SAFETY DATA SHEETS

This SDS packet was issued with item:

078393608

N/A

Merck Animal Health
One Merck Dr.
Whitehouse Station, NJ 08889

MATERIAL SAFETY DATA SHEET

Merck Animal Health urges each user or recipient of this MSDS to read the entire data sheet to become aware of the hazards associated with this material.

SECTION 1. IDENTIFICATION OF SUBSTANCE AND CONTACT INFORMATION

MSDS NAME: **Double Barrel VP Insecticide Ear Tags**

SYNONYM(S): LPM Combination Ear Tag

MSDS NUMBER: SP000854

EMERGENCY NUMBER(S): (908) 423-6000 (24/7/365) English Only

Transportation Emergencies - CHEMTREC:
(800) 424-9300 (Inside Continental USA)
(703) 527-3887 (Outside Continental USA)

Rocky Mountain Poison Center (For Human Exposure):
(303) 595-4869

Animal Health Technical Services:
For Animal Adverse Events: Small Animals and Horses: (800) 224-5318
For Animal Adverse Events: Livestock: (800) 211-3573
For Animal Adverse Events: Poultry: (800) 219-9286

INFORMATION: Animal Health Technical Services:
For Small Animals and Horses: (800) 224-5318
For Livestock: (800) 211-3573
For Poultry: (800) 219-9286

MERCK MSDS HELPLINE: (800) 770-8878 (US and Canada)
(908) 473-3371 (Worldwide)
Monday to Friday, 9am to 5pm (US Eastern Time)

SECTION 2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Flexible plastic ear tag
Red or White (formulation specific)
Characteristic odor
Harmful if swallowed.
Harmful if absorbed through skin.
May be irritating to skin.
May cause effects to:
central nervous system
cardiovascular system
liver
respiratory system
mucous membranes
May cause impaired fertility.
fetus
Toxic to fish and aquatic organisms.
May cause long-term adverse effects in the aquatic environment.

POTENTIAL HEALTH EFFECTS:

The toxicological properties of the mixture(s) have not been fully characterized in humans or animals. However, there are data to describe the toxicological properties of the individual ingredients. The following summary is based upon available information about the individual ingredients of the mixture(s), or of the expected properties of the mixture(s).

Lambda cyhalothrin is a pyrethroid insecticide. Cases of severe pyrethroid poisoning in humans are rare. However, in pesticide applicators the following symptoms have been reported: burning, pricking, tickling, or tingling of the skin, skin irritation, numbness, feeling hot or cold, red eyes, coughing and sneezing. In animal studies, lambda cyhalothrin was very toxic by inhalation. However, as an impregnated active ingredient in this product, significant inhalation exposure to this material is not expected.

The active ingredient, pirimiphos methyl, is an organophosphate cholinesterase inhibitor insecticide. Pirimiphos methyl is a skin and eye irritant. Overexposure to pirimiphos methyl may cause loss of appetite, headache, nausea, slurred speech, blurred vision, muscular weakness, and cold sweating. Adverse responses of cholinesterase inhibition in humans include vomiting, diarrhea, abdominal cramping, bronchospasm, pinpoint pupil, slow heart rate, excessive salivation and sweating, muscle fasciculation (twitching), tremors, weakness, increased or decreased blood pressure, agitation, seizures and coma. At low doses in humans, the only effect observed following pirimiphos methyl administration was a temporary decrease in plasma cholinesterase activity.

Di-2-ethylhexyl phthalate (DEHP) has low oral and dermal toxicity. Mucous membrane and eye irritation as well as central nervous system depression may occur. Dermal irritation is seldom seen. Skin sensitization has not been reported in humans.

