SAFETY DATA SHEET

1. Identification

Product identifier          Stronghold Plus; Revolution Plus
Other means of identification
Synonyms                  Selamectin / Sarolaner
Recommended use of the chemical and restrictions on use
Recommended use            Veterinary product used as antiparasitic; endectocide
Restrictions on use        Not for human use

Details of manufacturer or importer
Company Name (AU)           Zoetis Australia Pty Ltd
                             ABN 94 156 476 425
                             Level 6, 5 Rider Boulevard
                             Rhodes NSW 2138 AUSTRALIA
Tel                          1800 814 883
Fax                          (02) 8876 0444
Email                       productsupport.au@zoetis.com
Emergency Phone             1800 814 883 (all hours)
Police and Fire Brigade     Dial 000
If ineffective              Dial Poisons Information Centre (13 1126 from anywhere in Australia)

2. Hazard(s) identification

Classification of the hazardous chemical

Physical hazards            Flammable liquids          Category 2
Health hazards              Serious eye damage/eye irritation Category 2A
                             Reproductive toxicity          Category 2
                             Specific target organ toxicity following single exposure Category 3 narcotic effects
Environmental hazards        Hazardous to the aquatic environment, acute hazard Category 1
                             Hazardous to the aquatic environment, long-term hazard Category 1

Label elements, including precautionary statements

Hazard symbol(s)

Signal word                  Danger
Hazard statement(s)          Highly flammable liquid and vapour. Causes serious eye irritation. May cause drowsiness or dizziness. Suspected of damaging fertility or the unborn child. Very toxic to aquatic life with long lasting effects.
Precautionary statement(s)  Prevention
Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Avoid breathing mist or vapour. Use only outdoors or in a well-ventilated area. Wash thoroughly after handling. Avoid release to the environment. Wear protective gloves/eye protection/face protection.
Response

IF exposed or concerned: Get medical advice/attention. IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. 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 INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTRE or doctor/physician if you feel unwell. In case of fire: Use appropriate media for extinction. Collect spillage.

Storage

Store in a well-ventilated place. Keep cool. Store locked up.

Disposal

Dispose of contents/container in accordance with local/regional/national/international regulations.

Other hazards which do not result in classification

None known.

Supplemental information

Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis.

3. Composition/information on ingredients

<table>
<thead>
<tr>
<th>Mixture</th>
<th>Identity of chemical ingredients</th>
<th>CAS number and other unique identifiers</th>
<th>Concentration of ingredients (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Isopropyl alcohol</td>
<td>67-63-0</td>
<td>60-80</td>
</tr>
<tr>
<td></td>
<td>DIPROPYLENE GLYCOL METHYL ETHER</td>
<td>34590-94-8</td>
<td>5-30</td>
</tr>
<tr>
<td></td>
<td>Selamectin</td>
<td>220119-17-5</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Sarolaner</td>
<td>1398609-39-6</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Butylated hydroxytoluene</td>
<td>128-37-0</td>
<td>##</td>
</tr>
</tbody>
</table>

Composition comments

## Trace

4. First-aid measures

Description of necessary first aid measures

Inhalation

Move to fresh air. Call a POISON CENTRE or doctor/physician if you feel unwell. For breathing difficulties, oxygen may be necessary.

Skin contact

Take off immediately all contaminated clothing. Wash off with soap and plenty of water. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse.

Eye contact

Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

Ingestion

Rinse mouth. Call a physician or poison control center immediately. Do not induce vomiting without advice from poison control center. Never give anything by mouth to a victim who is unconscious or is having convulsions.

Personal protection for first-aid responders

IF exposed or concerned: Get medical advice/attention. For personal protection, see section B of the SDS. Take off all contaminated clothing immediately. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before reuse.

Symptoms caused by exposure

Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. May cause drowsiness and dizziness. Headache. Nausea, vomiting. May cause respiratory irritation. Mild skin irritation. Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis.

Medical attention and special treatment

Provide general supportive measures and treat symptomatically. Symptoms may be delayed.

5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media

Water fog. Alcohol resistant foam. Dry chemical powder. Carbon dioxide (CO2).

Unsuitable extinguishing media

Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical

Highly flammable. Vapours may ignite. Vapours may travel considerable distance to a source of ignition and flash back. During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for fire fighters

Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel
Local authorities should be advised if significant spillages cannot be contained.

For emergency responders
Ensure adequate ventilation. ELIMINATE all ignition sources (no smoking, flares, sparks, or flames in immediate area). Wear appropriate protective equipment and clothing during clean-up. Avoid contact with eyes, skin, and clothing. Do not breathe mist or vapour. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Use appropriate containment to avoid environmental contamination. Use personal protection recommended in Section 8 of the SDS.

