

# Material Safety Data Sheet

HAZARD WARNINGS	RISK PHRASES	PROTECTIVE CLOTHING
  	<p>Flammable material; avoid heat and sources of ignition.                      Corrosive to eyes and skin on contact.                      Toxic compound, do not ingest or inhale. Avoid all contact with this material.                      Hygroscopic -- keep container tightly sealed.                      Refrigerate.</p>	

## Section I. Chemical Product and Company Identification

Chemical Name	<b>Tetra-n-butylammonium Hydroxide</b> (37% in Methanol)		
Catalog Number	T1948	Supplier	TCI America 9211 N. Harborsgate St. Portland OR 1-800-423-8616
Synonym	1-Butanaminium, N-N-N-tributyl-, hydroxide (9 Cl)		
Chemical Formula	[CH <sub>3</sub> (CH <sub>2</sub> ) <sub>3</sub> ] <sub>4</sub> NOH		
CAS Number	2052-49-5	In case of Emergency Call	<b>Chemtrec®</b> <b>(800) 424-9300 (U.S.)</b> <b>(703) 527-3887 (International)</b>

## Section II. Composition and Information on Ingredients

Chemical Name	CAS Number	Percent (%)	TLV/PEL	Toxicology Data
Tetra-n-butylammonium Hydroxide (37% in Methanol)	2052-49-5	37.0 43.0 (MeOH)	Not available.	<b>MeOH:</b> Rat LC <sub>50</sub> (inhalation) 64000ppm/4H Rat LD <sub>50</sub> (oral) 5600mg/kg Rabbit LD <sub>50</sub> (dermal) 15800mg/kg

## Section III. Hazards Identification

Acute Health Effects	<p>Corrosive to skin, eyes, and respiratory system. Liquid or spray mist may produce tissue damage, particularly in mucous membranes of the eyes, mouth and respiratory tract. Skin contact may produce burns. Eye contact can result in corneal damage or blindness. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Corrosive materials may cause serious injury if ingested. Toxic if ingested or inhaled. Avoid prolonged contact with this material. Overexposure may result in serious illness or death.</p> <p>Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.</p>
Chronic Health Effects	<p><b>CARCINOGENIC EFFECTS</b> : Not available.  <b>MUTAGENIC EFFECTS</b> : Not available.  <b>TERATOGENIC EFFECTS</b> : Not available.  <b>DEVELOPMENTAL TOXICITY</b> : REPRODUCTIVE EFFECTS:                      Rat TCl<sub>o</sub> (inhalation) 20000ppm/7 Hours, female, 1-22 Days of pregnancy.                      Toxic Effects:                      Specific Developmental Abnormalities- Musculoskeletal system.                      Specific Developmental Abnormalities- Cardiovascular (circulatory) system.                      Specific Developmental Abnormalities- Urogenital system.                      Rat TDLo (oral) 35295mg/kg, female, 1-15 Days of pregnancy.                      Toxic Effects:                      Effects on Fertility- Female fertility index.                      Effects on Fertility- Pre-implantation mortality.                      Effects on Fertility- Post-implantation mortality.                      Rat TDLo (oral) 200ppm/20 Hours, male, 78 Weeks prior to mating.                      Toxic Effects:                      Paternal Effects- Testes, epididymis, sperm duct.                      Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.</p>

## Section IV. First Aid Measures

Eye Contact	Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.
Skin Contact	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.
Inhalation	If the victim is not breathing, perform mouth-to-mouth resuscitation. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, oxygen can be administered. Seek medical attention if respiration problems do not improve.
Ingestion	DO NOT INDUCE VOMITING. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive.

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Emergency phone number (800) 424-9300

**Section V. Fire and Explosion Data**

Flammability	Flammable.	Auto-Ignition	470°C (878°F) (MeOH)
Flash Points	11°C (51.8°F) (MeOH)	Flammable Limits	LOWER: 6% UPPER: 36% (MeOH)
Combustion Products	These products are toxic carbon oxides (CO, CO <sub>2</sub> ), nitrogen oxides (NO, NO <sub>2</sub> ).		
Fire Hazards	Not available.		
Explosion Hazards	Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.		
Fire Fighting Media and Instructions	Flammable liquid. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion. Consult with local fire authorities before attempting large scale fire-fighting operations.		

