







Material Safety Data Sheet

| HAZARD WARNINGS | RISK PHRASES | PROTECTIVE CLOTHING |
|---|--|---|
|   | Flammable material; avoid heat and sources of ignition. Irritating to skin, eyes, and the respiratory system. Stench -- do not inhale, use under a fume hood. |     |

Section I. Chemical Product and Company Identification

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|------------------|-------------------------------------|---------------------------------|---|
| Chemical Name | tert-Butyl Mercaptan | | |
| Catalog Number | M0405 | Supplier | TCl America 9211 N. Harbortgate St. Portland OR 1-800-423-8616 |
| Synonym | 2-Methyl-2-propanethiol | | |
| Chemical Formula | (CH ₃) ₃ CSH | | |
| CAS Number | 75-66-1 | In case of Emergency Call | Chemtrec® (800) 424-9300 (U.S.) (703) 527-3887 (International) |

Section II. Composition and Information on Ingredients

| Chemical Name | CAS Number | Percent (%) | TLV/PEL | Toxicology Data |
|----------------------|------------|-------------------|----------------|---|
| tert-Butyl Mercaptan | 75-66-1 | Min. 98.0 (GC) | Not available. | Rat LD ₅₀ (oral) 4729mg/kg Rat LD ₅₀ (intraperitoneal) 590mg/kg Rat LC ₅₀ (inhalation) 22200ppm/4H |

Section III. Hazards Identification

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| Acute Health Effects | Irritating to eyes and skin on contact. Inhalation causes irritation of the lungs and respiratory system. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound. |
| Chronic Health Effects | CARCINOGENIC EFFECTS : Not available. MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : Not available. DEVELOPMENTAL TOXICITY Not available. Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs. |

Section IV. First Aid Measures

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| Eye Contact | Check for and remove any contact lenses. IMMEDIATELY flush eyes with running water for at least 15 minutes. keeping eyelids open. COLD water may be used. DO NOT use an eye ointment. Flush eyes with running water for a minimum of 15 minutes, occasionally lifting the upper eyelids. Seek medical attention. Treat symptomatically and supportively. |
| Skin Contact | After contact with skin, wash immediately with plenty of water. Gently and thorough wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. COLD water may be used. Cover the irritated skin with an emollient. Seek medical attention. Treat symptomatically and supportively. Wash any contaminated clothing before reusing. |
| Inhalation | Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform artificial respiration. WARNING: It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention and, if possible, show the chemical label. Treat symptomatically and supportively. |
| Ingestion | INDUCE VOMITING by sticking finger in throat. Lower the head so that the vomit will not reenter the mouth and throat. Loosen tight clothing such as a collar, tie, belt, or waistband. If the victim is not breathing, administer artificial respiration. 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. Seek immediate medical attention and, if possible, show the chemical label. Treat symptomatically and supportively. |

Section V. Fire and Explosion Data

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|---------------------|--|------------------|----------------|
| Flammability | Flammable. | Auto-Ignition | Not available. |
| Flash Points | -11°C (12.2°F). | Flammable Limits | Not available. |
| Combustion Products | These products are toxic carbon oxides (CO, CO ₂), sulfur oxides (SO ₂ , SO ₃ ...). | | |
| Fire Hazards | No specific information is available regarding the flammability of this compound in the presence of various materials. | | |

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Emergency phone number (800) 424-9300

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| 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. No additional information is available regarding the risks of explosion. |
| Fire Fighting Media and Instructions | Flammable liquid. SMALL FIRE: Use DRY chemicals, CO ₂ , alcohol foam or water spray. LARGE FIRE: Use alcohol foam, water spray or fog. |


Section VI. Accidental Release Measures

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| Spill Cleanup Instructions | Flammable liquid. Irritating material. Stench material. Keep away from heat and sources of ignition. Mechanical exhaust required. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. DO NOT touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all sources of ignition. Consult federal, state, and/or local authorities for assistance on disposal. |
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Section VII. Handling and Storage

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| Handling and Storage Information | FLAMMABLE. IRRITANT. STENCH. Handle with caution and minimize exposure. DO NOT ingest. Do not breathe gas, fumes, vapor or spray. 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, alkalis (bases). |
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Section VIII. Exposure Controls/Personal Protection

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| 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 | Splash goggles. Lab coat. Vapor respirator. Boots. Gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product. |
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| Exposure Limits | Not available. |

