

1. IDENTIFICATION

Product Name Phenothiazine
Other Names No Data Available

Uses Polymerisation inhibitor; Pharmaceutical intermediate.

Chemical Family No Data Available

Chemical Formula C12H9NS

Chemical Name 10H-Phenothiazine
Product Description No Data Available

Contact Details of the Supplier of this Safety Data Sheet

OrganisationLocationTelephoneRedox Ltd2 Swettenham Road+61-2-97333000

Minto NSW 2566 Australia

Redox Ltd 11 Mayo Road +64-9-2506222

Wiri Auckland 2104 New Zealand

Redox Inc. 3960 Paramount Boulevard +1-424-675-3200

Suite 107

Lakewood CA 90712

USA

Redox Chemicals Sdn Bhd Suite 13A.03, Menara Summit +60-3-5614-2111

Persiaran Kewajipan USJ1 47600 UEP Subang Jaya Selangor, Malaysia

Emergency Contact Details

For emergencies only; DO NOT contact these companies for general product advice.

Organisation Location Telephone Poisons Information Centre Australia - Westmead NSW 1800-251525 131126 Chemcall Australia 1800-127406 +64-4-9179888 +64-4-9179888 Chemcall Malaysia **National Poison Centre** Malaysia +60-4-6536-999 Chemcall New Zealand 0800-243622 +64-4-9179888 National Poisons Centre New Zealand 0800-764766

CHEMTREC USA & Canada 1-800-424-9300 CN723420

+1-703-527-3887

2. HAZARD IDENTIFICATION

Poisons Schedule (Aust)

, ,

Redox Ltd
Corporate Office Sydney
Locked Bag 15 Minto NSW 2566 Australia
2 Swettenham Road Minto NSW 2566 Australia
All Deliveries: 4 Holmes Road Minto NSW 2566 Australia

Phone Fax E-mail Web

6

+61 2 9733 3000 +61 2 9733 3111 sydney@redox.com www.redox.com 92 000 762 345 Australia Adelaide Brisbane Melbourne Perth Sydney

New Zealand Auckland Christchurch Hawke's Bay UK London Malaysia
Kuala Lumpur
USA
Los Angeles
Oakland
Mexico
Solitillo



Globally Harmonised System

Hazard Classification Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of

Chemicals (GHS)

Hazard Categories Acute Toxicity (Oral) - Category 5

Skin Corrosion/Irritation - Category 2

Specific Target Organ Toxicity (Single Exposure) - Category 1

Specific Target Organ Toxicity (Single Exposure) - Category 3

Specific Target Organ Toxicity (Repeated Exposure) - Category 2

Acute Hazard To The Aquatic Environment - Category 1

Long-term Hazard To The Aquatic Environment - Category 1

Pictograms







Signal Word Danger

Hazard Statements H303 May be harmful if swallowed.

H315 Causes skin irritation.

H335 May cause respiratory irritation.

H370 Causes damage to organs (liver, kidney, blood, nervous system, circulatory system).H373 May cause damage to organs (blood) through prolonged or repeated exposure.

H410 Very toxic to aquatic life with long lasting effects.

Precautionary Statements Prevention **P280** Wear protective gloves.

P260 Do not breathe dusts or mists.
P273 Avoid release to the environment.

P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.

Response P307 + P311 IF exposed: Call a POISON CENTER or doctor/physician.

P302 + P352 IF ON SKIN: Wash with plenty of water.

P312 Call a POISON CENTER or doctor if you feel unwell.

P391 Collect spillage.

P304 + P340 IF INHALED: Remove victim to fresh air and keep comfortable for breathing.

P332 + P313 If skin irritation occurs: Get medical attention.

P362 + P364 Take off contaminated clothing and wash it before reuse.

Storage P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

P405 Store locked up.

Disposal P501 Dispose of contents/container in accordance with local / regional / national /

international regulations.

