

**Scentinel® TB Gas Odorant**

Version 2.5

Revision Date 2026-08-03

Version	Revision Date:	SDS Number (Internal):	MSDS number: AA00974-0000000280
2.5	2026-08-03	100000014177	Date of last issue: 2026-06-25 Date of first issue: 2009-10-27

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Scentinel® TB Gas Odorant

Material : 1119678, 1086437, 1086436, 1103087, 1103086, 1103855, 1024798, 1024799

Product code : 000000000000000000 000000000000000000

Recommended use of the chemical and restrictions on use

Recommended use : Odorant

Restrictions on use : None known.

Manufacturer or supplier's details

Address : Chevron Phillips Chemical Company LP
Specialty Chemicals
9500 Lakeside Blvd.
The Woodlands, TX 77381

Address : CHEVRON PHILLIPS CHEMICALS ASIA PTE. LTD.
C/O DONG WOO CORPORATION
#B-2601, JEONGJAIL-RO,
BUNDANG-GU, SEONGNAMI-SI,
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SOUTH KOREA
Telephone no.: +612-9186-1132

Emergency telephone:**Health:**

866.442.9628 (North America)
1.832.813.4984 (International)

Transport:

CHEMTREC 800.424.9300 or 703.527.3887(int'l)
Asia: CHEMWATCH (+612 9186 1132) China: 0532 8388 9090
Mexico CHEMTREC 01-800-681-9531 (24 hours)
South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600
Argentina: +(54)-1159839431
EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
Austria: VIZ +43 1 406 43 43 (24 hours/day, 7 days/week)
Belgium: 070 245 245 (24 hours/day, 7 days/week)
Bulgaria: +359 2 9154 233
Croatia: +3851 2348 342 (24 hours/day, 7 days/week)
Cyprus: 1401
Czech Republic: Toxicological Information Center +420 224 919 293, +420 224 915 402
Denmark: Danish Poison Center (Giftlinjen): +45 8212 1212
Estonia: BIG +32.14.584545 (phone) or +32.14583516 (telefax)



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Finland: 0800 147 111 09 471 977 (24 hours/day)
 France: ORFILA number (INRS): + 33 (0) 1 45 42 59 59 (24 hours/day, 7 days/week)
 Germany: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
 Greece: (0030) 2107793777 (24 hours/day, 7 days/week)
 Hungary: +36-80-201-199 (24 hours/day, 7 days/week)
 Iceland: 543 2222 (24 hours/day, 7 days/week)
 Ireland: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
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 Latvia: State Fire and Rescue Service, phone number: 112; Toxicology and Sepsis Clinic Poisoning and Drug Information Center, Hipokrāta 2, Riga, Latvia, LV-1038, phone number +371 67042473. (24 hours.)
 Liechtenstein: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
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 The Netherlands: NVIC: +31 (0)88 755 8000
 Norway: 22 59 13 00 (24 hours/day, 7 days/week)
 Poland: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
 Portugal: CIAV phone number: +351 800 250 250
 Romania: +40213183606
 Slovakia: +421 2 5477 4166
 Slovenia: Phone number: 112
 Spain: National Emergency Telephone Number of Spanish Poison Centre: +34 91 562 04 20 (24 hours/day, 7 days/week)
 Sweden: 112 – ask for Poisons Information

Organization that prepared the SDS : Product Safety and Toxicology Group
 E-mail address : SDS@CPChem.com
 Website : www.CPChem.com
 Appointees : 회사명: 리이치 24 시코리아(주).

주소: 서울시 서초구 헌릉로 7,
 외국기업창업지원연구센터

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(IKP) 908-909호

전화: +82-1067838981

ODOR-FADE WARNING

A GAS LEAK CAN CAUSE A FIRE OR EXPLOSION RESULTING IN SERIOUS INJURY OR DEATH.

Be aware that the stenching chemical added to gas to make it detectable may not warn of a gas leak or the presence of propane or natural gas to all persons in every instance.

