Material Safety Data Sheet

SELCOTE® PLUS COBALT

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name: SELCOTE® PLUS COBALT

Product Code: 04569

Product Type: Nutritional supplement

Company Name: Nufarm NZ

Address: 6 Manu Street, Otahuhu Auckland 2024 New Zealand

Emergency Tel.: 0800 651 911

Telephone/Fax Number: Tel: 0-9-270 4157
Fax: 0-9-270 4159

Email: www.nufarm.co.nz

Recommended Use: For application to pasture to correct livestock selenium and cobalt deficiency.

Other Information: This SDS describes, to the best of our knowledge, the properties of the concentrated product. The physical properties and some of the assessments do not apply to the properties of the product once it has been diluted for application. Acute health effects of the diluted product are likely to be much less severe.

2. HAZARDS IDENTIFICATION

Hazard Classification: Not classified as Dangerous Goods according to the LTSA New Zealand.

Risk Phrase(s): 6.1D acute toxicant, 6.5A sensitiser, 6.5B sensitiser, 6.6B mutagen, 6.9B target organ toxicant, 9.1C aquatic toxicant, 9.2C soil toxicant, 9.3C terrestrial vertebrate toxicant.

Toxicity: Toxic - may cause respiratory sensitisation. Harmful - may be harmful if swallowed, inhaled or absorbed through the skin. May cause sensitisation from prolonged skin contact. Suspected of causing heritable mutations. May cause organ damage from repeated oral exposure at high doses.

Ecotoxicity: Harmful to aquatic life with long-lasting effects. Harmful to the soil environment at high doses.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Characterization: Solid

Information on Composition: Selcote Plus Cobalt contains 5g/kg selenium as sodium and barium selenate (90% minimum); and sodium and barium selenite (10% maximum); plus 52g/kg cobalt elemental equivalent.

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS</th>
<th>Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cobalt (as cobalt hydroxide)</td>
<td>21041-93-0</td>
<td>5.2 %w/w</td>
</tr>
<tr>
<td>Selenium (present as barium selenate)</td>
<td>7787-41-9</td>
<td>0.36 %w/w</td>
</tr>
<tr>
<td>Selenium (present as sodium selenate)</td>
<td>13410-01-0</td>
<td>0.14 %w/w</td>
</tr>
<tr>
<td>Selenium (present as barium selenite)</td>
<td>13718-59-7</td>
<td>max 0.036 %w/w</td>
</tr>
<tr>
<td>Selenium (present as sodium selenite)</td>
<td>10102-18-8</td>
<td>max 0.014 %w/w</td>
</tr>
<tr>
<td>Ingredients determined to be non-hazardous</td>
<td>-</td>
<td>99%w/w</td>
</tr>
</tbody>
</table>
4. FIRST AID MEASURES

Inhalation
Remove patient to fresh air. Lay down and keep warm and rested. If breathing is shallow or has stopped ensure airway is clear and apply resuscitation. Seek medical assistance immediately.

Ingestion
Never give anything by mouth to an unconscious person. If swallowed do NOT induce vomiting. For advice, contact the National Poisons Centre (0800 764 766). Seek medical assistance immediately.

Skin
Immediately flush body and clothes with large amounts of water. Remove contaminated clothing and footwear. Wash affected areas with soap and water. If a large area is affected seek medical assistance.

Eye
Flush eyes with plenty of water for 15 minutes holding eyelids open if necessary. Seek medical assistance.

First Aid Facilities
Facilities storing or utilizing this material should be equipped with an eyewash facility and safety shower.

Advice to Doctor
Treat symptomatically.

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media
Carbon dioxide to exclude air.

Hazard from Combustion Products
May emit toxic fumes of selenium dioxide if involved in fires or exposed to extreme heat.

Special Protective Equipment for fire fighters
Full protective clothing and self-contained breathing apparatus.

Specific Methods
Keep up wind. Do not allow washings to reach sewage or effluent systems.

Other Information
Location Certificate: Not applicable
Hazardous Atmosphere Zone: Not applicable
Number of Fire Extinguishers: Not applicable

6. ACCIDENTAL RELEASE MEASURES

Spills & Disposal
Wear protective clothing. Clear area of unprotected personnel. Sweep up solids without generating dust. If spill does enter waterways contact the local authority. Collect in an appropriate sealable container for disposal in an approved landfill.

