Spinosad Pour-On
Effective Date: 18-Nov-2003

Elanco Animal Health
Material Safety Data Sheet

Section 1 - Chemical Product and Company

Manufacturer:
Elanco Animal Health
Division of Eli Lilly and Company
2001 West Main St
PO Box 708
Greenfield, IN 46140

Manufacturer's Emergency Phone:
1-800-428-4441

CHEMTREC:
1-800-424-9300 (North America)
1-703-527-3887 (International)

Common Name: Spinosad Pour-On

Chemical Name: 1H-as-Indaceno[3,2-d]oxacyclododecin-7,15-dione, 2-[(6-deoxy-2,3,4-tri-O-methyl-alpha-L-mannopyranosyl)oxy]-13-[(2R,5S,6R)-5-(dimethylamino)tetrahydro-6-methyl-2H-pyran-2-yl]oxy-9-ethyl-2,3,3a,5a,5b,6,9,10,11,12,13,14,16a,16b-tetradecahydro-14-methyl-, (2R,3aS,5aR,5bS,9S,13S,14R,16aS,16bR)-

Chemical Name 2: 1H-as-Indaceno[3,2-d]oxacyclododecin-7,15-dione, 2-[(6-deoxy-2,3,4-tri-O-methyl-alpha-L-mannopyranosyl)oxy]-13-[(2R,5S,6R)-5-(dimethylamino)tetrahydro-6-methyl-2H-pyran-2-yl]oxy-9-ethyl-2,3,3a,5a,5b,6,9,10,11,12,13,14,16a,16b-tetradecahydro-4,14-dimethyl- (2S,3aR,5aS,5bS,9S,13S,14R,16aS,16bS)-

Synonym(s): 232105 formulation; Spinosad formulation; Spinosad pour-on for sheep and cattle

See attached glossary for abbreviations.

Section 2 - Composition / Information on Ingredients

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS</th>
<th>Concentration %</th>
</tr>
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<tbody>
<tr>
<td>Spinosyn A</td>
<td>131929-60-7</td>
<td>a</td>
</tr>
<tr>
<td>Spinosyn D</td>
<td>131929-63-0</td>
<td>a</td>
</tr>
<tr>
<td>Propylene Glycol</td>
<td>57-55-6</td>
<td>20</td>
</tr>
<tr>
<td>Trimethylnonanol Polyethylene Glycol</td>
<td>60828-78-6</td>
<td>10</td>
</tr>
<tr>
<td>Lactic Acid</td>
<td>50-21-5</td>
<td>0.5</td>
</tr>
<tr>
<td>Polyethylene Glycols</td>
<td>25322-68-3</td>
<td>0.3</td>
</tr>
</tbody>
</table>
2,6,8-Trimethyl-4-nonanol 123-17-1 0.2
Polydimethylsiloxane 63148-62-9 0.3
Propyl Gallate 121-79-9 0.1
Water 7732-18-5 > 65

a - Spinosyn A and Spinosyn D combine to make Spinosad which accounts for 2% of the formulation.

**Exposure Guidelines:**
Spinosad - Dow AgroSciences Exposure Guideline 0.3 mg/m3 TWA.

Propylene glycol - WEEL 50 ppm TWA (total vapor and aerosol), 10 mg/m3 (aerosol only) TWA for 8 hours.
UK - Exposure Standard 10 mg/m3 TWA (particulates), 150 ppm (474 mg/m3) TWA (vapor and particulates).
Ireland - Occupational Exposure Limit 10 mg/m3 TWA (particulates) 150 ppm (470 mg/m3) TWA (total vapor and particulates).

### Section 3 - Hazards Identification

**Appearance:** Blue, clear low viscosity liquid  
**Physical State:** Liquid  
**Odor:** Earthy

**Emergency Overview**

**Emergency Overview Effective Date:** 07-Jun-2002

**Lilly Laboratory Labeling Codes:**

Health 2  Fire 1  Reactivity 0

**Primary Physical and Health Hazards:** Irritant (eyes). Liver, Kidney and Bone Marrow Effects.

**Caution Statement:** Spinosad Pour-On may be irritating to the eyes. Effects of exposure to Spinosad Pour-On may include liver, kidney, and bone marrow tissue changes.

**Routes of Entry:** Inhalation and skin contact.
Effects of Overexposure: May be severely irritating to the eyes. May cause slight skin irritation. Animal studies with high doses of spinosad reported tissue changes in the liver, kidney, and bone marrow.

Medical Conditions Aggravated by Exposure: None known.

Carcinogenicity:
Spinosad (spinosyn A and spinosyn D) - Not listed by IARC, NTP, ACGIH, or OSHA. Did not cause cancer in long term animal studies.

