

# Material Safety Data Sheets

## 1. IDENTIFICATION

<b>Product Name</b>	<b>Thiourea</b>
<b>Other Names</b>	2-Thiourea; Beta-Thiopseudourea; Isothiourea; Sulfoarea; Thiocarbamide
<b>Uses</b>	Organic synthesis; vulcanising accelerators; Production of pharmaceuticals, dyes, resins, plastic powder, rubber; Metal mineral flotation.
<b>Chemical Family</b>	No Data Available
<b>Chemical Formula</b>	CH <sub>4</sub> N <sub>2</sub> S
<b>Chemical Name</b>	Thiourea
<b>Product Description</b>	Mono-constituent substance (organic).
<b>Company</b>	Arman sina.co
<b>Contact Information</b>	<a href="mailto:info@armansina.com">info@armansina.com</a> <a href="http://www.armansina.com">www.armansina.com</a>

## 2. HAZARD IDENTIFICATION

### Globally Harmonised System

<b>Hazard Classification</b>	Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)
<b>Hazard Categories</b>	Acute Toxicity (Oral) - Category 4 Carcinogenicity - Category 2 Toxic To Reproduction - Category 2 Acute Hazard To The Aquatic Environment - Category 2 Long-term Hazard To The Aquatic Environment - Category 2

### Pictograms



**Signal Word** Warning

<b>Hazard Statements</b>	<b>H302</b>	Harmful if swallowed.
	<b>H351</b>	Suspected of causing cancer.
	<b>H361fd</b>	Suspected of damaging fertility. Suspected of damaging the unborn child.
	<b>H411</b>	Toxic to aquatic life with long lasting effects.

<b>Precautionary Statements</b>	Prevention	<b>P281</b>	Use personal protective equipment as required.
		<b>P201</b>	Obtain special instructions before use.
		<b>P273</b>	Avoid release to the environment.
		<b>P264</b>	Wash hands thoroughly after handling.
		<b>P270</b>	Do not eat, drink or smoke when using this product.
	Response	<b>P308 + P313</b>	IF exposed or concerned: Get medical advice.
		<b>P391</b>	Collect spillage.
		<b>P301 + P312</b>	IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell.
	Storage	<b>P330</b>	Rinse mouth.
		<b>P405</b>	Store locked up.
Disposal	<b>P501</b>	Dispose of contents/container in accordance with local / regional / national / international regulations.	

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

#### Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Thiourea	CH4N2S	62-56-6	<=100 %

### 4. FIRST AID MEASURES

#### Description of necessary measures according to routes of exposure

<b>Swallowed</b>	IF SWALLOWED: Rinse mouth, then drink plenty of water. Do not induce vomiting unless directed to do so by medical personnel. Call a Poison Centre or doctor/physician for advice. Never give anything by mouth to an unconscious person.
<b>Eye</b>	IF IN EYES: Immediately flush eyes with running water for several minutes, holding eyelids open and occasionally lifting the upper and lower lids. Remove contact lenses if present and easy to do. Continue rinsing for at least 15 minutes. If eye irritation persists, get medical advice/attention.
<b>Skin</b>	IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash it before reuse. If skin irritation occurs, get medical advice/attention.
<b>Inhaled</b>	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If respiratory symptoms persist, get medical advice/attention. Give artificial respiration if victim is not breathing. Administer oxygen if breathing is difficult.
<b>Advice to Doctor</b>	If exposed or concerned, get medical advice/attention. Treat symptomatically and supportively. Symptoms may be delayed. Ensure that attending medical personnel are aware of the identity and nature of the product(s) involved, and take precautions to protect themselves.

**Medical Conditions Aggravated by No information available.**

**Exposure**

### 5. FIRE FIGHTING MEASURES

<b>General Measures</b>	If safe to do so, move undamaged containers from fire area. Cool containers with water spray until well after fire is out.
<b>Flammability Conditions</b>	Combustible solid; May burn but does not ignite readily.
<b>Extinguishing Media</b>	Use dry chemical, Carbon dioxide (CO <sub>2</sub> ), alcohol-resistant foam or water spray for extinction - Do not use water jet (may scatter or spread fire).
<b>Fire and Explosion Hazard</b>	Avoid generating dust; Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.
<b>Hazardous Products of Combustion</b>	Fire may produce irritating, toxic and/or corrosive fumes, including Carbon oxides, Sulfur oxides, Nitrogen oxides.
<b>Special Fire Fighting Instructions</b>	Prevent entry into drains and waterways. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
<b>Personal Protective Equipment</b>	Wear positive pressure self-contained breathing apparatus (SCBA) and chemical splash suit. SCBA and structural firefighter's uniform may provide limited protection.
<b>Flash Point</b>	No Data Available
<b>Lower Explosion Limit</b>	No Data Available
<b>Upper Explosion Limit</b>	No Data Available
<b>Auto Ignition Temperature</b>	>400 ° C
<b>Hazchem Code</b>	No Data Available

