

THIOUREA

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SECTION 1: IDENTIFICATION

1.1 GHS Product identifier:

THIOUREA
Thiocarbamide; Sulfourea
CAS: 62-56-6

Other means of identification:

Not relevant

1.2 Recommended use of the chemical and restrictions on use:

Relevant uses: Chemical intermediate for rubber vulcanization accelerators, metal cleaning/pickling additives, photographic chemicals, resins and pharmaceuticals. For industrial user only.
Uses advised against: All uses not specified in this section or in section 7.3.

1.3 Supplier's details:

SURAJ CHEMICALS
No 92, Govindappa Naicken Street, Shiva Complex, Chennai – 600001, Tamil Nadu, India
Tel: +91 - 7092722822, +91 - 9840284032 / +91 - 44 - 25393652, 42130281
Email: sales@surajchemicals.com | Website: www.surajchemicals.com
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1.4 Emergency phone number:

Emergency Contact No: +91 - 7092722822, +91 - 9840284032

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture:

GHS:
Classification of this product has been carried out in accordance with the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Acute Tox. 4 (oral)	Acute oral toxicity, Category 4, H302
Carc. 2	Carcinogenicity, Category 2, H351
Aquatic Chronic 3	Hazardous to the aquatic environment, chronic hazard, Category 3 (not a classified category under GHS Rev.8 but used by some supplier SDS for guidance)

Per well-established published GHS data for this CAS number, the principal classifications are Acute Tox. 4 (oral) and Carc. 2; aquatic hazard classification varies by supplier SDS and jurisdiction – refer to current specification sheet/regional SDS where this product is used for formal regulatory classification purposes.

2.2 GHS label elements, including precautionary statements:

GHS: Warning

Hazard statements:

H302: Harmful if swallowed.
H351: Suspected of causing cancer.

Precautionary statements:

P201: Obtain special instructions before use.
P202: Do not handle until all safety precautions have been read and understood.
P264: Wash hands thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.
P280: Wear protective gloves/eye protection.
P301+P312: IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
P308+P313: IF exposed or concerned: Get medical advice/attention.
P330: Rinse mouth.
P501: Dispose of the contents/containers in accordance with regulations on hazardous waste or packaging and packaging waste, respectively.

2.3 Other hazards which do not result in classification:

Known to cause thyroid effects (antithyroid/goitrogenic action) in animal studies with repeated exposure. Not classified as a PBT/vPvB substance per available data.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Substances:

Chemical description: Thiourea

In accordance with Annex 4.3.3 of the GHS, the product contains:

Identification	Chemical Name / Classification	Concentration
CAS: 62-56-6	Thiourea — Acute Tox. 4: H302; Carc. 2: H351 – Warning	≥ 99% (typical commercial grade)

To obtain more information on the hazards of the substances, consult sections 11, 12 and 16.

3.2 Mixtures:

Non-applicable

SECTION 4: FIRST AID MEASURES

4.1 Description of necessary first-aid measures:

Request medical assistance if symptoms occur, showing the SDS of this product.

By inhalation:

Remove the person affected from the area of exposure to fresh air and keep at rest. Seek medical attention if coughing or discomfort persists.

By skin contact:

Remove contaminated clothing. Wash skin thoroughly with soap and water. Seek medical advice if irritation persists.

By eye contact:

Rinse eyes thoroughly with lukewarm water for at least 15 minutes, lifting eyelids occasionally. Remove contact lenses if present and easy to do. Seek medical advice if irritation persists.

By ingestion/aspiration:

Rinse out the mouth. Do not induce vomiting. Seek medical attention, showing the SDS of this product. Keep the person at rest.

4.2 Most important symptoms/effects, acute and delayed:

Nausea, vomiting and headache possible with significant acute ingestion. Repeated exposure associated with thyroid gland effects in animal studies. See sections 2 and 11.

4.3 Indication of immediate medical attention and special treatment needed, if necessary:

No specific antidote; treat symptomatically. Monitor thyroid function following significant repeated exposure if clinically indicated.

