



TCI AMERICA

SAFETY DATA SHEET

Revision number: 2
Revision date: 10/06/2014

1. IDENTIFICATION

Product name: Thiourea [for Biochemical Research]
Product code: T2835

Product use: For laboratory research purposes.
Restrictions on use: Not for drug or household use.

Company:
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TCI America (8:00am - 5:00pm) PST
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Transportation Emergencies:
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Responsible department:
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2. HAZARD(S) IDENTIFICATION

OSHA Haz Com: CFR 1910.1200:
Acute Toxicity - Oral [Category 3]
Eye Damage/Irritation [Category 2B]
Sensitization - Skin [Category 1]
Carcinogenicity [Category 2]
Toxic to Reproduction [Category 2]
Specific Target Organ Toxicity (Single Exposure) [Category 3]
Specific Target Organ Toxicity (Repeated Exposure) [Category 1]
Aquatic Hazard (Acute) [Category 2]
Aquatic Hazard (Long-Term) [Category 2]

Signal word: Danger!

Hazard Statement(s):
Causes eye irritation
May cause an allergic skin reaction
Suspected of causing cancer
Suspected of damaging fertility or the unborn child
Toxic if swallowed
Toxic to aquatic life
Toxic to aquatic life with long lasting effects
May cause respiratory irritation.
Causes damage to organs: Thyroid Gland through prolonged or repeated exposure.

Pictogram(s) or Symbol(s):



Precautionary Statement(s):
[Prevention]

Do not eat, drink or smoke when using this product. Wash hands and face thoroughly after handling. Avoid breathing dusts or mists. Contaminated work clothing must not be allowed out of the workplace. Wear protective gloves. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves, protective clothing, eye protection and face protection. Use only outdoors or in a well-ventilated area. Do not breathe dusts or mists.

2. HAZARD(S) IDENTIFICATION**[Response]**

If swallowed: Immediately call a poison center or doctor. Rinse mouth. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice or attention. If on skin: Wash with plenty of water. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse. If exposed or concerned: Get medical advice or attention. If exposed: Call a poison center or doctor. If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center or doctor if you feel unwell. Get medical advice or attention if you feel unwell.

[Storage]

Store locked up. Store in a well-ventilated place. Keep container tightly closed.

[Disposal]

Dispose of contents and container in accordance with US EPA guidelines for the classification and determination of hazardous waste listed in 40 CFR 261.3. (See Section 13)

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance/Mixture:	Substance
Components:	Thiourea [for Biochemical Research]
Percent:	>99.0%(T)
CAS Number:	62-56-6
Molecular Weight:	76.12
Chemical Formula:	CH ₄ N ₂ S

4. FIRST-AID MEASURES**Inhalation:**

May cause coughing, difficult breathing and nausea. Immediately call a poison center or doctor. Effects of exposure (inhalation) to substance may be delayed. Inhalation of vapors or contact with substance will result in contamination and potential harmful effects. Move victim to fresh air. Give artificial respiration if victim is not breathing. Administer oxygen if breathing is difficult. Keep victim warm and quiet. Treat symptomatically and supportively. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

Skin contact:

Immediately call a poison center or doctor. Effects of exposure (skin contact) to substance may be delayed. Remove and wash contaminated clothing before re-use. In case of contact with substance, immediately flush skin with running water for at least 20 minutes. Treat symptomatically and supportively. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

Eye contact:

IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. Contact with material may irritate or burn eyes. Call emergency medical service. Move victim to fresh air. Check for and remove any contact lenses. Keep victim warm and quiet. Treat symptomatically and supportively. Effects of exposure to substance may be delayed. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

Ingestion:

Toxic if swallowed. Do not induce vomiting with out medical advice. Effects of exposure (ingestion) to substance may be delayed. If swallowed, seek medical advice immediately and show the container or label. Do not use mouth-to-mouth method if victim ingested the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Loosen tight clothing such as a collar, tie, belt or waistband. If a person vomits place them in the recovery position so that vomit will not reenter the mouth and throat. Rinse mouth. Keep victim warm and quiet. Treat symptomatically and supportively. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

Symptoms/effects:**Acute:**

Redness.

Delayed:

May cause skin sensitization. May have effects on the respiratory tract. Possibly carcinogenic to humans.

Immediate medical attention:

WARNING: It might be dangerous to the person providing aid to give mouth-to-mouth respiration, because the inhaled material is toxic. CAUTION: Victim may be a source of contamination. If breathing has stopped, perform artificial respiration. Use first aid treatment according to the nature of the injury. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

5. FIRE-FIGHTING MEASURES**Suitable extinguishing media:**

Dry chemical, CO₂ or water spray. Consult with local fire authorities before attempting large scale fire fighting operations.

