1. IDENTIFICATION

Product Name
SENTINEL® SPECTRUM®
(milbemycin oxime/lufenuron/praziquantel)

Recommended use of the chemical
and restrictions on use

Identified uses
Chewable Tablets for Worm and Flea Prevention and Control in Dogs and Puppies

Restrictions on Use
Federal law restricts this drug to use by or on the order of a licensed veterinarian.

Company Identification
Virbac AH, Inc.
P.O. Box 162059
Fort Worth, Texas 76161

Customer Information Number
(800) 338-3659

Emergency Telephone Number
CHEMTREC Number: (800) 424-9300
Other Emergency Number:
Poison Control Center: 1-800-222-1222 (human)
HOT LINE NUMBER: 1-800-345-4735 (human and pet)

Issue Date
April 27, 2017

Supersedes Date
April 10, 2015

Safety Data Sheet prepared in accordance with OSHA’s Hazard Communication Standard (29 CFR 1910.1200) and the Globally Harmonized System of Classification and Labelling of Chemicals (GHS)

2. HAZARD IDENTIFICATION

Hazard Classification
Acute Hazards to the Aquatic Environment - Category 1 (OSHA non-mandatory)
Chronic Hazards to the Aquatic Environment - Category 1 (OSHA non-mandatory)

Label Elements
Hazard Symbols

Signal Word: Warning

Hazard Statements
Very toxic to aquatic life.
Very toxic to aquatic life with long lasting effects.

Precautionary Statements
Prevention
Avoid release to the environment.
Response
Collect spillage.
Storage
None
2. HAZARD IDENTIFICATION

Disposal
Dispose of contents/container in accordance with local regulation.

Other Hazards
None

Specific Concentration Limits
The values listed below represent the percentages of ingredients of unknown toxicity.

<table>
<thead>
<tr>
<th>Hazard Type</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute oral toxicity</td>
<td>&lt;10%</td>
</tr>
<tr>
<td>Acute dermal toxicity</td>
<td>&lt;10%</td>
</tr>
<tr>
<td>Acute inhalation toxicity</td>
<td>20 - 30%</td>
</tr>
<tr>
<td>Acute aquatic toxicity</td>
<td>&gt;90%</td>
</tr>
</tbody>
</table>

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms:
This product is a mixture.

<table>
<thead>
<tr>
<th>Component Name</th>
<th>CAS Number</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starch</td>
<td>NA</td>
<td>25 – 35%</td>
</tr>
<tr>
<td>Lufenuron</td>
<td>103055-07-8</td>
<td>5 – 10%</td>
</tr>
<tr>
<td>Praziquantel</td>
<td>55268-74-1</td>
<td>1 – 5%</td>
</tr>
<tr>
<td>Milbemycin oxime</td>
<td>122674-17-3</td>
<td>&lt;1%</td>
</tr>
</tbody>
</table>

Each flavored chew contains:
- 2.3, 5.75, 11.5 or 23.0 mg of Milbemycin oxime
- 46, 115, 230, or 460 mg of Lufenuron
- 22.8, 57, 114, or 228 mg of Praziquantel

4. FIRST-AID MEASURES

Description of necessary first-aid measures

Eyes
Not an expected route of entry. If chew contacts eye, flush thoroughly with water. If pain or irritation persists contact a physician.

Skin
Wash skin with soap and water.

Ingestion
Contact a physician immediately if ingested. Physician may call a poison control center for advice concerning human ingestion.

Inhalation
Not applicable

Most important symptoms/effects, acute and delayed
Aside from the information found under Description of necessary first aid measures (above) and Indication of immediate medical attention and special treatment needed, no additional symptoms and effects are anticipated.

