

# Thiophenol

sc-251238

Material Safety Data Sheet



The Power is Question

Hazard Alert Code Key: **EXTREME** **HIGH** **MODERATE** **LOW**

## Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

### PRODUCT NAME

Thiophenol

### STATEMENT OF HAZARDOUS NATURE

CONSIDERED A HAZARDOUS SUBSTANCE ACCORDING TO OSHA 29 CFR 1910.1200.

### NFPA



### SUPPLIER

Santa Cruz Biotechnology, Inc.  
2145 Delaware Avenue  
Santa Cruz, California 95060  
800.457.3801 or 831.457.3800

### EMERGENCY:

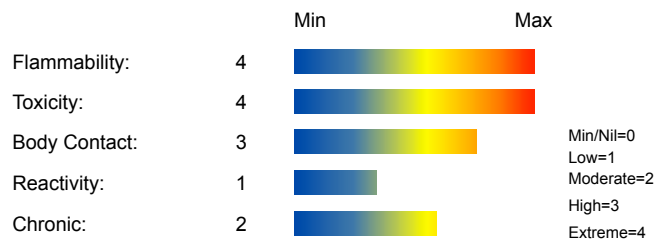
ChemWatch  
Within the US & Canada: 877-715-9305  
Outside the US & Canada: +800 2436 2255  
(1-800-CHEMCALL) or call +613 9573 3112

### SYNONYMS

C6-H6-S, C6H5SH, "phenyl mercaptan", benzenethiol, "phenol, thio-", "RCRA Waste No. P014", "USAF XR-19"

## Section 2 - HAZARDS IDENTIFICATION

### CHEMWATCH HAZARD RATINGS



### CANADIAN WHMIS SYMBOLS



## EMERGENCY OVERVIEW

### RISK

Very toxic by inhalation.

Risk of serious damage to eyes.

Toxic in contact with skin and if swallowed.

Flammable.

### POTENTIAL HEALTH EFFECTS

#### ACUTE HEALTH EFFECTS

##### SWALLOWED

■ Toxic effects may result from the accidental ingestion of the material; animal experiments indicate that ingestion of less than 40 gram may be fatal or may produce serious damage to the health of the individual.

■ The response of animals following exposure to thiophenol is uniform regardless of species or route of exposure. The toxic syndrome is represented by restlessness progressing to hypernea, incoordination, muscular weakness, skeletal muscle paralysis of hind-limbs, cyanosis, lethargy and/or sedation and respiratory depression, followed by coma and death at higher doses. This is a picture typical of central nervous system stimulation followed by post-convulsive depression. Animals surviving the excitement stage went into lengthy 1-2 day comas.

##### EYE

■ If applied to the eyes, this material causes severe eye damage.

##### SKIN

■ Skin contact with the material may produce toxic effects; systemic effects may result following absorption.

■ The liquid may be miscible with fats or oils and may degrease the skin, producing a skin reaction described as non-allergic contact dermatitis. The material is unlikely to produce an irritant dermatitis as described in EC Directives .

■ Open cuts, abraded or irritated skin should not be exposed to this material.

■ Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

##### INHALED

■ Inhalation of vapors or aerosols (mists, fumes), generated by the material during the course of normal handling, may produce severely toxic effects; these may be fatal.

■ Inhalation of vapours may cause drowsiness and dizziness. This may be accompanied by narcosis, reduced alertness, loss of reflexes, lack of coordination and vertigo.

■ There is some evidence to suggest that the material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage.

■ Inhalation of high concentrations of gas/vapor causes lung irritation with coughing and nausea, central nervous depression with headache and dizziness, slowing of reflexes, fatigue and inco-ordination.

■ Thiols (particularly ethyl mercaptan) produce lethargy or sleepiness. Exposure to high levels may result in nausea, vomiting, restlessness, muscle incoordination and or paralysis, bluing of skin, depression of breathing, coma and death.

#### CHRONIC HEALTH EFFECTS

■ Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems.

Chronic exposure to mercaptans may result in damage to the lungs, kidneys and liver.

Repeated intraperitoneal injections (9 doses of 3.5 mg/kg over 3 weeks) produced fibrous thickening of the splenic capsule and peritoneal irritation. Nephropathy with hyaline casts in the tubules and hyperaemia of the adrenal medulla was also seen.

## Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
thiophenol	108-98-5	>98

## Section 4 - FIRST AID MEASURES

##### SWALLOWED

· IF SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY. · Where Medical attention is not immediately available or where the patient is more than 15 minutes from a hospital or unless instructed otherwise:

##### EYE

■ If this product comes in contact with the eyes: · Immediately hold eyelids apart and flush the eye continuously with running water. · Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.

##### SKIN

■ If skin or hair contact occurs: · Quickly but gently, wipe material off skin with a dry, clean cloth. · Immediately remove all contaminated clothing, including footwear.

##### INHALED

· If fumes or combustion products are inhaled remove from contaminated area. · Lay patient down. Keep warm and rested.

#### NOTES TO PHYSICIAN

■ For exposures involving sulfides and hydrogen sulfide (including gastric acid decomposition products of alkaline sulfides).

- Hydrogen sulfide anion produces its major toxic effect through inhibition of cytochrome oxidases.
- Symptoms include profuse salivation, nausea, vomiting and diarrhea. Central nervous effects may include giddiness, headache, vertigo, amnesia, confusion and unconsciousness. Tachypnea, palpitation, tachycardia, arrhythmia, sweating, weakness and muscle cramps may also indicate over-exposures.

## Section 5 - FIRE FIGHTING MEASURES

Vapor Pressure (mmHg):	1.395 @ 20 C
Upper Explosive Limit (%):	Not available
Specific Gravity (water=1):	1.073
Lower Explosive Limit (%):	Not available

### EXTINGUISHING MEDIA

- Foam.
- Dry chemical powder.

### FIRE FIGHTING

- Alert Emergency Responders and tell them location and nature of hazard.
  - May be violently or explosively reactive.
- When any large container (including road and rail tankers) is involved in a fire, consider evacuation by 1000 metres in all directions.

### GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS

- Liquid and vapor are flammable.
  - Moderate fire hazard when exposed to heat or flame.
- Combustion products include: carbon dioxide (CO<sub>2</sub>), carbon monoxide (CO), sulfur oxides (SO<sub>x</sub>), other pyrolysis products typical of burning organic material.
- May emit poisonous fumes.

### FIRE INCOMPATIBILITY

- Avoid contamination with oxidizing agents i.e. nitrates, oxidizing acids, chlorine bleaches, pool chlorine etc. as ignition may result.

### PERSONAL PROTECTION

Glasses:  
Chemical goggles.

Gloves:

Respirator:  
Type AB-P Filter of sufficient capacity

## Section 6 - ACCIDENTAL RELEASE MEASURES

### MINOR SPILLS

- Remove all ignition sources.
- Clean up all spills immediately.

WARNING: Never use dry, powdered hypochlorite or other strong oxidizer for mercaptan spills, as autoignition can occur.

### MAJOR SPILLS

- Clear area of personnel and move upwind.
- Alert Emergency Responders and tell them location and nature of hazard.

## Section 7 - HANDLING AND STORAGE

### PROCEDURE FOR HANDLING

■ The careful design and assembly of equipment is paramount to the control of mercaptan odors. Although careful planning reduces the chances for leaks developing in the system, it is important to be prepared to locate and stop small leaks promptly. It is recommended that a leak check be made prior to every run carried out under pressure in metal equipment with a mercaptan or hydrogen sulfide present.

An effective method to obtain a leak-free system involves two steps:

- Charge the system with nitrogen gas or other inert, nontoxic gas to a pressure at least as high as will be used in practice, and check for a drop in pressure with time on a suitable gauge. In some cases, it is advantageous to block off sections of the system to facilitate finding the leak. If any leaks are detected by using a foaming detergent solution, correct them and recheck.
- Recharge the system with hydrogen sulfide gas. Since hydrogen sulfide is very toxic, it is good practice to charge the system in steps of increasing pressure, until it is certain that no large leaks are present. Any remaining small leaks can be located quickly by examining the system with lead acetate paper. Dilution of the hydrogen sulfide with nitrogen can also be considered.