Environmental precautions
Avoid release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses, or onto the ground.

Methods and materials for containment and cleaning up
Ensure adequate ventilation. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil etc) away from spilled material. Prevent product from entering drains.

Large Spills: Stop the flow of material, if this is without risk. Ground container and transfer equipment to eliminate static electric sparks. Take precautionary measures against static discharge. Use only non-sparking tools. Ventilate the contaminated area. Use water spray to disperse vapors and dilute spill to a nonflammable mixture. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Clean surface thoroughly to remove residual contamination.

Small Spills: Absorb spillage with non-combustible, absorbent material. Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use.

7. Handling and storage

Precautions for safe handling
Highly flammable. May be ignited by open flame. Do not handle until all safety precautions have been read and understood. Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Do not taste or swallow. Avoid breathing mist or vapour. Avoid contact with eyes, skin, and clothing. Use only outdoors or in a well-ventilated area. Wear personal protective equipment. Observe good industrial hygiene practices. Wash thoroughly after handling. When using, do not eat, drink or smoke. Avoid release to the environment.

Also, Industrial use: Take precautionary measures against static discharges. Use only non-sparking tools. Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres. Ground and bond containers when transferring material. Handling operations that can promote accumulation of static charges include but are not limited to: mixing, filtering, pumping at high flow rates, splash filling, creating mists or sprays, tank and container filling, tank cleaning, sampling, gauging, switch loading, vacuum truck operations.

Conditions for safe storage, including any incompatibilities
Store locked up. Keep containers tightly closed in a cool, well-ventilated place. < 30°C/86°F. Protect from sunlight. Do not handle or store near an open flame, heat or other sources of ignition. Keep away from food, drink and animal feeding stuffs. Keep out of the reach of children. Store away from incompatible materials (see Section 10 of the SDS).

Also, Industrial use: Keep in an area equipped with sprinklers. This material can accumulate static charge which may cause spark and become an ignition source. Take measures to prevent the build up of electrostatic charge. Prevent electrostatic charge build-up by using common bonding and grounding techniques.

8. Exposure controls and personal protection

Control parameters
Follow standard monitoring procedures.
## Occupational exposure limits

### Zoetis Components

<table>
<thead>
<tr>
<th>Component</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sarolaner (CAS 1398609-39-6)</td>
<td>TWA</td>
<td>110 µg/m³</td>
</tr>
<tr>
<td>Selamectin (CAS 220119-17-5)</td>
<td>TWA</td>
<td>200 µg/m³</td>
</tr>
</tbody>
</table>

### Australia. National Workplace OELs (Workplace Exposure Standards for Airborne Contaminants, Appendix A)

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butylated hydroxytoluene (CAS 128-37-0)</td>
<td>TWA</td>
<td>10 mg/m³</td>
</tr>
<tr>
<td>DIPROPYLENE GLYCOL METHYL ETHER (CAS 34590-94-8)</td>
<td>TWA</td>
<td>308 mg/m³</td>
</tr>
<tr>
<td>Isopropyl alcohol (CAS 67-63-0)</td>
<td>STEL</td>
<td>1230 mg/m³</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>983 mg/m³</td>
</tr>
</tbody>
</table>

### US. ACGIH Threshold Limit Values

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butylated hydroxytoluene (CAS 128-37-0)</td>
<td>TWA</td>
<td>2 mg/m³</td>
<td>Inhalable fraction and vapour.</td>
</tr>
<tr>
<td>DIPROPYLENE GLYCOL METHYL ETHER (CAS 34590-94-8)</td>
<td>STEL</td>
<td>150 ppm</td>
<td></td>
</tr>
<tr>
<td>Isopropyl alcohol (CAS 67-63-0)</td>
<td>STEL</td>
<td>100 ppm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>200 ppm</td>
<td></td>
</tr>
</tbody>
</table>

### UK. EH40 Workplace Exposure Limits (WELs)

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butylated hydroxytoluene (CAS 128-37-0)</td>
<td>TWA</td>
<td>10 mg/m³</td>
</tr>
<tr>
<td>DIPROPYLENE GLYCOL METHYL ETHER (CAS 34590-94-8)</td>
<td>TWA</td>
<td>308 mg/m³</td>
</tr>
<tr>
<td>Isopropyl alcohol (CAS 67-63-0)</td>
<td>STEL</td>
<td>1250 mg/m³</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>999 mg/m³</td>
</tr>
</tbody>
</table>

