# SAFETY DATA SHEET

Version 6.10
Revision Date 03/25/2024
Print Date 07/14/2024

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1 Product identifiers

Product name : Thiourea

Product Number : T7875
Brand : Sigma-Aldrich
Index-No. : 612-082-00-0
CAS-No. : 62-56-6

### 1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

### 1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765
Fax : +1 800 325-5052

### 1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

**GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)**

Acute toxicity, Oral (Category 4), H302
Carcinogenicity (Category 2), H351
Reproductive toxicity (Category 2), H361
Short-term (acute) aquatic hazard (Category 2), H401
Long-term (chronic) aquatic hazard (Category 2), H411

For the full text of the H-Statements mentioned in this Section, see Section 16.

### 2.2 GHS Label elements, including precautionary statements



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| | |
|---|---|
| Pictogram | |
| Signal Word | Warning |

Hazard Statements

| | |
|---|---|
| H302 | Harmful if swallowed. |
| H351 | Suspected of causing cancer. |
| H361 | Suspected of damaging fertility or the unborn child. |
| H411 | Toxic to aquatic life with long lasting effects. |

Precautionary Statements

| | |
|---|---|
| P201 | Obtain special instructions before use. |
| P202 | Do not handle until all safety precautions have been read and understood. |
| P264 | Wash skin thoroughly after handling. |
| P270 | Do not eat, drink or smoke when using this product. |
| P273 | Avoid release to the environment. |
| P280 | Wear protective gloves/ protective clothing/ eye protection/ face protection. |
| P301 + P312 + P330 | IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell. Rinse mouth. |
| 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 plant. |

### 2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

## SECTION 3: Composition/information on ingredients

### 3.1 Substances

| | | |
|---|---|---|
| Synonyms | : | Sulfourea<br>Thiocarbamide |
| Formula | : | $CH_4N_2S$ |
| Molecular weight | : | 76.12 g/mol |
| CAS-No. | : | 62-56-6 |
| EC-No. | : | 200-543-5 |
| Index-No. | : | 612-082-00-0 |

| Component | Classification | Concentration |
|---|---|---|
| **Thiourea** | | |
| | Acute Tox. 4; Carc. 2; Repr. 2; Aquatic Acute 2; Aquatic Chronic 2; H302, H351, H361, H401, H411 | <= 100 % |

For the full text of the H-Statements mentioned in this Section, see Section 16.



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## SECTION 4: First aid measures

### 4.1 Description of first-aid measures

**General advice**
Show this material safety data sheet to the doctor in attendance.

**If inhaled**
After inhalation: fresh air. Call in physician.

**In case of skin contact**
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Consult a physician.

**In case of eye contact**
After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.

**If swallowed**
After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

### 4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

### 4.3 Indication of any immediate medical attention and special treatment needed
No data available

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

**Suitable extinguishing media**
Water Foam Carbon dioxide (CO2) Dry powder

**Unsuitable extinguishing media**
For this substance/mixture no limitations of extinguishing agents are given.

### 5.2 Special hazards arising from the substance or mixture
Carbon oxides
Nitrogen oxides (NOx)
Sulfur oxides
Combustible.
Development of hazardous combustion gases or vapours possible in the event of fire.

### 5.3 Advice for firefighters
Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

### 5.4 Further information
Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.



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## SECTION 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Avoid inhalation of dusts. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.
For personal protection see section 8.

### 6.2 Environmental precautions

Do not let product enter drains.

### 6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up dry. Dispose of properly. Clean up affected area. Avoid generation of dusts.

### 6.4 Reference to other sections

For disposal see section 13.

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

**Advice on safe handling**
Work under hood. Do not inhale substance/mixture.

**Hygiene measures**
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.
For precautions see section 2.2.

### 7.2 Conditions for safe storage, including any incompatibilities

**Storage conditions**
Tightly closed. Dry.

Handle and store under inert gas.

