

Safety Data Sheet THIOUREA

SDS no. V5AX1N8G • Version 1.0 • Date of issue: 2023-02-05

SECTION 1: Identification

GHS Product identifier

Product name

THIOUREA

Recommended use of the chemical and restrictions on use

Photography (fixing agent and stain remover for negatives) and photocopying papers (auxiliary agent in diazo paper (light-sensitive photocopy paper) and almost all other types of copy paper); organic synthesis (intermediate, chelating agents, reagent, catalyst, dyes, pharmaceuticals, hair preparations); preparation of non-glare mirrors, silver ion complexing agent, in cleaning and plating baths for metals; galvanic products; rubber vulcanization accelerator; in mineral oil; flame-retardant finish for lacy fabrics, cotton, nylon-based products, manufacture of resins, amino resins; weighting agent for silk; in dry-cleaning chemicals; stain inhibitor on hemlock wood; mold inhibitor; fungicide; insecticides; in agrochemicals; accelerator of sprouting in dormant tubers; nitrification inhibitor for ammonia-based fertilizer; mercury removal from wastewaters; radioprotector in X-irradiated mice; sulfur source for making semiconductor cadmium sulfide nanoparticle; analytical reagent and laboratory reagent.

Supplier's details

Name Address	ChemSupply Australia Pty Ltd 38-50 Bedford Street	
	5013 Gillman South Australia Australia	
Telephone email	08 8440 2000 www.chemsupply.com	
Emergency phone number		

CHEMCALL 1800 127 406 (Australia) / +64-4-917-9888 (International)

SECTION 2: Hazard identification

General hazard statement

Classified as dangerous goods according to the Australian Dangerous Goods Code (ADG).

Classified as Hazardous according to the Globally Harmonised System of classification and labelling of Chemicals (GHS) including Work, Health and Safety regulations, Australia.

Classification of the substance or mixture

GHS classification in accordance with: UN GHS revision 7

- Acute toxicity, oral, Cat. 4

- Carcinogenicity, Cat. 2
- Toxic to reproduction, Cat. 2

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- Hazardous to the aquatic environment, long-term (chronic), Cat. 2

GHS label elements, including precautionary statements

Pictograms



Signal word	Warning
Hazard statement(s)	
H302	Harmful if swallowed
H351	Suspected of causing cancer
H361	Suspected of damaging fertility or the unborn child [effect, route]
H411	Toxic to aquatic life with long lasting effects
Precautionary statement(s)	
P202	Do not handle until all safety precautions have been read and understood.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P301+P312	IF SWALLOWED: Call a POISON CENTER/doctor/physcian if you feel unwell,
P308+P313	IF exposed or concerned: Get medical advice/attention.
P391	Collect spillage.
P405	Store locked up.
P501	Dispose of contents/container to an approved waste disposal facility

SECTION 3: Composition/information on ingredients

Mixtures

Molecular weight: 76.12

Components	
Component	Concentration
THIOUREA (CAS no.: 62-56-6; EC no.: 200-543-5; Index no.: 612-082-00-0)	100 - 100 % (weight)
CLASSIFICATIONS: Carcinogenicity, Cat. 2; Toxic to reproduction, Cat. 2; Acute toxicity, oral, Cat. 4; Hazardous to the aquatic environment, long-term (chronic), Cat.	
2. HAZARDS: H302 - Harmful if swallowed; H351 - Suspected of causing cancer [route]; H361d - ; H411 - Toxic to aquatic life with long lasting effects.	

SECTION 4: First-aid measures

Description of necessary first-aid measures

General advice	First Aid Facilities: Maintain eyewash fountain and drench facilities in work area.	
	For advice, contact a Poisons Information Centre (e.g. phone Australia 13 11 26; New Zealand 0800 764 766) or a doctor (at once).	
If inhaled	If inhaled, remove from contaminated area. Apply artificial respiration if not breathing.	
In case of skin contact	If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water.	
In case of eye contact	If in eyes wash out immediately with water.	

If swallowed

Do not induce vomiting. Wash out mouth thoroughly with water. Seek immediate medical attention.

Most important symptoms/effects, acute and delayed

Gastrointestinal complaints, Diarrhoea, Vomiting, Nausea

Indication of immediate medical attention and special treatment needed, if necessary

For advice in an emergency, contact a Poisons Information Centre (Phone Australia 131 126) or a doctor at once.

SECTION 5: Fire-fighting measures

Suitable extinguishing media

Small fire: Use dry chemical, CO2 or water spray. If safe to do so, move undamaged containers from fire area. Large fire: Use dry chemical, CO2, foam or water spray - Do not use water jets. Cool containers with flooding quantities of water until well after the fire is out. Avoid getting water inside containers.

Specific hazards arising from the chemical

Very toxic and irritating fumes of nitroxides (NO, NO2, etc) and sulfoxides (SO2, SO3, etc). May burn but do not ignite readily. Containers may explode when heated. Runoff may pollute waterways. Fire will produce irritating, poisonous and/or corrosive gases.