### Germany. DFG MAK List (advisory OELs). Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area (DFG)

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butylated hydroxytoluene (CAS 128-37-0)</td>
<td>TWA</td>
<td>10 mg/m³</td>
<td>Vapor and aerosol, inhalable fraction.</td>
</tr>
<tr>
<td>DIPROPYLENE GLYCOL METHYL ETHER (CAS 34590-94-8)</td>
<td>TWA</td>
<td>310 mg/m³</td>
<td>Vapour.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50 ppm</td>
<td>Vapour.</td>
</tr>
</tbody>
</table>
Germany. DFG MAK List (advisory OELs). Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area (DFG)

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isopropyl alcohol (CAS 67-63-0)</td>
<td>TWA</td>
<td>500 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>200 ppm</td>
<td></td>
</tr>
</tbody>
</table>

Biological limit values

* - For sampling details, please see the source document.

Germany. TRGS 903, BAT List (Biological Limit Values)

<table>
<thead>
<tr>
<th>Components</th>
<th>Value</th>
<th>Determinant</th>
<th>Specimen</th>
<th>Sampling Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isopropyl alcohol (CAS 67-63-0)</td>
<td>25 mg/l</td>
<td>ACETON</td>
<td>Urine</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>25 mg/l</td>
<td>ACETON</td>
<td>Blood</td>
<td>*</td>
</tr>
</tbody>
</table>

ACGIH Biological Exposure Indices

* - For sampling details, please see the source document.

<table>
<thead>
<tr>
<th>Components</th>
<th>Value</th>
<th>Determinant</th>
<th>Specimen</th>
<th>Sampling Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isopropyl alcohol (CAS 67-63-0)</td>
<td>40 mg/l</td>
<td>Acetone</td>
<td>Urine</td>
<td>*</td>
</tr>
</tbody>
</table>

Exposure guidelines

Dipropylene glycol (mono) methyl ether - Australia OEL additional information: Skin designation (Can be absorbed through the skin.)

US ACGIH Threshold Limit Values: Skin designation

DIPROPYLENE GLYCOL METHYL ETHER (CAS 34590-94-8) Can be absorbed through the skin.

Appropriate engineering controls

General ventilation normally adequate.

Industrial use: Provide adequate general and local exhaust ventilation. Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Provide eyewash station.

Individual protection measures, for example personal protective equipment (PPE)

Eye/face protection

Not normally needed. If contact is likely, safety glasses with side shields are recommended.

Industrial use: Wear safety glasses with side shields (or goggles).

Skin protection

Hand protection

Wear protective gloves.

Industrial use: Wear appropriate chemical resistant gloves.

Other

Not normally needed.

Industrial use: Wear suitable protective clothing. Impervious protective clothing is recommended if skin contact with drug product is possible and for bulk processing operations.

Respiratory protection

No personal respiratory protective equipment normally required.

Industrial use: In case of insufficient ventilation, wear suitable respiratory equipment. If the applicable Occupational Exposure Limit (OEL) is exceeded, wear an appropriate respirator with a protection factor sufficient to control exposures to below the OEL. Chemical respirator with organic vapour cartridge and full facepiece.

Thermal hazards

Not applicable.

Hygiene measures

Observe any medical surveillance requirements. When using do not smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance

Physical state | Liquid.
Form | Liquid.
Material name: Stronghold Plus; Revolution Plus
912-ZA

Colour
Clear, colorless to pale yellow

Odour
Alcohol.

Odour threshold
Not available.

pH
Not available.

Melting point/freezing point
Not available.

Initial boiling point and boiling range
84 °C (183.2 °F) estimated

Flash point
19.0 °C (66.2 °F) estimated

Evaporation rate
Not available.

Flammability (solid, gas)
Not applicable.

Upper/lower flammability or explosive limits

Flammability limit - lower (%)
Not available.

Flammability limit - upper (%)
Not available.

Explosive limit - lower (%)
Not available.

Explosive limit – upper (%)
Not available.

Vapour pressure
Not available.

Vapour density
Not available.

Relative density
Not available.

Solubility(ies)
Solubility (water)
Insoluble

Partition coefficient (n-octanol/water)
Not available.

Auto-ignition temperature
Not available.

Decomposition temperature
Not available.

Viscosity
Not available.

Other physical and chemical parameters

Explosive properties
Not explosive.

Oxidising properties
Not oxidising.

Specific gravity
0.82 - 0.85

10. Stability and reactivity

Reactivity
The product is stable and non-reactive under normal conditions of use, storage and transport.

Chemical stability
Material is stable under normal conditions.

Possibility of hazardous reactions
No dangerous reaction known under conditions of normal use.