**Section VI. Accidental Release Measures**

Spill Cleanup Instructions	Flammable liquid. Corrosive liquid. Toxic liquid. Hygroscopic material. Refrigerate material. Keep away from heat. Mechanical exhaust required. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. DO NOT get water inside container. DO NOT touch spilled material. Use water spray curtain to divert vapor drift. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Consult federal, state, and/or local authorities for assistance on disposal.
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**Section VII. Handling and Storage**

Handling and Storage Information	FLAMMABLE. TOXIC. CORROSIVE. HYGROSCOPIC. REFRIGERATE. Keep locked up.. Keep container dry. Keep away from heat. Mechanical exhaust required. Avoid excessive heat and light. DO NOT ingest. Do not breathe gas/fumes/ vapor/spray. Never add water to this product. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label. Treat symptomatically and supportively. Always store away from incompatible compounds such as oxidizing agents, reducing agents, acids.
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**Section VIII. Exposure Controls/Personal Protection**

Engineering Controls	Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash station and safety shower is proximal to the work-station location.
Personal Protection	Face shield. Lab coat. Vapor respirator. Boots. Gloves. A MSHA/NIOSH approved respirator must be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.
	
Exposure Limits	Not available.

**Section IX. Physical and Chemical Properties**

Physical state @ 20°C	Liquid. (Clear, colorless.)	Solubility	<b>MeOH:</b> Miscible with water, ethanol, ether, benzene, ketones, and most other organic solvents.
Specific Gravity	0.82 (water=1) (MeOH)		
Molecular Weight	259.48	Partition Coefficient	Not available.
Boiling Point	64 to 65°C (147.2 to 149°F) (MeOH)	Vapor Pressure	13 kPa (@ 20°C) (MeOH)
Melting Point	-98°C (-144.4°F) (MeOH)	Vapor Density	1.11 (Air = 1) (MeOH)
Refractive Index	1.33 (MeOH)	Volatility	Not available.
Critical Temperature	Not available.	Odor	Not available.
Viscosity	Not available.	Taste	Not available.

**Section X. Stability and Reactivity Data**

Stability	This material is stable if stored under proper conditions. (See Section VII for instructions)
Conditions of Instability	Hygroscopic; keep container tightly closed. Avoid excessive heat and light.
Incompatibilities	Reactive with oxidizing agents, reducing agents, strong acids.

**Section XI. Toxicological Information**

RTECS Number	BS5425000 PC1400000 (MeOH)
Routes of Exposure	Eye Contact. Ingestion. Inhalation. Skin contact.
Toxicity Data	<b>MeOH:</b> Rat LC <sub>50</sub> (inhalation) 64000ppm/4H Rat LD <sub>50</sub> (oral) 5600mg/kg Rabbit LD <sub>50</sub> (dermal) 15800mg/kg
Chronic Toxic Effects	<b>CARCINOGENIC EFFECTS</b> : Not available. <b>MUTAGENIC EFFECTS</b> : Not available. <b>TERATOGENIC EFFECTS</b> : Not available. <b>DEVELOPMENTAL TOXICITY</b> : REPRODUCTIVE EFFECTS: Rat TCLo (inhalation) 20000ppm/7 Hours, female, 1-22 Days of pregnancy. Toxic Effects: Specific Developmental Abnormalities- Musculoskeletal system. Specific Developmental Abnormalities- Cardiovascular (circulatory) system. Specific Developmental Abnormalities- Urogenital system. Rat TDLo (oral) 35295mg/kg, female, 1-15 Days of pregnancy. Toxic Effects: Effects on Fertility- Female fertility index. Effects on Fertility- Pre-implantation mortality. Effects on Fertility- Post-implantation mortality. Rat TDLo (oral) 200ppm/20 Hours, male, 78 Weeks prior to mating. Toxic Effects: Paternal Effects- Testes, epididymis, sperm duct. Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.
Acute Toxic Effects	Corrosive to skin, eyes, and respiratory system. Liquid or spray mist may produce tissue damage, particularly in mucous membranes of the eyes, mouth and respiratory tract. Skin contact may produce burns. Eye contact can result in corneal damage or blindness. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Corrosive materials may cause serious injury if ingested. Toxic if ingested or inhaled. Avoid prolonged contact with this material. Overexposure may result in serious illness or death. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.