Instances where the odorant in an odorized gas may be undetectable include:

- Odor intensity may fade or be eliminated for a variety of chemical and physical causes, including the oxidation of rusting pipes, adsorption into or sticking onto the interior of pipes or appliances, or absorption into liquids.
- Contact with soil in underground leaks may de-odorize or remove odorant from the gas.
- Some people have a diminished ability, or inability to smell the stench. Factors that negatively affect a person's sense of smell include age, gender, medical conditions, and alcohol/tobacco usage.
- The stench of odorized gas may not awaken sleeping persons.
- Other odors may mask or hide the stench.
- Exposure to the odor for even a short period of time, may cause nasal fatigue, where a person can no longer smell the stench.

Gas detectors listed by the Underwriters Laboratories (UL) can be used as an extra measure of safety for detecting gas leaks, especially under conditions where the odorant alone may not provide an adequate warning. Gas detectors emit a loud, shrill sound when gas is present and do not depend on sense of smell. Because the odor intensity can fade or people may have problems with their sense of smell, we recommend installing, per manufacturer's instructions, one or more combustible gas detectors, in suitable locations to ensure adequate coverage to detect gas leaks.

Educate yourself, your employees, and your customers with the content of this warning and other important facts associated with the so-called "odor-fade phenomenon."

2. HAZARDS IDENTIFICATION**GHS Classification**

Flammable liquids : Category 2


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Skin corrosion/irritation : Category 2

Serious eye damage/eye irritation : Category 2

Skin sensitization : Category 1

Aspiration hazard : Category 2

Long-term (chronic) aquatic hazard : Category 2

GHS label elements

Hazard pictograms :



Signal Word : Danger

Hazard Statements : H225 Highly flammable liquid and vapor.
 H305 May be harmful if swallowed and enters airways.
 H315 Causes skin irritation.
 H317 May cause an allergic skin reaction.
 H319 Causes serious eye irritation.
 H411 Toxic to aquatic life with long lasting effects.

Precautionary Statements : **Prevention:**
 P210 Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.
 P233 Keep container tightly closed.
 P240 Ground/bond container and receiving equipment.
 P241 Use explosion-proof electrical/ ventilating/ lighting/ equipment.
 P242 Use only non-sparking tools.
 P243 Take precautionary measures against static discharge.
 P261 Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
 P264 Wash the contact area thoroughly after handling.
 P273 Avoid release to the environment.
 P280 Wear protective gloves/ eye protection/ face protection.

Response:
 P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
 P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.

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P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P321 Specific treatment (see supplemental first aid instructions on this label).

P331 Do NOT induce vomiting.

P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.

P337 + P313 If eye irritation persists: Get medical advice/ attention.

P362 + P364 Take off contaminated clothing and wash it before reuse.

P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

P391 Collect spillage.

Storage:

P403 + P235 Store in a well-ventilated place. Keep cool.

Disposal:

P501 Dispose of contents and container according to wastes control act.

Other hazards which do not result in classification

No data available

3. COMPOSITION/INFORMATION ON INGREDIENTS**Components**

Chemical name	Common Name	CAS-No.	Concentration (% w/w)
Tetrahydrothiophene	tetrahydrothiophene	110-01-0	>= 70 - < 75
t-Butyl Mercaptan	2-methylpropane-2-thiol	75-66-1	>= 30 - < 35

4. FIRST AID MEASURES

General advice : Move out of dangerous area.
Show this material safety data sheet to the doctor in attendance.
Material may produce a serious, potentially fatal pneumonia if swallowed or vomited.

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In case of eye contact	:	Immediately flush eye(s) with plenty of water. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.
In case of skin contact	:	If skin irritation persists, call a physician. If on skin, rinse well with water. If on clothes, remove clothes.
If inhaled	:	If unconscious, place in recovery position and seek medical advice. If symptoms persist, call a physician.
If swallowed	:	Keep respiratory tract clear. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician. Take victim immediately to hospital.
Most important symptoms and effects, both acute and delayed	:	No information available. No information available. No data available No data available
Notes to physician	:	No information available. No data available

5. FIRE-FIGHTING MEASURES**Suitable and unsuitable extinguishing media**

Suitable extinguishing media : Alcohol-resistant foam
Carbon dioxide (CO₂)
Dry chemical

Unsuitable extinguishing media : High volume water jet

Specific hazards during fire fighting : Do not allow run-off from fire fighting to enter drains or water courses.