Personal Protection
For appropriate personal protective equipment (PPE), refer Section 8.

Environmental Precautions
Prevent from entering drains, waterways or sewers.

7. HANDLING AND STORAGE

Precautions for Safe Handling
Avoid skin and eye contact and inhalation of dust.
APPROVED HANDLER: Not applicable
TRACKING: Is not required
RECORD KEEPING: Not applicable

Conditions for Safe Storage
Keep out of reach of children.
Store in original container tightly closed and in a locked, dry, cool area away from foodstuffs. Storage must be in accordance with NZS 8409 Management of Agrichemicals. Stores containing 1,000kg of Selcote Plus Cobalt are subject to signage, and more than 1,000kg require emergency response plans.

Other Information
Always read the label and any attached leaflet before use.
Aggregate Storage Volume Thresholds:
When stored with substances of the same hazard classification the aggregate quantity must be considered. For full details refer to the current NZS8409 Management of Agrichemicals and the HSNO Regulations.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

National Exposure Standards
No exposure limits (WES, TEL or EEL’s) have been specifically assigned for this product.
WES TWA for selenium and compounds, as Se = 0.1 mg/m³
WES TWA for Cobalt metal dust and fume, as Co = 0.5mg/m³, A3 carcinogen, bio
Material Safety Data Sheet

Infosafe No™ 3NUJ8  Issue Date :November 2008  ISSUED by NUFARMNZ

Product Name SELCOTE® PLUS COBALT

<table>
<thead>
<tr>
<th>Engineering Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensure ventilation is adequate and that air concentrations of components are</td>
</tr>
<tr>
<td>controlled below quoted Workplace Exposure Standards. Avoid generating and</td>
</tr>
<tr>
<td>inhaling dusts. Use with local exhaust ventilation or while wearing a dust</td>
</tr>
<tr>
<td>mask. Keep containers closed when not in use.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Personal Protective Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>When handling the product wear safety goggles, impervious gloves, cotton</td>
</tr>
<tr>
<td>overalls buttoned to the neck and wrist, and boots.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hygiene Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do not eat, drink or smoke while using.</td>
</tr>
<tr>
<td>Remove protective clothing and wash hands and face thoroughly before meals and</td>
</tr>
<tr>
<td>after work. Wash protective clothing daily after work.</td>
</tr>
</tbody>
</table>

9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Form</th>
<th>Solid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Deep red granules</td>
</tr>
<tr>
<td>Odour</td>
<td>Mild</td>
</tr>
<tr>
<td>Solubility in Water</td>
<td>Sparsely soluble in water</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>1.0</td>
</tr>
<tr>
<td>Volatile Component</td>
<td>Nil</td>
</tr>
<tr>
<td>Other Information</td>
<td>(GR) Granule</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

<table>
<thead>
<tr>
<th>Chemical Stability</th>
<th>Stable at room temperature. Incompatible with strong oxidizing agents, sparks and open flames.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazardous Polymerization</td>
<td>Hazardous polymerisation will not occur.</td>
</tr>
</tbody>
</table>