To control odors in mercaptan reactions in the laboratory. All reactions must be carried out in a hood or, in the case of pressure reactions, in a closed in area equipped with an efficient exhaust fan. In the laboratory, the two basic types of reactions used are batch and continuous. Batch-type reactions at atmospheric pressure are generally conducted in glass equipment. If no significant quantity of a volatile mercaptan is present, the reaction can be carried out in a hood equipped with a charcoal bed in the exhaust line to absorb the mercaptan. In reactions where appreciable quantities of a volatile mercaptan are present, a vent gas line can be connected to two caustic scrubbers in series, with an empty trap inserted between the reaction and scrubbers to avoid reverse flow of caustic into the reaction. Continuous-type reactions often include a continuous flow of volatile C1 to C4 mercaptans. In this case, the vented gases can be fed to an outside gas burner and stack for destruction of the odor by combustion.

A hood, equipped with a charcoal filter in the exhaust line, and a high linear air velocity (100 ft./min., minimum) is necessary for mercaptan reactions carried out in glass and certain small-scale reactions with stainless-steel. In reactions where relatively small amounts of mercaptans can escape, the charcoal bed can absorb the mercaptans and prevent the escape of odor to the outside atmosphere. However, in reactions with hydrogen sulfide or lower molecular weight mercaptans, e.g., C1-C4 mercaptans, the quantity of effluent gases is directed to an outside gas burner to convert the odorous compounds to acceptable combustion products, including CO<sub>2</sub> and SO<sub>2</sub>.

A very familiar and successful method for containing the odors of mercaptan (primarily C1 and C6) in laboratory reactions and distillations is to connect the condenser vent to two caustic scrubbers in series with an empty trap between the system and the scrubbers to catch the caustic in the event of reverse flow. Gas bubblers fitted with sintered-glass dip tubes and charged with aqueous sodium hydroxide (5 to 20%) are commonly used. Frequently, a low flow of inert gas, e.g., nitrogen, is used to maintain a steady flow through the bubbler.

Sodium hypochlorite solution (3-10%) destroys the odor by converting the mercaptan predominantly to the corresponding sulfonic acid (sodium salt). A wash bottle with hypochlorite solution is very convenient for quickly eliminating or controlling the odor from small spills or when cleaning up glass equipment. A bath of this solution is also very useful. WARNING! Do not add this solution to a large quantity of concentrated mercaptan, since a violent reaction may occur.

A 30-40% aqueous solution of lead acetate trihydrate serves acts as a detector for methyl and ethyl mercaptan as well as hydrogen sulfide. A wash bottle of lead acetate solution is used to moisten a piece of filter paper or paper towel which is then held close to (no contact) the suspected leak. With hydrogen sulfide the paper turns black and with the two mercaptans a yellow color is obtained (high sensitivity).

A large plastic bag should be kept in the hood, to store any odorous waste materials. The plastic bags can then be sealed in fiber drums for disposal. Glass bottles containing mercaptans and other odorous compounds can also be packed in fiber drums for odor-containment and properly marked for disposal.

A box of disposable gloves should be available, and the gloves should be discarded (in plastic bag in hood) after each use. Disposable aprons or lab coats are recommended, since clothing contacted with mercaptan is often difficult to deodorise.

Types of tubing found useful with mercaptans include: Teflon<sup>7</sup>, TFE, FEP, and PFA, Bev-a-line (IV or V), and 316 stainless steel. Bev-a-line tubing has a polyethylene liner cross-linked to an ethylene vinyl acetate shell, a useful temperature range of -60 C to +250 C, and is heat bondable. It is less expensive than TFE tubing and is convenient for flexible connections between glass and metal tubing lines. It is available from most laboratory supply houses. Copper and brass are unacceptable materials for handling mercaptans, because mercaptans are H<sub>2</sub>S are highly corrosive to copper and brass. Care should be taken not to use valves and gauges with brass components.

Atofina Chemicals.

- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.
- Containers, even those that have been emptied, may contain explosive vapours.
- Do NOT cut, drill, grind, weld or perform similar operations on or near containers.

#### RECOMMENDED STORAGE METHODS

- Lined metal can, Lined metal pail/drum
- Plastic pail.