National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification NOT Dangerous Goods according to the Criteria of the Australian Code for the Transport of Dangerous Goods

by Road & Rail (ADG Code)

Safe Work Australia

National Guide for Classifying Hazardous Chemicals under the Model WHS Regulations

Hazard Classification Hazardous according to the criteria of Safe Work Australia under Model WHS Regulations

Environmental Protection Authority (New Zealand)

Hazardous Substances and New Organisms Amendment Act 2015

HSNO Classifications Health Hazards **6.3A** Substances that are irritating to the skin

6.9A Substances that are toxic to human target organs or systems

Environmental 9.1A Substances that are very ecotoxic in the aquatic environment

Hazards

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Phenothiazine	C12H9NS	92-84-2	>=99.5 %

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed IF SWALLOWED: Rinse mouth. Call a Poison Centre or doctor/physician for advice. Never give anything by mouth to an

unconscious person.

Eye 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. Get

medical advice/attention.

Skin IF ON SKIN: Remove material from skin immediately - Wash off with plenty of soap and water (use polyethylene glycol,

e.g. PEG-400 if available). Take off contaminated clothing and wash before reuse. Get medical advice/attention.

Inhaled IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a Poison Centre or

doctor/physician for advice. Apply resuscitation if victim is not breathing. Administer oxygen if breathing is difficult. Keep

victim calm and warm - Obtain immediate medical care.

Advice to Doctor If exposed, call a Poison Centre or doctor/physician. Treat symptomatically. 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 Repeated or prolonged contact may cause skin sensitization as well as photosensitisation.

Exposure

5. FIRE FIGHTING MEASURES

General Measures If safe to do so, move undamaged containers from fire area. Cool containers with water spray until well after fire is out.

Dike fire-control water for later disposal.

Flammability Conditions Combustible; May burn but does not ignite readily.

Extinguishing MediaUse dry chemical, Carbon dioxide (CO2), foam or water spray for extinction. Do not scatter spilled material with high-

pressure water streams.

Fire and Explosion Hazard 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.

Hazardous Products of

Combustion

Fire may produce irritating and/or toxic fumes, including Carbon oxides, Nitrogen oxides, Sulfur oxides.

Special Fire Fighting Instructions Contain runoff from fire control water - Runoff may pollute waterways.

Personal Protective Equipment Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only

provide limited protection.

Flash Point 202 °C

Lower Explosion LimitNo Data AvailableUpper Explosion LimitNo Data AvailableAuto Ignition TemperatureNo Data AvailableHazchem CodeNo Data Available

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure Ensure adequate ventilation. ELIMINATE all ignition sources (if dust clouds can occur). Do not touch or walk through

spilled material. Avoid dust formation. Do not breathe dust/mist and avoid contact with eyes, skin and clothing.

Clean Up Procedures With clean shovel, place material into clean, dry container and cover loosely; move containers from spill area. Adhered or

collected material should be promptly disposed of, in accordance with appropriate laws and regulations (see SECTION

13).

Containment Stop leak if safe to do so - Prevent entry into waterways, drains or confined areas. Prevent dust cloud. Cover powder spill

with plastic sheet or tarp to minimize spreading.

DecontaminationClean contaminated floors and objects thoroughly, observing environmental regulations.

Environmental Precautionary

Measures

Spillages and decontamination runoff should be prevented from entering drains and watercourses.

Evacuation Criteria Spill or leak area should be isolated immediately. Keep unauthorised personnel away. Keep upwind and to higher

ground

Personal Precautionary Measures Wear suitable protective equipment (see SECTION 8).

*P3 filter respirator for harmful particles.

7. HANDLING AND STORAGE

Handling Safety showers and eyewash facilities should be provided within the immediate work area for emergency use. Ensure

adequate ventilation - Use only outdoors or in a well-ventilated area. Handle in accordance with good industrial hygiene and safety practice. Avoid dust/mist/aerosol formation. Do not breathe dust/mist/aerosols and avoid contact with eyes, skin and clothing. Do not ingest. Use personal protective equipment as required (see SECTION 8). WARNING: May form combustible dust concentrations in air. Keep away from heat and sources of ignition - No smoking. Take precautionary

measures against electrostatic charges - earthing necessary during loading operations.