Specific extinguishing methods : Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
For safety reasons in case of fire, cans should be stored separately in closed containments.
Use a water spray to cool fully closed containers.

Special protective equipment for fire-fighters : Wear self-contained breathing apparatus for firefighting if necessary.

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6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.
Ensure adequate ventilation.
Remove all sources of ignition.
Evacuate personnel to safe areas.
Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.
- Environmental precautions : Prevent product from entering drains.
Prevent further leakage or spillage if safe to do so.
If the product contaminates rivers and lakes or drains inform respective authorities.
- Methods and materials for containment and cleaning up : Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

7. HANDLING AND STORAGE

- Advice on protection against fire and explosion : Do not spray on a naked flame or any incandescent material.
Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors).
Use only explosion-proof equipment.
Keep away from open flames, hot surfaces and sources of ignition.
- Advice on safe handling : Avoid formation of aerosol.
Do not breathe vapors/dust.
Avoid exposure - obtain special instructions before use.
Avoid contact with skin and eyes.
For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
Take precautionary measures against static discharges.
Provide sufficient air exchange and/or exhaust in work rooms.
Open drum carefully as content may be under pressure.
Dispose of rinse water in accordance with local and national regulations.
Persons susceptible to skin sensitization problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.
- Conditions for safe storage : No smoking.

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Keep container tightly closed in a dry and well-ventilated place.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Observe label precautions.
Electrical installations / working materials must comply with the technological safety standards.

Further information on storage stability : No decomposition if stored and applied as directed.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Ingredients with workplace control parameters**

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
t-Butyl Mercaptan	75-66-1	TWA	0.5 ppm	CPC

Other ingredients, which are listed in section 3 but not listed in this section, do not have established occupational exposure limit values.

Engineering measures : Adequate ventilation to control airborne concentrations below the exposure guidelines/limits.
Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

Personal protective equipment. Among the following personal protective equipment, the PPEs which require safety certification need to be certified by KOSHA.

Respiratory protection : If ventilation or other engineering controls are not adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure, a supplied-air NIOSH approved respirator may be appropriate.
If exposure to harmful levels of airborne material may occur, a NIOSH approved respirator that provides protection may be appropriate, such as:
Air-Purifying Respirator for Organic Vapors
Full-Face Air-Purifying Respirator for Organic Vapors, Dusts and Mists
A positive pressure, air-supplying respirator may be appropriate if there is potential for uncontrolled release, aerosoliza-

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tion, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.

Eye protection : Eye wash bottle with pure water
Tightly fitting safety goggles

Hand protection

Remarks : The suitability for a specific workplace should be discussed with the producers of the protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Skin and body protection : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.

Wear as appropriate:
Remove and wash contaminated clothing before re-use.
Skin should be washed after contact.

Footwear protecting against chemicals

Hygiene measures : When using do not eat or drink.

When using do not smoke.

Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : liquid

Color : Colorless

Odor : Pungent

Odor Threshold : No data available

pH : Not applicable

Melting point/freezing point : No data available

Pour point : No data available

Boiling point/boiling range : 85 °C

Flash point : > -17.8 °C

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Method: Tagliabue Open Cup

Evaporation rate : No data available

Self-ignition : No data available

Upper explosion limit / Upper flammability limit : No data available

Lower explosion limit / Lower flammability limit : No data available

Vapor pressure : 20 mbar (20 °C)
3.6 PSI (50 °C)Solubility(ies)
Water solubility : InsolubleRelative vapor density : 3.04
(Air = 1.0)

Relative density : 0.94 (15.6 °C)

Partition coefficient: n-octanol/water : No data available

Viscosity
Viscosity, kinematic : No data available

Oxidizing properties : no

Molecular weight : Not applicable

10. STABILITY AND REACTIVITY

Chemical stability and possibility of hazardous reactions : Reactivity:
Stable under recommended storage conditions.
Chemical stability:
This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.
Possibility of hazardous reactions:
Hazardous polymerization does not occur.
Possibility of hazardous reactions:

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Conditions to avoid	:	Vapors may form explosive mixture with air.
Hazardous decomposition products	:	Heat, flames and sparks.
	:	Carbon oxides
	:	Sulfur oxides