Special protective actions for fire-fighters

Fire fighters should wear full protective clothing and self-contained breathing apparatus (SCBA) operated in positive pressure mode. Fight fire from safe location.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Wear respiratory protection. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.

Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating dust. Sweep up and shovel. Do not flush with water. Keep in suitable, closed containers for disposal.

SECTION 7: Handling and storage

Precautions for safe handling

Avoid ingestion and inhalation of dust. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure. Minimize dust generation and accumulation. Ensure good ventilation at the workplace. Use with adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. Under no circumstances eat, drink or smoke while handling this material. If ingested, seek medical advice immediately and show the container or the label. Wear suitable protective clothing. Wear special protective equipment for maintenance break-in or where exposures may exceed established exposure levels. Wash hands and face thoroughly after handling. Wash hands, face, forearms and neck when exiting restricted areas. Shower, remove contaminated clothing and wash before reuse, change to clean garments at the end of the day. Avoid cross-contamination of street clothes. Protect against physical damage. Isolate from oxidizing materials.

Conditions for safe storage, including any incompatibilities

Highly toxic or infectious materials should be stored in a separate locked safety storage cabinet or room. Storage site should be as close as practicable to laboratory in which carcinogens are to be used, so that only small quantities required for experiment need to be carried. Carcinogens should be kept in only one section of cupboard, an explosion-proof refrigerator or freezer (depending on chemicophysical properties) that bears appropriate label. An inventory should be kept, showing quantity of carcinogen and date it was acquired. Facilities for dispensing should be contiguous to storage area. Store in a tightly closed container, in a cool, dry, ventilated area away from

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incompatible materials. Keep well protected from direct sunlight and moisture. Protect against physical damage. Isolate from oxidizing materials. Keep away from foodstuffs, beverages and feed. Keep away from heat and all sources of ignition (open flames, sparks). Ground all equipment containing material. Wear special protective equipment for maintenance break-in or where exposures may exceed established exposure levels. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

SECTION 8: Exposure controls/personal protection

Appropriate engineering controls

Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapor, gas, etc.) below recommended exposure limits. If the engineering controls are not sufficient to maintain concentrations of vapours/mists below the exposure standards, suitable respiratory protection must be worn.

Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

The use of a face shield, chemical goggles or safety glasses with side shield protection as appropriate. Must comply with Australian Standards AS 1337 and be selected and used in accordance with AS 1336.

Skin protection

Clean impervious clothing should be worn. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals.

Hand Protection: Normally not required but if in doubt ensure hand protection should complies with AS 2161, Occupational protective gloves - Selection, use and maintenance.

Body protection

Suitable protective workwear, e.g. cotton overalls buttoned at neck and wrist is recommended. Chemical resistant apron is recommended where large quantities are handled.

Respiratory protection

If engineering controls are not effective in controlling airborne exposure then an approved respirator with a replaceable vapor/ mist filter should be used. Refer to relevant regulations for further information concerning respiratory protective requirements. Reference should be made to Australian Standards AS/ NZS 1715, Selection, Use and Maintenance of Respiratory Protective Devices; and AS/NZS 1716, Respiratory Protective Devices, in order to make any necessary changes for individual circumstances.

SECTION 9: Physical and chemical properties

Basic physical and chemical properties

Physical state Appearance Color Odor Odor threshold Melting point/freezing point Boiling point or initial boiling point and boiling range Flammability Lower and upper explosion limit/flammability limit Flash point Explosive properties Auto-ignition temperature Decomposition temperature Oxidizing properties Solid White, lustrous crystals or crystalline powder. No data available. Odourless. No data available. 169 - 173°C Not applicable (decomposes). No data available. No data available. No data available. No data available. 440°C No data available. No data available. No data available. No data available. No data available.

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Kinematic viscosity Solubility Partition coefficient n-octanol/water (log value) Vapor pressure Evaporation rate Density and/or relative density Relative vapor density

Particle characteristics

No data available.

Supplemental information regarding physical hazard classes No data available.

Further safety characteristics (supplemental) Other Information: Conversion Factor: 1 ppm = 3.11 mg/m³.

SECTION 10: Stability and reactivity

Reactivity

No data available

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

Violent reactions possibe with oxidising agents, acryl aldehyde, nitric acid, hydrogen peroxide.

Hazardous Polymerization: May occur when in contact with acrolein (acryl aldehyde).

Conditions to avoid

Strong heating, mechanical shock, dust generation and incompatibles.

Incompatible materials

Oxidizing agents, sulfhydryl-oxidizing agents, strong acids, strong bases, acrolein (acryl aldehyde), hydrogen peroxide + nitric acid, organic compounds, protein and certain hydrocarbons.

Hazardous decomposition products

Very toxic and irritating fumes of nitroxides (NO, NO2, etc) and sulfoxides (SO2, SO3, etc).

SECTION 11: Toxicological information

Information on toxicological effects

Acute toxicity

Oral: LD50 (rat): 1750 mg/kg.