Indication of immediate medical attention and special treatment needed

Notes to Physicians
Treat symptomatically.
5. **FIRE - FIGHTING MEASURES**

   **Extinguishing Media**
   Use extinguishing media appropriate for surrounding materials.

   **Unusual Fire and Explosion Hazards**
   Can release hazardous vapors during a fire.

   **Protective Equipment for Fire-Fighting**
   Wear full protective clothing and self-contained breathing apparatus.

6. **ACCIDENTAL RELEASE MEASURES**

   **Personal precautions, protective equipment and emergency procedures**
   Wear appropriate protective clothing.

   **Environmental Precautions**
   Prevent the material from entering drains or watercourses.

   **Methods and materials for containment and cleaning up**
   Sweep and dispose of small amounts in trash. Large amounts should be disposed of in a sanitary landfill.

7. **HANDLING AND STORAGE**

   **Precautions for safe handling**
   Wear appropriate protective clothing.

   **Conditions for safe storage**
   Store in original container at controlled room temperatures between 59°F and 77°F (15°C - 25°C).
   Keep out of sunlight. Keep away from children. Wash hands after dispensing to dog and before eating, drinking or smoking.

8. **EXPOSURE CONTROLS/PERSONAL PROTECTION**

   **Control parameters**
   Exposure limits are listed below, if they exist.

   **Milbemycin Oxime**
   Manufacturer’s recommended limit: 0.12 mg/m³ 8h TWA

   **Lufenuron**
   Manufacturer’s recommended limit: 0.15mg/m³ 8h TWA

   **Praziquantel**
   None established

   **Starch**
   ACGIH: TLV 10mg/m³ 8h TWA
   OSHA: PEL 15 mg/m³ total dust, 5 mg/m³ respirable fraction

   **Appropriate engineering controls**
   No specific measures necessary. Good general room ventilation is expected to be adequate to control airborne levels.
8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Individual protection measures
Respiratory Protection
Not required under normal conditions of use.
Skin Protection
Not required under normal conditions of use. Workers should wash hands before eating, drinking or smoking.
Eye/Face Protection
Not required under normal conditions of use.
Body Protection
Normal work wear.

9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Solid</td>
</tr>
<tr>
<td>Physical State</td>
<td>Solid</td>
</tr>
<tr>
<td>Color</td>
<td>Brown</td>
</tr>
<tr>
<td>Odor</td>
<td>Characteristic beef-bacon flavor</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Density</td>
<td>No data available</td>
</tr>
<tr>
<td>Boiling Range/Point (°C/F)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Melting Point (°C/F)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flash Point (°C/F)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Evaporation Rate (BuAc=1)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Solubility in Water</td>
<td>Soluble</td>
</tr>
<tr>
<td>Vapor Density (Air = 1)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>VOC</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Partition coefficient (n-octanol/water)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Viscosity</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Auto-ignition Temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Decomposition</td>
<td>No data available</td>
</tr>
<tr>
<td>Temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Upper explosive limit</td>
<td>No data available</td>
</tr>
<tr>
<td>Lower explosive limit</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No data available</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

Reactivity
Data is not available.

Chemical Stability
Stable under normal conditions.

Possibility of hazardous reactions
Hazardous polymerization will not occur.
10. STABILITY AND REACTIVITY

Conditions to Avoid
Heat - high temperatures

Incompatible Materials
None known.

Hazardous Decomposition Products
None known.

11. TOXICOLOGICAL INFORMATION

See product insert and/or packaging for additional information.

Acute Toxicity
Milbemycin oxime
Oral LD50 (rat) >2000 mg/kg
Dermal LD50 (rat) >2000 mg/kg
Inhalation LD50 (rat) 1220 mg/m³ 4h

Lufenuron
Oral LD50 (rat) >2000 mg/kg
Dermal LD50 (rat) >2000 mg/kg
Inhalation LD50 (rat) >2350 mg/m³ 4h

Praziquantel
Oral LD50 (rat) 2840 mg/kg
Dermal LD50 (rat) >2000 mg/kg

Specific Target Organ Toxicity (STOT) – single exposure
Praziquantel: Acute overexposure (ingestion) may cause dizziness, headache, drowsiness, malaise, abdominal pain.

Specific Target Organ Toxicity (STOT) – repeat exposure
Praziquantel: Chronic overexposure may cause nausea, lethargy, diarrhea, itching, fever and rash.