SECTION 5: FIRE-FIGHTING MEASURES

5.1 Suitable extinguishing media:

Suitable: Water spray/fog, foam, dry chemical powder, carbon dioxide
Unsuitable: High-pressure water jet (may disperse dust)

5.2 Specific hazards arising from the chemical:

Combustible solid. Fine dust may form explosive dust-air mixtures in the presence of an ignition source. Combustion may release sulfur oxides, carbon monoxide, carbon dioxide and nitrogen oxides.

5.3 Special protective actions for fire-fighters:

Evacuate non-essential personnel. Wear self-contained breathing apparatus and protective clothing in enclosed areas.

Additional provisions:

Avoid dust formation during fire-fighting/clean-up operations. Cool closed containers exposed to fire with water spray.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures:

For non-emergency personnel:

Avoid generating dust. Use PPE described in section 8. Ensure adequate ventilation.

For emergency responders:

Wear appropriate protective equipment as per section 8.

6.2 Environmental precautions:

Avoid release to drains, water courses and soil. Contain spillage.

6.3 Methods and materials for containment and cleaning up:

Sweep up (avoid dust generation) and place in a suitable, labelled container for disposal or recovery.

6.4 Reference to other sections:

See sections 8 and 13.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling:

A. General precautions for safe use:

Avoid generating dust. Provide adequate ventilation. Avoid prolonged or repeated exposure.

B. Technical recommendations for the prevention of fires and explosions:

Use dust-tight equipment and anti-static earthing where handling in bulk/powder form to control combustible dust hazard.

C. Technical recommendations on general occupational hygiene:

Do not eat, drink or smoke while handling. Wash hands thoroughly after handling.

D. Technical recommendations to prevent environmental risks:

Prevent release to drains and watercourses. Follow the protective measures given in section 8.

7.2 Conditions for safe storage, including any incompatibilities:

A. Specific storage requirements:

Minimum Temp.	Ambient
Maximum Temp.	30°C
Maximum time	24 Months (unopened, in original packaging)

B. General conditions for storage:

Store in a cool, dry, well-ventilated place away from strong oxidizers, in tightly closed containers.

7.3 Specific end use(s):

Except for the instructions already specified, it is not necessary to provide any special recommendation regarding the uses of this product.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters:

No specific occupational exposure limit is established for thiourea under Indian regulations.

Identification	Occupational Exposure Limit Type	Value
Thiourea CAS: 62-56-6	No established OEL (general dust: TWA)	Typical value – refer to current specification sheet

8.2 Appropriate engineering controls:

Use local exhaust ventilation or dust extraction where powder/dust is generated, in addition to PPE as needed.

B. Respiratory protection:

Use a particulate (dust) respirator (FFP2/N95 or better) where dust generation is significant or ventilation is inadequate.

C. Specific protection for the hands:

Chemical-resistant gloves (e.g. nitrile). Replace at any sign of damage.

D. Eye and face protection:

Safety glasses with side shields; use chemical goggles where dust generation is significant.

E. Bodily protection:

Standard industrial workwear; antistatic clothing recommended where combustible dust may be present.

F. Additional emergency measures:

Eyewash station and washing facilities should be available in the work area.

Environmental exposure controls:

Avoid environmental spillage of both the product and its container. See subsection 7.1.D.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties:

Appearance

Physical state at 20°C	Solid (crystalline powder)
Appearance	White crystalline solid
Color	White
Odor	Faint, slightly unpleasant odour
Odour threshold	Not established
Volatility	
Boiling point at atmospheric pressure	Non-applicable (decomposes before boiling)
Vapour pressure at 20°C	Negligible
Evaporation rate at 20°C	Not relevant (solid)
Product Description	
Density / Relative density at 20°C	~1.40–1.41 g/cm³
Dynamic / Kinematic viscosity	Non-applicable (solid)
Concentration	≥99% (typical commercial grade)
pH (5% aqueous solution)	~6.0–7.0 (typical)
Vapour density	Not relevant
Partition coefficient n-octanol/water (log Pow)	~ -1.0 (hydrophilic)
Solubility in water at 20°C	~142 g/L (freely soluble)
Decomposition temperature	Typical value – refer to current specification sheet
Melting point/freezing point	176–178°C (with decomposition)
Flammability	
Flash Point	Non-applicable (solid)
Flammability (solid, gas)	Combustible solid; not readily flammable
Autoignition temperature	Typical value – refer to current specification sheet
Lower / Upper flammability limit	Not established
Particle Characteristics	
Median equivalent diameter	Varies by grade – refer to current specification sheet

