1 Identification

Product identifier

Product name: Thiourea

Stock number: A12828

CAS Number: 62-56-6

EC number: 209-543-5

Index number: 612-082-00-0

Relevant identified uses of the substance or mixture and uses advised against.

Identified use: SU24 Scientific research and development

Details of the supplier of the safety data sheet

Manufacturer/Supplier:

Alfa Aesar
Thermo Fisher Scientific Chemicals, Inc.
30 Bond Street
Ward Hill, MA 01835-8099
Tel: 800-343-0660
Fax: 800-322-4757
Email: tech@alfa.com
www.alfa.com

Information Department: Health, Safety and Environmental Department

Emergency telephone number:

During normal business hours (Monday-Friday, 8am-7pm EST), call (800) 343-0660. After normal business hours, call Carechem 24 at (866) 928-0789.

2 Hazard(s) identification

Classification of the substance or mixture in accordance with 29 CFR 1910 (OSHA HCS)

GHS08 Health hazard

Carc. 2 H351 Suspected of causing cancer.

Repr. 2 H361 Suspected of damaging fertility or the unborn child.

HGS07

Acute Tox. 4 H302 Harmful if swallowed.

Hazards not otherwise classified No information known.

Label elements

GHS label elements The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)

Hazard pictograms

GHS07 GHS08

Signal word Warning

Hazard statements

H302 Harmful if swallowed.

H351 Suspected of causing cancer.

H361 Suspected of damaging fertility or the unborn child.

Precautionary statements

P281 Use personal protective equipment as required.

P264 Wash thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P306+P313 IF exposed or concerned: Get medical advice/attention.

P405 Store locked up.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

WHMIS classification

D2A - Very toxic material causing other toxic effects

Classification system

HMIS ratings (scale 0-4)

(Hazardous Materials Identification System)

Health (acute effects) = 2

Flammability = 1

Physical Hazard = 1

Other hazards

Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

3 Composition/information on ingredients

Chemical characterization: Substances

CAS# Description:

62-56-6 Thiourea

EC number: 209-543-5

Index number: 612-082-00-0

(Contd. on page 2)
4 First-aid measures

**Description of first aid measures**
- **After inhalation**
  Supply fresh air. If required, provide artificial respiration. Keep patient warm. Seek immediate medical advice.
- **After skin contact**
  Immediately wash with water and soap and rinse thoroughly. Seek immediate medical advice.
- **After eye contact**
  Rinse opened eye for several minutes under running water. Then consult a doctor.
- **After swallowing**
  Seek medical treatment.

**Information for doctor**
- **Most important symptoms and effects, both acute and delayed**
  Harmful if swallowed. Suspected of causing cancer. Suspected of damaging fertility or the unborn child.
- **Indication of any immediate medical attention and special treatment needed**
  No further relevant information available.

5 Fire-fighting measures

**Extinguishing media**
- **Suitable extinguishing agents** Carbon dioxide, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

**Special hazards arising from the substance or mixture**
If this product is involved in a fire, the following can be released:
- Carbon monoxide and carbon dioxide
- Sulfur oxides (SOx)
- Nitrogen oxides (NOx)

**Advice for firefighters**
- **Protective equipment:**
  Wear self-contained respirator.
  Wear fully protective impervious suit.

6 Accidental release measures

**Personal precautions, protective equipment and emergency procedures**
- **Wear protective equipment.** Keep unprotected persons away.
- **Ensure adequate ventilation**
  Environmental precautions: Do not allow product to reach sewage system or any water course.
- **Methods and material for containment and cleaning up:** Dispose of contaminated material as waste according to section 13.
- **Prevention of secondary hazards:** No special measures required.

**Reference to other sections**
- See Section 7 for information on safe handling
- See Section 8 for information on personal protection equipment.
- See Section 13 for disposal information.

7 Handling and storage

**Handling**
- **Precautions for safe handling**
  Keep container tightly sealed. Store in cool, dry place in tightly closed containers. Ensure good ventilation at the workplace.
  **Information about protection against explosions and fires:** No information known.

**Conditions for safe storage, including any incompatibilities**
- **Storage**
  Requirements to be met by storerooms and receptacles: No special requirements.
  **Information about storage in one common storage facility:** Store away from oxidizing agents.
  **Further information about storage conditions:**
  Keep container tightly sealed. Store in cool, dry conditions in well sealed containers.