Specific hazards arising from the chemical**Hazardous combustion products:**

These products include: Carbon oxides Nitrogen oxides Silicates

Other specific hazards:

Closed containers may explode from heat of a fire.

5. FIRE-FIGHTING MEASURES**Special precautions for fire-fighters:**

Use water spray or fog; do not use straight streams. Dike fire-control water for later disposal; do not scatter the material. Containers may explode when heated. Move containers from fire area if you can do it without risk.

Special protective equipment for fire-fighters:

Wear positive pressure self-contained breathing apparatus (SCBA). Structural fire fighters' protective clothing provides limited protection in fire situations ONLY; it may not be effective in spill situations. Wear chemical protective clothing which is specifically recommended by the manufacturer. It may provide little or no thermal protection.

6. ACCIDENTAL RELEASE MEASURES**Personal precautions:**

Avoid contact with skin, eyes, and clothing. Keep people away from and upwind of spill/leak. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing (Section 8). Warn unnecessary personnel to move away. Stop leak if you can do it without risk. Ensure adequate ventilation. Isolate the hazard area and deny entry to unnecessary and unprotected personnel.

Personal protective equipment:

Wear eye protection (splash goggles) and face protection (full length face shield). Wear protective clothing (chemical resistant suit and chemical resistant boots). Dust respirator. Be sure to use a MSHA/NIOSH approved respirator or equivalent. Wear protective gloves (nitrile).

Emergency procedures:

Prevent dust cloud. Do not clean-up or dispose except under supervision of a specialist. In case of a spill and/or a leak, always shut off any sources of ignition, ventilate the area, and exercise caution. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Warn personnel to move away. Prevent entry into sewers, basements or confined areas; dike if needed.

Methods and materials for containment and cleaning up:

ELIMINATE all ignition sources (no smoking, flares, sparks, or flames in immediate area). Stop leak if without risk. Absorb with an inert material and put the spilled material in an appropriate waste disposal container. Use clean non-sparking tools to collect absorbed material. Dike far ahead of spill; use dry sand to contain the flow of material. Ventilate the area.

Environmental precautions:

Keep away from living quarters. Environmental hazard. Do not let product enter drains. Prevent further leakage or spillage if safe to do so. Water runoff can cause environmental damage. Prevent entry into sewers, basements or confined areas; dike if needed.

7. HANDLING AND STORAGE**Precautions for safe handling:**

Avoid inhalation of vapor or mist. Manipulate under an adequate fume hood. Do not ingest. Avoid contact with skin and eyes. Avoid exposure - obtain special instructions before use. Avoid prolonged or repeated exposure. Normal measures for preventive fire protection. Avoid contact - obtain special instructions before use. Good general ventilation should be sufficient to control airborne levels. Keep container dry. Handle and open container with care. Wear suitable protective clothing, gloves and eye/face protection. When using do not eat, drink, or smoke. Keep away from sources of ignition.

Conditions for safe storage:

Store locked up. Keep containers tightly closed in a cool, well-ventilated place. Keep away from incompatibles. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Avoid prolonged storage periods.

Storage incompatibilities:

Combustible substances, Store away from oxidizing agents

8. EXPOSURE CONTROLS / PERSONAL PROTECTION**Exposure limits:**

No data available

Appropriate engineering controls:

Handle only in a fully enclosed system and equipment. Good general ventilation should be sufficient to control airborne levels. Ventilation is normally required when handling or using this product. Eyewash fountains should be provided in areas where there is any possibility that workers could be exposed to the substance. Follow safe industrial engineering/laboratory practices when handling any chemical.

Personal protective equipment**Respiratory protection:**

Dust respirator. Be sure to use a MSHA/NIOSH approved respirator or equivalent.

Hand protection:

Wear protective gloves.

Eye protection:

Safety glasses.

Skin and body protection:

Wear protective clothing (chemical resistant suit and chemical resistant boots).

9. PHYSICAL AND CHEMICAL PROPERTIES**Physical state (20°C):**

Solid

Form:

Crystal - Powder

Color:

White

Odor:

No data available

Odor threshold:

No data available

9. PHYSICAL AND CHEMICAL PROPERTIES

Melting point/freezing point:	177°C (351°F)	pH:	5.0 - 7.0 (50g/L H ₂ O 25°C)
Boiling point/range:	No data available	Vapor pressure:	0.4Pa/25°C
Decomposition temperature:	No data available	Vapor density:	No data available
Relative density:	No data available	Dynamic Viscosity:	No data available
Kinematic Viscosity:	No data available		
Partition coefficient: n-octanol/water (log P_{ow})	-1.08	Evaporation rate: (Butyl Acetate = 1)	No data available
Flash point:	No data available	Autoignition temperature:	440°C (824°F)
Flammability (solid, gas):	No data available	Flammability or explosive limits:	
		Lower:	No data available
		Upper:	No data available