Conditions to avoid
Contact with incompatible materials. Sunlight. Keep away from heat, spark, open flames and other sources of ignition.

Incompatible materials

Hazardous decomposition products
Irritating and/or toxic fumes and gases may be emitted upon the product's decomposition.

11. Toxicological information

Information on possible routes of exposure

Inhalation
May cause drowsiness and dizziness. Headache. Nausea, vomiting. Prolonged inhalation may be harmful.

Skin contact
Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis.

Isopropyl alcohol
Result: Irritation
Species: Rabbit
Severity: Mild
**Skin contact**
DIPROPYLENE GLYCOL METHYL ETHER  
Species: Rabbit  
Severity: Mild

Selamectin  
Species: Rabbit  
Severity: Minimal

Butylated hydroxytoluene  
Species: Rabbit  
Severity: Moderate

Sarolaner  
Species: Rabbit  
Severity: Non-irritating

**Eye contact**  
Causes serious eye irritation.

Isopropyl alcohol  
Result: Irritation  
Species: Rabbit  
Severity: Severe

DIPROPYLENE GLYCOL METHYL ETHER  
Species: Rabbit  
Severity: Mild

Selamectin  
Species: Rabbit  
Severity: Mild

Sarolaner  
Species: Rabbit  
Severity: Minimal

Butylated hydroxytoluene  
Species: Rabbit  
Severity: Moderate

**Ingestion**  
Health injuries are not known or expected under normal use. May be harmful if swallowed. However, ingestion is not likely to be a primary route of occupational exposure.

**Symptoms related to exposure**  
Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. May cause drowsiness and dizziness. Headache. Nausea, vomiting. Behavioural changes. May cause respiratory irritation. Mild skin irritation. Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis. Prolonged exposure may cause chronic effects.

**Acute toxicity**  
May be harmful if swallowed.

**Components**  
**Species**  
**Test Results**

<table>
<thead>
<tr>
<th>Components</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butylated hydroxytoluene (CAS 128-37-0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Acute</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intraperitoneal</td>
<td>Mouse</td>
<td>138 mg/kg</td>
</tr>
<tr>
<td>Oral</td>
<td>Mouse</td>
<td>650 mg/kg</td>
</tr>
<tr>
<td></td>
<td>Rat</td>
<td>1700 mg/kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td>890 mg/kg</td>
</tr>
<tr>
<td><strong>Chronic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral</td>
<td>Mouse</td>
<td>2000 mg/kg, 4 days Liver, Kidney, Ureter, Bladder</td>
</tr>
<tr>
<td></td>
<td>Rat</td>
<td>5185 mg/kg, 4 weeks Liver</td>
</tr>
<tr>
<td>DIPROPYLENE GLYCOL METHYL ETHER (CAS 34590-94-8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Acute</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dermal</td>
<td>Rabbit</td>
<td>9510 mg/kg</td>
</tr>
</tbody>
</table>
### Components

<table>
<thead>
<tr>
<th>Components</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inhalation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Vapour</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LC50</td>
<td>Rat</td>
<td>&gt; 3.35 mg/l, 7 hours (No deaths)</td>
</tr>
<tr>
<td><strong>Oral</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rat</td>
<td>&gt; 5000 mg/kg</td>
</tr>
<tr>
<td><strong>Isopropyl alcohol (CAS 67-63-0)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Acute</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dermal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rabbit</td>
<td>12800 mg/kg</td>
</tr>
<tr>
<td><strong>Inhalation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LC50</td>
<td>Rat</td>
<td>16000 ppm, 8 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30 mg/l</td>
</tr>
<tr>
<td><strong>Oral</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Mouse</td>
<td>3600 mg/kg</td>
</tr>
<tr>
<td></td>
<td>Rat</td>
<td>&gt; 2000 mg/kg</td>
</tr>
<tr>
<td><strong>Chronic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Inhalation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NOAEL</td>
<td>Rat</td>
<td>4000 ppm, 20 weeks (Liver, Central nervous system)</td>
</tr>
<tr>
<td><strong>Sarolaner (CAS 1398609-39-6)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Acute</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dermal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rat</td>
<td>&gt; 2020 mg/kg</td>
</tr>
<tr>
<td><strong>Oral</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rat</td>
<td>783 mg/kg</td>
</tr>
<tr>
<td><strong>Subacute</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Oral</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NOAEL</td>
<td>Rat</td>
<td>2.5 mg/kg/day, 14 days (Adrenal gland)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.2 mg/kg/day, 30 days (Adrenal gland, Ovary, Liver)</td>
</tr>
<tr>
<td><strong>Subchronic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Oral</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NOAEL</td>
<td>Rat</td>
<td>25 mg/kg/day, 90 days (Adrenal gland, Ovary, Pancreas)</td>
</tr>
<tr>
<td><strong>Selamectin (CAS 220119-17-5)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Acute</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Mouse</td>
<td>&gt; 1600 mg/kg</td>
</tr>
<tr>
<td></td>
<td>Rat</td>
<td>&gt; 1600 mg/kg</td>
</tr>
<tr>
<td><strong>Subchronic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Oral</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NOAEL</td>
<td>Dog</td>
<td>40 mg/kg/day, 3 months [Target organ(s): None identified]</td>
</tr>
<tr>
<td></td>
<td>Rat</td>
<td>5 mg/kg/day, 3 months [Target organ(s): Liver]</td>
</tr>
</tbody>
</table>