11. TOXICOLOGICAL INFORMATION

<table>
<thead>
<tr>
<th>Toxicology Information</th>
<th>No specific toxicological data is available for this product. Data below is for constituents. Sodium selenate is rapidly absorbed into the body, either by swallowing or breathing in dust.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Hazard</td>
<td>No adverse health effects are expected if the product is handled in accordance with this Safety Data Sheet and the product label.</td>
</tr>
<tr>
<td>Inhalation</td>
<td>Inhalation of dust may result in respiratory irritation. Sodium selenate is readily absorbed into the body. Effects may include those described for 'swallowing'. Can cause possible allergic reactions, producing asthma-like symptoms.</td>
</tr>
<tr>
<td>Ingestion</td>
<td>Swallowing may result in nausea, vomiting, diarrhoea and abdominal pain. Large amounts may cause muscle spasms, coma and death from respiratory failure.</td>
</tr>
<tr>
<td>Skin</td>
<td>Contact with skin may result in irritation. A skin sensitiser. Repeated or prolonged skin contact may lead to allergic contact dermatitis.</td>
</tr>
<tr>
<td>Eye</td>
<td>May be an eye irritant.</td>
</tr>
<tr>
<td>Chronic Effects</td>
<td>Repeated or prolonged exposure to selenate compounds may cause bronchial irritation, gastro-intestinal hypermotility resulting in diarrhoea, loss of weight and liver changes.</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>Objective reviewers of literature have concluded that selenium is not carcinogenic, albeit it may even play a protective role against carcinogenicity in small doses. IARC have classified Selenium and Selenium compounds as Group 3 - not classifiable as to their carcinogenicity to humans.</td>
</tr>
<tr>
<td>Acute Toxicity - Oral</td>
<td>LD50 (rat) 1.6 mg/kg for sodium selenate</td>
</tr>
<tr>
<td></td>
<td>LD50 (rat) 7 mg/kg for barium selenate</td>
</tr>
<tr>
<td></td>
<td>LD50 (rabbit) 2.19 mg/kg for sodium selenite</td>
</tr>
<tr>
<td></td>
<td>LD50 (rat) 80 mg/kg for cobalt hydroxide</td>
</tr>
<tr>
<td>Skin Sensitisation</td>
<td>May cause respiratory and contact sensitisation (cobalt hydroxide)</td>
</tr>
<tr>
<td>Subchronic/Chronic Toxicity</td>
<td>Rats fed a dietary level of 100ppm ate little food and all died in 8-16 days. Those receiving 50ppm died in 10-97 days. A dietary level of 15ppm was tolerated for 72 days or more but food intake was about half of normal. All rats survived 7.5ppm (0.37mg/kg) for 6 months, and their growth was normal. LOAEL (oral) = 0.02mg/kg bw/day. Target organ - cardiovascular system. (Cobalt hydroxide)</td>
</tr>
<tr>
<td></td>
<td>NOAEL (inhalation) male rabbit = 0.6mg/m³/day (Cobalt hydroxide)</td>
</tr>
</tbody>
</table>
**SELCOTE® PLUS COBALT**

**Human Effects**
A significant decrease in lung function due to chronic bronchial obstruction was observed in humans exposed to 0.038mg/m³ cobalt for 6 hours. A woman who had ingested 53mg/kg of sodium selenate experienced gastrointestinal hypermotility with diarrhoea. Liver function tests were abnormal.

**12. ECOLOGICAL INFORMATION**

**Persistence / Degradability**
Not readily degradable (sodium selenate)

**Bioaccumulative Potential**
Daphnia BCF value = 3650 for sodium selenate

**Basis for Assessment**
Ecotoxicological data have not been determined specifically for this product. Data below is for the active ingredient unless otherwise stated.

**Acute Toxicity - Fish**
LC50 (96hr) for fathead minnow is 0.69 mg/l for sodium selenate
LC50 (96h) rainbow trout = 1.406mg/L for cobalt hydroxide

**Acute Toxicity - Daphnia**
LC50(96h) Daphnia magna 0.58mg/L
LC50(48h) Daphnia magna 0.75mg/L (adult), 0.55mg/L (juvenile)
LC50(48h) Daphnia magna = 1.11mg/L for cobalt hydroxide

**Acute Toxicity - Algae**
EC50 (96h) for green algae 0.2 mg/l for sodium selenate.
EC50 (96h) blue-green algae = 23.8mg/L for cobalt hydroxide

**13. DISPOSAL CONSIDERATIONS**

**Product Disposal**
Dispose of product only by using according to the label, or at an approved landfill.

**Container Disposal**
Ensure container is completely empty. Burn in an appropriate incinerator if circumstances, such as wind direction, permit. Otherwise crush and bury in an appropriate landfill.

**14. TRANSPORT INFORMATION**

**Transport Information**
It is good practice to separate this product from food, food related materials, animal feedstuffs, seed or fertilisers during transport.

**Storage and Transport**
Not classified as Dangerous Goods for transport in New Zealand.

**Other Information**
Do not carry this product on a passenger service vehicle.

**15. REGULATORY INFORMATION**

**National and or International Regulatory Information**
This product does not require registration under the ACVM Act. Approved pursuant to the HSNO Act 1996, Approval Code HSR002521

**Packaging & Labelling**
HARMFUL - keep out of reach of children

**Hazard Rating Systems**
NFPA/HMIS: 2-0-1

**16. OTHER INFORMATION**

**Contact Person/Point**
IN AN EMERGENCY, DIAL 111 - FIRE OR POLICE
24Hr TollFree Emergency No: 0800 651 911
24Hr Emergency No: National Poisons Centre Phone: 0800 764 766

**Other Information**
Superseded SDS issued First issue
...End Of MSDS...