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure : No data available

Health hazard information**Acute toxicity****Product:**

Acute oral toxicity	:	Acute toxicity estimate: 2,264 mg/kg Method: Calculation method
	:	Acute toxicity estimate: > 2,000 mg/kg Method: Calculation method

Acute inhalation toxicity	:	Acute toxicity estimate: 32.29 mg/l Exposure time: 4 h Test atmosphere: vapor Method: Calculation method
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Acute dermal toxicity	:	Acute toxicity estimate: > 2,000 mg/kg Method: Calculation method
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Components:**Tetrahydrothiophene:**

Acute oral toxicity	:	LD50 (Rat, male and female): 1,850 mg/kg Method: OECD Test Guideline 401 GLP: yes
Acute inhalation toxicity	:	LC50 (Rat, male and female): 22.6 mg/l, 6270 ppm Exposure time: 4 h Test atmosphere: vapor Method: OECD Test Guideline 403 GLP: yes

t-Butyl Mercaptan:

Acute oral toxicity	:	LD50 (Rat, male): 4,729 mg/kg Assessment: Not harmful
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Acute inhalation toxicity : LC50 (Rat, male and female): 98.3 mg/l, 26643 ppm
Exposure time: 4 h
Test atmosphere: vapor
Method: OECD Test Guideline 403
Assessment: 0 - Not toxic

LC50 (Rat, male): 81.9 mg/l, 22200 ppm
Exposure time: 4 h
Test atmosphere: vapor
Method: OECD Test Guideline 403
Assessment: 0 - Not toxic

LC50 (Mouse, male): 60.9 mg/l, 16500 ppm
Exposure time: 4 h
Test atmosphere: vapor
Method: OECD Test Guideline 403
Assessment: 0 - Not toxic

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg
GLP: no
Assessment: Not harmful

Skin corrosion/irritation**Product:**

Result : Skin irritation
Remarks : largely based on animal evidence

Components:**Tetrahydrothiophene:**

Species : Rabbit
Result : Skin irritation
GLP : yes

t-Butyl Mercaptan:

Species : Rabbit
Exposure time : 72 h
Result : No skin irritation
GLP : no

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Serious eye damage/eye irritation**Product:**

Result	: Eye irritation
Remarks	: largely based on animal evidence

Components:**Tetrahydrothiophene:**

Species	: Rabbit
Result	: Eye irritation
GLP	: yes

t-Butyl Mercaptan:

Species	: EpiOcular™ Reconstructed Human Cornea-Like Epithelium
Result	: Mild eye irritation
Method	: OECD Test Guideline 492

Species	: Bovine cornea
Result	: inconclusive
Method	: OECD Test Guideline 437

Respiratory or skin sensitization**Skin sensitization**

May cause an allergic skin reaction.
largely based on animal evidence

Product:

Result	: The product is a skin sensitizer, sub-category 1B.
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Components:**Tetrahydrothiophene:**

Test Type	: Maximization Test
Species	: Guinea pig
Method	: OECD Test Guideline 406
Result	: Did not cause sensitization on laboratory animals.
GLP	: yes
Remarks	: Information given is based on data obtained from similar substances.

Test Type	: KeratinoSens assay
Method	: OECD Test Guideline 442D

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Result : negative

t-Butyl Mercaptan:

Test Type : Local lymph node assay (LLNA)
Species : Mouse
Method : OECD Test Guideline 429
Result : The product is a skin sensitizer, sub-category 1B.
GLP : yes

Carcinogenicity**Components:****Tetrahydrothiophene:**

No data available

t-Butyl Mercaptan:

No data available

Carcinogenicity - Assessment : Not available

Germ cell mutagenicity**Components:****Tetrahydrothiophene:**

Not applicable

Genotoxicity in vitro : Test Type: Ames test
Method: Mutagenicity (Escherichia coli - reverse mutation assay)
Result: negative
GLP: yes

Test Type: Cytogenetic assay
Result: negative

Test Type: HGPRT assay
Result: negative

Test Type: Sister Chromatid Exchange Assay
Method: OECD Guideline 473
Result: negative

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Test Type: Unscheduled DNA synthesis assay
Result: negative

Germ cell mutagenicity- Assessment : Tests on bacterial or mammalian cell cultures did not show mutagenic effects.

