

GPS Safety Summary

Substance Name:

Tetrahydrothiophene

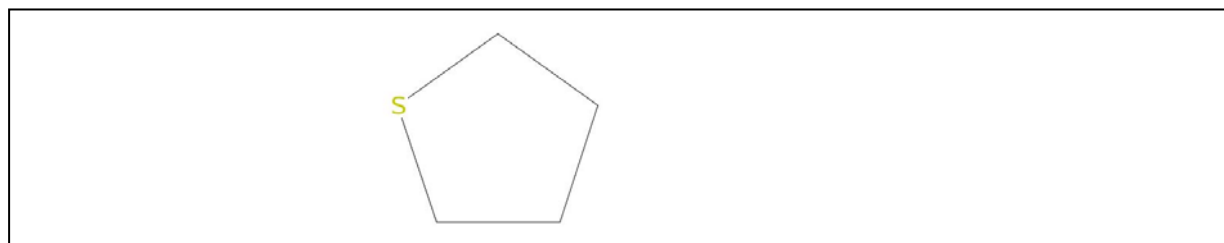
1. General Statement

Tetrahydrothiophene is a colourless liquid with a very characteristic smell and an extremely low odour threshold at 1 ppb. Products containing tetrahydrothiophene are commercially available to industrial customers only.

Flammable, harmful if swallowed, inhaled or by contact with skin, irritating to skin and eyes and harmful to aquatic fauna with long lasting effects, this substance must be carefully handled and stored to preserve human health and environment.

2. Chemical Identity

Name: Tetrahydrothiophene
Brand names: Tetrahydrothiophene
Chemical name (IUPAC): tetrahydrothiophene
CAS number(s): 110-01-0
EC number (optional): 203-728-9
Molecular formula (optional): C₄H₈S
Structure (optional):



3. Use and applications

Tetrahydrothiophene (THT) is used as such or in combination with odour sulphur compounds to odourise natural gas. Thanks to its structure (cyclic sulphide), THT is currently the most stable gas odorant.

The use conditions of THT as odorant for natural gas are described in the International Standard ISO 13734.

4. Physical / Chemical properties

Property	Value
Physical state (Liquid/solid/gaseous)	Liquid
Colour	Colourless
Odour	Mercaptans
Density	1000 kg/m ³ at 20°C
Melting point	-96.2°C at 1013 hPa
Boiling point	119 - 121°C at 1013 hPa
Flammability (optional)	Flammable Liquid
Explosive properties	Not explosive based on the structure
Oxidising properties	Not oxidising based on the structure
Self-ignition temperature	215°C at 1013 hPa
Vapour pressure	24 hPa at 25°C
Mol weight	88.17 g/mol
Water solubility	5.8 g/l at 20°C
Flash point	17.5°C (closed cup) at 1013 hPa
Octanol-water partition coefficient (LogKow)	1.8 at 20°C

5. Health Effects

Effect Assessment	Result
Acute Toxicity Oral / inhalation / dermal	Harmful by oral/dermal/inhalation routes.
Irritation / corrosion Skin / eye/ respiratory tract	Irritating to skin and eyes. May cause transitory irritation to respiratory system at high vapour concentrations.
Sensitisation	Not a skin sensitizer.
Toxicity after repeated exposure Oral / inhalation / dermal	Inhalation studies performed with analogue substances did not suggest a significant systemic toxicity following repeated exposure but a possible irritation to the respiratory system.
Genotoxicity / Mutagenicity	No evidence of genetic toxicity.
Carcinogenicity	No evidence of carcinogenic toxicity.
Toxicity for reproduction	No evidence of toxicity for reproduction.

6. Environmental Effects

Effect Assessment	Result
Aquatic Toxicity	Harmful to aquatic invertebrates.

Fate and behaviour	Result
Biodegradation	Not readily biodegradable.
Bioaccumulation potential	Not expected to bioaccumulate (log P = 1.8).
PBT / vPvB conclusion	Not considered to be either PBT or vPvB.
Additional information	Not hydrolysable.

7. Exposure

7.1 Human health

The most likely route of human exposure (workers) to tetrahydrothiophene is through inhalation and/or to a much lesser extent dermal contact. In industrial settings, ingestion is not an anticipated route of exposure. Critical health effects associated with chronic exposure to the substance are local and systemic inhalation effects.