Propylene glycol - Not listed by IARC, NTP, ACGIH, or OSHA. Multiple long term dietary, inhalation, and dermal studies demonstrated no evidence of carcinogenicity in mice, rabbits, or rats.

Remaining ingredients - Not listed by IARC, NTP, ACGIH, or OSHA.

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Section 4 - First Aid Measures

**Eyes:** Flush eyes with plenty of water. Get medical attention.

**Skin:** Remove contaminated clothing and clean before reuse. Wash all exposed areas of skin with plenty of soap and water. Get medical attention if irritation develops.

**Inhalation:** Move individual to fresh air. Get medical attention if breathing difficulty occurs. If not breathing, provide artificial respiration assistance (mouth-to-mouth) and call a physician immediately.

**Ingestion:** Do not induce vomiting. Call a physician or poison control center. If available, administer activated charcoal (6-8 heaping teaspoons) with two to three glasses of water. Do not give anything by mouth to an unconscious person. Immediately transport to a medical care facility and see a physician.

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Section 5 - Fire Fighting Measures

**Flash Point:** >62 C (>144 F)
**Flash Method:** Pensky-Martin Closed Tester
**UEL:** No applicable information found
**LEL:** No applicable information found

**Extinguishing Media:** Use water, carbon dioxide, dry chemical, foam, or Halon.

**Unusual Fire and Explosion Hazards:** Slight fire hazard when exposed to heat or flame.
**Hazardous Combustion Products:** May emit toxic fumes when exposed to heat or fire.

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### Section 6 - Accidental Release Measures

**Spills:** Prevent further migration into the environment. Use absorbent/adsorbent material to solidify liquids. Sweep up or vacuum. Wear protective equipment, including eye protection, to avoid exposure (see Section 8 for specific handling precautions). Large spills due to traffic accidents, etc., should be reported immediately to CHEMTREC and Elanco Animal Health for assistance. Prevent spilled material from flowing onto adjacent land or into streams, ponds, or lakes.

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### Section 7 - Handling and Storage

**Storage Conditions:** Store at room temperature. Product should not be used after the date printed on the container. Warehouse: 10 to 40 C (45 to 104 F).

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### Section 8 - Exposure Controls / Personal Protection

See Section 2 for Exposure Guideline information.

When mixing and handling, use protective clothing, impervious gloves, and dust respirator. Operators should wash thoroughly with soap and water after handling. If accidental eye contact occurs, immediately rinse with plenty of water.

**Respiratory Protection:** Use an approved respirator.

**Eye Protection:** Safety glasses or goggles.

**Ventilation:** Laboratory fume hood or local exhaust ventilation.

**Other Protective Equipment:** In a manufacturing setting, wear chemical-resistant gloves and body covering to minimize skin contact. If handled in a ventilated enclosure, as in a laboratory setting, respirator and goggles or face shield may not be required. Safety glasses are always required.

**Additional Exposure Precautions:** Under normal use and handling conditions, wear goggles to protect eyes and wear impermeable gloves and protective equipment to avoid direct contact with skin. Wash thoroughly with soap and water after handling.

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### Section 9 - Physical and Chemical Properties
**Appearance:** Blue, clear low viscosity liquid  
**Odor:** Earthy  
**Boiling Point:** No applicable information found  
**Melting Point:** No applicable information found  
**Specific Gravity:** 1.023  
**pH:** 4 to 4.1  
**Evaporation Rate:** No applicable information found  
**Water Solubility:** Soluble  
**Vapor Density:** No applicable information found  
**Vapor Pressure:** No applicable information found

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### Section 10 - Stability and Reactivity

**Stability:** Stable at normal temperatures and pressures.

**Incompatibility:** May react with strong oxidizing agents (e.g., peroxides, permanganates, nitric acid, etc.).

**Hazardous Decomposition:** May emit toxic fumes when heated to decomposition.

**Hazardous Polymerization:** Will not occur.

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### Section 11 - Toxicological Information

#### Acute Exposure

**Oral:**  
Spinosad pour-on - Rat, median lethal dose between 5000 mg/kg and 20000 mg/kg.

**Skin:**  
Spinosad pour-on - Rabbit, median lethal dose greater than 1000 mg/kg.

**Inhalation:**  
Spinosad - Rat, median lethal concentration greater than 5180 mg/m3 for 4 hours.  
Propylene glycol - Dog, 313 g/m3 to 627 g/m3 for 15 minutes, no deaths or toxicity.  
Dimethylsiloxane - Rabbit, median lethal concentration 978 g/m3 for 7.5 hours, no deaths.

