Monteban Premix

Effective Date: 18-Aug-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: Monteban Premix

Synonym(s): 079891 Formulation; Narasin Formulation
Trademarks(s): Monteban 120; Monteban 45; Monteban 45 with Microtracer; Monteban 60; Monteban 70; Monteban 50; Monteban; Monteban 100
Lilly Item Code(s): AF0505; AF0506; AF0507; AF0510; AF0511; AF0512; AF0515; AF0611; AF0615; AF1510; AH0615; MS8260; MS8261

See attached glossary for abbreviations.

Section 2 - Composition / Information on Ingredients

Ingredient	CAS	Concentration %
Narasin	55134-13-9	5 - 11
Excipients	NA	88.1
Anti-dusting Oil	NAIF	2
Microtracer FS	NA/NAIF	0 - 0.5

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

Excipients may include rice hulls, limestone, soybean mill run.

Microtracer consists of non-nutrient stainless steel grit.

Exposure Guidelines: Narasin - LEG 11 micrograms/m3 TWA for 12 hours.

Grain dust - PEL 10 mg/m3 TWA. TLV 4 mg/m3 TWA for 8 or 12 hours (total). Lilly preferred exposure limit is TLV.
UK - Maximum Exposure Limit 10 mg/m3 TWA (total) (Sens).
Ireland - Occupational Exposure Limit 10 mg/m3 TWA (Sens).

Limestone dust - PEL 5 mg/m3 TWA (respirable) and 15 mg/m3 TWA (total). TLV 10 mg/m3 TWA.
UK - Exposure Standard 4 mg/m3 TWA (respirable) and 10 mg/m3 TWA (total).
Ireland - Occupational Exposure Limit 4 mg/m3 TWA (respirable) and 10 mg/m3 TWA (total).
France - Occupational Exposure Limit 10 mg/m3 (VME) TWA.

The anti-dusting oil reduces potential exposure under normal conditions of use.

Section 3 - Hazards Identification

Appearance: Grey-brown free-flowing granular material speckled with light tan to yellow particles
Physical State: Solid
Odor: No applicable information found

Emergency Overview

Emergency Overview Effective Date: 18-May-1999

Lilly Laboratory Labeling Codes:
Health 3 **Fire** 1 **Reactivity** 0

Primary Physical and Health Hazards: Toxic. Corrosive (eyes, skin). Irritant (respiratory tract). Nervous System, Heart and Muscle Effects.

Caution Statement: Monteban Premix contains narasin, is toxic, may cause burns or permanent tissue damage to the eyes and skin, and may be irritating to the respiratory tract. Effects of exposure may include reduced activity, nerve tissue changes, changes in heart rate/rhythm, heart tissue changes and muscle tissue changes.

Routes of Entry: Inhalation and skin contact.

Effects of Overexposure: Skin rash and respiratory irritation have been reported with occupational exposure to a narasin formulation. Prolonged exposure to high concentrations of grain dust or limestone dust may cause irritation of the respiratory tract and mucous membranes. Based on animal studies, may cause burns or permanent tissue damage to the eyes and skin.

Medical Conditions Aggravated by Exposure: Hypersensitivity to narasin.

Carcinogenicity: Narasin - Not listed by IARC, NTP, ACGIH, or OSHA. Not considered carcinogenic in animal studies conducted by Lilly Research Laboratories.

Section 4 - First Aid Measures

Eyes: Hold eyelids open and flush with a steady, gentle stream of water for 15 minutes. See an ophthalmologist (eye doctor) immediately. Failure to rinse the eyes could result in possible damage.

Skin: Wash all exposed areas with plenty of soap and water. Wash all contaminated clothing before reuse. If irritation occurs and is severe or persistent, contact a physician.

Inhalation: Product is not expected to present a hazard by inhalation due to its coarse, granular nature. If inhalation does occur, remove 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: Call a physician or poison control center. Drink promptly a large quantity of milk, egg white, gelatin solution, or if these are not available, large quantities of water. Avoid alcohol. Induce vomiting by giving syrup of ipecac. Do not induce vomiting or give anything by mouth to an unconscious person.

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: As a finely divided material, may form dust mixtures in air which could explode if subjected to an ignition source.

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

Section 6 - Accidental Release Measures

Spills: Sweep or clean with vacuum. Control the dust by use of oils or water during clean-up. Residues may be flushed with water. Use absorbents or cement powder to solidify liquids and dispose as waste. 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 a cool, dry place. Protect from moisture and heat. Product should not be used after the date printed on the container.

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: Chemical goggles and/or face shield.

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: Caution!
Do not allow adult turkeys, horses or other equines access to formulations containing narasin. Ingestion of narasin by equines and adult turkeys has been fatal. Do not feed to laying chickens. 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.