Tetrahydrothiophene is harmful if swallowed, inhaled or by contact with skin, and is irritating to skin and eyes.

The probability of exposure to workers is expected to be low because this product is manufactured in enclosed controlled environment and is transported in well sealed containers in order to avoid odour nuisance. Due to its very low odour threshold leaks can be detected quickly and prolonged exposures can be avoided. However, workers may be exposed during (un)loading, mixing, sampling, analysis or maintenance operations and particularly in case of batch processes. The exposure must be kept as minimum as possible by the use of appropriate risk management measures as suitable collective and personal protective equipment, good industrial hygiene practices and risk communication through appropriate training of workers.

For more information about conditions recommended, refer to the extended safety data sheet in Europe.

7.2 Environment

Based on its physico-chemical properties, tetrahydrothiophene is water soluble, has a medium potential for volatility, a low potential of bioaccumulation, is not readily biodegradable and is harmful to aquatic life.

Due to the potential of this substance to cause significant harm to aquatic environments, care should be taken to avoid releases of these products to sewage, drainage systems and water bodies. Spillage shall be quickly collected in the event of an accidental release. More information about release measures and accidental release measures are available in the extended safety data sheet.

8. Risk Management recommendations

Human health measures	
Organizational	Implement a good basic standard of occupational hygiene Ensure operatives are well informed of the hazards and trained to minimize exposures. Hygiene measures must be respected and incompatible materials must be clearly identified.
Protection	Eye/Face protection: Safety glasses.
	Skin protection: Combination with delayed penetration, protective suit.
	Hand protection: Gloves nitrile rubber. Glove thickness: 0.75 mm
	Respiratory protection: In case of insufficient ventilation: wear suitable respiratory equipment. In case of high concentrations or prolonged activity: Self contained Breathing Apparatus.
Engineering controls	Ensure sufficient air exchange and/or exhaust in work area. Ensure that eyewash stations and safety showers are close to workstation locations.
Environmental protective measures	
This substance and all industrial releases that may contain the substance must be treated to avoid any exposure to the environment. Eliminate by incineration in accordance with local and national regulations.	

9. Regulatory Information / Classification and Labelling

9.1 Regulatory Information

This substance has been registered under:



- EU Regulation EC 1907/2006 (REACH)

9.2 Classification and labelling

Under GHS substances are classified according to their physical, health, and environmental hazards. The hazards are communicated via specific labels and the eSDS. GHS attempts to standardize hazard communication so that the intended audience (workers, consumers, transport workers, and emergency responders) can better understand the hazards of the chemicals in use. Substances registered for REACH are classified according CLP (EC) 1272/2008, implementation of the GHS in the European Union.

Classification
<u>According to REGULATION (EC) no 1272/2008:</u> Flammable liquids cat. 2 Oral: Acute toxicity cat. 4 Dermal: Acute toxicity cat.4 Inhalation: Acute toxicity cat. 4 Skin irritation cat. 2 Eye irritation cat. 2 Chronic aquatic toxicity cat. 3

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Signal Word	
Danger	
Pictogram	
— GHS03: Flame	
— GHS07: Exclamation mark	
Labelling: hazard statement	
<p>H225: Highly flammable liquid and vapour. H302: Harmful if swallowed. H312: Harmful in contact with skin. H332: Harmful if inhaled. H315: Causes skin irritation. H319: Causes serious eye irritation. H412: Harmful to aquatic life with long lasting effects.</p>	
Additional classification according to Globally Harmonized System (GHS)	
<p>Oral: Acute toxicity cat.5 (H333: May be harmful if inhaled) Acute aquatic toxicity cat.3 (H402: Harmful to aquatic life) According GHS, the substance is not classified “Dermal: Acute toxicity cat.4 (H312: Harmful in contact with skin.)”.</p>	

10. Contact Information within Company

For further information on this substance or product safety summary in general, please contact:

- Arkema web site : on the product page, an actualised contact name is provided
<http://www.arkema.com>
- **ICCA portal where the GPS Safety Summary is posted:**
<http://www.icca-chem.org/en/Home/ICCA-initiatives/global-product-strategy/>

11. Date of Issues / Revision

- Date of issue: 2014/01/31
- Date of revision:

12. Disclaimer

The information contained in this paper is intended as advice only and whilst the information is provided in utmost good faith and has been based on the best information currently available, is to be relied upon at the user's own risk.

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