**Storage class**
Storage class (TRGS 510): 11: Combustible Solids

### 7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

**Ingredients with workplace control parameters**
Contains no substances with occupational exposure limit values.



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## 8.2 Exposure controls

**Appropriate engineering controls**
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

**Personal protective equipment**

**Eye/face protection**
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

**Skin protection**
This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN 16523-1 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:KCL 741 Dermatril® L

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN 16523-1 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:KCL 741 Dermatril® L

**Body Protection**
protective clothing

**Respiratory protection**
Recommended Filter type: Filter B-(P3)
The entrepeneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.
required when dusts are generated. Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

**Control of environmental exposure**
Do not let product enter drains.

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# SECTION 9: Physical and chemical properties

## 9.1 Information on basic physical and chemical properties

a) Appearance Form: crystalline



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| | | |
|---|---|---|
| | | Color: white |
| b) | Odor | odorless |
| c) | Odor Threshold | Not applicable |
| d) | pH | 5.0 - 7 at 50 g/l at 20 °C (68 °F) |
| e) | Melting point/freezing point | Melting point/range: 170 - 176 °C (338 - 349 °F) - lit. |
| f) | Initial boiling point and boiling range | No data available |
| g) | Flash point | ()Not applicable |
| h) | Evaporation rate | No data available |
| i) | Flammability (solid, gas) | No data available |
| j) | Upper/lower flammability or explosive limits | No data available |
| k) | Vapor pressure | No data available |
| l) | Vapor density | No data available |
| m) | Density | 1.405 g/cm3 at 20 °C (68 °F) |
| | Relative density | No data available |
| n) | Water solubility | 137 g/l at 20 °C (68 °F) |
| o) | Partition coefficient: n-octanol/water | log Pow: -0.92 at 20 °C (68 °F) - Bioaccumulation is not expected. |
| p) | Autoignition temperature | No data available |
| q) | Decomposition temperature | No data available |
| r) | Viscosity | No data available |
| s) | Explosive properties | No data available |
| t) | Oxidizing properties | none |

### 9.2 Other safety information

| | |
|---|---|
| Surface tension | ca.65.4 mN/m at 1g/l at 20 °C (68 °F) - OECD Test Guideline 115 |

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

The following applies in general to flammable organic substances and mixtures: in correspondingly fine distribution, when whirled up a dust explosion potential may generally be assumed.



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### 10.2 Chemical stability
The product is chemically stable under standard ambient conditions (room temperature) .

### 10.3 Possibility of hazardous reactions
Risk of explosion with:
chlorates
Violent reactions possible with:
acryl aldehyde
Exothermic reaction with:
Acrolein
Strong oxidizing agents
Strong acids and strong bases
hydrogen peroxide
with
Nitric acid

### 10.4 Conditions to avoid
Heat.
no information available

### 10.5 Incompatible materials
No data available

### 10.6 Hazardous decomposition products
In the event of fire: see section 5

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## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

**Acute toxicity**
LD50 Oral - Rat - female - 2,000 - 2,500 mg/kg
(OECD Test Guideline 423)
LC50 Inhalation - Rat - male and female - 4 h - > 195 mg/l - dust/mist

(OECD Test Guideline 403)
LD50 Dermal - Rabbit - male and female - > 2,800 mg/kg
(OECD Test Guideline 402)

**Skin corrosion/irritation**
Skin - Rabbit
Result: No skin irritation - 24 h
(OECD Test Guideline 404)

**Serious eye damage/eye irritation**
Eyes - Rabbit
Result: No eye irritation
(OECD Test Guideline 405)

**Respiratory or skin sensitization**
Maximization Test - Guinea pig



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Result: negative
(OECD Test Guideline 406)

**Germ cell mutagenicity**
No data available

**Carcinogenicity**
Suspected of causing cancer.

IARC: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

NTP: RAHC - Reasonably anticipated to be a human carcinogen (Thiourea)