* Values are typical for the commercial grade; refer to current specification sheet for batch-specific data.

9.2 Other information:

Explosive properties	Not classified; fine dust may be combustible
Oxidising properties	Not relevant – not an oxidiser
Corrosive to metals	Not relevant
Heat of combustion	Not established
Surface tension	Not relevant
Refraction index	Not relevant

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity:
Stable under normal conditions of use. Reacts with strong oxidizing agents; may form hazardous sulfur-containing decomposition products on strong heating.

10.2 Chemical stability:
Chemically stable under the indicated conditions of storage, handling and use.

10.3 Possibility of hazardous reactions:
Under the specified conditions, hazardous reactions are not expected. Fine dust clouds may be combustible in the presence of an ignition source.

10.4 Conditions to avoid:

Shock/Friction	Contact with Air	Increase in Temperature	Sunlight	Humidity
Avoid generating dust clouds	Not applicable	Avoid excessive heat (decomposes above melting point)	No special measures	No special measures

10.5 Incompatible materials:

Strong Oxidizers	Strong Acids/Bases	Ignition Sources
Avoid contact – may react vigorously	No significant reaction known	Keep away

10.6 Hazardous decomposition products:
Thermal decomposition may release sulfur oxides, hydrogen sulfide, carbon monoxide, carbon dioxide and nitrogen oxides.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects:
Per well-established published data for this CAS number, thiourea presents the following toxicological profile:

A. Ingestion (acute effect):
Harmful if swallowed. May cause nausea, vomiting and gastrointestinal discomfort.

B. Inhalation (acute effect):
Dust may cause irritation of the respiratory tract; not expected to cause severe acute effects at typical exposure levels.

C. Contact with skin and eyes (acute effect):
Not classified as a skin or eye irritant per standard GHS criteria based on available data; may cause mild transient irritation.

D. CMR effects (carcinogenicity, mutagenicity, reproductive toxicity):
Suspected of causing cancer (Carc. 2, H351) based on animal studies showing thyroid and liver tumours with chronic high-dose exposure. IARC: Group 3 (not classifiable as to carcinogenicity to humans) per IARC's own review, though national classification schemes (e.g. used by some supplier SDS) list it as Category 2 based on animal data. Not classified for germ cell mutagenicity or reproductive toxicity based on available data.

E. Sensitizing effects:
Not classified as a skin or respiratory sensitizer based on available data.

F. Specific target organ toxicity (STOT) – single exposure:

Classification criteria are not met based on available data.

G. Specific target organ toxicity (STOT) – repeated exposure:

Repeated administration in animal studies has been associated with antithyroid (goitrogenic) activity and liver effects; not formally classified as STOT RE under all supplier SDS – refer to current specification sheet for grade/regulatory-specific classification.

H. Aspiration hazard:

Non-applicable (solid).

Product-specific toxicological information:

Identification	Acute Toxicity	Genus
Thiourea CAS: 62-56-6	LD50 oral: 125–300 mg/kg	Rat
	LD50 dermal: >2000 mg/kg	Rabbit

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity data limited; handle to avoid release to the aquatic environment as a precaution.

12.1 Toxicity:

Acute Toxicity	Species	Genus
LC50: ~29–100 mg/L (96h, typical range reported)	Non-applicable	Fish
EC50: Typical value – refer to current specification sheet	Non-applicable	Crustacean (Daphnia)

12.2 Persistence and degradability:

Biodegradable under aerobic conditions over time; moderate persistence reported in some studies.