Serious Eye damage/Irritation
Milbemycin oxime: Not irritating to eyes in rabbit studies.
Lufenuron: Not irritating to eyes in rabbit studies.
Praziquantel: Not irritating to eyes in rabbit studies.

Skin Corrosion/Irritation
Milbemycin oxime: Not irritating to skin in rabbit studies.
Lufenuron: Not irritating to skin in rabbit studies.
Praziquantel: Not irritating to skin in rabbit studies.

Respiratory or Skin Sensitization
Milbemycin oxime: Not sensitizing in guinea pig study.
Lufenuron: Sensitizing in guinea pig in Maximisation Test.
Praziquantel: Not sensitizing in guinea pig study.
11. TOXICOLOGICAL INFORMATION

Carcinogenicity
Product: Not considered carcinogenic by NTP, IARC, and OSHA.
Praziquantel: Long term studies in rats and golden hamsters did not reveal any carcinogenic effect.
Lufenuron: Not carcinogenic in rat and mouse studies.

Germ Cell Mutagenicity
Milbemycin oxime: Negative results for in vivo and in vitro animal studies.
Lufenuron: Negative results for in vivo and in vitro animal studies.
Praziquantel: Negative results for in vivo and in vitro animal studies.

Reproductive Toxicity
Praziquantel: Studies in rats and rabbits have shown no evidence of impaired fertility or harm to the fetus. An increase of the abortion rate was found in rats at three times the single human therapeutic dose.
Lufenuron: Did not show teratogenic effects in animal experiments.
Milbemycin oxime: Not teratogenic in rat and rabbit studies.

Aspiration Hazard
Not an aspiration hazard.

12. ECOLOGICAL INFORMATION

Ecotoxicity
Lufenuron
LC50 (Rainbow Trout) >73 mg/l 96hr
LC50 (Daphnia magna) 0.0011 – 0.0013 mg/l 48hr
EC50 (green algae) 10 mg/l 72hr
Aquatic Chronic - Category 1, Very toxic to aquatic life with long lasting effects.
Milbemycin Oxime
LC50 (Common carp) 0.059 mg/l 48hr
LC50 (Daphnia pulex) >300 mg/l 3hr
Aquatic Chronic - Category 1, Very toxic to aquatic life with long lasting effects.

Mobility in soil
No relevant studies identified.

Persistence/Degradability
Lufenuron: Not readily biodegradable.

Bioaccumulative Potential
No relevant studies identified.

Other adverse effects
No relevant studies identified.

13. DISPOSAL CONSIDERATIONS

Dispose of in accordance with all applicable local and national regulations.
14. TRANSPORT INFORMATION

Contact supplier for transport information.

15. REGULATORY INFORMATION

United States TSCA Inventory
This product is excluded from the US EPA Toxic Substance Control Act and is regulated under the Food, Drug and Cosmetic Act.

California Proposition 65
This product does not contain any Proposition 65 chemicals at levels which would require warning labels as known to the State of California to cause cancer, birth defects or other reproductive harm.

SARA Title III Sect. 311/312 Categorization
None

SARA Title III Sect. 313
The following chemicals are listed in Section 313 at or above de minimis concentrations: None.

16. OTHER INFORMATION

Legend
ACGIH: American Conference of Governmental Industrial Hygienists
BOD: Biological Oxygen Demand
CAS#: Chemical Abstracts Service Number
FIFRA: Federal Insecticide, Fungicide and Rodenticide Act
IARC: International Agency for Research on Cancer
LC50: Lethal Concentration 50%
LD50: Lethal Dose 50%
N/A: Denotes no applicable information found or available
NTP: National Toxicology Program
OSHA: Occupational Safety and Health Administration
PEL: Permissible Exposure Limit
STEL: Short Term Exposure Limit
TLV: Threshold Limit Value
TSCA: Toxic Substance Control Act

Revision Date: April 27, 2017
Replaces: April 10, 2015
Changes made: Changes to sections 2 and 15.

Information Source and References
This SDS is prepared by Hazard Communication Specialists based on information provided by internal company references.

Prepared By: EnviroNet LLC.

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16. OTHER INFORMATION

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