### 6. ACCIDENTAL RELEASE MEASURES

<b>General Response Procedure</b>	Ensure adequate ventilation. ELIMINATE all ignition sources (if dust clouds can occur). Do not touch or walk through spilled material. Avoid breathing dust and contact with eyes, skin and clothing.
<b>Clean Up Procedures</b>	Collect material (sweep or vacuum up) and place into suitable, properly labelled containers for later disposal (see SECTION 13). Avoid dispersal of dust in the air. Non-sparking tools should be used.
<b>Containment</b>	Stop leak if safe to do so – Prevent entry into waterways, drains or confined areas. Prevent dust cloud.
<b>Decontamination</b>	Ventilate the area.
<b>Environmental Precautionary Measures</b>	Spillages and decontamination runoff should be prevented from entering drains and watercourses.
<b>Evacuation Criteria</b>	Spill or leak area should be isolated immediately. Keep unauthorised personnel away. Keep upwind and to higher ground.
<b>Personal Precautionary Measures</b>	Use personal protective equipment as required (see SECTION 8). <b>Large spill: Wear SCBA and chemical splash suit.</b>

## 7. HANDLING AND STORAGE

<b>Handling</b>	Safety showers and eyewash facilities should be provided within the immediate work area for emergency use. Ensure adequate ventilation. Obtain special instructions before use - Do not use until all safety precautions have been read and understood. Minimise dust generation and accumulation. Avoid breathing dust and contact with eyes, skin and clothing. Do not ingest. Use personal protective equipment as required (see SECTION 8). <b>WARNING:</b> May form combustible dust concentrations in air! Keep away from heat and sources of ignition - No smoking. Take precautionary measures against static discharge.
<b>Storage</b>	Store in a cool, dry and well-ventilated place, out of direct sunlight. Keep container tightly closed. Protect from moisture. Protect against physical damage. Keep away from heat and sources of ignition - No smoking. Keep away from foodstuff containers and incompatible materials (see SECTION 10). Store locked up.
<b>Container</b>	Keep in the original container. *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.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

<b>General</b>	No specific exposure standards are available for this product. For dusts from solid substances without specific occupational exposure standards: - Safe Work Australia Exposure Standard (Nuisance dusts): 8 hr TWA = 10 mg/m <sup>3</sup> (measured as inhalable dust). - New Zealand WES (Particulates not otherwise classified): TWA = 10 mg/m <sup>3</sup> ; TWA = 3 mg/m <sup>3</sup> (respirable dust).
<b>Exposure Limits</b>	No Data Available
<b>Biological Limits</b>	No information available.
<b>Engineering Measures</b>	A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Use explosion-proof electrical/ventilating/lighting equipment.
<b>Personal Protection Equipment</b>	- Respiratory protection: Wear respiratory protection in case of inadequate ventilation or if an inhalation risk exists. Recommended: Dust mask/particulate filter respirator or full-face respirator with multi-purpose combination or type AXBEK respirator cartridges (refer to AS/NZS 1715 & 1716). - Eye/face protection: Wear appropriate eye protection to avoid eye contact. Recommended: Safety glasses or goggles. - Hand protection: Handle with gloves. Recommended: Impervious protective gloves, e.g. Butyl rubber. - Skin/body protection: Wear appropriate personal protective clothing to avoid skin contact. Recommended: Overalls, safety shoes.
<b>Special Hazards Precautions</b>	No information available.
<b>Work Hygienic Practices</b>	Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Remove contaminated clothing and shoes immediately and wash before reuse. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Physical State</b>	Solid
<b>Appearance</b>	Crystalline
<b>Odour</b>	Odourless
<b>Colour</b>	White
<b>pH</b>	No Data Available
<b>Vapour Pressure</b>	No Data Available
<b>Relative Vapour Density</b>	No Data Available
<b>Boiling Point</b>	>35 ° C
<b>Melting Point</b>	171 - 178 ° C
<b>Freezing Point</b>	No Data Available
<b>Solubility</b>	Soluble in water
<b>Specific Gravity</b>	1.41 (Water = 1)
<b>Flash Point</b>	No Data Available
<b>Auto Ignition Temp</b>	>400 ° C
<b>Evaporation Rate</b>	No Data Available
<b>Bulk Density</b>	No Data Available
<b>Corrosion Rate</b>	No Data Available
<b>Decomposition Temperature</b>	>180 ° C
<b>Density</b>	1.41 g/cm <sup>3</sup>
<b>Specific Heat</b>	No Data Available
<b>Molecular Weight</b>	76.12 g/mol
<b>Net Propellant Weight</b>	No Data Available
<b>Octanol Water Coefficient</b>	2.5
<b>Particle Size</b>	No Data Available
<b>Partition Coefficient</b>	No Data Available
<b>Saturated Vapour Concentration</b>	No Data Available
<b>Vapour Temperature</b>	No Data Available
<b>Viscosity</b>	No Data Available
<b>Volatile Percent</b>	No Data Available
<b>VOC Volume</b>	No Data Available
<b>Additional Characteristics</b>	No information available.
<b>Potential for Dust Explosion</b>	Avoid generating dust; Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.
<b>Fast or Intensely Burning Characteristics</b>	No information available.
<b>Flame Propagation or Burning Rate of Solid Materials</b>	No information available.
<b>Non-Flammables That Could Contribute Unusual Hazards to a Fire</b>	No information available.
<b>Properties That May Initiate or Contribute to Fire Intensity</b>	Combustible solid; May burn but does not ignite readily.
<b>Reactions That Release Gases or Vapours</b>	Fire/decomposition may produce irritating, toxic and/or corrosive fumes, including Carbon oxides, Sulfur oxides, Nitrogen oxides.
<b>Release of Invisible Flammable Vapours and Gases</b>	When heated, vapours may form explosive mixtures with air.

