SAFETY DATA SHEET

Cloprostenol Formulation

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name: Cloprostenol Formulation

Manufacturer or supplier's details
Company: MSD
Address: 91-105 Harpin Street
          Bendigo 3550, Victoria Australia
Telephone: 908-740-4000
Emergency telephone number: 1 800 033 461
E-mail address: EHSDATASTEWARD@msd.com
Telefax: 1 800 817 414

Recommended use of the chemical and restrictions on use
Recommended use: Veterinary product

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification
Not a hazardous substance or mixture.

GHS label elements
Not a hazardous substance or mixture.

Other hazards which do not result in classification
None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture: Mixture

Components

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>Concentration (% w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzyl alcohol</td>
<td>100-51-6</td>
<td>&lt; 10</td>
</tr>
<tr>
<td>sodium [1α(Z),2β(1E,3R*)]-[(+/-)-7-[2-[4-(3-chlorophenoxy)-3-hydroxybut-1-enyl]-3,5-di hydroxycyclopentyl]hept-5-enoate</td>
<td>55028-72-3</td>
<td>&lt; 0.3</td>
</tr>
</tbody>
</table>

SECTION 4. FIRST AID MEASURES

If inhaled: If inhaled, remove to fresh air.
Get medical attention if symptoms occur.

In case of skin contact: Wash with water and soap as a precaution.
Get medical attention if symptoms occur.

In case of eye contact: Flush eyes with water as a precaution.
SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media: Water spray
Alcohol-resistant foam
Carbon dioxide (CO2)
Dry chemical

Unsuitable extinguishing media: None known.

Specific hazards during firefighting: Exposure to combustion products may be a hazard to health.

Hazardous combustion products: Carbon oxides

Specific extinguishing methods:
- Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Use water spray to cool unopened containers.
- Remove undamaged containers from fire area if it is safe to do so.
- Evacuate area.

Special protective equipment for firefighters:
- Wear self-contained breathing apparatus for firefighting if necessary.
- Use personal protective equipment.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Follow safe handling advice and personal protective equipment recommendations.

Environmental precautions:
- Discharge into the environment must be avoided.
- Prevent further leakage or spillage if safe to do so.
- Prevent spreading over a wide area (e.g. by containment or oil barriers).
- Retain and dispose of contaminated wash water.
- Local authorities should be advised if significant spillages cannot be contained.

Methods and materials for containment and cleaning up:
- Soak up with inert absorbent material.
- For large spills, provide dyking or other appropriate containment to keep material from spreading. If dyked material can be pumped, store recovered material in appropriate container.
- Clean up remaining materials from spill with suitable absorbent.
- Local or national regulations may apply to releases and disposal of this material, as well as those materials and items
employed in the cleanup of releases. You will need to determine which regulations are applicable. Sections 13 and 15 of this SDS provide information regarding certain local or national requirements.

SECTION 7. HANDLING AND STORAGE

Technical measures: See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.

Local/Total ventilation: Use only with adequate ventilation.

Advice on safe handling: Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment
Take care to prevent spills, waste and minimize release to the environment.

Hygiene measures: If exposure to chemical is likely during typical use, provide eye flushing systems and safety showers close to the working place.
When using do not eat, drink or smoke.
Wash contaminated clothing before re-use.
The effective operation of a facility should include review of engineering controls, proper personal protective equipment, appropriate degowning and decontamination procedures, industrial hygiene monitoring, medical surveillance and the use of administrative controls.

Conditions for safe storage: Keep in properly labelled containers.
Store in accordance with the particular national regulations.