t-Butyl Mercaptan:

Not applicable

Genotoxicity in vitro : Test Type: Ames test
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

Test Type: Mouse lymphoma assay
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative

Test Type: Sister Chromatid Exchange Assay
Metabolic activation: with and without metabolic activation
Result: negative

Genotoxicity in vivo : Test Type: Mouse micronucleus assay
Species: Mouse
Dose: 1250, 2500, 5000 mg/kg
Method: OECD Test Guideline 474
Result: negative
GLP: yes

Germ cell mutagenicity- Assessment : Tests on bacterial or mammalian cell cultures did not show mutagenic effects., In vivo tests did not show mutagenic effects

Reproductive toxicity**Components:****Tetrahydrothiophene:**

No data available

Reproductive toxicity - Assessment : Animal testing did not show any effects on fertility.
Animal testing did not show any effects on fetal development.

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t-Butyl Mercaptan:

No data available

Reproductive toxicity - Assessment : No evidence of adverse effects on sexual function and fertility, or on development, based on animal experiments.

STOT-single exposure**Product:**

Remarks : Not classified due to data which are conclusive although insufficient for classification.

STOT-repeated exposure**Product:**

Remarks : Not classified due to data which are conclusive although insufficient for classification.

Repeated dose toxicity**Components:****Tetrahydrothiophene:**

Species : Rat, Male and female
NOAEL : 51 ppm
Application Route : Inhalation
Exposure time : 13 wk
Number of exposures : 6 h/d, 5 d/wk
Dose : 0, 51, 236, 1442 ppm
Method : OECD Guideline 413
GLP : yes
Target Organs : Upper respiratory tract
Symptoms : Lachrymation, Salivation, irritation

t-Butyl Mercaptan:

Species : Rat, Male and female
NOAEL : > 196 ppm
Application Route : Inhalation
Test atmosphere : vapor
Exposure time : 13 wks
Number of exposures : 6 hrs/d, 5 d/wk
Dose : 9, 97, 196 ppm

Species : Rat, Male and female

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NOAEL	:	50 mg/kg bw/day
LOAEL	:	200 mg/kg bw/day
Application Route	:	oral gavage
Exposure time	:	42-53 days
Number of exposures	:	Daily
Dose	:	10, 50, 200 mg/kg bw/day
Method	:	OECD Guideline 422
Symptoms	:	Body weight depression
Species	:	Rat, Male and female
NOAEL	:	99.6 ppm
LOAEL	:	403.4 ppm
Application Route	:	Inhalation
Test atmosphere	:	vapor
Exposure time	:	13 wks
Number of exposures	:	6 hrs/d, 5 d/wk
Dose	:	25.1, 99.6, 403.4 ppm
Method	:	OECD Guideline 413
Target Organs	:	Liver, Kidney, Blood, Upper respiratory tract
Symptoms	:	Body weight depression
Remarks	:	Information given is based on data obtained from similar substances.

Aspiration toxicity**Product:**

May be harmful if swallowed and enters airways.

Components:**Tetrahydrothiophene:**

May be harmful if swallowed and enters airways.

t-Butyl Mercaptan:

May be harmful if swallowed and enters airways.

Experience with human exposure

No data available

Toxicology, Metabolism, Distribution

No data available

Neurological effects

No data available

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Further information**Product:**

Remarks : Solvents may degrease the skin.

12. ECOLOGICAL INFORMATION**Ecotoxicity****Components:****Tetrahydrothiophene:**

Toxicity to fish	: LC50 (Danio rerio (Zebra Fish)): > 24 mg/l Exposure time: 96 h Method: OECD Test Guideline 203 GLP: yes
Toxicity to daphnia and other aquatic invertebrates	: EC50 (Daphnia magna (Water flea)): 24 mg/l Exposure time: 48 h Method: OECD Test Guideline 202 GLP: yes
Toxicity to algae/aquatic plants	: EC50 (Pseudokirchneriella subcapitata (green algae)): > 153.2 mg/l Exposure time: 72 h Method: OECD Test Guideline 201 GLP: yes
Toxicity to microorganisms	: EC50: 1,530 mg/l Exposure time: 3 h Test Type: Respiration inhibition Method: OECD Test Guideline 209 GLP: yes