12.3 Bioaccumulative potential:

Low bioaccumulation potential indicated by low log Pow (highly water-soluble, hydrophilic substance).

12.4 Mobility in soil:

Koc	Henry	Dry Soil	Moist Soil
Low (highly water-soluble)	Low	High mobility possible	High mobility possible

12.5 Results of PBT and vPvB assessment:

Not classified as PBT/vPvB under available regulatory frameworks.

12.6 Other adverse effects:

Not described

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Disposal methods:

Dispose of in accordance with local, state and national hazardous waste regulations. Incineration at a licensed hazardous waste facility is a suitable disposal route. Do not discharge to drains or watercourses. For packaging: avoid treatments as far as possible – use dedicated containers.
Refer to national and local regulations on waste management.

SECTION 14: TRANSPORT INFORMATION

Transport of dangerous goods by land (ADR 2023 / RID 2023):

14.1 UN number	Not regulated (non-dangerous goods)
14.2 UN proper shipping name	Non-applicable
14.3 Transport hazard class(es)	Not classified
14.4 Packing group	N/A
14.5 Environmental hazard	No
14.6 Special precautions for user	Physico-chemical properties: see section 9
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

Transport of dangerous goods by sea (IMDG 41-22):

14.1 UN number	Not regulated (non-dangerous goods)
14.2 UN proper shipping name	Non-applicable
14.3 Transport hazard class(es)	Not classified
14.4 Packing group	N/A
14.5 Marine pollutant	No
14.6 Special precautions for user	Non-hazardous for transport
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

Transport of dangerous goods by air (IATA/ICAO 2024):

14.1 UN number	Not regulated (non-dangerous goods)
14.2 UN proper shipping name	Non-applicable
14.3 Transport hazard class(es)	Not classified
14.4 Packing group	N/A
14.5 Environmental hazard	No
14.6 Special precautions for user	Non-hazardous for transport
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations specific for the product in question:

It is recommended to use the information included in this safety data sheet as data used in a risk evaluation of local circumstances, in order to establish the necessary risk prevention measures for the manipulation, use, storage and disposal of this product.

Other legislation:

Manufacture, Storage and Import of Hazardous Chemicals Rules 1989

SECTION 16: OTHER INFORMATION

Legislation related to safety data sheets:

This safety data sheet has been designed in accordance with Annex 4 – Guidance on the preparation of Safety Data Sheets of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Texts of the legislative phrases mentioned in sections 2 and 3:

H302: Harmful if swallowed.

H351: Suspected of causing cancer.

The phrases indicated do not refer to the product itself; they are present merely for informative purposes and refer to the individual components which appear in section 3.

Advice related to training:

Minimal training is recommended to prevent industrial risks for staff using this product, in order to facilitate their comprehension and interpretation of this safety data sheet, as well as the label on the product.

Principal bibliographical sources:

Published GHS classification data, IARC monographs and standard chemical reference sources for CAS 62-56-6.

Abbreviations and acronyms:

ADR: European agreement concerning the international carriage of dangerous goods by road | IMDG: International maritime dangerous goods code | IATA: International Air Transport Association | ICAO: International Civil Aviation Organisation | LD50: Lethal Dose 50 | LC50: Lethal Concentration 50 | EC50: Effective Concentration 50 | Log-POW: Octanol-water partition coefficient | Koc: Partition coefficient of organic carbon | IARC: International Agency for Research on Cancer

The information contained in this safety data sheet is based on sources, technical knowledge and current legislation, without being able to guarantee its accuracy. This information cannot be considered a guarantee of the properties of the product; it is simply a description of the security requirements. The occupational methodology and conditions for users of this product are not within Suraj Chemicals' awareness or control, and it is ultimately the responsibility of the user to take the necessary measures to obtain the legal requirements concerning the manipulation, storage, use and disposal of chemical products. The information on this safety data sheet only refers to this product, which should not be used for needs other than those specified.

END OF SAFETY DATA SHEET