Materials to avoid: Do not store with the following product types:
Strong oxidizing agents

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value type (Form of exposure)</th>
<th>Control parameters / Permissible concentration</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>sodium [1α(Z),2β(1E,3R*),3α,5α]-(+/-)-7-[2-[4-(3-chlorophenoxy)-3-hydroxybut-1-enyl]-3,5-dihydroxycyclopentyl]hept-5-enoate</td>
<td>55028-72-3</td>
<td>TWA</td>
<td>0.01 ug/m3 (OEB 5)</td>
<td>Internal</td>
</tr>
</tbody>
</table>

Further information: RSEN, Skin

Wipe limit 0.1 ug/100 cm2 Internal

Engineering measures: Use closed processing systems or containment technologies to control at source (e.g., glove boxes/isolators) and to prevent leakage of compounds into the workplace.
All engineering controls should be implemented by facility design and operated in accordance with GMP principles to protect products, workers, and the environment.
No open handling permitted.
Totally enclosed processes and materials transport systems are required. Operations require the use of appropriate containment technology designed to prevent leakage of compounds into the workplace.

**Personal protective equipment**

- **Respiratory protection**: If adequate local exhaust ventilation is not available or exposure assessment demonstrates exposures outside the recommended guidelines, use respiratory protection.
  - Filter type: Organic vapour type

- **Hand protection**: Chemical-resistant gloves

- **Eye protection**: Wear safety glasses with side shields or goggles. If the work environment or activity involves dusty conditions, mists or aerosols, wear the appropriate goggles. Wear a faceshield or other full face protection if there is a potential for direct contact to the face with dusts, mists, or aerosols.

- **Skin and body protection**: Work uniform or laboratory coat. Additional body garments should be used based upon the task being performed (e.g., sleevelets, apron, gauntlets, disposable suits) to avoid exposed skin surfaces. Use appropriate degowning techniques to remove potentially contaminated clothing.

**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

- **Appearance**: Aqueous solution
- **Colour**: clear
- **Odour**: No data available
- **Odour Threshold**: No data available
- **pH**: 5.6 - 6.1 (20 - 25 °C)
- **Melting point/freezing point**: No data available
- **Initial boiling point and boiling range**: No data available
- **Flash point**: No data available
- **Evaporation rate**: No data available
- **Flammability (solid, gas)**: Not applicable
- **Flammability (liquids)**: No data available
- **Upper explosion limit / Upper**: No data available
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flammmability limit

Lower explosion limit / Lower flammmability limit: No data available

Vapour pressure: No data available

Relative vapour density: No data available

Relative density: 1

Density: No data available

Solubility(ies)
Water solubility: soluble

Partition coefficient: n-octanol/water: Not applicable

Auto-ignition temperature: No data available

Decomposition temperature: No data available

Viscosity
Viscosity, kinematic: No data available

Explosive properties: Not explosive

Oxidizing properties: The substance or mixture is not classified as oxidizing.

Molecular weight: No data available

Particle size: Not applicable

SECTION 10. STABILITY AND REACTIVITY

Reactivity: Not classified as a reactivity hazard.
Chemical stability: Stable under normal conditions.
Possibility of hazardous reactions: Can react with strong oxidizing agents.
Conditions to avoid: None known.
Incompatible materials: Oxidizing agents
Hazardous decomposition products: No hazardous decomposition products are known.

SECTION 11. TOXICOLOGICAL INFORMATION

Exposure routes: Inhalation
Skin contact
Ingestion
Eye contact

Acute toxicity
Not classified based on available information.
Product:

Acute oral toxicity: Acute toxicity estimate: > 2,000 mg/kg
   Method: Calculation method

Acute inhalation toxicity: Acute toxicity estimate: > 5 mg/l
   Exposure time: 4 h
   Test atmosphere: dust/mist
   Method: Calculation method

Components:

Benzyl alcohol:
   Acute oral toxicity: LD50 (Rat): 1,620 mg/kg
   Acute inhalation toxicity: LC50 (Rat): > 4.178 mg/l
      Exposure time: 4 h
      Test atmosphere: dust/mist
      Method: OECD Test Guideline 403

sodium [1α(Z),2β(1E,3R*),3α,5α]-(+/-)-7-[2-[4-(3-chlorophenoxy)-3-hydroxybut-1-enyl]-3,5- dihydroxycyclopentyl]hept-5-enoate:
   Acute oral toxicity: LD50 (Rat): > 25 mg/kg
      Remarks: No mortality observed at this dose.