Ecotoxicology Assessment

Acute aquatic toxicity	: Harmful to aquatic life.
Chronic aquatic toxicity	: Harmful to aquatic life with long lasting effects.

t-Butyl Mercaptan:

Toxicity to fish	: LC50 (Oncorhynchus mykiss (rainbow trout)): 34 mg/l Exposure time: 96 h Test Type: semi-static test
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Method: OECD Test Guideline 203
GLP: yes

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 6.7 mg/l
Exposure time: 48 h
Test Type: static test
Method: OECD Test Guideline 202
GLP: yes

Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): 24 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201
GLP: yes

Ecotoxicology Assessment

Acute aquatic toxicity : Toxic to aquatic life.

Chronic aquatic toxicity : Toxic to aquatic life with long lasting effects.

Persistence and degradability**Product:**

Biodegradability : Remarks: This material is not expected to be readily biodegradable.

Components:**Tetrahydrothiophene:**

Biodegradability : aerobic
Result: Not readily biodegradable.
Biodegradation: < 10 %
Exposure time: 28 d
Method: Directive 67/548/EEC Annex V, C.4.E.
GLP: yes

t-Butyl Mercaptan:

Biodegradability : aerobic
Inoculum: activated sludge
Result: Not readily biodegradable.
Biodegradation: 6 %
Exposure time: 63 d
Method: OECD Test Guideline 301
GLP: yes

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Bioaccumulative potential**Components:****Tetrahydrothiophene:**

Bioaccumulation : Remarks: No bioaccumulation is to be expected (log Pow <= 4).

t-Butyl Mercaptan:

Bioaccumulation : Bioconcentration factor (BCF): 12
Method: QSAR modeled data
Remarks: This material is not expected to bioaccumulate.

Partition coefficient: n-octanol/water : log Pow: 2.2
Method: OECD Test Guideline 107

Mobility in soil**Components:****Tetrahydrothiophene:**

Mobility : Remarks: The product will be dispersed amongst the various environmental compartments (soil/ water/ air).

t-Butyl Mercaptan:

Mobility : Method: Calculation, Mackay Level III Fugacity Model
Remarks: The product will be dispersed amongst the various environmental compartments (soil/ water/ air).

Other adverse effects**Product:**

Additional ecological information : Toxic to aquatic life with long lasting effects.

Components:**Tetrahydrothiophene:**

Results of PBT and vPvB assessment : Non-classified PBT substance
Non-classified vPvB substance

t-Butyl Mercaptan:

Results of PBT and vPvB assessment : Non-classified PBT substance
Non-classified vPvB substance

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Endocrine disrupting properties

No data available

13. DISPOSAL CONSIDERATIONS**Disposal methods**

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.
Do not contaminate ponds, waterways or ditches with chemical or used container.
Send to a licensed waste management company.

Contaminated packaging : Empty remaining contents.
Dispose of as unused product.
Do not re-use empty containers.
Do not burn, or use a cutting torch on, the empty drum.

Disposal precautions

Dispose of contents and container according to wastes control act.

14. TRANSPORT INFORMATION**International Regulations****IATA-DGR**

UN/ID No. : UN 3336
Proper shipping name : Mercaptan mixture, liquid, flammable, n.o.s.
(,)
Class : 3
Packing group : II
Labels : Class 3 - Flammable Liquid

IMDG-Code

UN number : UN 3336
Proper shipping name : MERCAPTAN MIXTURE, LIQUID, FLAMMABLE, N.O.S.
(,)
Class : 3
Packing group : II
Labels : 3
EmS Code : F-E, S-D
Marine pollutant : no

Maritime transport in bulk according to IMO instruments

II - Hazardous Properties

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Domestic regulation

Refer to section 15 for specific national regulation.

