1. IDENTIFICATION

**Product Name**: Tetramethylthiuram disulphide (TMTD)

**Other Names**: Disulfide, bis(dimethylthiocarbamoyl); Rubber Accelerator TMTD(TT); Thiram

**Uses**: Rubber (vulcanisation) accelerator.

**Chemical Family**: No Data Available

**Chemical Formula**: C₆H₁₂N₂S₄

**Chemical Name**: Thioperoxydicarbonic diamide \([(H₂N)C(S)]₂S₂\), tetramethyl-

**Product Description**: No Data Available

---

**Contact Details of the Supplier of this Safety Data Sheet**

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Location</th>
<th>Telephone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Redox Ltd</td>
<td>2 Swettenham Road Minto NSW 2566 Australia</td>
<td>+61-2-97333000</td>
</tr>
<tr>
<td>Redox Ltd</td>
<td>11 Mayo Road Wiri Auckland 2104 New Zealand</td>
<td>+64-9-2506222</td>
</tr>
<tr>
<td>Redox Inc.</td>
<td>3960 Paramount Boulevard Lakewood CA 90712 USA</td>
<td>+1-424-675-3200</td>
</tr>
<tr>
<td>Redox Chemicals Sdn Bhd</td>
<td>Level 2, No. 8, Jalan Sapir 33/7 Kuala Lumpur</td>
<td>+60-3-5614-2111</td>
</tr>
</tbody>
</table>

**Emergency Contact Details**

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

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Location</th>
<th>Telephone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poisons Information Centre</td>
<td>Westmead NSW</td>
<td>1800-251525</td>
</tr>
<tr>
<td>Chemcall</td>
<td>Australia</td>
<td>1800-127406</td>
</tr>
<tr>
<td>Chemcall</td>
<td>Malaysia</td>
<td>+64-4-9179888</td>
</tr>
<tr>
<td>Chemcall</td>
<td>New Zealand</td>
<td>0800-243622</td>
</tr>
<tr>
<td>National Poisons Centre</td>
<td>New Zealand</td>
<td>0800-764766</td>
</tr>
<tr>
<td>CHEMTREC</td>
<td>USA &amp; Canada</td>
<td>1-800-424-9300 CN723420</td>
</tr>
</tbody>
</table>

---

2. HAZARD IDENTIFICATION
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 4
Acute Toxicity (Inhalation) - Category 4
Skin Corrosion/Irritation - Category 2
Serious Eye Damage/Irritation - Category 2A
Sensitisation (Skin) - Category 1
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
Warning

Hazard Statements
H302 + H332 Harmful if swallowed or if inhaled.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H373 May cause damage to organs through prolonged or repeated exposure.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary Statements

Prevention
P280 Wear protective gloves/eye protection/face protection.
P260 Do not breathe dust.
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.
P272 Contaminated work clothing should not be allowed out of the workplace.

Response
P312 Call a POISON CENTER or doctor if you feel unwell.
P302 + P352 IF ON SKIN: Wash with plenty of water/...
P337 + P313 If eye irritation persists: Get medical advice/attention.
P333 + P313 If skin irritation or rash occurs: Get medical advice/attention.
P391 Collect spillage.
P330 Rinse mouth.
P304 + P340 IF INHALED: Remove victim to fresh air and keep comfortable for breathing.
P362 Take off contaminated clothing.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

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)
HSNO Classifications

Environmental Protection Authority (New Zealand)
Hazardous Substances and New Organisms Amendment Act 2015

<table>
<thead>
<tr>
<th>HSNO Classifications</th>
<th>Health Hazards 6.1D</th>
<th>Substances that are acutely toxic - Harmful</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6.3A</td>
<td>Substances that are irritating to the skin</td>
</tr>
<tr>
<td></td>
<td>6.4A</td>
<td>Substances that are irritating to the eye</td>
</tr>
<tr>
<td></td>
<td>6.5B</td>
<td>Substances that are contact sensitisers</td>
</tr>
<tr>
<td></td>
<td>6.9B</td>
<td>Substances that are harmful to human target organs or systems</td>
</tr>
</tbody>
</table>

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

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

<table>
<thead>
<tr>
<th>Chemical Entity</th>
<th>Formula</th>
<th>CAS Number</th>
<th>Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetramethylthiuram disulfide</td>
<td>C6H12N2S4</td>
<td>137-26-8</td>
<td>&lt;=100 %</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed
IF SWALLOWED: Rinse mouth, then drink a glass of water. Do not drink alcohol. Call a Poison Centre or doctor/physician for advice. Do not induce vomiting unless directed to do so by medical personnel. 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. If eye irritation persists, get medical advice/attention.