## 10. STABILITY AND REACTIVITY

<b>General Information</b>	No information available.
<b>Chemical Stability</b>	Stable under proper operation and storage conditions.
<b>Conditions to Avoid</b>	Avoid generating dust. Keep away from heat and sources of ignition.
<b>Materials to Avoid</b>	Incompatible/reactive with oxidising agents, strong acids, strong alkalis, Hydrogen peroxide, Acrolein, Acrylaldehyde.
<b>Hazardous Decomposition Products</b>	Fire/decomposition may produce irritating, toxic and/or corrosive fumes, including Carbon oxides, Sulfur oxides, Nitrogen oxides.
<b>Hazardous Polymerisation</b>	May occur when in contact with acrylaldehyde.

## 11. TOXICOLOGICAL INFORMATION

<b>General Information</b>	<ul style="list-style-type: none"><li>- Acute toxicity: Harmful if swallowed. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea.</li><li>- Skin corrosion/irritation: Slightly irritating to skin. May cause skin irritation.</li><li>- Eye damage/irritation: May cause slight eye irritation.</li><li>- Respiratory/skin sensitisation: Not found to induce dermal sensitisation (Guinea pigs). In humans: Cases of contact dermatitis have been reported in individuals following exposure to the chemical during formulation processes, or to products containing the chemical. May cause an allergic reaction, which becomes evident upon re-exposure to this material; May cause skin eruptions.</li><li>- Germ cell mutagenicity: The chemical is considered unlikely to be a genotoxic carcinogen [NICNAS].</li><li>- Carcinogenicity: Suspected of causing cancer. Thiourea (CAS No. 62-56-6) is classified in Group 3 of the IARC Monographs: Not classifiable as to its carcinogenicity to humans, based on inadequate evidence for carcinogenicity in humans; However, there is (limited) evidence for carcinogenicity in animal testing. Thiourea is well absorbed and concentrates in the thyroid, where it causes decreased thyroid hormone production and a compensatory increase of proliferation of thyroid tissue. This is the probable basis of the tumourigenic activity of thiourea for the thyroid in experimental animals.</li><li>- Reproductive toxicity: Suspected of damaging the unborn child. While there are limited data available, the known effect of reduction in thyroxine (T4) is strongly associated with developmental effects [NICNAS].</li><li>- STOT (single exposure): Inhalation of dust may cause respiratory tract irritation (mucous membranes).</li><li>- STOT (repeated exposure): Reported effects include adverse effects relating to the thyroid, specifically enlargement or hyperplasia of the thyroid; reduced body weight, enlargement and increased weight of the pituitary and reduced levels of the thyroid hormone, thyroxine (T4).</li><li>- Aspiration toxicity: No information available.</li></ul>
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### *Acute*

<b>Ingestion</b>	Acute toxicity (Oral): - LD50, Rat: >2,000 - 2,500 mg/kg bw. [Supplier's SDS].
<b>Other</b>	Acute toxicity (Dermal): - LD50, Rabbits: >2,800 mg/kg bw.
<b>Inhalation</b>	Acute toxicity (Inhalation): - LC50, Rats: >195 mg/m <sup>3</sup> (4 h) [maximum attainable concentration].
<b>Carcinogen Category</b>	Cat. 2

## 12. ECOLOGICAL INFORMATION

<b>Ecotoxicity</b>	Aquatic toxicity: - EC50, Crustacea: 16 mg/L (48 h). - ErC50, Algae/aquatic plants: 5.6 mg/L (96 h). - Chronic NOEC, Crustacea: 1.8 mg/L
<b>Persistence/Degradability</b>	Not readily biodegradable; however, may be regarded as inherently and ultimately biodegradable.
<b>Mobility</b>	Thiourea is expected to be mobile in soil. Thiourea is considered to be non-volatile from water surfaces and is not expected to volatilise from soil.