Special precautions for user

Remarks : UN3336

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

15. REGULATORY INFORMATION**National regulatory information****Regulation under the Occupational Safety and Health Act****Harmful Substances Prohibited from Manufacturing**

Not applicable

Harmful Substances Required Permission for Manufacture

Not applicable

Harmful Agents to be kept below Occupational Exposure Limits

Not applicable

Harmful Agents Required to be kept below Permission Levels

Not applicable

Hazardous substances requiring management

Not applicable

Special Management Materials

Not applicable

Controlled Substances Subject to Environment Monitoring

Not applicable

Controlled Substances Subject to Health Examination

Not applicable

Hazardous Substances Subject to Process Safety Management (PSM) Reporting Obligation

Chemical name/Classification	Manufacturing or handling quantity	Storage quantity
Flammable liquids	5,000 kg	200,000 kg

K-OSHA Hazardous Substances (Occupational Safety and Health Regulations, Table 1)

Category

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Flammable liquid

K-OSHA Hazardous Substances (Occupational Safety and Health Regulations, Table 9)

Category	Manufacturing or handling quantity
Flammable liquid	400 liter

Regulation under the Chemicals Control Act**Restricted Chemicals**

Not applicable

Prohibited Chemicals

Not applicable

Toxic Release Inventory

Not applicable

Accident Precaution Chemicals

Not applicable

Chemicals of Acute and Chronic Hazard to Human Health and the Environment**Substances Acutely hazardous to humans**

Not applicable

Substances Chronically hazardous to humans

Not applicable

Substances Hazardous to the environment

Not applicable

Accident Precaution Chemicals

Not applicable

Toxic Release Inventory

Not applicable

Act on Registration and Evaluation of Chemical Substances (K-REACH)**Restricted Chemicals**

Not applicable

Prohibited Chemicals

Not applicable

Substances with Unconfirmed Hazards

Not applicable

Dangerous Substances Safety Management Act

Classification : Class 4, Flammable liquids, Type 1 petroleums, Water insoluble liquid

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Hazard rank : Hazardous rank II

Safety Warning : Keep away from fire

International Chemical Weapons Convention (CWC) Schedules of Toxic Chemicals and Precursors : Neither banned nor restricted

Waste Control Act

Industrial general wastes

Follow article 13 of the act to dispose the product waste

Other requirements in domestic and other countries**The ingredients of this product are reported in the following inventories:**

EU REACH	: This mixture contains only ingredients which have been registered according to Regulation (EU) No. 1907/2006 (REACH).
CH INV	: On the inventory, or in compliance with the inventory
TSCA	: On or in compliance with the active portion of the TSCA inventory
DSL	: All components of this product are on the Canadian DSL
AU AIIC	: On the inventory, or in compliance with the inventory
ENCS	: On the inventory, or in compliance with the inventory
NZIoC	: On the inventory, or in compliance with the inventory
KECI	: All substances in this product were registered, notified to be registered, or exempted from registration by CPChem through an Only Representative according to K-REACH regulations. Importation of this product is permitted if the Korean Importer of Record was included on CPChem's notifications or if the Importer of Record themselves notified the substances.
PICCS	: On the inventory, or in compliance with the inventory
TW TCSI	: On the inventory, or in compliance with the inventory
IECSC	: On the inventory, or in compliance with the inventory

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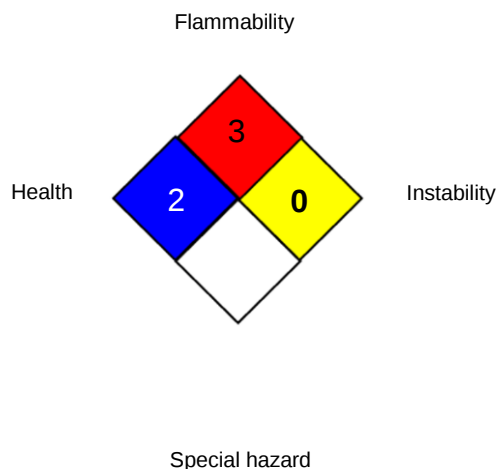
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16. OTHER INFORMATION**Further information**

Issuing date : 2009-10-27

Revision number and date

Number of Revision : 2.5
Revision Date : 2026-08-03
Other information : None.
Date format : yyyy/mm/dd

NFPA:**Full text of other abbreviations**

CPC : Chevron Phillips Chemical Company LP

CPC / TWA : Time weighted average

AIIC - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardization; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory con-

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centration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organization for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MERCOSUR - The Agreement for the Facilitation of the Transport of Dangerous Goods; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorization and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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