Elector

Effective Date: 11-May-2004

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: Elector

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): Spinosad; Spinosad suspension; Spray concentrate; Suspension concentrate
Trademarks(s): Elector

See attached glossary for abbreviations.

Section 2 - Composition / Information on Ingredients

Ingredient	CAS	Concentration %
Spinosyn A	131929-60-7	a
Spinosyn D	131929-63-0	a
Propylene Glycol	57-55-6	10
Excipients	NA	10.25
Water	7732-18-5	77.29

a - Spinosyn A and Spinosyn D combine to make spinosad which accounts for 2.46% of this formulation.

Contains no hazardous components (one percent or greater) or carcinogens (one-tenth percent or greater) not listed above.

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: Tan to gray aqueous suspension
Physical State: Liquid
Odor: Latex paint

Emergency Overview

Emergency Overview Effective Date: 11-May-2004

Lilly Laboratory Labeling Codes:
Health 1 **Fire** 0 **Reactivity** 0

Primary Physical and Health Hazards: Liver, Kidney and Bone Marrow Effects.

Caution Statement: Effects of exposure to Elector may include liver, kidney, and bone marrow tissue changes.

Routes of Entry: Inhalation and skin contact.

Effects of Overexposure: The active ingredient, spinosad, may be slightly irritating to the eyes and is not expected to be irritating to the skin. Exposure to small amounts during normal handling is not likely to cause harmful effects. Based on animal studies, overexposure to spinosad may cause tissue changes in the liver, kidney, or bone marrow. Dilute formulations of propylene glycol may be slightly irritating to the eyes and respiratory tract.

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.

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.

Section 5 - Fire Fighting Measures

Flash Point: No applicable information found
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: None known.

Hazardous Combustion Products: May emit toxic fumes when exposed to heat or fire.

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.

Section 7 - Handling and Storage

Storage Conditions: Store in original container only. In case of leak or spill, remove with absorbent materials and dispose of as waste. Do not contaminate water, food, or feed by storage.

Section 8 - Exposure Controls / Personal Protection

See Section 2 for Exposure Guideline information.

Respiratory Protection: No respiratory protection should be needed.

Eye Protection: Safety glasses.

Additional Exposure Precautions: Under normal use and handling conditions, no protective equipment is required.

Section 9 - Physical and Chemical Properties

Appearance: Tan to gray aqueous suspension
Odor: Latex paint
Boiling Point: Not applicable
Melting Point: Not applicable
Specific Gravity: 1.01 to 1.04 @ 20 C (68 F)
pH: 7.3 to 8.7
Evaporation Rate: No applicable information found
Water Solubility: Soluble
Vapor Density: No applicable information found
Vapor Pressure: No applicable information found

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.

Section 11 - Toxicological Information

Acute Exposure

No data available for mixture or formulation. Data for ingredient(s) or related material(s) are presented.

Oral:
Spinosad suspension (44%) - Rat, median lethal dose estimated greater than 5000 mg/kg.

Skin:
Spinosad suspension (44%) - Rabbit, median lethal dose estimated greater than 2000 mg/kg.

Inhalation:
Spinosad suspension (44%) - Rat, median lethal concentration estimated greater than 5000 mg/m3 (duration not specified).

Skin Contact:
Spinosad suspension (44%) - Rabbit, slight irritant

Eye Contact:
Spinosad suspension (44%) - Rabbit, slight irritant

Chronic Exposure

No data available for mixture or formulation. Data for ingredient(s) or related material(s) are presented.

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.
Propylene glycol - No significant adverse effects were reported in monkeys exposed to saturated vapor for 18 months or dogs administered 2000 mg/kg for 2 years.

Reproduction:
Spinosad - In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals.
Propylene glycol - In animal studies, has been shown not to interfere with reproduction.

Sensitization:
Spinosad - 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.