For low viscosity materials

- Drums and jerricans must be of the non-removable head type.
- Where a can is to be used as an inner package, the can must have a screwed enclosure.

All inner and sole packagings for substances that have been assigned to Packaging Groups I or II on the basis of inhalation toxicity criteria, must be hermetically sealed.

#### STORAGE REQUIREMENTS

- Store in original containers.
- Keep containers securely sealed.

## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

### EXPOSURE CONTROLS

Source	Material	TWA ppm	TWA mg/m <sup>3</sup>	STEL ppm	STEL mg/m <sup>3</sup>	Peak ppm	Peak mg/m <sup>3</sup>	TWA F/CC	Notes
Canada - Alberta Occupational Exposure Limits	thiophenol (Phenyl mercaptan)	0.1	0.5						
Canada - British Columbia Occupational Exposure Limits	thiophenol (Phenyl mercaptan)					0.1			
US ACGIH Threshold Limit Values (TLV)	thiophenol (Phenyl mercaptan)	0.1							TLV Basis: central nervous system impairment; eye & skin irritation
US NIOSH Recommended Exposure Limits (RELs)	thiophenol (Benzenethiol)					0.1	0.5		(Ceiling ([15-minute]))

US - Minnesota Permissible Exposure Limits (PELs)	thiophenol (Phenyl mercaptan)	0.5	2			
US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants	thiophenol (Phenyl mercaptan)	0.5	2			
US - California Permissible Exposure Limits for Chemical Contaminants	thiophenol (Phenyl mercaptan)	0.5	2			
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants	thiophenol (Phenyl mercaptan)	0.5	2			
Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)	thiophenol (Phenyl mercaptan)	0.5	2.3			
Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits	thiophenol (Phenyl mercaptan)	0.1		0.3		Skin
US - Hawaii Air Contaminant Limits	thiophenol (Phenyl mercaptan)	0.5	2			
Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances	thiophenol (Phenyl mercaptan)	3	10	3	10	
US - Washington Permissible exposure limits of air contaminants	thiophenol (Phenyl mercaptan)	0.5		1.5		
US - Alaska Limits for Air Contaminants	thiophenol (Phenyl mercaptan)	0.5	2			
Canada - Nova Scotia Occupational Exposure Limits	thiophenol (Phenyl mercaptan)	0.1				TLV Basis: central nervous system impairment; eye & skin irritation
Canada - Prince Edward Island Occupational Exposure Limits	thiophenol (Phenyl mercaptan)	0.1				TLV Basis: central nervous system impairment; eye & skin irritation
US - Michigan Exposure Limits for Air Contaminants	thiophenol (Phenyl mercaptan)	0.5	2			
Canada - Northwest Territories Occupational	thiophenol (Phenyl mercaptan)	0.5	2.3	1.5	6.8	

Exposure Limits  
(English)  
ENDOELTABLE

## PERSONAL PROTECTION



## RESPIRATOR

Type AB-P Filter of sufficient capacity  
Consult your EHS staff for recommendations

## EYE

- Safety glasses with side shields.
- Chemical goggles.

## HANDS/FEET

- Wear chemical protective gloves, eg. PVC.

Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include: such as:

- frequency and duration of contact,
- chemical resistance of glove material,
- glove thickness and
- dexterity

Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739).

- When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374) is recommended.
- When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374) is recommended.
- Contaminated gloves should be replaced.

Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended.

- Neoprene gloves.

## OTHER

- Overalls.
- Eyewash unit.
- Some plastic personal protective equipment (PPE) (e.g. gloves, aprons, overshoes) are not recommended as they may produce static electricity.
- For large scale or continuous use wear tight-weave non-static clothing (no metallic fasteners, cuffs or pockets), non sparking safety footwear.

## ENGINEERING CONTROLS

- Local exhaust ventilation usually required. If risk of overexposure exists, wear an approved respirator.

<|p>

CARE: Use of a quantity of this material in confined space or poorly ventilated area, where rapid build up of concentrated atmosphere may occur, could require increased ventilation and/or protective gear.

## Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

### PHYSICAL PROPERTIES

Liquid.

Does not mix with water.

Sinks in water.

Toxic or noxious vapours/gas.

