Material Safety Data Sheet

Section 1. Chemical product and company identification

Product name
Thiourea, 100 g

Catalogue Number
RPN6301

Synonym
Urea, 2-thio-; thiocarbamide

Material uses
Industrial applications: Analytical chemistry, Research. Other non-specified industry: PHOTOGRAPHY AND PHOTOCOPYING PAPERS; ORGANIC SYNTHESIS (INTERMEDIATES, DYES, DRUGS, HAIR PREPARATIONS); RUBBER ACCELERATOR; ANALYTICAL REAGENT; AMINO RESINS; MOLD INHIBITOR.

Product type
Solid.

Validation date
21 February 2012

Supplier
GE Healthcare UK Ltd
Amersham Place
Little Chalfont
Buckinghamshire HP7 9NA
England
+44 0870 606 1921

In case of emergency
US
ChemTrec (US) 1-800-424-9300
Canada
ChemTrec (US) 1-703-527-3887

2. Hazards identification

Physical state
Solid.

Odor
Odorless.

OSHA/HCS status
This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Emergency overview
WARNING!
HARMFUL IF SWALLOWED. CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. MAY CAUSE ALLERGIC SKIN REACTION. MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA. SUSPECT CANCER HAZARD - MAY CAUSE CANCER.

Precautionary measures
Do not handle until all safety precautions have been read and understood. Obtain special instructions before use. Do not ingest. Use only with adequate ventilation. Do not eat, drink or smoke when using this product. Avoid contact with eyes, skin and clothing. Keep container tightly closed. Use personal protective equipment as required. Wash thoroughly after handling.

Routes of entry
Dermal contact. Eye contact. Inhalation. Ingestion.

Potential acute health effects

Potential chronic health effects

Eyes
Irritating to eyes.

Skin
Irritating to skin. May cause sensitization by skin contact.

Inhalation
Irritating to respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Ingestion
Toxic if swallowed.

May cause target organ damage, based on animal data. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

May cause cancer. Risk of cancer depends on duration and level of exposure.

No known significant effects or critical hazards.

No known significant effects or critical hazards.

No known significant effects or critical hazards.

No known significant effects or critical hazards.

May cause damage to the following organs: blood, liver, bone marrow, thyroid.

Adverse symptoms may include the following: respiratory tract irritation, coughing.
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No specific data.

No specific fire or explosion hazard.

No action shall be taken involving any personal risk or without suitable training.

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor. Note: see section 1 for emergency contact information and section 13 for waste disposal.

Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Avoid exposure - obtain special instructions before use. Do not get in eyes or on skin or clothing. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
Storage

Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Consult local authorities for acceptable exposure limits.

Recommended monitoring procedures. This product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

Engineering measures. Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Hygiene measures. Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal protection

Respiratory. Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Hands. Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Eyes. Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

Skin. Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Environmental exposure controls. Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Section 9. Physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Solid.</td>
</tr>
<tr>
<td>Flash point</td>
<td>Closed cup: &gt;93.3°C (&gt;199.9°F) [Product does not sustain combustion.]</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>240°C (82°F)</td>
</tr>
<tr>
<td>Color</td>
<td>White.</td>
</tr>
<tr>
<td>Odor</td>
<td>Odorless.</td>
</tr>
<tr>
<td>Molecular weight</td>
<td>76.13</td>
</tr>
<tr>
<td>Molecular formula</td>
<td>CH4N2S</td>
</tr>
<tr>
<td>pH</td>
<td>7 to 7 [Conc. (% w/w): 5%]</td>
</tr>
<tr>
<td>Boiling/condensation point</td>
<td>Decomposes.</td>
</tr>
<tr>
<td>Melting/freezing point</td>
<td>176 to 178°C (348.8 to 352.4°F)</td>
</tr>
<tr>
<td>Relative density</td>
<td>1.41</td>
</tr>
<tr>
<td>Volatility</td>
<td>0% (w/w)</td>
</tr>
<tr>
<td>VOC</td>
<td>0% (w/w) [ISO 11890-1]</td>
</tr>
<tr>
<td>Solubility</td>
<td>Easily soluble in the following materials: methanol. Soluble in the following materials: cold water and hot water. Partially soluble in the following materials: diethyl ether.</td>
</tr>
</tbody>
</table>

Section 10. Stability and reactivity

Stability. The product is stable.

Possibility of hazardous reactions. Under normal conditions of storage and use, hazardous reactions will not occur. Not considered to be a product presenting a risk of explosion.

Section 11. Toxicological information

Acute toxicity

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Dose</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thioura</td>
<td>LD50 Oral</td>
<td>Rat</td>
<td>125 mg/kg</td>
<td>-</td>
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</table>

Conclusion/Summary. Not available.

Sensitizer

Conclusion/Summary. Not available.

