Group:

Canada TDG

Shipping Name: Not available

Hazard Class:

UN Number:

Packing Group:

USA RQ: CAS# 7664-38-2: 5000 lb final RQ; 2270 kg final RQ

Section 15 - Regulatory Information

US Federal

TSCA

CAS# 2052-49-5 is listed on the TSCA Inventory.

CAS# 7664-38-2 is listed on the TSCA Inventory.

CAS# 7732-18-5 is listed on the TSCA Inventory.

Health & Safety Reporting List	None of the chemicals are on the Health & Safety Reporting List.
Chemical Test Rules	None of the chemicals in this product are under a Chemical Test Rule.
Section 12b	None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule	None of the chemicals in this material have a SNUR under TSCA.
CERCLA Hazardous Substances and corresponding RQs	CAS# 7664-38-2: 5000 lb final RQ; 2270 kg final RQ
SARA Section 302 Extremely Hazardous Substances	None of the chemicals in this product have a TPQ.
SARA Codes	CAS # 2052-49-5: acute, flammable. CAS # 7664-38-2: acute.
Section 313	No chemicals are reportable under Section 313.
Clean Air Act:	This material does not contain any hazardous air pollutants. This material does not contain any Class 1 Ozone depletors. This material does not contain any Class 2 Ozone depletors.
Clean Water Act:	CAS# 7664-38-2 is listed as a Hazardous Substance under the CWA. None of the chemicals in this product are listed as Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.
OSHA: STATE	Tetra-n-butyl ammonium hydroxide is not present on state lists from CA, PA, MN, MA, FL, or NJ. Orthophosphoric acid can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts. Water is not present on state lists from CA, PA, MN, MA, FL, or NJ.
California Prop 65	
California No Significant Risk Level:	None of the chemicals in this product are listed.
European/International Regulations	

European Labeling in Accordance with EC Directives

Hazard Symbols: XI

Risk Phrases:

R 36/38 Irritating to eyes and skin.

Safety Phrases:

S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S 28 After contact with skin, wash immediately with...

WGK (Water Danger/Protection)

CAS# 2052-49-5: Not available

CAS# 7664-38-2: 1

CAS# 7732-18-5: Not available

Canada

CAS# 2052-49-5 is listed on Canada's DSL List

CAS# 7664-38-2 is listed on Canada's DSL List

CAS# 7732-18-5 is listed on Canada's DSL List

Canadian WHMIS Classifications: Not available

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

CAS# 2052-49-5 is not listed on Canada's Ingredient Disclosure List.

CAS# 7664-38-2 is listed on Canada's Ingredient Disclosure List

CAS# 7732-18-5 is not listed on Canada's Ingredient Disclosure List.

Section 16 - Other Information

MSDS Creation Date: 12/12/1997

Revision #3 Date 10/03/2005

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential, or exemplary damages howsoever arising, even if the company has been advised of the possibility of such damages.