State	Liquid	Molecular Weight	110.17
Melting Range (°F)	5	Viscosity	Not available
Boiling Range (°F)	336.2	Solubility in water (g/L)	Immiscible
Flash Point (°F)	123.008	pH (1% solution)	Not applicable
Decomposition Temp (°F)	Not available	pH (as supplied)	Not applicable
Autoignition Temp (°F)	Not available	Vapor Pressure (mmHg)	1.395 @ 20 C
Upper Explosive Limit (%)	Not available	Specific Gravity (water=1)	1.073
Lower Explosive Limit (%)	Not available	Relative Vapor Density (air=1)	3.8
Volatile Component (%vol)	Not available	Evaporation Rate	Not available

## APPEARANCE

Colourless liquid with repulsive garlic-like odour; does not mix with water. Soluble in alcohol, miscible with ether, benzene, carbon disulfide. Oxidises in air.

## Section 10 - CHEMICAL STABILITY

### CONDITIONS CONTRIBUTING TO INSTABILITY

- Presence of incompatible materials.
- Product is considered stable.

### STORAGE INCOMPATIBILITY

- Phenyl mercaptan
  - may be contaminated with carbon disulfide (CS<sub>2</sub>) which tends to lower its flash point
  - reacts with water, steam or acids, producing toxic and flammable vapours
  - oxidises on exposure to air forming diphenyl disulfide
  - is incompatible with strong acids, caustics, alkali metals
  - is corrosive to carbon steel.
  - Avoid strong bases.

Avoid reaction with oxidizing agents.

For incompatible materials - refer to Section 7 - Handling and Storage.

## Section 11 - TOXICOLOGICAL INFORMATION

THIOPHENOL

### TOXICITY AND IRRITATION

THIOPHENOL:

- unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

TOXICITY	IRRITATION
Oral (rat) LD50: 46.2 mg/kg	Eye (rabbit): 108 mg - SEVERE
Inhalation (rat) LC50: 33 ppm/4h	
Dermal (rabbit) LD50: 300 mg/kg	
Intraperitoneal (rat) LD50: 9.8 mg/kg	
Inhalation (mouse) LC50: 28 ppm/4h	
Intraperitoneal (mouse) LD50: 25 mg/kg	
Dermal (rabbit) LD50: 134 mg/kg	
Oral (Rat) LD50: 223 mg/kg	
Oral (Mouse) LD50: 266 mg/kg	

- The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

### For benzyl mercaptan (BZM) and phenyl mercaptan (PHM):

BZM and PHM are members of the broader family of organomercaptans, which are also sometimes referred to as thiols or sulfhydryls. Many are naturally occurring and are characterised by their very strong malodor and low odor threshold (~1 ppb), a property that creates an immediate odor nuisance while keeping exposure and potential for adverse effects to humans at a minimum.

Acute toxicity studies show that BZM is of low acute toxicity by oral, inhalation, dermal, and intraperitoneal routes.

BZM has not been tested for reproductive or developmental toxicity; reproductive and developmental toxicity data are available for PHM. Due to its close structural similarity to PHM, as well as the demonstrated higher level of acute toxicity of PHM, it would be expected that BZM would be of a similar order of magnitude as PHM, if not of lower reproductive and developmental toxicity.

The increased toxicity of PHM is likely due to its physicochemical characteristics; PHM has a slightly lower molecular weight, and is slightly more water soluble, mobile, and bioavailable than BZM. This is important because the trend is consistent and shows that where there are BZM data gaps in mammalian toxicity information, and PHM data are available for read-across purposes

PHM was tested by the National Toxicology Program for reproductive toxicity in rats. PHM was determined to be a slight reproductive toxicant both in males (based on increased incidence of inhibited spermiation in all treated F1 males, and decreased epididymal sperm motility in the mid- and high dose [18 and 35 mg/kg] F0 males) and in females (developmental - based on decreased pup weights).

Results of this study also show that PHM is not a selective reproductive toxicant because the minor effects on reproduction occurred concomitant with, or at doses greater than, those doses that produce hepatic or renal toxicity.