**Skin Contact:**  
Spinosad pour-on - Rabbit, nonirritant

**Eye Contact:**  
Spinosad pour-on - Rabbit, severe irritant (reversible)
Chronic Exposure

Target Organ Effects:
Spinosad - In animals, has been shown to cause vacuolation of cells in liver, kidney, and bone tissues and changes in blood and serum biochemistry. Dose levels producing these effects were many times higher than any dose levels expected from exposure due to use. Polyethylene glycol - Kidney effects (decreased weight, tissue changes).

Other Effects:
Spinosad - Decreased activity, leg weakness, and intermittent tremors were reported in a female dog given oral doses of 200 mg/kg/day for 5 days. These effects were not observed in the male dog.

Reproduction:
Spinosad - In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals.
Polyethylene glycol - Decreased offspring survival and fetal weight at doses toxic to the mother.
Polydimethylsiloxane - No effects identified in limited animal studies.

Sensitization:
Spinosad pour-on - Did not cause allergic skin reactions when tested in guinea pigs.

Mutagenicity:
Spinosad - Not mutagenic in bacterial or mammalian cells.
Propylene glycol - In vitro mutagenicity studies were negative. Animal mutagenicity studies were negative.
Polydimethylsiloxane - Not mutagenic in bacterial or mammalian cells.

Section 12 - Ecological Information

No environmental data for the mixture or formulation. The environmental information for ingredient(s) or related material(s) are presented.

Environmental Summary:
Spinosad - Highly toxic to honey bees, oysters, and diatoms. Moderately toxic to blue-green algae. Slightly to moderately toxic to fish and aquatic invertebrates. No more than slightly to practically nontoxic to birds. Practically nontoxic to green algae. No volatility expected. Does not bioconcentrate in aquatic organisms. Not persistent due to photolysis and biodegradation.

Propylene glycol - Practically non-toxic to aquatic organisms. Material is not expected to bioconcentrate in aquatic organisms. Material may leach from soil into groundwater. Material is expected to be degraded by microorganisms. Biodegradation is expected to be achievable in secondary waste water treatment plant. Material is not
expected to readily evaporate; however, once in the atmosphere it is expected to rapidly degrade (within minutes to hours).
Polydimethylsiloxane - Material is toxic to slightly toxic to aquatic organisms. Material can be considered immobile in soil. Material is not expected to be degraded in water, air, or soil by light or microorganisms. Material is considered persistent in the environment.

Section 13 - Disposal Considerations

Waste Disposal: Dispose of any cleanup materials and waste residue according to all applicable laws and regulations.

Container Disposal: No special package disposal required.

Section 14 - Transport Information

Regulatory Organizations:

DOT: Not Regulated

ICAO/IATA: Not Regulated

IMO: Not Regulated

Section 15 - Regulatory Information

Below is selected regulatory information chosen primarily for possible Elanco Animal Health usage. This section is not a complete analysis or reference to all applicable regulatory information. Please consider all applicable laws and regulations for your country/state.

U.S. Regulations
Spinosad (spinosyn A and spinosyn D)
TSCA - No
CERCLA - Not on this list
SARA 302 - Not on this list
SARA 313 - Not on this list
OSHA Substance Specific - No

Remaining Ingredients
TSCA - Yes
CERCLA - Not on this list
SARA 302 - Not on this list
SARA 313 - Not on this list
OSHA Substance Specific - No

EU Regulations

EC Classification
Xi (Irritant)

Risk Phrases
R 36 - Irritating to eyes.

Safety Phrases
S 25 - Avoid contact with eyes.
S 26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Section 16 - Other Information

MSDS Sections Revised: Sections 1 and 16.

As of the date of issuance, we are providing available information relevant to the handling of this material in the workplace. All information contained herein is offered with the good faith belief that it is accurate. THIS MATERIAL SAFETY DATA SHEET SHALL NOT BE DEEMED TO CREATE ANY WARRANTY OF ANY KIND (INCLUDING WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE). In the event of an adverse incident associated with this material, this safety data sheet is not intended to be a substitute for consultation with appropriately trained personnel. Nor is this safety data sheet intended to be a substitute for product literature which may accompany the finished product.

For additional information contact:
ELANCO Animal Health
1-800-428-4441
1-317-276-2000

GLOSSARY:

ACGIH = American Conference of Governmental Industrial Hygienists
AIHA = American Industrial Hygiene Association
BEI = Biological Exposure Index
CAS Number = Chemical Abstract Service Registry Number
CERCLA = Comprehensive Environmental Response Compensation and Liability Act (of 1980)
CHAN = Chemical Hazard Alert Notice
CHEMTREC = Chemical Transportation Emergency Center