Skin
IF ON SKIN: Remove contaminated clothing and shoes immediately. Wash skin with plenty of soap and running water. If skin irritation or rash occurs, get medical advice/attention. Wash contaminated clothing and wash before reuse.

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.

Advice to Doctor
Treat symptomatically. Keep victim calm and warm - Obtain immediate medical care. 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 Exposure
May cause an allergic skin reaction. May cause alcohol intolerance.

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.

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

Extinguishing Media
Use dry chemical, Carbon dioxide (CO2), foam or water spray for extinction.

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, toxic and/or corrosive fumes, including Carbon oxides, Nitrogen oxides, Sulphur oxides.

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

Personal Protective Equipment
Wear self-contained breathing apparatus (SCBA) and chemical splash suit. SCBA and structural firefighter's uniform may provide limited protection.

Flash Point
approx. 150 °C [COC]

Lower Explosion Limit
10 g/m³

Upper Explosion Limit
No Data Available

Auto Ignition Temperature
>400 °C

Hazchem Code
No Data Available

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure
Ensure adequate ventilation. ELIMINATE all ignition sources. Do not touch or walk through spilled material. Avoid generating dust. Avoid breathing dust and contact with eyes, skin and clothing.

Clean Up Procedures
Collect material (sweep up and shovel) and keep in suitable, closed containers for disposal (see SECTION 13). Avoid dispersal of dust in the air (i.e. clearing dusty surfaces with compressed air). Non-sparking tools should be used.

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

Decontamination
No information available.

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
Use personal protective equipment as required (see SECTION 8). Large spill: Wear SCBA and chemical splash suit.

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. Minimise dust generation and accumulation. Do not breathe dust/vapours and avoid contact with eyes, skin and clothing. Do not ingest. Wear protective gloves/eye protection/face protection (see SECTION 8). Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations. Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres. Avoid release to the environment - Collect spillage (see SECTION 6).

Storage
Store in a cool, dry and well-ventilated place, out of direct sunlight. Keep container tightly closed. Keep away from heat and sources of ignition - No smoking. Keep away from food/feedstuffs and incompatible materials (see SECTION 10).

Container
Keep in the original container.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General
For Thiram (CAS No. 137-26-8):
- Safe Work Australia Exposure Standard: TWA = 1 mg/m³; Respiratory and/or skin sensitiser (Sen).
- New Zealand Workplace Exposure Standard (2019): TWA = 0.2 mg/m³; Inhalable fraction and vapour (ifv).
- NIOSH REL/OSHA PEL: TWA = 5 mg/m³.
- Immediately dangerous to life or health (IDLH) concentration: 100 mg/m³.

Exposure Limits
No Data Available

Biological Limits
No information available.
**Engineering Measures**

Ensure good ventilation and local exhaustion of the working area.

**Personal Protection Equipment**

- Respiratory protection: In case of inadequate ventilation, wear respiratory protection. Recommended: Organic vapour/particulate filter respirator, supplied-air respirator or self-contained breathing apparatus (refer to AS/NZS 1715 & 1716).
- Eye/face protection: Wear appropriate eye protection to avoid eye contact. Recommended: Face shield and safety glasses.
- Skin/body protection: Wear appropriate personal protective clothing to avoid skin contact. Recommended: Chemical protective clothing. 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 Precautions**

No information available.

**Work Hygienic Practices**

Do not eat, drink or smoke when using this product. Wash hands before breaks and at the end of workday. Take off contaminated clothing and wash before reuse. 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.