PHM was tested by the National Toxicology Program for developmental toxicity in both rats and rabbits. These studies followed OECD Guideline 414 and were found to be valid without restriction. In rats, the maternal LOAEL was 20 mg/kg/day, and the foetal NOAEL was 20 mg/kg/day. Maternal toxicity (observed as maternal mortality), a persistent decrease in body weight and weight gain, and a decrease in food consumption during the treatment period occurred at the high-dose level of 50 mg/kg/day. The LOAEL (20 mg/kg/day) for maternal toxicity was based on minor, transient decreases in maternal weight gain and food consumption on gestation day (gd) 6 to 9. Developmental toxicity, observed as increased post-implantation death, decreased litter size, decreased fetal body weight, and an increase in the incidence of external malformations, occurred only at the high dose. Reduced female fetal body weight was observed at 35 mg/kg/day, suggesting an NOAEL of 20 mg/kg/day.

In rabbits, the maternal NOAEL was 10 mg/kg/day, and the foetal NOAEL was 40 mg/kg/day. The 40 mg/kg/day PHM did not adversely affect

the growth, viability, or morphological development of the offspring. As a result, the developmental toxicity in this study was . 40 mg/kg/day; the LOAEL could not be determined at the doses evaluated. Maternal toxic effects at 30 and 40 mg/kg/day were minor and transient; therefore, the evidence of toxicity was equivocal. However, a slightly higher dose of 50 mg/kg/day was found to be excessively toxic, resulting in maternal morbidity and mortality. Evaluation of developmental toxicity at doses above 40 mg/kg/day was precluded by excessive maternal toxicity.

**Genetic Toxicity/Mutagenicity:**

A valid in vitro gene mutation study (Salmonella typhimurium Reverse Mutation Assay) was performed for BZM and showed no mutagenic activity.

Somnolence, tremour, muscle weakness, ataxia, coma, cyanosis, respiratory depression and stimulation and primary skin irritation recorded.

**SKIN**

thiophenol	Canada - Alberta Occupational Exposure Limits - Skin	Substance Interaction	1
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**Section 12 - ECOLOGICAL INFORMATION**

This material and its container must be disposed of as hazardous waste.

**Ecotoxicity**

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
thiophenol	HIGH		LOW	MED

**Section 13 - DISPOSAL CONSIDERATIONS**

**US EPA Waste Number & Descriptions**

A. General Product Information

Ignitability characteristic: use EPA hazardous waste number D001 (waste code I)

B. Component Waste Numbers

When thiophenol is present as a solid waste as a discarded commercial chemical product, off-specification species, as a container residue, or a spill residue, use EPA waste number P014 (waste code T).

**Disposal Instructions**

All waste must be handled in accordance with local, state and federal regulations.

! Puncture containers to prevent re-use and bury at an authorized landfill.

Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.

A Hierarchy of Controls seems to be common - the user should investigate:

- Reduction
- Reuse
- Recycling
- Disposal (if all else fails)

This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. If it has been contaminated, it may be possible to reclaim the product by filtration, distillation or some other means. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate.

DO NOT allow wash water from cleaning equipment to enter drains. Collect all wash water for treatment before disposal.

- Recycle wherever possible.
- Consult manufacturer for recycling options or consult Waste Management Authority for disposal if no suitable treatment or disposal facility can be identified.

**Section 14 - TRANSPORTATION INFORMATION**

DOT:

Symbols: None Hazard class or Division: 6.1

Identification Numbers: UN2337 PG: I

Label Codes: 6.1, 3 Special provisions: 2, B9,

B14, B32,

B77, T20,

TP2, TP13,

TP38, TP45

Packaging: Exceptions: None Packaging: Non- bulk: 227

Packaging: Exceptions: None Quantity limitations: Forbidden

Passenger aircraft/rail:

Quantity Limitations: Cargo Forbidden Vessel stowage: Location: B aircraft only:

Vessel stowage: Other: 40, 52

Hazardous materials descriptions and proper shipping names:



