Date of issue for the 1st edition : 06/10/2014
Date of revision : 07/05/2021

Safety Data Sheet

1. Identification of the substance/mixture and of the company/undertaking

Product identifier:
- Product name: Thiourea
- Reference number(SDS):44240jis_E-3

Product type:
- Reagent

Details of the supplier of the safety data sheet
- Manufacturer/Supplier: JUNSEI CHEMICAL CO., LTD.
- Address: 1-6, Ohmano-cho, Koshigaya-shi, Saitama 343-0844, Japan
- Division: Quality Assurance Department
- Telephone number: +81-48-986-6161
- FAX: +81-48-989-2787
- e-mail address: shiyaku-t@junsei.co.jp

2. Hazards identification

GHS classification and label elements of the product

Classification of the substance or mixture

HEALTH HAZARDS
- Acute toxicity (Oral): Category 4
- Serious eye damage/eye irritation: Category 2B
- Skin sensitization: Category 1
- Carcinogenicity: Category 2
- Reproductive toxicity: Category 2
- Specific target organ toxicity - single exposure: Category 3 (Respiratory tract irritation)
- Specific target organ toxicity - repeated exposure: Category 1(thyroid)
- Specific target organ toxicity - repeated exposure: Category 2(liver)

ENVIRONMENT HAZARDS
- Hazardous to the aquatic environment (Acute): Category 2
- Hazardous to the aquatic environment (Long-term): Category 2

Label elements

Signal word: Danger

HAZARD STATEMENT
- H302-Harmful if swallowed
- H320-Causes eye irritation
- H317-May cause an allergic skin reaction
- H351-Suspected of causing cancer
- H361-Suspected of damaging fertility or the unborn child
- H335-May cause respiratory irritation
- H372-Causes damage to organs through prolonged or repeated exposure
- H373-May cause damage to organs through prolonged or repeated exposure
- H401-Toxic to aquatic life
- H411-Toxic to aquatic life with long lasting effects

PRECAUTIONARY STATEMENT

Prevention

Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Avoid release to the environment.
Do not breathe dust/fume/gas/mist/vapors/spray.
Use only outdoors or in a well-ventilated area.
Wash contaminated parts thoroughly after handling.
Wear protective gloves.
Contaminated work clothing should not be allowed out of the workplace.
Use personal protective equipment as required.
Do not eat, drink or smoke when using this product.

Response

Collect spillage.
Get medical advice/attention if you feel unwell.
IF exposed or concerned: Get medical advice/attention.
Call a POISON CENTER or doctor/physician if you feel unwell.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
IF ON SKIN: Wash with plenty of soap and water.
If skin irritation or rash occurs: Get medical advice/attention.
Take off contaminated clothing and wash it before reuse.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention.
IF SWALLOWED: Rinse mouth. Call a POISON CENTER or doctor/physician if you feel unwell.

Storage

Store in a well-ventilated place. Keep container tightly closed.
Store locked up.

Disposal

Dispose of contents/container in accordance with local/national regulation.

3. Composition/information on ingredients

Mixture/Substance selection:

Substance

Ingredient name:Thiourea
Content (%):98.0 <
Chemical formula:CH4N2S
Chemicals No, Japan:2-1733
CAS No.:62-56-6
MW:76.12
ECNO:200-543-5

4. First-aid measures

Descriptions of first-aid measures

General measures

Get medical attention/advice if you feel unwell.
Keep victim warm and quiet.
Call emergency medical service.
Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.

IF INHALED

Remove person to fresh air and keep comfortable for breathing.
Give artificial respiration if victim is not breathing.
Administer oxygen if breathing is difficult.
Call a POISON CENTER or doctor/physician if you feel unwell.

IF ON SKIN (or hair)

Take off immediately all contaminated clothing. Rinse skin with water/shower.
Wash with plenty of soap and water.
If skin irritation or rash occurs: Get medical advice/attention.
Remove and isolate contaminated clothing and shoes.
For minor skin contact, avoid spreading material on unaffected skin.

IF IN EYES

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention.

IF SWALLOWED

Rinse mouth. Induce vomiting (ONLY IN CONSCIOUS PERSONS!).
Call a POISON CENTER or doctor/physician if you feel unwell.

Most important symptoms and effects, both acute and delayed

(Symptoms when inhalation or ingestion)

Cough

(Symptoms when skin and/or eye contact)

Conjunctival redness of the eyes

5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media

In case of fire, use water mist, foam, dry powder, CO2 to extinguish.