LISTED CARCINOGENS

INGREDIENT	CAS NUMBER	OSHA	IARC	NTP	ACGIH
Di(2-ethylhexyl)phthalate (DEHP)	117-81-7			R	A3

SECTION 3. COMPOSITION AND INFORMATION ON INGREDIENTS

PRODUCT USE: Veterinary product

CHEMICAL FORMULA: Pesticide Impregnated Ear Tag

The formulation for this product is proprietary information. Only hazardous ingredients in concentrations of 1% or greater and/or carcinogenic ingredients in concentrations of 0.1% or greater are listed in the Chemical Composition table. Active ingredients in any concentration are listed. For additional information about carcinogenic ingredients see Section 2.

CHEMICAL COMPOSITION

INGREDIENT	CAS NUMBER	PERCENT
Pirimiphos Methyl	29232-93-7	14
Lambda Cyhalothrin	91465-08-6	6.8
Di(2-ethylhexyl)phthalate (DEHP)	117-81-7	20-30

ADDITIONAL INFORMATION: This MSDS is written to provide health and safety information for individuals who will be handling the final product formulation during research, manufacturing, and distribution. For health and safety information for individual ingredients used during manufacturing, refer to the appropriate MSDS for each ingredient. Refer to the package insert or product label for handling guidance for the consumer.

SECTION 4. FIRST AID MEASURES

INHALATION: Remove to fresh air. If any trouble breathing, get immediate medical attention. Administer artificial respiration if breathing has ceased. If irritation or symptoms occur or persist, consult a physician.

SKIN CONTACT: In case of skin contact, IMMEDIATELY flush exposed skin thoroughly with plenty of water. While wearing protective gloves, remove any contaminated clothing, including shoes and continue to wash skin thoroughly with soap and water for at least 15 minutes. Get IMMEDIATE medical attention. Treat symptomatically.

EYE CONTACT: In case of eye contact, immediately rinse eyes thoroughly with plenty of water. If wearing contact lenses, remove only after initial rinse, and continue rinsing eyes for at least 15 minutes. If irritation occurs or persists, consult a physician.

INGESTION: Do not induce vomiting unless under the direction of a qualified medical professional or Poison Control Center. IMMEDIATELY consult a physician. Do not attempt to give anything by mouth to a seizing, drowsy or unconscious person. If alert, rinse mouth and drink a glass of water.

NOTE TO PHYSICIAN: Acetylcholinesterase inhibitor. Organophosphate poisoning may result in 1) muscarinic (parasympathetic) symptoms including salivation, lacrimation, urination, defecation and sweating (SLUDS), 2) nicotinic or autonomic ganglia and somatic motor responses and 3) Central Nervous System (CNS) manifestations. Treat symptomatically and provide supportive care as necessary. Decontamination must proceed concurrently with treatment. Atropine and pralidoxime (2-PAM) may be antidotal, but are not always indicated depending on class of pesticide and amount of exposure, and may cause further toxicity. Follow current medical procedures for the proper treatment of pesticide poisonings.

SECTION 5. FIRE FIGHTING MEASURES

FLAMMABILITY DATA:

Flash Point: Not determined (liquids) or not applicable (solids).

SPECIAL FIRE FIGHTING PROCEDURES:
Wear full protective clothing and self-contained breathing apparatus (SCBA).

SUITABLE EXTINGUISHING MEDIA:
Carbon dioxide (CO2), extinguishing powder or water spray.

See Section 9 for Physical and Chemical Properties.

SECTION 6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS:
Wear appropriate personal protective equipment as specified in Section 8. Keep personnel away from the clean-up area.

SPILL RESPONSE / CLEANUP:
All spills should be handled according to site requirements and based on precautions cited in the MSDS. In the case of liquids, use proper absorbent materials. For laboratories and small-scale operations, incidental spills within a hood or enclosure should be cleaned by using a HEPA filtered vacuum or wet cleaning methods as appropriate. For large dry or liquid spills or those spills outside enclosure or hood, appropriate emergency response personnel should be notified. In manufacturing and large-scale operations, HEPA vacuuming prior to wet mopping or cleaning is required.