Phenyl mercaptan

**Air Transport IATA:**

ICAO/IATA Class: 6.1 ICAO/IATA Subrisk: 3

UN/ID Number: 2337 Packing Group: -

Special provisions: None

Cargo Only

Packing Instructions: Forbidden Maximum Qty/Pack: Forbidden

Passenger and Cargo Passenger and Cargo

Packing Instructions: Forbidden Maximum Qty/Pack: Forbidden

Passenger and Cargo Limited Quantity Passenger and Cargo Limited Quantity

Packing Instructions: - Maximum Qty/Pack: -

Shipping Name: PHENYL MERCAPTAN

**Maritime Transport IMDG:**

IMDG Class: 6.1 IMDG Subrisk: 3

UN Number: 2337 Packing Group: I

EMS Number: F-E , S-D Special provisions: None

Limited Quantities: 0

Shipping Name: PHENYL MERCAPTAN

## Section 15 - REGULATORY INFORMATION

**thiophenol (CAS: 108-98-5) is found on the following regulatory lists;**

"Canada - Alberta Occupational Exposure Limits", "Canada - British Columbia Occupational Exposure Limits", "Canada - Northwest Territories Occupational Exposure Limits (English)", "Canada - Nova Scotia Occupational Exposure Limits", "Canada - Prince Edward Island Occupational Exposure Limits", "Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)", "Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits", "Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances", "Canada Domestic Substances List (DSL)", "Canada Ingredient Disclosure List (SOR/88-64)", "Canada Toxicological Index Service - Workplace Hazardous Materials Information System - WHMIS (English)", "OECD Representative List of High Production Volume (HPV) Chemicals", "US - Alaska Limits for Air Contaminants", "US - California Occupational Safety and Health Regulations (CAL/OSHA) - Hazardous Substances List", "US - California Permissible Exposure Limits for Chemical Contaminants", "US - Connecticut Hazardous Air Pollutants", "US - Hawaii Air Contaminant Limits", "US - Massachusetts Oil & Hazardous Material List", "US - Michigan Exposure Limits for Air Contaminants", "US - Minnesota Hazardous Substance List", "US - Minnesota Permissible Exposure Limits (PELs)", "US - New Jersey Right to Know Hazardous Substances", "US - Pennsylvania - Hazardous Substance List", "US - Rhode Island Hazardous Substance List", "US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants", "US - Vermont Hazardous Constituents", "US - Vermont Hazardous Waste - Acutely Hazardous Wastes", "US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants", "US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants", "US - Washington Dangerous waste constituents list", "US - Washington Discarded Chemical Products List - ""P"" Chemical Products", "US - Washington Permissible exposure limits of air contaminants", "US ACGIH Threshold Limit Values (TLV)", "US Department of Transportation (DOT) List of Hazardous Substances and Reportable Quantities - Hazardous Substances Other Than Radionuclides", "US DOE Temporary Emergency Exposure Limits (TEELs)", "US EPA Acute Exposure Guideline Levels (AEGs) - Interim", "US EPA High Production Volume Program Chemical List", "US EPA Master Testing List - Index I Chemicals Listed", "US Food Additive Database", "US List of Lists - Consolidated List of Chemicals Subject to EPCRA, CERCLA and Section 112(r) of the Clean Air Act", "US NIOSH Recommended Exposure Limits (RELs)", "US Postal Service (USPS) Hazardous Materials Table: Postal Service Mailability Guide", "US RCRA (Resource Conservation & Recovery Act) - Hazardous Constituents - Appendix VIII to 40 CFR 261", "US RCRA (Resource Conservation & Recovery Act) - List of Hazardous Wastes", "US SARA Section 302 Extremely Hazardous Substances", "US Toxic Substances Control Act (TSCA) - Inventory", "US TSCA Section 8 (a) - Preliminary Assessment Information Rules (PAIR) - Reporting List", "US TSCA Section 8 (d) - Health and Safety Data Reporting"

## Section 16 - OTHER INFORMATION

**LIMITED EVIDENCE**

- Cumulative effects may result following exposure\*.
  - May produce discomfort of the respiratory system\*.
  - Vapours potentially cause drowsiness and dizziness\*.
- \* (limited evidence).

**ND**

Substance CAS Suggested codes thiophenol 108- 98- 5

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- Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

A list of reference resources used to assist the committee may be found at:

[www.chemwatch.net/references](http://www.chemwatch.net/references).

- The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the

reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

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