Solubility(ies):**Water:** Soluble (142g/L, 25°C)**Soluble:** Alcohols**Very slightly soluble:** Ether**10. STABILITY AND REACTIVITY**

Reactivity:	Not Available.
Chemical Stability:	Stable under recommended storage conditions. (See Section 7)
Possibility of Hazardous Reactions:	No hazardous reactivity has been reported.
Conditions to avoid:	Avoid excessive heat and light.
Incompatible materials:	Oxidizing agents
Hazardous Decomposition Products:	No data available

11. TOXICOLOGICAL INFORMATION**RTECS Number:** YU2800000**Acute Toxicity:**

orl-rat LD50:125 mg/kg

ipr-rat LD50:436 mg/kg

scu-gpg LDLo:4 g/kg

Toxic Effects:

Blood - hemorrhage.

Blood - granulocytopenia.

Blood - changes in cell count (unspecified).

Toxic Effects:

Endocrine - evidence of thyroid hypofunction.

Skin corrosion/irritation:

No data available

Serious eye damage/irritation:

eye-rbt 14 %

Respiratory or skin sensitization:

May cause allergic skin reaction.

Germ cell mutagenicity:

dni-hmn-hla 140 mmol/L

mmo-sat 150 ug/plate (+S9)

mmo-smc 52600 umol/L (-S9)

Carcinogenicity:

orl-rat TDLo:78 g/kg/56W-C

Toxic Effects:

Tumorigenic - Carcinogenic by RTECS criteria.

Organ, Tissue or Functional System - sense organs and special senses (nose, eye, ear and taste).

Toxic Effects:

Tumorigenic - Equivocal tumorigenic agent by RTECS criteria.

Liver - multiple effects.

Lungs, Thorax or Respiration - other changes.

Toxic Effects:

Tumorigenic - Carcinogenic by RTECS criteria.

Organ, Tissue or Functional System - sense organs and special senses (nose, eye, ear and taste).

IARC: Group 3 (Not classifiable as carcinogenic to humans).

NTP: b (Reasonably anticipated to be carcinogens).

OSHA: No data available

Reproductive toxicity:

orl-rat TDLo:1 g/kg(12D preg)

Toxic Effects:

Specific developmental abnormalities - central nervous system.

Specific developmental abnormalities - musculoskeletal system.

Toxic Effects:

Maternal effects - uterus, cervix, vagina.

Maternal effects - other effects.

Toxic Effects:

Effects on fertility - post-implantation mortality.

Routes of Exposure:

Inhalation, Eye contact, Ingestion, Skin contact.

Symptoms related to exposure:

Overexposure may result in serious illness or death. Eye contact may result in redness or pain. Skin contact may result in sensitization. Readily absorbed through skin. Inhalation causes irritation of the lungs and respiratory system.

Potential Health Effects:

Inhalation causes irritation of the lungs and respiratory system.

Target organ(s):

May cause respiratory irritation.

Causes damage to organs: Thyroid Gland through prolonged or repeated exposure.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Fish:

48h LC50:>1000 ppm (Oryzias latipes)

96h LC50:>110 mg/L (Oryzias latipes)

Crustacea:

48h EC50:16 mg/L (Daphnia magna)

Algae:

72h EC50:>110 mg/L (Selenastrum capricornutum)

Persistence and degradability:

2.6 % (by BOD), 7.1 % (by TOC), 10.0 % (by HPLC), 13.5 % (by UV-VIS)

Bioaccumulative potential (BCF):

<0.2 (conc. 3 ppm), <2 (conc. 0.3 ppm)

Mobility in soil:

No data available

Partition coefficient:

-1.08

n-octanol/water (log P_{ow})

Soil adsorption (K_{oc}):

3

Henry's Law:

2.01 x 10⁻⁴

constant (PaM³/mol)

Other adverse effects:

Environmental Fate/Exposure Summary:

Thiourea's production and use as a photographic chemical, protein denaturant, in the manufacture of resins, in vulcanization accelerators, synthetic intermediate/catalyst and as a reagent for bismuth and selenite ions may result in its release to the environment through various waste streams.

Thiourea is also found to occur naturally in Laburnum shrubs and as a metabolite of Verticillium albo-atrum and Botrytis cinerea. If released to air, a vapor pressure of 2.8X10⁻³ mm Hg at 25 deg C indicates thiourea will exist solely as a vapor in the ambient atmosphere. Vapor-phase thiourea will be degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be 3 hours.