ENVIRONMENTAL PRECAUTIONS:
This product is toxic to aquatic organisms. Do not allow product to reach ground water, water course, sewage or drainage systems.

See Sections 9 and 10 for additional physical, chemical, and hazard information.

SECTION 7. HANDLING AND STORAGE

HANDLING:
Keep containers adequately sealed during material transfer, transport, or when not in use. Wash face, hands, and any exposed skin after handling. Do not eat, drink, or smoke when using this substance or mixture.

Appropriate handling of this material is dependent on many factors, including physical form, duration and frequency of process or task, and effectiveness of engineering controls. Site-specific risk assessments should be conducted to determine the feasibility and the appropriateness of all exposure control measures. See Section 8 (Exposure Controls) for additional guidance.

STORAGE:
Store in a cool, dry, well ventilated area. Store out of direct sunlight.

See Section 8 for exposure controls and additional safe handling information.

SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

The following guidance applies to the handling of the active ingredient(s) in this formulation.

EXPOSURE CONTROLS
The health hazard risks of handling this material are dependent on many factors, including physical form, duration and frequency of process or task, and effectiveness of engineering controls. Site-specific risk assessments should be conducted to determine the feasibility and the appropriateness of all exposure control measures. Exposure controls for normal operating or routine procedures follow a tiered strategy. Engineering controls are the preferred means of long-term or permanent exposure control. If engineering controls are not feasible, appropriate use of personal protective equipment (PPE) may be considered as alternative control measures. Exposure controls for non-routine operations must be evaluated and addressed as part of the site-specific risk assessment.

RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT (PPE):

Respiratory Protection:	Respiratory protective equipment (RPE) may be required for certain laboratory and large-scale manufacturing tasks if potential airborne breathing zone concentrations of substances exceed the relevant exposure limit(s). Workplace risk assessment should be completed before specifying and implementing RPE usage. Potential exposure points and pathways, task duration and frequency, potential employee contact with the substance, and the ability of the substance to be rendered airborne during specific tasks should be evaluated. Initial and ongoing strategies of quantitative exposure measurement should be obtained as required by the workplace risk assessment. All RPE must conform to local and regional specifications for efficacy and performance. Consult your site or corporate health and safety professional for additional guidance.
Skin Protection:	Gloves that provide an appropriate barrier to the skin are recommended if there is potential for contact with this material. Consult your site safety staff for guidance.
Eye Protection:	Safety glasses with side shields. Use of goggles or full face protection may be required based on hazard, potential for contact, or level of exposure. Consult your site safety staff for guidance.
Body Protection:	In small-scale or laboratory operations, lab coats or equivalent protection is required. Disposable Tyvek or other dust impermeable suit should be considered based on procedure or level of exposure. Use of additional PPE such as shoe coverings, gauntlets, hood, or head covering may be necessary. Consult your site safety staff for guidance. In large-scale or manufacturing operations, disposable Tyvek or other dust impermeable suit is recommended and based on level of exposure. Use of additional PPE such as shoe coverings, gauntlets, hood, or head covering may be necessary. Consult your site safety staff for guidance.

EXPOSURE LIMIT VALUES

INGREDIENT	CAS NUMBER	ACGIH TLV (TWA)	OSHA PEL (TWA)
Di(2-ethylhexyl)phthalate (DEHP)	117-81-7	5 mg/m^3	5 mg/m^3

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

FORM: Flexible plastic ear tag
COLOR: Red or White (formulation specific)
ODOR: Characteristic odor
SOLUBILITY:
Water: Insoluble

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

See Section 5 for flammability/explosivity information.

SECTION 10. STABILITY AND REACTIVITY

STABILITY/ REACTIVITY:
Stable under normal conditions.

INCOMPATIBLE MATERIALS / CONDITIONS TO AVOID:
Open flames and high temperatures. Oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS / REACTIONS:
Hydrogen chloride (HCl). Carbon oxides (COx). Phosphorus oxides. Nitrogen oxides (NOx). Sulfur oxides (SOx). Ammonia. Halogens. Halogen acids.