**Specific end use(s)**
No further relevant information available.

8 Exposure controls/personal protection

**Additional information about design of technical systems:**
- Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

**Control parameters**
- **Components with limit values that require monitoring at the workplace:**
  The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
- **Additional information:** No data

**Exposure controls**
- **Personal protective equipment**
  **General protective and hygienic measures**
  The usual precautionary measures for handling chemicals should be followed.
  Keep away from foodstuffs, beverages and feed. Remove all soiled and contaminated clothing immediately. Wash hands before breaks and at the end of work.
  Maintain an ergonomically appropriate working environment.
  **Breathing equipment:** Use suitable respirator when high concentrations are present.
  Use a respirator with type P100 (USA) or P3 (EN 143) cartridges as a backup to engineering controls. Risk assessment should be performed to determine if air-purifying respirators are appropriate. Only use equipment tested and approved under appropriate government standards.
- **Protection of hands:**
  Impervious gloves
  Check protective gloves prior to each use for their proper condition.
  The selection of suitable gloves not only depends on the material, but also on quality. Quality will vary from manufacturer to manufacturer.
- **Material of gloves**
  Nitrile rubber, NBR
- **Penetration time of glove material (in minutes)**
  480
- **Glove thickness**
  0.11 mm
- **Eye protection:** Safety glasses
- **Body protection:** Protective work clothing.
9 Physical and chemical properties

Information on basic physical and chemical properties

General Information

Appearance:
- Form: Solid
- Color: White
- Odor: Odorless
- Odor threshold: Not determined.

pH-value:
- Not applicable.

Change in condition
- Melting point/Melting range: 175-178 °C (347-352 °F)
- Boiling point/Boiling range: Not determined
- Sublimation temperature / start: Not determined
- Flammability (solid, gaseous):
  - Not determined.
- Ignition temperature: 440 °C (824 °F)
- Decomposition temperature: Not determined
- Auto igniting: Not determined.
- Danger of explosion: Not determined.
- Explosion limits:
  - Lower: Not determined
  - Upper: Not determined
- Vapor pressure: Not applicable.
- Density at 20 °C (68 °F): 1.405 g/cm³ (11.725 lbs/gal)
- Bulk density at 20 °C (68 °F): 640 kg/m³
- Relative density: Not determined.
- Vapor density: Not applicable.
- Evaporation rate: Not applicable.
- Solubility in / Miscibility with:
  - Water at 20 °C (68 °F): 136 g/l
- Partition coefficient (n-octanol/water): Not determined.
- Viscosity:
  - Dynamic: Not applicable.
  - Kinematic: Not applicable.
- Other information: No further relevant information available.

10 Stability and reactivity

Reactivity
- No information known.

Chemical stability
- Stable under recommended storage conditions.

Thermal decomposition / conditions to be avoided:
- Decomposition will not occur if used and stored according to specifications.

 Possibility of hazardous reactions:
- Reacts with strong oxidizing agents

Conditions to avoid:
- No further relevant information available.

Incompatible materials:
- Oxidizing agents

Hazardous decomposition products:
- Carbon monoxide and carbon dioxide
- Sulfur oxides (SOx)
- Nitrogen oxides

11 Toxicological information

Information on toxicological effects

Acute toxicity:
- Harmful if swallowed.

LD/LC50 values that are relevant for classification:
- No data

Skin irritation or corrosion:
- May cause irritation

Eye irritation or corrosion:
- May cause irritation

Sensitization:
- No sensitizing effects known.

Germ cell mutagenicity:
- The Registry of Toxic Effects of Chemical Substances (RTECS) contains mutation data for this substance.

Carcinogenicity:
- The Registry of Toxic Effects of Chemical Substances (RTECS) contains tumorigenic and/or carcinogenic and/or neoplastic data for this substance.

Reproductive toxicity:
- Suspected of causing cancer.

Specific target organ system toxicity - repeated exposure:
- No effects known.

Specific target organ system toxicity - single exposure:
- No effects known.

Aspiration hazard:
- No effects known.

Subacute to chronic toxicity:
- The Registry of Toxic Effects of Chemical Substances (RTECS) contains multiple dose toxicity data for this substance.