Unsuitable extinguishing media

Unsuitable extinguishing media data is not available.

Specific hazards arising from the substance or mixture

Containers may explode when heated.
Fire may produce irritating, corrosive and/or toxic gases.
Runoff from fire control or dilution water may cause pollution.

Advice for firefighters

Specific fire-fighting measures

Evacuate non-essential personnel to safe area.
Cool container with water spray.

Special protective equipment and precautions for fire-fighters

Wear fire/flame resistant/retardant clothing.
Wear protective gloves/protective clothing/eye protection/face protection.
Firefighters should wear self-contained breathing apparatus with full face peace operated positive pressure mode.

6. Accidental release measures

Personnel precautions, protective equipment and emergency procedures

Keep unauthorized personnel away.
In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
Ventilate area until material pick up is complete.
Wear proper protective equipment.
PUBLIC SAFTY: Ventilate closed spaces before entering.

EVACUATION : Spill: See the Table of Initial Isolation and Protective Action Distances for highlighted substances. For non-highlighted substances, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

Environmental precautions

Avoid release to headsprings, rivers, lakes, ocean and groundwater.

Methods and materials for containment and cleaning up

Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
If appropriate, moisten first to prevent dusting.

Preventive measures for secondary accident

Collect spillage.
Stop leak if you can do it without risk.
ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
Prevent entry into waterways, sewers, basements or confined areas.
Keep out of low areas.

7. Handling and storage

Precautions for safe handling

Preventive measures

(Exposure Control for handling personnel)

Do not breathe dust/fume/gas/mist/vapors/spray.

(Protective measures against fire and explosion)

Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

(Exhaust/ventilator)

Exhaust/ventilator should be available.

(Safety treatments)

Avoid contact with skin.
Avoid contact with eyes.

Safety Measures

Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/protective clothing/eye protection/face protection.
Use personal protective equipment as required.
When using do not eat, drink or smoke.

Any incompatibilities

Strong acids, Strong oxidizing agents, Acrolein should not be mixed with the chemicals.

Advice on general occupational hygiene

Wash contaminated parts thoroughly after handling.
Do not eat, drink or smoke when using this product.
Contaminated work clothing should not be allowed out of the workplace.
Take off contaminated clothing and wash it before reuse.

Storage

Conditions for safe storage

Store in a well-ventilated place. Keep container tightly closed.
Keep cool. Protect from sunlight.
Store in accordance with local/national regulation.
Store locked up.

Container and packaging materials for safe handling data is not available.

Specific end use(s)

See information in Section 7.1 and 7.2 for handling and storage recommendations. See Section 8 for exposure controls and personal protection recommendations.

8. Exposure controls/personal protection

Control parameters

Control value in MHLW is not available.

Adopted value

Adopted value in JSOH is not available.

Adopted value in ACGIH is not available.

Exposure controls

Appropriate engineering controls

Do not use in areas without adequate ventilation.

Eye wash station should be available.

Washing facilities should be available.

Individual protection measures

Respiratory protection

Wear respiratory protection.

Hand protection

Wear protective gloves. Recommended material(s): nitrile

Consult with your glove and/or personnel equipment manufacturer for selection of appropriate compatible materials.

Eye protection

Wear safety glasses with side-shields.

Wear eye/face protection.

Skin and body protection

Wear impervious clothing and boots in case of repeated or prolonged treatment.

9. Physical and Chemical Properties

Information on basic physical and chemical properties

Physical state: Crystals or crystalline powder

Color: White

Odor: None

Odor threshold data is not available.

Melting point/Freezing point: 182℃

Boiling point or initial boiling point data is not available.

Boiling range data is not available.

Flammability (gases, liquids and solids) data is not available.

Lower and upper explosion limit/flammability limit data is not available.

Flash point data is not available.

Auto-ignition temperature: 440℃

Decomposition temperature data is not available.

Self-Accelerating Decomposition Temperature/SADT data is not available.

pH: 6～8 (50g/L, 20℃)

Dynamic viscosity data is not available.

Kinematic viscosity data is not available.

Solubility:

Solubility in water: 142g/liter(25℃)

Solubility in solvent: Freely soluble in methanol; soluble in ethanol.

n-Octanol/water partition coefficient: log Pow-2.38 ～ -0.95

Vapor pressure: 0hPa(20℃)

Vapor density data is not available.

VOC data is not available.

Evaporation rate data is not available.