Storage Store in a cool, dark and well-ventilated place. Store under inert gas. Keep container tightly closed and dry. Avoid

exposure to air and light. Keep away from heat and sources of ignition - No smoking. Keep away from foodstuffs and

incompatible materials (see SECTION 10). Store locked up.

Container Keep in the original container.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General CHEMICAL: Phenothiazine (CAS No. 92-84-2):

 $- Safe Work \ Australia \ Exposure \ Standard: \ TWA = 5 \ mg/m3; \ Absorption \ through \ the \ skin \ may \ be \ a \ significant \ source \ of \ an interpretation \ and \ an interpretation \ an interpretation \ and \ an interpretation \ an interpretation \ and \ an interpretation \ an interpretation \ and \ an interpretation \ an interpretation \ and \ an interpretation \ an$

exposure (Sk).

- New Zealand Workplace Exposure Standard: TWA = 5 mg/m3.

- NIOSH REL: TWA = 5 mg/m3 [skin].

Exposure Limits No Data Available

Biological Limits No information available.

Engineering Measures

Use a closed system if possible, or with local exhaust ventilation if dust or aerosol will be generated. **Personal Protection Equipment** - Respiratory protection: Wear respiratory protection in case of inadequate ventilation or if an inhalation risk exists.

Recommended: P2 particle respirator; For higher level protection, use combination type ABEK-P2 respirator cartridges. Use respirators and components tested and approved under appropriate government standards (refer to AS/NZS 1715 &

- Eye/face protection: Wear appropriate eye protection to prevent eye contact. Recommended: Tightly fitting safety glasses; Face-shield and safety glasses. Use equipment for eye protection tested and approved under appropriate

government standards.

- Hand protection: Wear protective gloves. Recommended: Nitrile rubber, butyl rubber gloves. Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact). Gloves should be discarded and replaced if there is any indication of

degradation or chemical break-through.

- Skin/body protection: Wear appropriate personal protective clothing to prevent skin contact. Recommended: Longsleeved work clothing, as appropriate: Full chemical-protective suit, apron, boots. The type of protective equipment must be selected according to the concentration and amount of the hazardous substance(s) at the specific workplace.

Special Hazards Precaustions

No information available.

Work Hygienic Practices

Do not eat, drink or smoke when using this product. Wash hands and face thoroughly after handling. Take off contaminated clothing and wash before reuse. Garments that cannot be cleaned must be destroyed/disposed of. Contaminated work clothing should not be allowed out of the workplace. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State Solid **Appearance** Powder Odour Slight amine

Colour Light yellow to greenish рН No Data Available

Vapour Pressure 8.9E-07 mmHq (@ No Data Available)

Relative Vapour Density No Data Available

290°C **Boiling Point Melting Point** 185.1 °C

No Data Available **Freezing Point**

Solubility Hardly soluble in water - Soluble in acetone, ethanol

Specific Gravity No Data Available

Flash Point 202 °C

Auto Ignition Temp No Data Available **Evaporation Rate** No Data Available **Bulk Density** No Data Available **Corrosion Rate** No Data Available **Decomposition Temperature** No Data Available Density 1.34 - 1.36 g/cm3 **Specific Heat** No Data Available **Molecular Weight** 199.28 a/mol **Net Propellant Weight** No Data Available **Octanol Water Coefficient** Log Pow = 4.2

Particle SizeNo Data AvailablePartition CoefficientNo Data AvailableSaturated Vapour ConcentrationNo Data AvailableVapour TemperatureNo Data AvailableViscosityNo Data AvailableVolatile PercentNo Data AvailableVOC VolumeNo Data Available

Additional Characteristics Air-sensitive; Light-sensitive.