Harmful if swallowed. May cause severe irritation of the digestive tract. May affect bone marrow and consequently white blood cell, red blood cell, and platelet counts. May cause anaemia, leukopaenia (reduction in the number of white blood cells in the blood), and thrombocytopaenia. May cause bone marrow depression.

Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath.

// ----- From the Suggestion report (08/03/2023, 10:07 AM) ----- //

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6.0 - 8.0 (50 g/l, 20 °C) No data available. Solubility in Water: Soluble (137 g/l @ 20 °C). Log P (o/w): -0.92; -1.08. No data available. No data available. Specific Gravity: 1.405; Density: 1.405 g/m3 @ 20°C No data available. The ATE (oral) of the mixture is: 500 mg/kg bw

Skin corrosion/irritation

Dermal: LD50 (rabbit): >2800 mg/kg.

Causes irritation, redness and pain. May cause skin sensitization and skin eruptions, an allergic reaction, which becomes evident upon reexposure to this material. Sunlight may aggravate skin allergy.

Serious eye damage/irritation

Causes eye irritation, redness and pain.

Respiratory or skin sensitization

May cause allergy or asthma symptoms or breathing difficulties if inhaled

May cause an allergic skin reaction

Germ cell mutagenicity

No data available

Carcinogenicity

The chemical is classified as H351 Suspected of causing cancer, in the HSIS (Safe Work Australia). The available data support this classification.

The International Agency for Research on Cancer (IARC) has concluded that the chemical is not classifiable as to its carcinogenicity to humans (Group 3), based on inadequate evidence for carcinogenicity in humans (IARC, 2001). However, IARC has stated that there is limited evidence for carcinogenicity in animal testing, which is consistent with the existing HSIS classification for this chemical.

Reproductive toxicity

The chemical is classified as H361 Suspected of damaging fertility or the unborn child, in the HSIS (Safe Work Australia). While there are limited data available, the known effect (including in humans) of reduction in T4 is strongly associated with developmental effects.

Specific target organ toxicity (STOT) - single exposure

No data available

Specific target organ toxicity (STOT) - repeated exposure

No data available

Aspiration hazard

No data available

Additional information

Chronic Effects: Chronic exposure can cause liver damage. Prolonged or repeated exposure may cause thyroid damage, such as goiter (an enlarged thyroid gland). Thiourea has an antithyroid effect and it is possible that fetal goiter might be produced by sufficient maternal exposure to this agent. May affect bone marrow which could cause damage to blood. Repeated or prolonged contact may cause skin sensitization.

Other Information: NICNAS - HUMAN HEALTH TIER II ASSESSMENT FOR Thiourea, CAS Number: 62-56-6

SECTION 12: Ecological information

Toxicity

Acute Toxicity - Fish: Danio rerio LC50: 10000 mg/l /96 h;

Acute Toxicity - Daphnia: Daphnia magna EC50: 35 mg/l /48 h.

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[8Z] Acute Toxicity - Algae: Desmodesmus subspicatus IC50: 3.8-10 mg/l /72 h.

[90] Acute Toxicity - Bacteria: Pseudomonas putida EC10; 1265 mg/l /18hr

Persistence and degradability

Biologic degradation: Biologically not readily degradable. Degradability: BOD: 0.013 g/g; COD: 0.84 g/g; TOD 2.42 g/g.

Bioaccumulative potential

No bioaccumulation is to be expected (log P(o/w < 1)).

Mobility in soil

Distribution: log P(o/w): -0.92.

SECTION 13: Disposal considerations

Disposal methods

Product disposal

Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers.

Sewage disposal

No bioaccumulation is to be expected (log P(o/w < 1)).

Other disposal recommendations

Do not discharge this material into waterways, drains and sewers.

SECTION 14: Transport information

ADG (Road and Rail)

UN Number: 3077 Class: 9 Packing Group: III Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (CONTAINS THIOUREA)

Hazchem emergency action code (EAC)

2X

IMDG

UN Number: 2811 Class: 6.1 Packing Group: III EMS Number: Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (CONTAINS THIOUREA) Marine Pollutant: Yes

IATA

UN Number:3077 Class: 9 Packing Group: III Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE,SOLID, N.O.S. (CONTAINS THIOUREA)

SECTION 15: Regulatory information

Safety, health and environmental regulations specific for the product in question

Australia SUSMP

Poison Schedule: S6

SECTION 16: Other information

Further information/disclaimer

ChemSupply Australia Pty Ltd does not warrant that this product is suitable for any use or purpose. The user must ascertain the suitability of the product before use or application intended purpose. Preliminary testing of the product before use or application is recommended. Any reliance or purported reliance upon ChemSupply Australia Pty Ltd with respect to any skill or judgement or advice in relation to the suitability of this product of any purpose is disclaimed. Except to the extent prohibited at law, any condition implied by any statute as to the merchantable quality of this product or fitness for any purpose is hereby excluded. This product is not sold by description. Where the provisions of Part V, Division 2 of the Trade Practices Act apply, the liability of ChemSupply Australia Pty Ltd is limited to the replacement of supply of equivalent goods or payment of the cost of replacing the goods or acquiring equivalent goods.