### Skin corrosion/irritation

Prolonged skin contact may cause temporary irritation. Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis.

### Corrosivity

<table>
<thead>
<tr>
<th>Isopropyl alcohol</th>
<th>Result: Irritation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Species: Rabbit</td>
</tr>
<tr>
<td></td>
<td>Severity: Mild</td>
</tr>
</tbody>
</table>
**Corrosivity**
DIPROPYLENE GLYCOL METHYL ETHER
Species: Rabbit
Severity: Mild

Selamectin
Species: Rabbit
Severity: Minimal

**Irritation Corrosion - Skin**
Sarolaner
Result: Non-irritant
Species: Rabbit

**Serious eye damage/irritation**
Causes serious eye irritation.

**Eye contact**
Isopropyl alcohol
Result: Irritation
Species: Rabbit
Severity: Severe

DIPROPYLENE GLYCOL METHYL ETHER
Species: Rabbit
Severity: Mild

Selamectin
Species: Rabbit
Severity: Mild

Sarolaner
Species: Rabbit
Severity: Minimal

Butylated hydroxytoluene
Species: Rabbit
Severity: Moderate

**Respiratory or skin sensitisation**

**Respiratory sensitisation**
Not a respiratory sensitizer.

**Skin sensitisation**
This product is not expected to cause skin sensitisation.

**Skin Sensitisation**

Selamectin
GPMT
Species: Guinea Pig
Severity: Negative

Sarolaner
LLNA
Species: Mouse
Severity: Negative

**Germ cell mutagenicity**
No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

**Mutagenicity**

Sarolaner
Bacterial Mutagenicity (Ames)
Result: Negative
Species: Salmonella, E. coli

Isopropyl alcohol
Bacterial Mutagenicity (Ames)
Result: Negative
Species: Salmonella

Selamectin
Bacterial Mutagenicity (Ames)
Result: Negative
Species: Salmonella

Sarolaner
In Vitro Chromosome Aberration
Result: Negative
Species: Human lymphocytes

Selamectin
In Vitro Cytogenetics
Result: Negative
Species: Human lymphocytes
**Mutagenicity**

<table>
<thead>
<tr>
<th>Substance</th>
<th>Test Type</th>
<th>Result</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sarolaner</td>
<td>In Vitro Micronucleus</td>
<td>Negative</td>
<td>Chinese Hamster Ovary (CHO) cells</td>
</tr>
<tr>
<td>Isopropyl alcohol</td>
<td>In Vitro Sister Chromatid Exchange</td>
<td>Negative</td>
<td></td>
</tr>
<tr>
<td>DIPROPYLENE GLYCOL METHYL ETHER</td>
<td>In vitro tests</td>
<td>Negative</td>
<td></td>
</tr>
<tr>
<td>Selamectin</td>
<td>In Vivo Micronucleus</td>
<td>Negative</td>
<td>Mouse</td>
</tr>
<tr>
<td>Sarolaner</td>
<td>In Vivo Micronucleus</td>
<td>Negative</td>
<td>Rat</td>
</tr>
<tr>
<td>Selamectin</td>
<td>Mammalian Cell Mutagenicity</td>
<td>Negative</td>
<td>Chinese Hamster Ovary (CHO) cells</td>
</tr>
<tr>
<td>Isopropyl alcohol</td>
<td>Mammalian Cell Mutagenicity</td>
<td>Negative</td>
<td>HGPRT Chinese Hamster Ovary (CHO) cells</td>
</tr>
</tbody>
</table>

**Carcinogenicity**

Due to partial or complete lack of data the classification is not possible.