Section 9 - Physical and Chemical Properties

Appearance: Grey-brown free-flowing granular material speckled with light tan to yellow particles
Odor: No applicable information found
Boiling Point: Not applicable
Melting Point: Not applicable
Specific Gravity: Not applicable
pH: 7 to 8 (aqueous 50/50)
Evaporation Rate: No applicable information found
Water Solubility: Insoluble
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

Oral: Rat, median lethal dose 331 mg/kg, leg weakness, reduced activity, poor grooming, ptosis, and lethargy.

Skin: Rabbit, 5000 mg/kg, no deaths or toxicity.

Inhalation: This formulation is not considered to be an inhalation hazard due to its coarse granular nature and low potential for aerosolization.

Skin Contact: Rabbit, corrosive

Eye Contact: Rabbit, corrosive, but permanent damage prevented by immediate rinsing.

Chronic Exposure

The following effects were reported in chronic, teratogenic, and reproductive toxicity studies with narasin in laboratory animals where experimental dosage levels and durations of exposure were in excess of those likely to occur in humans.

Target Organ Effects: Narasin - Nervous system effects (lesions in peripheral nerves, reduced activity, tremors), heart effects (tissue changes, reduced heart rate, abnormal heart rhythm), muscle effects (skeletal muscle tissue changes).

Other Effects: Narasin - Decreased appetite, labored respiration.

Reproduction: Narasin - No effects identified in animal studies.

Sensitization: Narasin - Guinea pig, not a contact sensitizer.

Mutagenicity: Narasin - 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.

Ecotoxicity Data:
Narasin
Rainbow trout 96-hour median lethal concentration: >1.4 to <2.0 mg/L
Bluegill 96-hour median lethal concentration: 3.27 mg/L
Daphnia magna 48-hour median effective concentration: 7.72 mg/L
Bobwhite 14-day median lethal concentration: (male) 73.96 mg/kg, (female) >70 to <100 mg/kg
Bobwhite 5-day dietary median lethal concentration: (mycelial) 630 ppm
Mallard 5-day dietary median lethal concentration: (mycelial) 3800 ppm
Earthworm 14-day median lethal concentration: 46.4 mg/kg

Phytotoxicity median effective concentration (emergence): >29.26 mg/kg (oats), 5.07 mg/kg (radish), >29.26 mg/kg (mung bean)
Phytotoxicity 14 species: (severe injury) 10 to 40 mg/kg, (limited injury) 1.5, no injury at 0.15 mg/kg
Green algae (S. capricornutum) 72-hour median effective concentration (biomass): 0.77 mg/L
Soil Microflora
Carbon transformation: no significant effects at 17.43 mg/kg
Nitrogen transformation: no significant effects at 17.43 mg/kg

Environmental Fate:
Narasin
Log Kow: 4.85 (pH 8); >6.2 (HPLC)
Water solubility (mg/L): 102, 681 (pH 7, 9)
Photolysis half-life (days): 1.5 (pH 7)
Hydrolysis half-life (days): 3.5, none, none, (pH 5, 7, 9)
Soil degradation half-life (days): 8.8
Soil adsorption coefficient (log koc): > 5.63 at pH 4.5 and 6
Soil biodegradation half-life (days): 21, 49, 29 (sandy loam, loam, clay loam)

Environmental Summary:
Narasin - Moderately toxic to plants, worms, birds, and aquatic organisms, and is highly toxic to green algae. No significant effects on soil microorganisms at highest tested concentration. Measurable concentrations in the atmosphere are not expected since it is a non-volatile solid. Water soluble at pH 7 and pH 9. Material will adsorb strongly to sediment or soil. Soil concentrations expected to decline quickly due to fairly rapid degradation. Dissipates from the aquatic environment by photolysis or biodegradation. Material has potential to bioconcentrate in aquatic organisms, however, its rapid biodegradation in soil and photolysis rate make bioconcentration unlikely.

Lilly Aquatic Exposure Guideline (LAEG):
Narasin
LAEG for Drinking Water: 30 micrograms/L
LAEG for Chronic Exposure of Aquatic Organisms: 15.5 micrograms/L
LAEG for Acute Exposure of Aquatic Organisms: 139 micrograms/L

Section 13 - Disposal Considerations

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

Container Disposal: Bags may be burned or buried in accordance with approved safety and environmental standards.

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

Narasin
TSCA - No
CERCLA - Not on this list
SARA 302 - Not on this list
SARA 313 - Not on this list
OSHA Substance Specific - No

NADA Number: 118-980

EU Regulations

EC Classification
C (Corrosive)
Xn (Harmful)

Risk Phrases
R 22 - Harmful if swallowed.
R 34 - Causes burns.
R 37 - Irritating to respiratory system.
R 41 - Risk of serious damage to eyes.

Safety Phrases
S 22 - Do not breathe dust.
S 26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S 28 - After contact with skin, wash immediately.
S 36/37/39 - Wear suitable protective clothing, gloves and eye/face protection.
S 45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

Section 16 - Other Information

MSDS Sections Revised: Section 12.

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)