Density and/or relative density: 1.405g/cm3(20℃)

Relative vapor density (Air=1) data is not available.
Relative density of the Vapor/air - mixture at 20℃ (Air = 1) data is not available.
Critical temperature data is not available.
No Particle characteristics data is not available.

10. Stability and Reactivity

Reactivity

Reactivity data is not available.

Chemical stability

Stable under normal storage/handling conditions.

Possibility of hazardous reactions

Decomposes on heating. This produces toxic fumes.
Reacts violently with acrolein, strong acids and strong oxidants.

Conditions to avoid

Contact with incompatible materials.
Open flames. Heat.

Incompatible materials

Strong acids, Strong oxidizing agents, Acrolein.

Hazardous decomposition products

Carbon oxides, Sulfur oxides, Nitrogen oxides

11. Toxicological Information

Information on toxicological effects

Acute toxicity

Acute toxicity (Oral)

[GHS Cat. Japan, base data]
rat LD50=1750mg/kg (BUA 179, 1995)

Acute toxicity (Dermal)

[GHS Cat. Japan, base data]
rabbit LD50>2800mg/kg (CICAD 49, 2003)

Irritant properties

Skin corrosion/irritation

[GHS Cat. Japan, base data]
rabbit : no irritation (CICAD 49, 2003; NITE primary risk assessment, 2005)

Serious eye damage/irritation

[GHS Cat. Japan, base data]
rabbit : mild redness and edema (CICAD 49, 2003; NITE primary risk assessment, 2005)

Sensitization

Skin sensitization

[GHS Cat. Japan, base data]
cat. 1; NITE primary risk assessment, 2005; MOE risk assessment, vol.13, 2015; CICAD 49, 2003

Germ cell mutagenicity

Reverse-mutation assay in bacteria (Ames test) :Negative
(MHLW, Mutagenicity Test Results for Chemical Substances)

Carcinogenicity

[GHS Cat. Japan, base data]
cat.2; NTP R (NTP RoC 14th, 2016); EU Carc. 2 (ECHA CL Inventory, Access on Jun. 2017); JSOH 2B (JSOH, 2016)
IARC-Gr.3 : Not Classifiable as a Human Carcinogen
NTP-Reasonably Anticipated To Be Human Carcinogen
JSOH-2B: Insufficient Evidence of Carcinogenicity for Humans

EU-Category 2; Substances suspected human carcinogens

Reproductive toxicity

[GHS Cat. Japan, base data]

cat. 2; NITE primary risk assessment, 2005; MOE risk assessment, vol.13, 2015;

EU CLP Repr.2 (ECHA CL Inventory, Access on Jun. 2017)

STOT

STOT-single exposure

[cat.3 (resp. irrit.)]

[GHS Cat. Japan, base data]

respiratory tract irritation (NITE primary risk assessment, 2005; BUA 179, 1995)

STOT-repeated exposure

[cat.1]

[GHS Cat. Japan, base data]

thyroid gland (NITE primary risk assessment, 2005)

[cat.2]

[GHS Cat. Japan, base data]

liver (NITE primary risk assessment, 2005)

Aspiration hazard data is not available.

12. Ecological Information

Ecotoxicity

Aquatic toxicity

H401-Toxic to aquatic life

H411-Toxic to aquatic life with long lasting effects

Hazardous to the aquatic environment (Acute)

[GHS Cat. Japan, base data]

Crustacea (Daphnia magna) EC50=9mg/L/96hr (WHO/IPCS CICAD, 2003)

Hazardous to the aquatic environment (Long-term)

[GHS Cat. Japan, base data]

Crustacea (Daphnia magna) NOEC (Reproductive inhibition)=0.75mg/L/21days

(NITE primary risk assessment, 2005)

Water solubility

142g/L(25℃) (PHYSPROP Database)

Persistence and degradability

Not degrade rapidly [BOD_Degradation：2.6% (J-CHECK, 1979)]

Bioaccumulative potential

log Pow=-2.38～ -0.95 (ICSC, 2001); BCF < 2 (Registered chemicals data check & review, Japan)

Mobility in soil

Mobility in soil data is not available.

Other adverse effects

Ozone depleting chemical data is not available.

13. Disposal considerations

Description of waste residues and information on their safe handling and methods of disposal, including the disposal of any contaminated packaging

Waste treatment methods

Avoid release to the environment (- if this is not the intended use).

Dispose of contents/container in accordance with local/national regulation.