Potential for Dust Explosion 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.

Fast or Intensely Burning

Characteristics

No information available.

Flame Propagation or Burning

Rate of Solid Materials

No information available.

Non-Flammables That Could Contribute Unusual Hazards to a

Fire

No information available.

Properties That May Initiate or Contribute to Fire Intensity

Combustible; May burn but does not ignite readily.

Reactions That Release Gases or

Vapours

Combustion/thermal decomposition may produce irritating and/or toxic fumes, including Carbon oxides, Nitrogen oxides,

Sulfur oxides.

Release of Invisible Flammable

Vapours and Gases

No information available.

10. STABILITY AND REACTIVITY

General InformationWhen handled and stored appropriately no dangerous reactions are known.Chemical StabilityStable under recommended conditions. No decomposition if used as prescribed.Conditions to AvoidAvoid dust/aerosol formation. Keep away from heat and sources of ignition.

Materials to Avoid Incompatible/reactive with strong oxidising agents, acids.

Hazardous Decomposition

Products

Combustion/thermal decomposition may produce irritating and/or toxic fumes, including Carbon oxides, Nitrogen oxides,

Sulfur oxides.

Hazardous Polymerisation No information available.

11. TOXICOLOGICAL INFORMATION

General Information

- Acute toxicity: Not classified. May be harmful if swallowed.
- Skin corrosion/irritation: Causes skin irritation, itching, redness, pain.
- Eye damage/irritation: Not classified. May cause eye irritation, redness, pain. Photosensitization with direct sunlight may result from exposure to the substance and keratitis was also reported among workers handling the substance.
- Respiratory/skin sensitisation: Classification not possible due to lack of data. Repeated or prolonged contact may cause skin sensitization as well as photosensitisation/skin photophobia (abnormal visual intolerance to light).
- Germ cell mutagenicity: Not classified. Negative (in-vivo somatic cell mutagenicity test); Negative (Ames test).
- Carcinogenicity: Classification not possible due to lack of data.
- Reproductive toxicity: Classification not possible due to lack of data.
- STOT (single exposure): Causes damage to organs (liver, kidney, blood system, cardiovascular system, nervous system). Accidental exposure (of humans) has caused hemolytic anaemia and toxic hepatitis; May cause abdominal cramps, tachycardia and renal damage; Cardiac arrest, hypotension, dysrhythmias, CNS depression and coma may occur. May cause respiratory irritation.
- STOT (repeated exposure): May cause damage to organs through prolonged or repeated exposure (blood system).

- Aspiration toxicity: No information available.

Acute

Ingestion Acute toxicity (Oral):

- LD50, Rats: 5,000 mg/kg [ACGIH (2001)].

Other Acute toxicity (Dermal):

- LD50, Rabbits: ca. 9,400 mg/kg [IUCLID (2000)].

Carcinogen Category None

12. ECOLOGICAL INFORMATION

Ecotoxicity Aquatic toxicity:

- EC50, Crustacea (Daphnia magna): 0.055 mg/L (48 h) Immobilisation test [OECD Guideline 202].

Persistence/Degradability Not readily biodegradable; Phenothiazine is regarded as persistent.

Mobility No information available.

Environmental FateVery toxic to aquatic life with long lasting effects - Prevent entry into soils, drains and waterways.

Bioaccumulation Potential No potential for bioaccumulation; Low concentration.

Environmental Impact No Data Available

13. DISPOSAL CONSIDERATIONS

General Information Dispose of contents/container through a licensed disposal company and in accordance with local/regional/national

regulations. Dissolve or mix the material

with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Special Precautions for Land Fill Contaminated packaging: Dispose of as unused product.