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

**Reproductive toxicity**
Suspected of damaging the unborn child.
Suspected of damaging fertility.

**Specific target organ toxicity - single exposure**
No data available

**Specific target organ toxicity - repeated exposure**
No data available

**Aspiration hazard**
No data available

### 11.2 Additional Information

Repeated dose toxicity - Mouse - male and female - Oral - 2 yr - NOAEL (No observed adverse effect level) - 6.88 mg/kg - LOAEL (Lowest observed adverse effect level) - 27.5 mg/kg
Remarks: (ECHA)

RTECS: YU2800000
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Liver - Irregularities - Based on Human Evidence

Liver - Irregularities - Based on Human Evidence

## SECTION 12: Ecological information

### 12.1 Toxicity

| | |
|---|---|
| Toxicity to fish | static test LC50 - Pimephales promelas (fathead minnow) - > 600 mg/l - 96 h<br>Remarks: (ECHA) |
| Toxicity to daphnia and other aquatic | EC50 - Daphnia magna (Water flea) - 5.6 - 18.0 mg/l - 48 h<br>Remarks: (ECOTOX Database) |



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invertebrates

| | |
|---|---|
| Toxicity to algae | EC50 - Desmodesmus subspicatus (green algae) - 6.8 mg/l - 96 h<br>Remarks: (External MSDS) |
| Toxicity to bacteria | EC10 - Pseudomonas putida - 1,265 mg/l - 18 h<br>Remarks: (IUCLID) |

**12.2 Persistence and degradability**

| | |
|---|---|
| Biodegradability | aerobic - Exposure time 34 d<br>Result: 0 % - Not readily biodegradable.<br>(OECD Test Guideline 301C) |
| Biochemical Oxygen Demand (BOD) | 13 mg/g<br>Remarks: (IUCLID) |

**12.3 Bioaccumulative potential**

No data available

**12.4 Mobility in soil**

No data available

**12.5 Results of PBT and vPvB assessment**

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

**12.6 Endocrine disrupting properties**

No data available

**12.7 Other adverse effects**

## SECTION 13: Disposal considerations

**13.1 Waste treatment methods**

**Product**

Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

## SECTION 14: Transport information

**DOT (US)**

UN number: 3077 Class: 9 Packing group: III

Proper shipping name: Environmentally hazardous substance, solid, n.o.s. (Thiourea)

Reportable Quantity (RQ): 10 lbs

Poison Inhalation Hazard: No



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**IMDG**
UN number: 3077 Class: 9 Packing group: III EMS-No: F-A, S-F
Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Thiourea)
Marine pollutant : yes
Marine pollutant : no
**IATA**
UN number: 3077 Class: 9 Packing group: III
Proper shipping name: Environmentally hazardous substance, solid, n.o.s. (Thiourea)
**Further information**
EHS-Mark required (ADR 2.2.9.1.10, IMDG code 2.10.3) for single packagings and combination packagings containing inner packagings with Dangerous Goods > 5L for liquids or > 5kg for solids.

## SECTION 15: Regulatory information

**SARA 302 Components**
This material does not contain any components with a section 302 EHS TPQ.

**SARA 313 Components**
The following components are subject to reporting levels established by SARA Title III, Section 313:

| | CAS-No. | Revision Date |
|---|---|---|
| Thiourea | 62-56-6 | 2007-07-01 |

**SARA 311/312 Hazards**
Acute Health Hazard, Chronic Health Hazard

**Massachusetts Right To Know Components**

| | CAS-No. | Revision Date |
|---|---|---|
| Thiourea | 62-56-6 | 2007-07-01 |

**Pennsylvania Right To Know Components**

| | CAS-No. | Revision Date |
|---|---|---|
| Thiourea | 62-56-6 | 2007-07-01 |

**California Prop. 65 Components**

| | CAS-No. | Revision Date |
|---|---|---|
| , which is/are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.Thiourea | 62-56-6 | 2007-09-28 |

## SECTION 16: Other information

**Further information**
The information is believed to be correct but is not exhaustive and will be used solely as a guideline, which is based on current knowledge of the chemical substance or mixture and is applicable to appropriate safety precautions for the product. It does not represent



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