**Section XII. Ecological Information**

Ecotoxicity	Not available.
Environmental Fate	Methanol has been identified as a natural emission product from various plants and as a biological decomposition product of biological wastes and sewage. The largest anthropogenic source of methanol release to the environment is evaporation from solvent uses (1.1 billion lb/yr). If released to the atmosphere, methanol degrades via reaction with photochemically produced hydroxyl radicals with an approximate half-life of 17.8 days. Physical removal from air can occur via rainfall. If released to water, decomposition via biodegradation is expected to occur. If released to soil, methanol is expected to degrade via biodegradation and be susceptible to significant leaching. Relatively rapid evaporation from dry surfaces is likely to occur. Occupational and general exposure occurs through inhalation and dermal contact. Exposure also occurs through consumption of various foods and waters. (HSDB)

**Section XIII. Disposal Considerations**

Waste Disposal	Recycle to process, if possible. Consult your local regional authorities. You may be able to dissolve or mix material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber system. Observe all federal, state and local regulations when disposing of the substance.
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**Section XIV. Transport Information**

DOT Classification	CLASS 3: Flammable liquid. Class 8: Corrosive material
PIN Number	UN2924
Proper Shipping Name	Flammable liquids, corrosive, n.o.s.
Packing Group (PG)	II
DOT Pictograms	 

**Section XV. Other Regulatory Information and Pictograms**

TSCA Chemical Inventory (EPA)	This compound is <b>ON</b> the EPA Toxic Substances Control Act (TSCA) inventory list. This product is subject to SARA Section 313 reporting requirements.
WHMIS Classification (Canada)	CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-1B: Material causing immediate and serious toxic effects (TOXIC). CLASS E: Corrosive liquid. On DSL.
EINECS Number (EEC)	218-147-6 200-659-6 (MeOH)
EEC Risk Statements	R10- Flammable. R18- In use, may form flammable/explosive vapor-air mixture. R23/24/25- Toxic by inhalation, in contact with skin and if swallowed. R34- Causes burns.
Japanese Regulatory Data	ENCS No. 2-186

**Section XVI. Other Information**

**Version 1.0**  
**Validated on 10/12/2004.**  
**Printed 3/17/2005.**

**Notice to Reader**

TCl laboratory chemicals are for research purposes only and are NOT intended for use as drugs, food additives, household, or pesticides. The information herein is believed to be correct, but does not claim to be all inclusive and should be used only as a guide. Neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All chemical reagents must be handled with the recognition that their chemical, physiological, toxicological, and hazardous properties have not been fully investigated or determined. All chemical reagents should be handled only by individuals who are familiar with their potential hazards and who have been fully trained in proper safety, laboratory, and chemical handling procedures. Although certain hazards are described herein, we can not guarantee that these are the only hazards which exist. Our MSDS sheets are based only on data available at the time of shipping and are subject to change without notice as new information is obtained. Avoid long storage periods since the product is subject to degradation with age and may become more dangerous or hazardous. It is the responsibility of the user to request updated MSDS sheets for products that are stored for extended periods. Disposal of unused product must be undertaken by qualified personnel who are knowledgeable in all applicable regulations and follow all pertinent safety precautions including the use of appropriate protective equipment (e.g. protective goggles, protective clothing, breathing equipment, facial mask, fume hood). For proper handling and disposal, always comply with federal, state, and local regulations.