Classification

Conclusion/Summary. Not available.
Thiourea, 100 g

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>ACGIH</th>
<th>IARC</th>
<th>EPA</th>
<th>NIOSH</th>
<th>NTP</th>
<th>OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thiourea</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Possible</td>
</tr>
</tbody>
</table>

**Section 12. Ecological information**

**Environmental effects**
- Not readily biodegradable. This product shows a low bioaccumulation potential.

**Aquatic ecotoxicity**

- **Test**
  - **Result**
    - Acute LC50 9000 to 18000 ug/L Fresh water
  - **Species**
    - Daphnia - Water flea
    - Daphnia magna - <24 hours
  - **Exposure**
    - 48 hours

**Conclusion/Summary**
- Not available.

**Biodegradability**
- Not available.

**Partition coefficient: n-octanol/water**
- 0.92

**Bioconcentration factor**
- <2

**Other adverse effects**
- No known significant effects or critical hazards.

**Section 13. Disposal considerations**

**Waste disposal**
- The generation of waste should be avoided or minimized wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

**Section 14. Transport information**

**International transport regulations**

<table>
<thead>
<tr>
<th>Regulatory information</th>
<th>UN number</th>
<th>Proper shipping name</th>
<th>Class</th>
<th>Packing group</th>
<th>Label</th>
<th>Additional information</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOT Classification</td>
<td>UN3077</td>
<td>Environmentally hazardous substance, solid, n.o.s. (Thiourea). Marine pollutant (Thiourea)</td>
<td>B</td>
<td>P</td>
<td>P</td>
<td>Reportable quantity 10 lbs. (4.54 kg)</td>
</tr>
<tr>
<td>TDG Classification</td>
<td>UN3077</td>
<td>Environmentally hazardous substance, solid, n.o.s. (Thiourea). Marine pollutant (Thiourea)</td>
<td>B</td>
<td>P</td>
<td>P</td>
<td>-</td>
</tr>
<tr>
<td>Mexico Classification</td>
<td>UN3077</td>
<td>Environmentally hazardous substance, solid, n.o.s. (Thiourea). Marine pollutant (Thiourea)</td>
<td>B</td>
<td>P</td>
<td>P</td>
<td>-</td>
</tr>
</tbody>
</table>
Section 15. Regulatory information

**HCS Classification**
- Toxic material
- Irritating material
- Sensitizing material
- Carcinogen
- Target organ effects

**U.S. Federal regulations**
- **TSCA 8(a) PAIR**: Thiourea
- **TSCA 8(a) IUR Exempt/Partial exemption**: Not determined
- **United States inventory (TSCA 8b)**: This material is listed or exempted
- **SARA 302/304/311/312 extremely hazardous substances**: No products were found.
- **SARA 302/304 emergency planning and notification**: No products were found.
- **SARA 302/304/311/312 hazardous chemicals**: Thiourea
- **SARA 311/312 MSDS distribution - chemical inventory - hazard identification**: Thiourea: Immediate (acute) health hazard, Delayed (chronic) health hazard

**Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs)**
- Not listed

**Clean Air Act Section 602 Class I Substances**
- Not listed

**Clean Air Act Section 602 Class II Substances**
- Not listed

**DEA List I Chemicals (Precursor Chemicals)**
- Not listed

**DEA List II Chemicals (Essential Chemicals)**
- Not listed

**SARA 313**
- **Form R - Reporting requirements**
  - **Product name**: Thiourea
  - **CAS number**: 62-56-6
  - **Concentration**: 100
- **Supplier notification**
  - **Product name**: Thiourea
  - **CAS number**: 62-56-6
  - **Concentration**: 100

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

**State regulations**
WARNING: This product contains a chemical known to the State of California to cause cancer.

<table>
<thead>
<tr>
<th>Ingredient name</th>
<th>Cancer</th>
<th>Reproductive</th>
<th>No significant risk level</th>
<th>Maximum acceptable dosage level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thiourea</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

United States inventory (TSCA 8b) This material is listed or exempted.

International regulations

- Australia inventory (AICS): This material is listed or exempted.
- China inventory (IECSC): This material is listed or exempted.
- Korea inventory: This material is listed or exempted.
- New Zealand inventory of Chemicals (NZIoC): This material is listed or exempted.
- Philippines inventory (PICCS): This material is listed or exempted.
- Chemical Weapons Convention List Schedule I Chemicals: Not listed
- Chemical Weapons Convention List Schedule II Chemicals: Not listed
- Chemical Weapons Convention List Schedule III Chemicals: Not listed

Section 16. Other information

Label requirements

HARMFUL IF SWALLOWED. CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. MAY CAUSE ALLERGIC SKIN REACTION. MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA. SUSPECT CANCER HAZARD - MAY CAUSE CANCER.

The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (U.S.A.)

- Flammability: 1
- Health: 3
- Instability: 0
- Special:

Indicates information that has changed from previously issued version.

History

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<th>Date of printing</th>
<th>Date of previous issue</th>
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<td>21 February 2012</td>
<td>23 July 2009</td>
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<tr>
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<tr>
<td>21 February 2012</td>
<td>4.01</td>
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Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its 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 materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.