   Acute toxicity (other routes of administration): LD50 (Rat): > 50 mg/kg
      Application Route: Subcutaneous

      LD50 (Rat): > 50 mg/kg
      Application Route: Intramuscular

      LD50 (Rat): 5 mg/kg
      Application Route: Intravenous
      Remarks: No mortality observed at this dose.

   LD50 (Mouse): 350 mg/kg
      Application Route: Intramuscular

      LD50 (Mouse): 54.7 mg/kg
      Application Route: Intravenous

      TDL0 (Monkey): 0.0025 - 0.025 mg/kg
      Application Route: Intramuscular
      Target Organs: Lungs
      Symptoms: Diarrhoea, Vomiting, Rapid respiration

      TDL0 (Monkey): 0.0013 mg/kg
      Application Route: Intramuscular
      Target Organs: ovaries

Skin corrosion/irritation
Not classified based on available information.
Components:

**Benzyl alcohol:**
- **Species:** Rabbit
- **Method:** OECD Test Guideline 404
- **Result:** No skin irritation

**sodium [1α(Z),2β(1E,3R*),3α,5α]-(+/-)-7-[2-[4-(3-chlorophenoxy)-3-hydroxybut-1-enyl]-3,5-dihydroxycyclopentyl]hept-5-enoate:**
- **Remarks:** Not classified due to lack of data. Can be absorbed through skin.

**Serious eye damage/eye irritation**
Not classified based on available information.

Components:

**Benzyl alcohol:**
- **Species:** Rabbit
- **Result:** Irritation to eyes, reversing within 21 days
- **Method:** OECD Test Guideline 405

**sodium [1α(Z),2β(1E,3R*),3α,5α]-(+/-)-7-[2-[4-(3-chlorophenoxy)-3-hydroxybut-1-enyl]-3,5-dihydroxycyclopentyl]hept-5-enoate:**
- **Remarks:** Not classified due to lack of data.

**Respiratory or skin sensitisation**
**Skin sensitisation**
Not classified based on available information.

**Respiratory sensitisation**
Not classified based on available information.

Components:

**Benzyl alcohol:**
- **Test Type:** Maximisation Test
- **Exposure routes:** Skin contact
- **Species:** Guinea pig
- **Method:** OECD Test Guideline 406
- **Result:** negative

**sodium [1α(Z),2β(1E,3R*),3α,5α]-(+/-)-7-[2-[4-(3-chlorophenoxy)-3-hydroxybut-1-enyl]-3,5-dihydroxycyclopentyl]hept-5-enoate:**
- **Result:** Sensitiser

**Chronic toxicity**
**Germ cell mutagenicity**
Not classified based on available information.
Components:

**Benzyl alcohol:**
- Genotoxicity in vitro: Test Type: Bacterial reverse mutation assay (AMES)  
  Result: negative
- Genotoxicity in vivo: Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)  
  Species: Mouse  
  Application Route: Intraperitoneal injection  
  Result: negative

sodium \([1\alpha(Z),2\beta(1E,3R^*),3\alpha,5\alpha]^{(+/-)}-7-[2-[4-(3-chlorophenoxy)-3-hydroxybut-1-enyl]-3,5-di hydroxycyclopentyl]hept-5-enoate:**
- Genotoxicity in vitro: Test Type: Bacterial reverse mutation assay (AMES)  
  Result: negative
  - Test Type: In vitro mammalian cell gene mutation test  
    Test system: mouse lymphoma cells  
    Result: negative
  - Test Type: Chromosomal aberration  
    Test system: Human lymphocytes  
    Result: equivocal
- Genotoxicity in vivo: Test Type: Micronucleus test  
  Species: Mouse  
  Cell type: Bone marrow  
  Application Route: Intraperitoneal  
  Result: negative

Carcinogenicity
Not classified based on available information.