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### 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>Appearance</td>
<td>Powder or granule</td>
</tr>
<tr>
<td>Odour</td>
<td>Slight, amine-like</td>
</tr>
<tr>
<td>Colour</td>
<td>White or light-greyish</td>
</tr>
<tr>
<td>pH</td>
<td>No Data Available</td>
</tr>
<tr>
<td>Vapour Pressure</td>
<td>Negligible (@ 20 °C)</td>
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<tr>
<td>Relative Vapour Density</td>
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</tr>
<tr>
<td>Boiling Point</td>
<td>No Data Available</td>
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<tr>
<td>Melting Point</td>
<td>&gt;=140 °C</td>
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<tr>
<td>Freezing Point</td>
<td>No Data Available</td>
</tr>
<tr>
<td>Solubility</td>
<td>Insoluble in water (30 ppm) - Soluble in acetone, ether, chloroform</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>0.3 (Water = 1)</td>
</tr>
<tr>
<td>Flash Point</td>
<td>approx. 150 °C (COC)</td>
</tr>
<tr>
<td>Auto Ignition Temp</td>
<td>&gt;400 °C</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>No Data Available</td>
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<tr>
<td>Bulk Density</td>
<td>410 - 450 kg/m³ (20 °C)</td>
</tr>
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<td>Corrosion Rate</td>
<td>No Data Available</td>
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<tr>
<td>Decomposition Temperature</td>
<td>No Data Available</td>
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<tr>
<td>Density</td>
<td>1,425 kg/m³</td>
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<tr>
<td>Specific Heat</td>
<td>No Data Available</td>
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<tr>
<td>Molecular Weight</td>
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<tr>
<td>Net Propellant Weight</td>
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<tr>
<td>Octanol Water Coefficient</td>
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</tr>
<tr>
<td>Particle Size</td>
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<tr>
<td>Partition Coefficient</td>
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<tr>
<td>Saturated Vapour Concentration</td>
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<tr>
<td>Vapour Temperature</td>
<td>No Data Available</td>
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<tr>
<td>Viscosity</td>
<td>No Data Available</td>
</tr>
<tr>
<td>Volatile Percent</td>
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<tr>
<td>VOC Volume</td>
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<tr>
<td>Additional Characteristics</td>
<td>No information available.</td>
</tr>
</tbody>
</table>
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 solid; May burn but does not ignite readily.

Reactions That Release Gases or Vapours
Fire/decomposition may produce irritating, toxic and/or corrosive fumes, including Carbon oxides, Nitrogen oxides, Sulphur oxides.

Release of Invisible Flammable Vapours and Gases
No information available.

10. STABILITY AND REACTIVITY

General Information
No information available.

Chemical Stability
Stable under recommended storage and handling conditions.

Conditions to Avoid
Avoid generating dust. Keep away from heat and sources of ignition.

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

Hazardous Decomposition Products
Fire/decomposition may produce irritating, toxic and/or corrosive fumes, including Carbon oxides, Nitrogen oxides, Sulphur oxides.

Hazardous Polymerisation
Will not occur.

11. TOXICOLOGICAL INFORMATION

General Information
- Acute toxicity: Harmful if swallowed and if inhaled. May cause cough, sore throat, headache, dizziness, confusion. Use of alcoholic beverages enhances the harmful effect.
- Skin corrosion/irritation: Causes skin irritation, redness.
- Eye damage/irritation: Causes serious eye irritation, redness, pain.
- Respiratory/skin sensitisation: May cause an allergic skin reaction.
- Germ cell mutagenicity: The chemical may have some genotoxic potential; Category 3 mutagen (compounds that cause concern but for which the evidence is not sufficient).
- Carcinogenicity: Not considered to be carcinogenic. Thiram (CAS No. 137-26-8) is classified by the IARC Monographs as "Not classifiable as to its carcinogenicity to humans" (Group 3).
- Reproductive toxicity: Not considered to cause reproductive or developmental effects up to 9 mg/kg bw/day. Older studies have indicated reproductive effects in animals exposed to the chemical at higher doses.
- STOT (single exposure): The substance (dust/vapour) is irritating to the respiratory tract.
- STOT (repeated exposure): May cause damage to organs through prolonged or repeated exposure, including neurotoxic effects, if swallowed. The substance may have effects on the thyroid and liver.
- Aspiration toxicity: No information available.

Acute

Ingestion
Acute toxicity (Oral):
- LD50, Rats: 375 - 1,000 mg/kg bw. [NICNAS].

Inhalation
Acute toxicity (Inhalation):
- LC50, Rats: 4.42 mg/L (4 h) aerosol.

Carcinogen Category
None
12. ECOLOGICAL INFORMATION

**Ecotoxicity**
- **Aquatic toxicity:**
  - LC50, Fish (Oncorhynchus mykiss): 0.046 mg/l (96 h).
  - EC50, Crustacea (Daphnia magna): 0.38 mg/l (48 h).
  - EC50, Algae (Pseudokirchneriella subcapitata): 0.065 mg/l (72 h).