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<b>Environmental Fate</b>	Toxic to aquatic life with long lasting effects - Prevent entry into drains and waterways.
<b>Bioaccumulation Potential</b>	Low potential for bioaccumulation (log octanol water partition coefficient less than 3).
<b>Environmental Impact</b>	No Data Available

### 13. DISPOSAL CONSIDERATIONS

<b>General Information</b>	Dispose of contents/container through a licensed waste contractor and in accordance with local/regional/national regulations.
<b>Special Precautions for Land Fill</b>	Contaminated packaging: Do not reuse empty containers. Do not burn or use a cutting torch on, or near, the empty drum.

### 14. TRANSPORT INFORMATION

#### Land Transport

<b>Proper Shipping Name</b>	Thiourea
<b>Class</b>	No Data Available
<b>Subsidiary Risk(s)</b>	No Data Available
<b>EPG</b>	171 Substances (Low to Moderate Hazard)
<b>UN Number</b>	No Data Available
<b>Hazchem</b>	No Data Available
<b>Pack Group</b>	No Data Available
<b>Special Provision</b>	AU01
<b>Comments</b>	Not regulated as DG when transported by road or rail in packagings that do not incorporate a receptacle exceeding 500 kg(L) or IBCs.

#### Sea Transport

<b>Proper Shipping Name</b>	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Thiourea)
<b>Class</b>	9 Miscellaneous Dangerous Goods and Articles
<b>Subsidiary Risk(s)</b>	No Data Available
<b>UN Number</b>	3077
<b>Hazchem</b>	2Z
<b>Pack Group</b>	III
<b>Special Provision</b>	No Data Available
<b>EMS</b>	F-A, S-F
<b>Marine Pollutant</b>	Yes

#### Air Transport

<b>Proper Shipping Name</b>	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Thiourea)
<b>Class</b>	9 Miscellaneous Dangerous Goods and Articles
<b>Subsidiary Risk(s)</b>	No Data Available
<b>UN Number</b>	3077
<b>Hazchem</b>	2Z
<b>Pack Group</b>	III
<b>Special Provision</b>	No Data Available

## 15. OTHER INFORMATION

Revision	2
Key/Legend	<p>&lt; Less Than &gt; Greater Than AICS Australian Inventory of Chemical Substances atm Atmosphere CAS Chemical Abstracts Service (Registry Number) cm<sup>2</sup> Square Centimetres CO<sub>2</sub> Carbon Dioxide COD Chemical Oxygen Demand deg C (° C) Degrees Celcius EPA (New Zealand) Environmental Protection Authority of New Zealand deg F (° F) Degrees Farenheit g Grams g/cm<sup>3</sup> Grams per Cubic Centimetre g/l Grams per Litre HSNO Hazardous Substance and New Organism IDLH Immediately Dangerous to Life and Health immiscible Liquids are insoluable in each other. inHg Inch of Mercury inH<sub>2</sub>O Inch of Water K Kelvin kg Kilogram kg/m<sup>3</sup> Kilograms per Cubic Metre lb Pound LC50 LC stands for lethal concentration. LC50 is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours. LD50 LD stands for Lethal Dose. LD50 is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals. ltr or L Litre m<sup>3</sup> Cubic Metre mbar Millibar mg Milligram mg/24H Milligrams per 24 Hours mg/kg Milligrams per Kilogram mg/m<sup>3</sup> Milligrams per Cubic Metre Misc or Miscible Liquids form one homogeneous liquid phase regardless of the amount of either component present. mm Millimetre mmH<sub>2</sub>O Millimetres of Water mPa.s Millipascals per Second N/A Not Applicable NIOSH National Institute for Occupational Safety and Health NOHSC National Occupational Heath and Safety Commission OECD Organisation for Economic Co-operation and Development Oz Ounce PEL Permissible Exposure Limit Pa Pascal ppb Parts per Billion ppm Parts per Million ppm/2h Parts per Million per 2 Hours ppm/6h Parts per Million per 6 Hours psi Pounds per Square Inch R Rankine RCP Reciprocal Calculation Procedure STEL Short Term Exposure Limit TLV Threshold Limit Value tne Tonne TWA Time Weighted Average ug/24H Micrograms per 24 Hours UN United Nations wt Weight</p>