SECTION 11. TOXICOLOGICAL INFORMATION

The toxicological properties of this material have not been fully characterized in humans or animals. The information presented below pertains to the following individual ingredients of this material and not to the formulated product.

ACUTE TOXICITY DATA

INHALATION:
Pirimiphos methyl: Inhalation LC50: > 4.7 mg/L (rat)

Rats were exposed to DEHP aerosols for 6 hr/day, 5 days/week for 4 weeks at target concentrations of 0, 0.01, 0.05, and 1.0 mg/L. There was statistically significant increase in lung weights observed in males at the highest dosage, and this included foam cell proliferation and thickening of the alveolar septa.

SKIN:
Pirimiphos methyl: Dermal LD50: 2200-3500 mg/kg (rabbit).
Pirimiphos methyl was slightly to moderately irritating to the skin of rabbits.

Lambda Cyhalothrin (92.6% purity): Dermal LD50: 632 - 696 mg/kg (rat)
Mortality was observed within 2 to 3 days. Clinical effects observed included decreased activity, tiptoe gait, splayed gait, loss of stability, dehydration, urinary incontinence, piloerection, and an upward curvature of the spine.

Lambda Cyhalothrin was not irritating to rabbit skin.

DEHP is a weak skin irritant when administered topically or subcutaneously (0.2 mL of an emulsion of 100 g/L).

EYE:
Pirimiphos methyl was irritating to the eyes of rabbits.

Lambda Cyhalothrin produced moderate irritation in rabbit eyes.

DEHP produced no irritation when instilled undiluted into rabbit eyes

ORAL:
Pirimiphos methyl: Oral LD50: 2400-5976 mg/kg (rat)
In an acute neurotoxicity study with pirimiphos methyl, rats were dosed by gavage at levels ranging from 15 to 1500 mg/kg/day. Clinical signs included convulsions, at all dose levels, and behavioral abnormalities. Inhibition of plasma, red blood cell, or brain cholinesterase was measured at all dose levels [NOEL for neurotoxicity: < 15 mg/kg/day].

Lambda Cyhalothrin: Oral LD50: 54 - 100 mg/kg (rat)
Mortality was observed between the days 1 to 3. Clincial effects noted at doses of 11.3 mg/kg and higher included ataxia, decreased activity, splayed gait, upward curvature of the spine, urinary incontinence, piloerection, salivation, dehydration, or ungroomed appearance.

No clinical or hematological effects were observed in six human volunteers given a single oral dose of 5 mg of lambda cyhalothrin (equivalent to 0.05 to 0.07 mg/kg).

DEHP: Oral LD50 >25,000 mg/kg (rat).

DERMAL AND RESPIRATORY SENSITIZATION:
Pirimiphos methyl was not a skin sensitizer in guinea pigs.

Lambda Cyhalothrin was not a skin sensitizer in guinea pigs.

DEHP was negative in human patch testing.

REPEAT DOSE TOXICITY DATA

SUBCHRONIC / CHRONIC TOXICITY:
In a 28-day feeding study, conducted in rats (5/sex/group), pirimiphos methyl was administered at dose levels of 0, 0.25, 0.40, 0.50, and 2.50 mg/kg/day. The LOEL was 2.5 mg/kg/day based upon the plasma cholinesterase inhibition observed in both male and female rats. In a 13-week oral study, pirimiphos methyl was administered to four groups of dogs (4/sex/dose) at dose levels as high as 25 mg/kg/day once daily. A reversible and non-progressive inhibition of plasma cholinesterase and dose-related inhibition in red blood cell cholinesterase levels were noted in both male and females at all dose levels (20% beginning in Week 1). No significant effects on brain cholinesterase levels were observed. However, the data are questionable because the post-mortem to assay time was not reported [LOEL for systemic toxicity: 2 mg/kg/day] [NOEL: < 2 mg/kg/day]. In a subchronic neurotoxicity study, male rats were dosed as high as 21 mg/kg/day and female rats were dosed as high as 25 mg/kg/day in their diets for 90 days. No neurotoxicity or systemic effects were noted.