**Persistence/Degradability**
- Not readily biodegradable.

**Mobility**
- This substance shows potential for adsorption to solid particles. The substance will not tend to evaporate significantly from the water surface.

**Environmental Fate**
- Very toxic to aquatic life with long lasting effects - Avoid release to the environment.

**Bioaccumulation Potential**
- Bioaccumulation in aquatic organisms is not expected.

**Environmental Impact**
- No Data Available

13. DISPOSAL CONSIDERATIONS

**General Information**
- Dispose of contents/container in accordance with local/regional/national regulations.

**Special Precautions for Land Fill**
- Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

14. TRANSPORT INFORMATION

**Land Transport (Australia)**

**ADG Code**

**Proper Shipping Name**
- Tetramethylthiuram disulphide (TMTD)

**Class**
- No Data Available

**Subsidiary Risk(s)**
- No Data Available

**EPG**
- 47 Low To Moderate Hazard Substances

**UN Number**
- No Data Available

**Hazchem**
- No Data Available

**Pack Group**
- No Data Available

**Special Provision**
- AU01

**Comments**
- UN3077: Not 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. (Tetramethylthiuram disulphide)

**Class**
- 9 Miscellaneous Dangerous Goods and Articles

**Subsidiary Risk(s)**
- No Data Available

**EPG**
- 47 Low To Moderate Hazard Substances

**UN Number**
- 3077

**Hazchem**
- 2Z

**Pack Group**
- III
SAFETY DATA SHEET TETRAMETHYLTHIURAM DISULPHIDE (TMTD) REVISION 4, DATE 01 JAN 19

**Land Transport (New Zealand)**
NZ55433

- **Proper Shipping Name**: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Tetramethylthiuram disulphide)
- **Class**: 9 Miscellaneous Dangerous Goods and Articles
- **Subsidiary Risk(s)**: No Data Available
- **EPG**: 47 Low To Moderate Hazard Substances
- **UN Number**: 3077
- **Hazchem**: Z2
- **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. (Tetramethylthiuram disulfide)
- **Class**: 9 Miscellaneous Dangerous Goods and Articles
- **Subsidiary Risk(s)**: No Data Available
- **ERG**: 171 Substances (Low to Moderate Hazard)
- **UN Number**: 3077
- **Hazchem**: Z2
- **Pack Group**: III
- **Special Provision**: No Data Available

**Sea Transport**
IMDG Code

- **Proper Shipping Name**: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Tetramethylthiuram disulphide)
- **Class**: 9 Miscellaneous Dangerous Goods and Articles
- **Subsidiary Risk(s)**: No Data Available
- **UN Number**: 3077
- **Hazchem**: Z2
- **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. (Tetramethylthiuram disulfide)
- **Class**: 9 Miscellaneous Dangerous Goods and Articles
- **Subsidiary Risk(s)**: No Data Available
- **UN Number**: 3077
- **Hazchem**: Z2
- **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 Classification

NOT 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)
Schedule 6

Environmental Protection Authority (New Zealand)
Hazardous Substances and New Organisms Amendment Act 2015

Approval Code
HSR002503

National/Regional Inventories

Australia (AIIC) Listed
Canada (DSL) Not Determined
Canada (NDSL) Not Determined
China (IECSC) Not Determined
Europe (EINECS) Not Determined
Europe (REACH) Not Determined
Japan (ENCS/METI) Not Determined
Korea (KECI) Not Determined
Malaysia (EHS Register) Not Determined
New Zealand (NZIoC) Listed
Philippines (PICCS) Not Determined
Switzerland (Giftliste 1) Not Determined
Switzerland (Inventory of Notified Substances) Not Determined
Taiwan (NCSR) Not Determined
USA (TSCA) Not Determined

16. OTHER INFORMATION

Related Product Codes
THIRAM1000, THIRAM1001, THIRAM1002, THIRAM1003, THIRAM2000, THIRAM3000, THIRAM4900, THIURA1000, THIURA1001, THIURA1002, THIURA1003, THIURA2000, THIURA2500, THIURA3000, THIURA3050, THIURA3500, THIURA3600, THIURA3610, THIURA4200, THIURA4500, THIURA4900, THIURAS3000, THIURAS4000, THIURAS5000, THIURAS5001, THIURAS5100, THIURAS5500