14. Transport Information

UN No., UN CLASS

UN No. or ID No.: 2811
UN Proper Shipping Name : TOXIC SOLID, ORGANIC, N.O.S.
Class or division (Transport hazard class) : 6.1
Packing group : III
ERG GUIDE No.: 154

IMDG Code (International Maritime Dangerous Goods Regulations)

UN No.: 2811
Proper Shipping Name : TOXIC SOLID, ORGANIC, N.O.S.
Class or division : 6.1
Packing group : III

IATA Dangerous Goods Regulations

UN No.: 2811
Proper Shipping Name : TOXIC SOLID, ORGANIC, N.O.S.
Class or division : 6.1
Hazard labels : Toxic
Packing group : III

Environmental hazards

MARPOL Annex III - Prevention of pollution by harmful substances

Marine pollutants (yes/no) : yes

MARPOL Annex V - Prevention of pollution by garbage discharge

Specific target organ toxicity - repeated exposure: cat.1
Thiourea
Hazardous to the aquatic environment - long-term hazard: cat.1, 2
Thiourea

Maritime transport in bulk according to IMO instruments

Not applicable to Maritime transport in bulk according to IMO instruments

15. Regulatory Information

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

Chemicals listed in TSCA Inventory

Thiourea

Other regulatory information

We are not able to check up the regulatory information with regard to the substances in
your country or region, therefore, we request this matter would be filled by your responsibility.
Regulatory information with regard to this substance in your country or in your region
should be examined by your own responsibility.
Ensure this material in compliance with federal requirements and ensure conformity to local regulations.
Regulatory information in this section are limited to intentional ingredient(s), but does
not contain information on non-intentional ingredients or impurities which are not informed by supplier(s).

Chemical safety assessment

Advice on safe handling for this product can be found in sections 7 and 8 of this SDS.

16. Other information

GHS classification and labelling

H302-Acute Tox. 4: H302 Harmful if swallowed
H320-Eye Irrit. 2B: H320 Causes eye irritation
H317-Skin Sens. 1: H317 May cause an allergic skin reaction
H351-Carc. 2: H351 Suspected of causing cancer
H361-Repr. 2: H361 Suspected of damaging fertility or the unborn child

H335-STOT SE 3: H335 May cause respiratory irritation
H372-STOT RE 1: H372 Causes damage to organs through prolonged or repeated exposure
H401-Aquatic Acute 2: H401 Toxic to aquatic life
H411-Aquatic Chronic 2: H411 Toxic to aquatic life with long lasting effects

Reference Book

Globally Harmonized System of classification and labelling of chemicals, UN
Recommendations on the TRANSPORT OF DANGEROUS GOODS 21th edit., 2019 UN
IMDG Code, 2018 Edition (Incorporating Amendment 39-18)
IATA Dangerous Goods Regulations (62nd Edition) 2021
2020 EMERGENCY RESPONSE GUIDEBOOK (US DOT)
2020 TLVs and BEIs. (ACGIH)
JIS Z 7252 : 2019
JIS Z 7253 : 2019
2020 Recommendation on TLVs (JSOH)
Supplier's data/information
Chemicals safety data management system "GHS Assistant" Version 4.11 (https://www.asahi-ghs.com/)
NITE Chemical Risk Information Platform "NITE-CHRIP"
(https://www.nite.go.jp/en/chem/chrip/chrip_search/systemTop)
GHS Classification Guidance for Enterprises 2019 Revised Edition (Ver. 2.0) (Mar. 2020, METI)

Definitions and Abbreviations

SDS (Safety Data Sheet)
LD50 (Lethal Dose, 50%)
LC50 (Lethal Concentration, 50%)
IARC (International Agency for Research on Cancer)
ACGIH (American Conference of Governmental Industrial Hygienists)
EPA (US Environmental Protection Agency)
NTP (US National Toxicology Program)
JSOH (Japan Society for Occupational Health)
EU (European Union)
EC50 (Effective Concentration, 50%)
NOEC (No Observed Effect Concentration)
BOD (Biochemical Oxygen Demand)
COD (Chemical Oxygen Demand)
BCF (Bioconcentration Factor)
anh (anhydride)

General Disclaimer

This data sheet was created based on the information we currently have and may be revised according to new information. In addition, the precautions apply only to normal handling, and in the case of special handling, please make adequate countermeasure to maintain your safety. The data given here is based on current knowledge and experience. The purpose of this Safety Data Sheet is to describe the products in terms of their safety requirements. The data does not signify any warranty with regard to the products' properties.
The GHS classification data given here is based on current Japan official data (NITE published in 2019).