Components:

**Benzyl alcohol:**
- Species: Mouse
- Application Route: Ingestion
- Exposure time: 103 weeks
- Method: OECD Test Guideline 451
- Result: negative

sodium \([1\alpha(Z),2\beta(1E,3R^*),3\alpha,5\alpha]^{(+/-)}-7-[2-[4-(3-chlorophenoxy)-3-hydroxybut-1-enyl]-3,5-di hydroxycyclopentyl]hept-5-enoate:**
- Remarks: Not classified due to lack of data.

Reproductive toxicity
Not classified based on available information.

Components:

**Benzyl alcohol:**
Effects on fertility

- **Test Type:** Fertility/early embryonic development  
  - **Species:** Rat  
  - **Application Route:** Ingestion  
  - **Result:** negative  
  - **Remarks:** Based on data from similar materials

Effects on foetal development

- **Test Type:** Embryo-foetal development  
  - **Species:** Mouse  
  - **Application Route:** Ingestion  
  - **Result:** negative

Reproductive toxicity - Assessment

- **May damage fertility.**

**STOT - single exposure**
Not classified based on available information.

**Components:**

- **sodium [1α(Z),2β(1E,3R*),3α,5α]-(+/-)-7-[2-[4-(3-chlorophenoxy)-3-hydroxybut-1-enyl]-3,5-dihydroxycyclopentyl]hept-5-enoate:**
  - **Target Organs:** Lungs  
  - **Assessment:** Causes damage to organs.

**STOT - repeated exposure**
Not classified based on available information.
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**Cloprostenol Formulation**

#### Version: 4.0  
Revision Date: 13.02.2020  
SDS Number: 25274-00012  
Date of last issue: 13.09.2019  
Date of first issue: 24.10.2014

#### Components:

**sodium [1α(Z),2β(1E,3R*),3α,5α]{(+/-)}-7-[2-[4-(3-chlorophenoxy)-3-hydroxybut-1-enyl]-3,5-dihydroxycyclopentyl]hept-5-enoate:**
- **Target Organs**: Ovary
- **Assessment**: Causes damage to organs through prolonged or repeated exposure.

#### Repeated dose toxicity

**Components:**

**Benzyl alcohol:**
- **Species**: Rat
- **NOAEL**: 1.072 mg/l
- **Application Route**: inhalation (dust/mist/fume)
- **Exposure time**: 28 Days
- **Method**: OECD Test Guideline 412

**sodium [1α(Z),2β(1E,3R*),3α,5α]{(+/-)}-7-[2-[4-(3-chlorophenoxy)-3-hydroxybut-1-enyl]-3,5-dihydroxycyclopentyl]hept-5-enoate:**
- **Species**: Rat
- **NOAEL**: 0.05 mg/kg
- **LOAEL**: 0.15 mg/kg
- **Application Route**: Oral
- **Exposure time**: 3 Months
- **Target Organs**: Ovary

- **Species**: Rat
  - **NOAEL**: 0.0125 mg/kg
  - **Application Route**: Subcutaneous
  - **Exposure time**: 30 Days
  - **Target Organs**: Ovary

- **Species**: Monkey
  - **NOAEL**: 0.05 mg/kg
  - **LOAEL**: 0.15 mg/kg
  - **Application Route**: Oral
  - **Exposure time**: 3 Months
  - **Target Organs**: Heart, Testis

#### Aspiration toxicity

Not classified based on available information.

**Components:**

**sodium [1α(Z),2β(1E,3R*),3α,5α]{(+/-)}-7-[2-[4-(3-chlorophenoxy)-3-hydroxybut-1-enyl]-3,5-dihydroxycyclopentyl]hept-5-enoate:**

Not applicable
Experience with human exposure

**Components:**

sodium \([1\alpha(Z),2\beta(1E,3R*)]3a,5a-(+/-)7-[2-[4-(3-chlorophenoxy)-3-hydroxybut-1-enyl]-3,5-dihydroxycyclopentyl]hept-5-enoate:

**General Information:**
- Target Organs: Uterus (including cervix)
- Symptoms: Embryo-foetal toxicity, foetal mortality, menstrual irregularities, miscarriage
- Target Organs: Lungs
- Symptoms: Asthma, bronchospasm