In a chronic toxicity study, dogs were administered pirimiphos methyl at dose levels as high as 10 mg/kg/day for two years. Inhibition of plasma, red blood cell and brain cholinesterase was observed [LOEL for brain and plasma cholinesterase inhibition: less than or equal to 0.5 mg/kg/day; LOEL for red blood cell cholinesterase inhibition: 2 mg/kg/day] [NOEL for chronic toxicity: 0.5 mg/kg/day]. In a combined carcinogenicity/ chronic toxicity study, rats were administered 0.4 to 12.6 mg/kg/day of pirimiphos methyl for two years. Dose-related and progressive plasma and brain cholinesterase inhibition were seen at 2.1 and 12.6 mg/kg/day. Red blood cell cholinesterase was observed at 12.6 mg/kg/day at various time points. There were no effects on body weight, food consumption and hematology [NOEL for chronic toxicity: 12.6 mg/kg/day].

Lambda Cyhalothrin: Subacute (5-days) to chronic (1-year) oral studies were conducted in mice, rats, rabbits, and dogs. Dosages varied with species ranging from 0.5 to 25 mg/kg/day. Decreased body weight and food consumption, and neurological signs associated with pyrethroid toxicity (e.g. ataxia, unsteady or abnormal gait, and hyperexcitability) were observed. [NOEL: 5 mg/kg/day (rats) and 0.5 mg/kg/day (dogs)]

Di-2-ethylhexyl phthalate (DEHP) administered to dogs at 0.06 and 0.09 ml/kg/day in a one-year diet study resulted in fatty vacuolization and congested areas in the liver and cloudy swelling of kidney in the high dosage. Liver function tests were negative (No-observed-effect-level, NOEL: 0.06 ml/kg/day). In an oral gavage study, rats given 3.4 g/kg/day for up to 90 days caused the death of 15/20. No deaths in a 90-day rat diet study at 3% DEHP (1.9 g/kg body weight). In a 14-day dietary rat study, no mortality observed at <= 50 g/kg. Rats given dosages of DEHP of 164.8 mg/kg/day for 18-days resulted in a small but significant increase in liver weight and serum aspartate aminotransferase activity. No conclusive histopathological changes were observed.

REPRODUCTIVE / DEVELOPMENTAL TOXICITY:
Reproduction (two-generation male and female rats) and developmental (female rats and rabbits) oral studies were conducted with pirimiphos methyl. Dose levels in the rat reproduction study ranged from 0.87 mg/kg/day to 15.4 mg/kg/day. There were no clinical signs of toxicity in parental animals and no effect on reproductive parameters. Plasma cholinesterase was inhibited at dose levels of 3.43 mg/kg/day and higher. Dose levels in the rat and rabbit developmental studies ranged from 1.5 to 150 mg/kg/day and 12 to 48 mg/kg/day, respectively. Female rats were dosed during gestation days 7-16 while female rabbits were dosed during gestation days 6-18. No developmental effects were seen in rats up to 150 mg/kg/day. Maternal toxicity including abnormal gait, changes in behavior and respiration, incontinence and tremors were noted in dams. No significant toxicological effects were observed at 15 mg/kg/day. The only maternal toxicity in rabbits was inhibition of plasma, red blood cell, or brain cholinesterase. No developmental defects were seen in treated rabbits [NOEL for developmental toxicity: 48 mg/kg/day].

Cyhalothrin: There were no signs of fetotoxicity or teratogenicity in rats and rabbits. Decreased litter size was noted in a 2-generation reproduction study in rats given oral dosages of 6.1 mg/kg/day.