Additional toxicological information:
- To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

Carcinogenic categories:
- OSHA-Ca (Occupational Safety & Health Administration) Substance is not listed.

12 Ecological information

Toxicity:
- No further relevant information available.

Aquatic toxicity:
- No further relevant information available.

Bioaccumulative potential:
- No further relevant information available.

Mobility in soil:
- No further relevant information available.

Additional ecological information:
- General notes:
  - Do not allow product to reach ground water, water course or sewage system.
  - Danger to drinking water if even small quantities leak into the ground.
  - Also poisonous for fish and plankton in water bodies.
  - Toxic to aquatic life.
  - May cause long lasting harmful effects to aquatic life.
  - Avoid transfer into the environment.
Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

Other adverse effects: No further relevant information available.

13 Disposal considerations
Waste treatment methods
Recommendation: Consult state, local or national regulations to ensure proper disposal.

Uncleaned packagings:
Recommendation: Disposal must be made according to official regulations.

14 Transport information

<table>
<thead>
<tr>
<th>UN-Number</th>
<th>DOT, IMDG, IATA</th>
<th>UN3077</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN proper shipping name</td>
<td>DOT</td>
<td>IMDG, IATA</td>
</tr>
<tr>
<td>Environmentally hazardous substances, solid, n.o.s. (Thiourea)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Thiourea)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Transport hazard class(es)

<table>
<thead>
<tr>
<th>Class</th>
<th>DOT, IMDG</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 Miscellaneous dangerous substances and articles.</td>
<td></td>
</tr>
</tbody>
</table>

Packing group

<table>
<thead>
<tr>
<th>DOT, IMDG, IATA</th>
<th>III</th>
</tr>
</thead>
</table>

Environmental hazards:
Special marking (ADR): Symbol (fish and tree)
Special marking (IATA): Symbol (fish and tree)

Special precautions for user
EMS Number: F-A,S-F

Warning: Miscellaneous dangerous substances and articles

Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
Not applicable.

Transport/Additional information:

<table>
<thead>
<tr>
<th>DOT</th>
<th>Marine Pollutant (DOT):</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN &quot;Model Regulation&quot;:</td>
<td>UN3077, Environmentally hazardous substances, solid, n.o.s. (Thiourea), 9, III</td>
<td></td>
</tr>
</tbody>
</table>

15 Regulatory information
Safety, health and environmental regulations/legislation specific for the substance or mixture

GHS label elements
The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)

Hazard pictograms

GHS07 GHS08

Signal word: Warning

Hazard statements
H302 Harmful if swallowed.
H351Suspected of causing cancer.
H361Suspected of damaging fertility or the unborn child.

Precautionary statements
P281 Use personal protective equipment as required.
P264 Wash thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P308+P313 IF exposed or concerned: Get medical advice/attention.
P405 Store locked up.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

National regulations
All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.
All components of this product are listed on the Canadian Domestic Substances List (DSL).

SARA Section 313 (specific toxic chemical listings)

62-56-6 Thiourea

California Proposition 65

Prop 65 - Chemicals known to cause cancer
62-56-6 Thiourea

Prop 65 - Developmental toxicity Substance is not listed.
Prop 65 - Developmental toxicity, female Substance is not listed.
Prop 65 - Developmental toxicity, male Substance is not listed.

Information about limitation of use: For use only by technically qualified individuals.

Other regulations, limitations and prohibitive regulations

Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006. Substance is not listed.
The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed.

Substance is not listed.

Annex XIV of the REACH Regulations (requiring Authorisation for use) Substance is not listed.

Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

Department issuing SDS: Global Marketing Department

Date of preparation / last revision 04/21/2016 / -

Abbreviations and acronyms:

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
EINECS: European Inventory of Existing Commercial Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
HMIS: Hazardous Materials Identification System (USA)
WHMIS: Workplace Hazardous Materials Information System (Canada)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
vPvB: very Persistent and very Bioaccumulative
ACGIH: American Conference of Governmental Industrial Hygienists (USA)
OSHA: Occupational Safety and Health Administration (USA)
NTP: National Toxicology Program (USA)
IARC: International Agency for Research on Cancer
EPA: Environmental Protection Agency (USA)
Acute Tox. 4: Acute toxicity, Hazard Category 4
Carc. 2: Carcinogenicity, Hazard Category 2
Repr. 2: Reproductive toxicity, Hazard Category 2