Section 12 - Ecological Information

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

Ecotoxicity Data:
Spinosad
Rainbow trout 96-hour median lethal concentration: 30 mg/L
Bluegill 96-hour median lethal concentration: 5.94 mg/L
Sheepshead minnow 96-hour median lethal concentration: 7.87 mg/L
Daphnia magna 48-hour median lethal concentration: 92.7 mg/L
Bobwhite 5-day dietary median lethal concentration: >5253 ppm
Mallard 5-day dietary median lethal concentration: >5156 ppm
Bobwhite 14-day oral median lethal dose: >2000 mg/kg
Mallard 14-day oral median lethal dose: >2000 mg/kg
Honey bee 48-hour acute contact median lethal dose: 0.0029 microgram/bee
Green algae (S. capricornutum) median effective concentration: >105.5 ppm
Blue-green algae (Anabaona flos-aquae) median effective concentration: 8.09 mg/L
Diatom (Navicula sp.) median effective concentration: 0.107 mg/L
Diatom (Skeletonema costatum) median effective concentration: 0.227 mg/L

Eastern oyster 96-hour median effective concentration: 0.3 ppm
Grass shrimp 96-hour median lethal concentration: >9.76 mg/L

Environmental Fate:
Spinosad
Photolysis half-life in water (days): 0.93 for spinosyn A at pH 7; 0.82 for spinosyn D at pH 7
Photolysis half-life in soil (days): 82 for spinosyn A; 44 for spinosyn D
Hydrolysis half-life (days): none, none (pH 5, 7); 200 for spinosyn A (pH 9); 259 for spinosyn D (pH 9)
Field soil dissipation half-life (days): 0.3 to 0.5 for spinosyn A
Soil leaching: immobile
Aerobic biodegradation half-life in soil (days): 9.4-17.3 for spinosyn A; 14.5 for spinosyn D
Anaerobic biodegradation half-life in water (days): 161 for spinosyn A; 250 for spinosyn D
Bioconcentration factor (BCF) in whole fish: 114

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.

Additional Information: Do not apply directly to water, to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning or disposing of equipment washwaters. Apply this product only as specified on this label.

Section 13 - Disposal Considerations

Waste Disposal: Wastes resulting from the use of this product may be disposed of on site according to label use directions or at an approved waste disposal facility. Do not contaminate water, food, or feed by disposal.

Container Disposal: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incinerator, or if allowed by state and local authorities, by burning. If burned, stay out of smoke.

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
Not assigned an overall EC classification.

Section 16 - Other Information

MSDS Sections Revised: New MSDS.

Emergency Overview Sections Revised: New caution.

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
DOT = Department of Transportation
EC = European Community
EINECS = European Inventory of Existing Chemical Substances
ELINCS = European List of New Chemical Substances
EPA = Environmental Protection Agency
HEPA = High Efficiency Particulate Air (Filter)
IARC = International Agency for Research on Cancer
ICAO/IATA = International Civil Aviation Organization/International Air Transport Association
IEG = Lilly Interim Exposure Guideline
IMO = International Maritime Organization
Kow = Octanol/Water Partition Coefficient
LEG = Lilly Exposure Guideline
LEL = Lower Explosive Limit
MSDS = Material Safety Data Sheet
MSHA = Mine Safety and Health Administration
NA = Not Applicable, except in Section 14 where NA = North America
NADA = New Animal Drug Application
NAIF = No Applicable Information Found
NCI = National Cancer Institute
NIOSH = National Institute for Occupational Safety and Health
NOS = Not Otherwise Specified
NTP = National Toxicology Program
OSHA = Occupational Safety and Health Administration
PEL = Permissible Exposure Limit (OSHA)
RCRA = Resource Conservation and Recovery Act
RQ = Reportable Quantity
RTECS = Registry of Toxic Effects of Chemical Substances
SARA = Superfund Amendments and Reauthorization Act
STEG = Lilly Short Term Exposure Guideline
STEL = Short Term Exposure Limit
TLV = Threshold Limit Value (ACGIH)
TPQ = Threshold Planning Quantity
TSCA = Toxic Substances Control Act
TWA = Time Weighted Average/8 Hours Unless Otherwise Noted
UEL = Upper Explosive Limit
UN = United Nations
WEEL = Workplace Environmental Exposure Level (AIHA)