<table>
<thead>
<tr>
<th>Carcinogen</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butylated hydroxytoluene (CAS 128-37-0)</td>
<td>A4 Not classifiable as a human carcinogen.</td>
</tr>
<tr>
<td>Isopropyl alcohol (CAS 67-63-0)</td>
<td>A4 Not classifiable as a human carcinogen.</td>
</tr>
</tbody>
</table>

**ACGIH Carcinogens**

<table>
<thead>
<tr>
<th>Substance</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butylated hydroxytoluene (CAS 128-37-0)</td>
<td>A4 Not classifiable as a human carcinogen.</td>
</tr>
<tr>
<td>Isopropyl alcohol (CAS 67-63-0)</td>
<td>A4 Not classifiable as a human carcinogen.</td>
</tr>
</tbody>
</table>

**IARC Monographs. Overall Evaluation of Carcinogenicity**

<table>
<thead>
<tr>
<th>Substance</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butylated hydroxytoluene (CAS 128-37-0)</td>
<td>3 Not classifiable as to carcinogenicity to humans.</td>
</tr>
</tbody>
</table>

**Reproductive toxicity**

<table>
<thead>
<tr>
<th>Substance</th>
<th>Effect</th>
<th>Dose</th>
<th>Result</th>
<th>Species</th>
<th>Organ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selamectin</td>
<td>Suspected of damaging fertility or the unborn child</td>
<td>10 mg/kg/day</td>
<td>Prenatal &amp; Postnatal Development, Developmental toxicity</td>
<td>Rat</td>
<td></td>
</tr>
<tr>
<td>Isopropyl alcohol</td>
<td></td>
<td>1200 mg/kg/day</td>
<td>Prenatal &amp; Postnatal Development, No effects at maximum dose</td>
<td>Rat</td>
<td>Oral</td>
</tr>
<tr>
<td>Sarolaner</td>
<td></td>
<td>3 mg/kg/day</td>
<td>Embryo / Fetal Development, Maternal Toxicity Not Teratogenic</td>
<td>Rabbit</td>
<td>Oral</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3.2 mg/kg/day</td>
<td>Embryo / Fetal Development, Maternal Toxicity Not Teratogenic</td>
<td>Rat</td>
<td>Oral</td>
</tr>
<tr>
<td>Selamectin</td>
<td></td>
<td>40 mg/kg/day</td>
<td>Prenatal &amp; Postnatal Development, Maternal Toxicity</td>
<td>Rat</td>
<td>Oral</td>
</tr>
</tbody>
</table>
Developmental effects
Butylated hydroxytoluene 6 g/kg Embryo / Fetal Development, teratogenic
Result: LOEL
Species: Rat
Organ: Oral

Isopropyl alcohol 7000 ppm Prenatal & Postnatal Development, Maternal toxicity, Fetotoxicity, Embryotoxicity
Result: LOAEL
Species: Rat
Organ: Inhalation

DIPROPYLENE GLYCOL METHYL ETHER Not teratogenic

Reproductivity
Selamectin 10 mg/kg/day Reproductive & Fertility, Fetotoxicity
Result: NOAEL
Species: Rat

Isopropyl alcohol 1000 mg/kg/day 2 Generation Reproductive Toxicity, Maternal Toxicity, Fetal mortality
Result: LOAEL
Species: Rat
Organ: Oral

Specific target organ toxicity - single exposure May cause drowsiness and dizziness.

Specific target organ toxicity - repeated exposure Not classified.

Aspiration hazard Not an aspiration hazard.

12. Ecological information
Ecotoxicity Very toxic to aquatic life with long lasting effects. Avoid release to the environment.

<table>
<thead>
<tr>
<th>Components</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isopropyl alcohol (CAS 67-63-0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aquatic Fish</td>
<td>LC50</td>
<td>Bluegill (Lepomis macrochirus)</td>
</tr>
<tr>
<td>Sarolaner (CAS 1398609-39-6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aquatic Algae</td>
<td>EC50</td>
<td>Pseudokirchneriella subcapitata (Green Alga)</td>
</tr>
<tr>
<td>Crustacea Daphnia magna (Water Flea)</td>
<td>EC50</td>
<td>0.27 mg/l, 48 Hours</td>
</tr>
<tr>
<td>Fish LC50</td>
<td>Fish</td>
<td>&gt; 0.54 mg/l, 96 Hours</td>
</tr>
<tr>
<td>Selamectin (CAS 220119-17-5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aquatic Crustacea Daphnia magna (Water Flea)</td>
<td>EC50</td>
<td>&gt; 763 ug/l, 72 Hours</td>
</tr>
<tr>
<td>Fish LC50</td>
<td>Mysidopsis bahia (Mysid Shrimp)</td>
<td>28 ng/L, 96 Hours</td>
</tr>
<tr>
<td></td>
<td>Cyprinodon variegatus (Sheepshead Minnow)</td>
<td>28 ug/l, 48 Hours</td>
</tr>
<tr>
<td></td>
<td>Oncorhynchus mykiss (rainbow trout)</td>
<td>266 ug/l, 96 Hours</td>
</tr>
</tbody>
</table>