DEHP had embryo-lethal and teratogenic effects in rats at 5 or 10 g/kg via intra-peritoneal (IP) injection on day 5, 10 and 15 of gestation. The effects observed included: resorption, gross abnormalities, fetal death or decreased fetal size. Pregnant rats administered 2 and 4 ml/kg DEHP IP injections on days 3, 6 and 9 of gestation, implantation was prevented in 4/5 rats. Adverse effects on parturition included excessive bleeding, incomplete expulsion of fetuses and maternal deaths. DEHP produced lethal anti-fertility effects in mice after a single intra-peritoneal injection (12.8 ml/kg).

Rats given 28 g/kg of DEHP orally for 10 days resulted in seminiferous tubular atrophy, comprising a loss of spermatids and spermatocytes, in 4-wk-old rats. In 10-wk-old rats, about 50% of the tubules were atrophic. However, no testicular damage was detected in 15-wk-old rats. When DEHP was given to 4-wk-old rats in feed at 20 g/kg (approx 1.2 g/kg/day of body weight), the lesions produced were reversible.

In rats given 10 or 20 g/kg of DEHP in their diet, the testis atrophy was dose dependent after approx 2 weeks of feeding. This atrophy was accompanied by pituitary changes, enlargement and vacuolization of the basophils of the pars distalis, corresponding to the formation of castration cells seen after gonadectomy. In another study, there was a reduction in testicular and prostatic zinc levels concomitant with increased urinary excretion of zinc.

MUTAGENICITY / GENOTOXICITY:
Pirimiphos methyl was negative in an in vitro chromosome aberration assay in human lymphocytes, in an in vitro mouse lymphoma TK+/- forward gene mutation assay, and in an in vitro Salmonella typhimurium reverse gene mutation assay. In an in vivo bone marrow cytogenetic assay in CD-1 mice, pirimiphos methyl was negative at dose levels ranging from 24 mg/kg/day to 234 mg/kg/day. It was positive in an vitro sister chromatid exchange Chinese hamster lung fibroblasts assay.

Lambda Cyhalothrin: Negative in in vitro chromosome aberration assays in human lymphocytes and human HELA cells, in an in vitro mouse lymphoma TK+/- forward gene mutation assay, in an in vivo bonbe marrow cytogenetic assay in mice, and in Ames assays.

DEHP exhibited no mutagenicity in Ames studies, in multiple strains, with or without S9 metabolic activation. In a mouse lymphoma study DEHP without S9, and two concentrations (7.5 and 20 mg/L) gave positive results. In a separate mouse lymphoma study, with and without S9, DEHP was found to be non-mutagenic.

CARCINOGENICITY:
Pirimiphos methyl was not carcinogenic in a combined carcinogenicity/chronic toxicity study conducted in rats or in carcinogenicity studies conducted in mice.

Lambda Cyhalothrin: No carcinogenic effects were noted in chronic feeding studies in rats and mice.

DEHP was carcinogenic in rats and mice when given dosages in diet of 6,000 or 12,000 ppm in rats and 3,000 or 6,000 ppm in mice for 103 week. DEHP caused an increased incidence of hepatocellular (liver cells) carcinomas female rats and male and female mice, and inducing an increased incidence of hepatocellular carcinomas or neoplastic nodules in male rats.

Two further studies confirmed the carcinogenicity of DEHP in rats. One study found a 78.5% incidence of hepatocellular carcinoma in 14 male rats fed a diet containing 20 g /kg for up to 108 week. Another study found either atocellular carcinomas or neoplastic nodules in 6/20 female rats given a diet containing 12 g/kg for 2 yr.