14. TRANSPORT INFORMATION

Land Transport (Australia)

ADG Code

Proper Shipping NamePhenothiazineClassNo Data AvailableSubsidiary Risk(s)No Data Available

EPG 171 Substances (Low to Moderate Hazard)

UN Number No Data Available
Hazchem No Data Available
Pack Group No Data Available

Special Provision AU01

CommentsNot regulated as DG when transported by road or rail in packagings that do not incorporate a receptacle

exceeding 500 kg(L) or IBCs.

Land Transport (Malaysia)

ADR Code

Proper Shipping Name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Phenothiazine)

Class 9 Miscellaneous Dangerous Goods and Articles

Subsidiary Risk(s) No Data Available

EPG 171 Substances (Low to Moderate Hazard)

UN Number 3077
Hazchem 2Z
Pack Group III

Special Provision No Data Available

Land Transport (New Zealand)

NZS5433

Proper Shipping Name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Phenothiazine)

Class 9 Miscellaneous Dangerous Goods and Articles

Subsidiary Risk(s) No Data Available

EPG 171 Substances (Low to Moderate Hazard)

 UN Number
 3077

 Hazchem
 2Z

 Pack Group
 III

Special Provision No Data Available

Land Transport (United States of America)

US DOT

Proper Shipping Name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Phenothiazine)

Class 9 Miscellaneous Dangerous Goods and Articles

Subsidiary Risk(s) No Data Available

ERG 171 Substances (Low to Moderate Hazard)

 UN Number
 3077

 Hazchem
 2Z

 Pack Group
 III

Special Provision No Data Available

Sea Transport

IMDG Code

Proper Shipping Name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Phenothiazine)

Class 9 Miscellaneous Dangerous Goods and Articles

Subsidiary Risk(s) No Data Available

 UN Number
 3077

 Hazchem
 2Z

 Pack Group
 III

Special Provision No Data Available

EMS F-A, S-F Marine Pollutant Yes

Air Transport

IATA DGR

Proper Shipping Name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Phenothiazine)

Class 9 Miscellaneous Dangerous Goods and Articles

Subsidiary Risk(s) No Data Available

UN Number 3077
Hazchem 27
Pack Group III

Special Provision No Data Available

National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods ClassificationNOT Dangerous Goods according to the Criteria of the Australian Code for the Transport of Dangerous Goods

by Road & Rail (ADG Code)

15. REGULATORY INFORMATION

General Information No Data Available

Poisons Schedule (Aust) 6

Environmental Protection Authority (New Zealand)

Hazardous Substances and New Organisms Amendment Act 2015

Approval Code HSR002503

HSR003044 (Revoked)

National/Regional Inventories

Australia (AIIC) Listed

Canada (DSL) Not Determined

Canada (NDSL) Not Determined

China (IECSC) Not Determined

Europe (EINECS) 202-196-5

Europe (REACh) Not Determined

Japan (ENCS/METI) Not Determined

Korea (KECI) Not Determined

Malaysia (List of Classified Substances) Not Determined

New Zealand (NZIoC) Listed

Philippines (PICCS) Not Determined

Taiwan (TCSI) Not Determined

USA (TSCA) Listed

Mexico (INSQ) Not Determined

16. OTHER INFORMATION

Related Product Codes PHENOT0900, PHENOT1000, PHENOT1000, PHENOT2000, PHENOT2100, PHENOT3000, PHENOT3100

Revision 4

AICS Australian Inventory of Chemical Substances

atm Atmosphere

CAS Chemical Abstracts Service (Registry Number)

cm² Square CentimetresCO2 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/cm³ Grams per Cubic Centimetre

g/I 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 inH2O Inch of Water

K Kelvin **kg** Kilogram

kg/m3 Kilograms per Cubic Metre

Ib 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.

Itr or L Litre m³ Cubic Metre mbar Millibar mg Milligram

mg/24H Milligrams per 24 Hours mg/kg Milligrams per Kilogram mg/m³ Milligrams per Cubic Metre

Misc or **Miscible** Liquids form one homogeneous liquid phase regardless of the amount of either component present.

mm Millimetre

mmH20 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 Hoursppm/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