Thiourea weakly absorbs ultraviolet light in the 290 to 310 nm range with no absorption above 310 nm suggesting a potential for direct photolysis. If released to soil, thiourea is expected to have very high mobility based upon an estimated K_{oc} of 3. Volatilization from moist soil surfaces is not expected to be an important fate process based upon an estimated Henry's Law constant of 1.98X10⁻⁹ atm-cu m/mole. Thiourea will not volatilize from dry soil surfaces based upon its vapor pressure. Thiourea was shown to degrade by both chemical and microbial degradation, although high levels of thiourea may suppress microflora activity for extended periods of time. If released into water, thiourea is not expected to adsorb to suspended solids and sediment in water based upon the estimated K_{oc}. Volatilization from water surfaces is not expected to be an important fate process based upon this compound's estimated Henry's Law constant. A BCF of <0.2 suggests bioconcentration in aquatic organisms is low. Thiourea is reported to be stable to hydrolysis at environmentally relevant pH. A rate constant of 4.7X10⁻⁹/mol-sec was reported for the reaction of thiourea with hydroxyl radicals in room temperature water. At a hydroxyl radical concentration of 1X10⁻¹⁷ M in sunlit natural water, the half-life would be 171 days. Occupational exposure to thiourea may occur via dermal contact with this compound at workplaces where thiourea is produced or used. The general population may have limited exposure to this compound from consumer products containing this thiourea.

13. DISPOSAL CONSIDERATIONS

Disposal of product:	Recycle to process if possible. It is the generator's responsibility to comply with Federal, State and Local rules and regulations. You may be able to dissolve or mix material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber system. This section is intended to provide assistance but does not replace these laws, nor does compliance in accordance with this section ensure regulatory compliance according to the law. US EPA guidelines for Identification and Listing of Hazardous Waste are listed in 40 CFR Parts 261. The product should not be allowed to enter the environment, drains, water ways, or the soil.
Disposal of container:	Dispose of as unused product. Do not re-use empty containers.
Other considerations:	Observe all federal, state and local regulations when disposing of the substance.

14. TRANSPORT INFORMATION**DOT (US)**

UN number:	Proper Shipping Name:	Class or Division:	Packing Group:
UN2811	Toxic solids, organic, n.o.s.	6.1 Toxic material.	III

IATA

UN number:	Proper Shipping Name:	Class or Division:	Packing Group:
UN2811	Toxic solid, oxidizing, n.o.s.	6.1 Toxic material.	III

IMDG

UN number:	Proper Shipping Name:	Class or Division:	Packing Group:
UN2811	Toxic solid, organic, n.o.s.	6.1 Toxic material.	III

EmS number: F-A, S-A

15. REGULATORY INFORMATION**Toxic Substance Control Act (TSCA 8b.):**

This product is ON the EPA Toxic Substances Control Act (TSCA) inventory.

US Federal Regulations**CERCLA Hazardous substance and Reportable Quantity:**

SARA 313:	Not Listed
SARA 302:	Not Listed

State Regulations**State Right-to-Know**

Massachusetts	Not Listed
New Jersey	Listed
Pennsylvania	Not Listed
California Proposition 65:	Listed

Other Information**NFPA Rating:**

Health:	2
Flammability:	0
Instability:	0

HMIS Classification:

Health:	3
Flammability:	0
Physical:	0

International Inventories

WHMIS hazard class:	D1B: Materials causing immediate and serious toxic effects. (Toxic) D2B: Materials causing other toxic effects. (Toxic)
EC-No:	200-543-5

16. OTHER INFORMATION

Revision date: 10/06/2014

Revision number: 2

16. OTHER INFORMATION

TCI chemicals are for research purposes only and are NOT intended for use as drugs, food additives, households, or pesticides. The information herein is believed to be correct, but does not claim to be all inclusive and should be used only as a guide. Neither the above named supplier nor any of its affiliates or subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All chemical reagents must be handled with the recognition that their chemical, physiological, toxicological, and hazardous properties have not been fully investigated or determined. All chemical reagents should be handled only by individuals who are familiar with their potential hazards and who have been fully trained in proper safety, laboratory, and chemical handling procedures. Although certain hazards are described herein, we can not guarantee that these are the only hazards which exist. Our SDS are based only on data available at the time of shipping and are subject to change without notice as new information is obtained. Avoid long storage periods since the product is subject to degradation with age and may become more dangerous or hazardous. It is the responsibility of the user to request updated SDS for products that are stored for extended periods. Disposal of unused product must be undertaken by qualified personnel who are knowledgeable in all applicable regulations and follow all pertinent safety precautions including the use of appropriate protective equipment (e.g. protective goggles, protective clothing, breathing equipment, face mask, fume hood). For proper handling and disposal, always comply with federal, state and local regulations.