Persistence and degradability No data is available on the degradability of this product. As with other members of the avermectin family, selamectin is highly toxic to fish and certain aquatic organisms. However, once in contact with soil, it is tightly bound and does not readily desorb. It is unlikely to reach groundwater and is also biodegradable by soil microflora.
Biodegradability
Percent Degradation (Aerobic Biodegradation)
DIPROPYLENE GLYCOL METHYL ETHER

Result: Readily biodegradable

Bioaccumulative potential
No data available for this product. Not expected to bioaccumulate.

Partition coefficient
n-octanol / water (log Kow)

Sarolaner: 3.25

Selamectin: 3.1, [Measured, Log P]

Mobility in soil
No data available for this product.

Other adverse effects
No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal methods
Avoid release to the environment. Do not discharge into drains, water courses or onto the ground. Do not allow this material to drain into sewers/water supplies. Dispose of contents/container in accordance with local/regional/national/international regulations.

Industrial use: Considering the relevant known environmental and human health hazards of the material, review and implement appropriate technical and procedural waste water and waste disposal measures to prevent occupational exposure and environmental release. It is recommended that waste minimization be practiced. The best available technology should be utilized to prevent environmental releases. This may include destructive techniques for waste and wastewater. Dispose of contents/container in accordance with local/regional/national/international regulations.

Residual waste
Industrial use: Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging
Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

ADG

UN number: UN1219
UN proper shipping name: Isopropanol Solution

Transport hazard class(es)
Class 3
Subsidiary risk -
Packing group II

Environmental hazards: No
Hazchem code 2YE

Special precautions for user: Read safety instructions, SDS and emergency procedures before handling.
Other information: See "excepted quantity" provisions if applicable.

RID

UN number: UN1219
UN proper shipping name: Isopropanol Solution

Transport hazard class(es)
Class 3
Subsidiary risk -
Packing group II

Environmental hazards: Yes (Selamectin, Isoxazoline)
Special precautions for user: Read safety instructions, SDS and emergency procedures before handling.
Other information: See "excepted quantity" provisions if applicable.

IATA

UN number: UN1219
UN proper shipping name: Isopropanol Solution

Transport hazard class(es)
Class 3
Subsidiary risk -
Packing group II
Environmental hazards: Marine pollutant (Selamectin, Isoxazoline) >5L/5Kg
Special precautions for user: Read safety instructions, SDS and emergency procedures before handling.
Other information: See "excepted quantity" provisions if applicable.

IMDG
UN number: UN1219
UN proper shipping name: Isopropanol Solution, MARINE POLLUTANT (Selamectin, Isoxazoline)
Transport hazard class(es):
- Class: 3
- Subsidiary risk: -
- Packing group: II
Environmental hazards:
- Marine pollutant: Yes
- EmS: F-E, S-D
Special precautions for user: Marine pollutant requirements apply only to quantities >5 Liters for liquids / >5 Kilograms for solids (per inner package) when shipped as per IMDG regulations.
Other information: See "excepted quantity" provisions if applicable.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
ADG

IATA; IMDG; RID

General information: For small quantities packed in combination packaging, exceptions may apply. See "excepted quantity" provisions if applicable. Please refer to the applicable dangerous goods regulations for additional information. Transport according to the requirements of the appropriate regulatory body.

15. Regulatory information
Safety, health and environmental regulations
National regulations

This Safety Data Sheet was prepared in accordance with the Australia Model Code of Practice for the preparation of safety data sheets for hazardous chemicals.

Poison Schedule (Product): Schedule 5

APVMA No. 87225 Revolution Plus (selamectin/sarolaner) monthly topical solution for small cats and kittens 1.25 – 2.5 kg

APVMA No. 87224 Revolution Plus (selamectin/sarolaner) monthly topical solution for medium cats 2.6 – 5 kg

APVMA No. 87222 Revolution Plus (selamectin/sarolaner) monthly topical solution for large cats 5.1 – 10 kg

Australia Medicines & Poisons Appendix A

Poisons schedule number not allocated.

Australia Medicines & Poisons Appendix B

DIPROPYLENE GLYCOL METHYL ETHER (CAS 34590-94-8)

Australia Medicines & Poisons Appendix D

Poisons schedule number not allocated.

Australia Medicines & Poisons Appendix E

Poisons schedule number not allocated.

Australia Medicines & Poisons Appendix F

Poisons schedule number not allocated.