**Inhalation:**
- Target Organs: Lungs
- Symptoms: bronchospasm, Asthma
- Remarks: May cause sensitisation of susceptible persons by inhalation of aerosol or dust.
- Target Organs: Uterus (including cervix)
- Symptoms: Embryolethal effects, menstrual irregularities

**Skin contact:**
- Target Organs: Lungs
- Symptoms: bronchospasm
- Remarks: Can be absorbed through skin.
- Target Organs: Uterus (including cervix)
- Symptoms: Embryolethal effects

SECTION 12. ECOLOGICAL INFORMATION

**Ecotoxicity**

**Components:**

Benzyl alcohol:

**Toxicity to fish:**
- LC50 (Pimephales promelas (fathead minnow)): 460 mg/l
- Exposure time: 96 h

**Toxicity to daphnia and other aquatic invertebrates:**
- EC50 (Daphnia magna (Water flea)): 230 mg/l
- Exposure time: 48 h
- Method: OECD Test Guideline 202

**Toxicity to algae/aquatic plants:**
- EC50 (Pseudokirchneriella subcapitata (green algae)): 770 mg/l
- Exposure time: 72 h
- Method: OECD Test Guideline 201
- NOEC (Pseudokirchneriella subcapitata (green algae)): 310 mg/l
- Exposure time: 72 h
- Method: OECD Test Guideline 201

**Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity):**
- NOEC (Daphnia magna (Water flea)): 51 mg/l
- Exposure time: 21 d
- Method: OECD Test Guideline 211
sodium [1α(Z),2β(1E,3R*),3α,5α]-(+/-)-7-[2-[4-(3-chlorophenoxy)-3-hydroxybut-1-enyl]-3,5-dihydroxycyclopentyl]hept-5-enoate:

Ecotoxicology Assessment

- Acute aquatic toxicity: Toxic effects cannot be excluded
- Chronic aquatic toxicity: Toxic effects cannot be excluded

Persistence and degradability

Components:

- Benzyl alcohol:
  - Biodegradability: Result: Readily biodegradable.
  - Biodegradation: 92 - 96 %
  - Exposure time: 14 d

Bioaccumulative potential

Components:

- Benzyl alcohol:
  - Partition coefficient: n-octanol/water: log Pow: 1.05
  - Mobility in soil: No data available
  - Other adverse effects: No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

- Waste from residues: Dispose of in accordance with local regulations.
- Contaminated packaging: Empty containers should be taken to an approved waste handling site for recycling or disposal.
  - If not otherwise specified: Dispose of as unused product.

SECTION 14. TRANSPORT INFORMATION

International Regulations

- UNRTDG: Not regulated as a dangerous good
- IATA-DGR: Not regulated as a dangerous good
- IMDG-Code: Not regulated as a dangerous good

- Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
  - Not applicable for product as supplied.

National Regulations
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Cloprostenol Formulation

Version 4.0  Revision Date: 13.02.2020  SDS Number: 25274-00012  Date of last issue: 13.09.2019
Date of first issue: 24.10.2014

ADG
Not regulated as a dangerous good

SECTION 15. REGULATORY INFORMATION

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

Prohibition/Licensing Requirements

There is no applicable prohibition or notification/licensing requirements, including for carcinogens under Commonwealth, State or Territory legislation.

The components of this product are reported in the following inventories:

AICS : not determined
DSL : not determined
IECSC : not determined

SECTION 16. OTHER INFORMATION

Further information

Revision Date : 13.02.2020

Items where changes have been made to the previous version are highlighted in the body of this document by two vertical lines.

Date format : dd.mm.yyyy

Full text of other abbreviations

AICS - Australian Inventory of Chemical Substances; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Con-
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and shall not be considered a warranty or quality specification of any type. The information provided relates only to the specific material identified at the top of this SDS and may not be valid when the SDS material is used in combination with any other materials or in any process, unless specified in the text. Material users should review the information and recommendations in the specific context of their intended manner of handling, use, processing and storage, including an assessment of the appropriateness of the SDS material in the user's end product, if applicable.

AU / EN