Section IX. Physical and Chemical Properties

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| Physical state @ 20°C | Liquid. | Solubility | Slightly soluble in water. Very soluble in alcohol, ether, liquid hydrogen sulfide. Soluble in heptane. |
| Specific Gravity | 0.8 | | |
| Molecular Weight | 90.19 | Partition Coefficient | Not available. |
| Boiling Point | 62 to 65°C (143.6 to 149°F) | Vapor Pressure | 303.5 mm Hg @ 37.7°C |
| Melting Point | -1°C (30.2°F) | Vapor Density | 3.1 |
| Refractive Index | 1.41984 @ 25°C | Volatility | Not available. |
| Critical Temperature | Not available. | Odor | Heavy skunk odor. |
| Viscosity | Not available. | Taste | Not available. |

Section X. Stability and Reactivity Data

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| Stability | This material is stable if stored under proper conditions. (See Section VII for instructions) |
| Conditions of Instability | Avoid excessive heat and light. |
| Incompatibilities | Reactive with oxidizing agents, reducing agents, alkalis (bases), and alkali metals. |

Section XI. Toxicological Information

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| RTECS Number | TZ7660000 |
| Routes of Exposure | Eye contact. Ingestion. Inhalation. Skin contact. |
| Toxicity Data | Rat LD ₅₀ (oral) 4729mg/kg Rat LD ₅₀ (intraperitoneal) 590mg/kg Rat LC ₅₀ (inhalation) 22200ppm/4H |
| Chronic Toxic Effects | CARCINOGENIC EFFECTS : Not available. MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : Not available. DEVELOPMENTAL TOXICITY Not available. 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 | Irritating to eyes and skin on contact. Inhalation causes irritation of the lungs and respiratory system. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound. |

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Section XII. Ecological Information

Ecotoxicity Not available.

Environmental Fate t-Butyl mercaptan's production and subsequent use as an odorant in natural gas, as an intermediate, and as a bacterial nutrient may result in its release to the environment through various waste streams. If released to the atmosphere, t-butyl mercaptan will exist mainly in the vapor phase in the ambient atmosphere based on a vapor pressure of 181 mm Hg at 25°C. In the vapor-phase, t-butyl mercaptan will react rapidly with hydroxyl radicals with half-lives of 11.0 to 13.3 hours determined from environmental rate constants. An estimated Koc of 350 suggests that this compound will have moderate mobility in soil; natural gas plus t-butyl mercaptan passed through a montmorillonite clay gave 85% of the influent odorant in the effluent within the first 100 standard cubic feet of gas. t-Butyl mercaptan should volatilize from dry soil surfaces based on its vapor pressure. Given an estimated Henry's Law constant of 6.11X10⁻³ atm-cu m/mole t-butyl mercaptan should volatilize from moist soil surfaces. In water, based on this Henry's Law constant, t-butyl mercaptan is expected to rapidly volatilize from water surfaces; volatilization half-lives from a model river and model lake were calculated as 2.9 hours and 3.8 days, respectively. This compound is not expected to bioconcentrate in aquatic organisms based on an estimated BCF value of 25. Exposure to t-butyl mercaptan may occur occupationally during its production or during its use as a natural gas odorant.

Section XIII. Disposal Considerations

Waste Disposal Recycle to process, if possible. Consult your local or 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.

Section XIV. Transport Information

DOT Classification DOT CLASS 3: Flammable liquid.

PIN Number UN2347

Proper Shipping Name Butyl mercaptans

Packing Group (PG) II

DOT Pictograms

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

TSCA Chemical Inventory (EPA) This compound is **ON** the EPA Toxic Substances Control Act (TSCA) inventory list.

WHMIS Classification (Canada) WHMIS CLASS B-2: Flammable liquid with a flash point lower than 35°C (100°F).

EINECS Number (EEC) 200-890-2

EEC Risk Statements
R11- Highly flammable.
R18- In use, may form flammable/explosive vapor-air mixture.
R36/37/38- Irritating to eyes, respiratory system and skin.

Japanese Regulatory Data Not available.

Section XVI. Other Information

Version 1.0
Validated on 12/7/1998.
Printed 3/1/2005.

Notice to Reader

TCI laboratory chemicals are for research purposes only and are NOT intended for use as drugs, food additives, households, 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.