Australia Medicines & Poisons Appendix G

Poisons schedule number not allocated.

Australia Medicines & Poisons Appendix H

Poisons schedule number not allocated.

Australia Medicines & Poisons Appendix I

Poisons schedule number not allocated.

Australia Medicines & Poisons Appendix J

Poisons schedule number not allocated.

Australia Medicines & Poisons Appendix K

Poisons schedule number not allocated.

Australia Medicines & Poisons Schedule 10

Poisons schedule number not allocated.

Australia Medicines & Poisons Schedule 2

Poisons schedule number not allocated.

Australia Medicines & Poisons Schedule 3

Poisons schedule number not allocated.

Australia Medicines & Poisons Schedule 4

Poisons schedule number not allocated.

Australia Medicines & Poisons Schedule 5

Poisons schedule number not allocated.

Australia Medicines & Poisons Schedule 6

Sarolaner (CAS 1398609-39-6)

Australia Medicines & Poisons Schedule 7

Poisons schedule number not allocated.

Australia Medicines & Poisons Schedule 8

Poisons schedule number not allocated.

Australia Medicines & Poisons Schedule 9

Poisons schedule number not allocated.

High Volume Industrial Chemicals (HVIC)

Isopropyl alcohol (CAS 67-63-0) 1000 - 9999 TONNES See the regulation for additional information.
Importation of Ozone Deleting Substances (Customs(Prohibited imports) Regulations 1956, Schedule 10)
Not listed.

National Pollutant Inventory (NPI) substance reporting list
Not listed.

Prohibited Carcinogenic Substances
Not regulated.

Prohibited Substances (National Model Regulation for the control of Workplace Hazardous Substances, Schedule 2 NOHSC:1005 (1994) as amended)
Not listed.

Restricted Importation of Organochlorine Chemicals (Customs(Prohibited Imports) Regulations 1956, Schedule 9)
Not listed.

Restricted Carcinogenic Substances
Not regulated.

International regulations
Stockholm Convention
Not applicable.

Rotterdam Convention
Not applicable.

Kyoto Protocol
Not applicable.

Montreal Protocol
Not applicable.

Basel Convention
Not applicable.
### International Inventories

<table>
<thead>
<tr>
<th>Country(s) or region</th>
<th>Inventory name</th>
<th>On inventory (yes/no)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Australian Inventory of Chemical Substances (AICS)</td>
<td>No</td>
</tr>
<tr>
<td>Canada</td>
<td>Domestic Substances List (DSL)</td>
<td>No</td>
</tr>
<tr>
<td>Canada</td>
<td>Non-Domestic Substances List (NDSSL)</td>
<td>No</td>
</tr>
<tr>
<td>China</td>
<td>Inventory of Existing Chemical Substances in China (IECSC)</td>
<td>No</td>
</tr>
<tr>
<td>Europe</td>
<td>European Inventory of Existing Commercial Chemical Substances (EINECS)</td>
<td>No</td>
</tr>
<tr>
<td>Europe</td>
<td>European List of Notified Chemical Substances (ELINCS)</td>
<td>No</td>
</tr>
<tr>
<td>Japan</td>
<td>Inventory of Existing and New Chemical Substances (ENCS)</td>
<td>No</td>
</tr>
<tr>
<td>Korea</td>
<td>Existing Chemicals List (ECL)</td>
<td>No</td>
</tr>
<tr>
<td>New Zealand</td>
<td>New Zealand Inventory</td>
<td>No</td>
</tr>
<tr>
<td>Philippines</td>
<td>Philippine Inventory of Chemicals and Chemical Substances (PICCS)</td>
<td>No</td>
</tr>
<tr>
<td>Taiwan</td>
<td>Taiwan Chemical Substance Inventory (TCSI)</td>
<td>No</td>
</tr>
<tr>
<td>United States &amp; Puerto Rico</td>
<td>Toxic Substances Control Act (TSCA) Inventory</td>
<td>No</td>
</tr>
</tbody>
</table>

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).*

### 16. Other information

<table>
<thead>
<tr>
<th>Issue date</th>
<th>26-November-2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revision date</td>
<td>12-April-2021</td>
</tr>
</tbody>
</table>

**Disclaimer**

Zoetis Inc. believes that the information contained in this Safety Data Sheet is accurate, and while it is provided in good faith, it is without warranty of any kind, expressed or implied. If data for a hazard are not included in this document there is no known information at this time. The information in the sheet was written based on the best knowledge and experience currently available.

**Revision information**

- Exposure controls and personal protection: Exposure guidelines
- Regulatory information: National regulations