SECTION 12. ECOLOGICAL INFORMATION

ECOTOXICITY DATA

INGREDIENT ECOTOXICITY

Pirimiphos methyl: 96-hr LC50 (rainbow trout): 404 mg/L
Pirimiphos methyl: 96-hr LC50 (bluegill sunfish): 2860 mg/L
Pirimiphos methyl: 24-hr LC50 (fathead minnow): 2.5 mg/L

Lambda Cyhalothrin: 48-hr EC50 (daphnid): 0.04 - 0.76 mg/L
Lambda Cyhalothrin: 96-hr LC50 (rainbow trout): 0.24 - 11.2 mg/L

ENVIRONMENTAL DATA

OTHER INGREDIENT ENVIRONMENTAL DATA: Pirimiphos methyl: log Kow (octanol/water partition coefficient): 4.12

SECTION 13. DISPOSAL CONSIDERATIONS

MATERIAL WASTE:
Disposal must be in accordance with applicable federal, state/provincial, and/or local regulations. Incineration is the preferred method of disposal, when appropriate. Operations that involve the crushing or shredding of waste materials or returned goods must be handled to meet the recommended exposure limit(s).

PACKAGING AND CONTAINERS:
Disposal must be in accordance with applicable federal, state/provincial, and/or local regulations.

SECTION 14. TRANSPORT INFORMATION

This material is not subject to the transportation regulations of DOT, IATA, and the IMO. Refer to site-specific procedures and requirements for additional guidance.

ADR CLASSIFICATION:

Proper Shipping Name:	Environmentally hazardous substance, solid, n.o.s. (lambda cyhalothrin)
Hazard Class:	9
UN Number:	UN 3077
Packing Group:	III

ADDITIONAL INFORMATION:
Although this material is regulated only under the ADR, both the IATA and IMO have special provisions that allow the shipper to transport materials under the shipping name "Environmentally hazardous substance, solid, n.o.s." if the material is being transported under both ADR and either IATA or IMO regulations.

SECTION 15. REGULATORY INFORMATION

TSCA LISTING

INGREDIENT	TSCA
Di(2-ethylhexyl)phthalate (DEHP)	X

U.S. STATE REGULATIONS

INGREDIENT	California Proposition 65	CARTK	NJRTK	CTRTK	MARTK
Pirimiphos Methyl			3430		
Di(2-ethylhexyl)phthalate (DEHP)	C D R - M	X	0238		X

INGREDIENT	PARTK	MNRTK	MIRTK	RIRTK
Di(2-ethylhexyl)phthalate (DEHP)	X	X		X

Fields in the above tables that do not contain data indicate that those materials have not been listed by local regulations.

"WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm."

SECTION 16. OTHER INFORMATION

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained therein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequence of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).

DEPARTMENT ISSUING MSDS:
Global Safety & the Environment
Merck & Co., Inc.
One Merck Drive
Whitehouse Station, NJ 08889

MERCK MSDS HELPLINE:
(800) 770-8878 (US and Canada)
(908) 473-3371 (Worldwide)
Monday to Friday, 9am to 5pm (US Eastern Time)

MSDS CREATION DATE: 14-Aug-1998

SUPERSEDES DATE: 21-Mar-2008

SECTIONS CHANGED (US SUBFORMAT): 1, 16
SIGNIFICANT CHANGES (US SUBFORMAT): Phone Number(s), OEB

SAFETY DATA SHEET

Cloxacillin Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 03/29/2018
4.0	08/13/2018	1089903-00006	Date of first issue: 11/30/2016

SECTION 1. IDENTIFICATION

Product name : Cloxacillin Formulation

Manufacturer or supplier's details

Company name of supplier : Merck & Co., Inc

Address : 2000 Galloping Hill Road
Kenilworth - New Jersey - U.S.A. 07033

Telephone : 908-740-4000

Telefax : 908-735-1496

Emergency telephone : 1-908-423-6000

E-mail address : EHSDATASTEWARD@merck.com

Recommended use of the chemical and restrictions on use

Recommended use : Veterinary product

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with 29 CFR 1910.1200

Respiratory sensitization : Category 1

Skin sensitization : Category 1

GHS label elements

Hazard pictograms :

Signal Word : Danger

Hazard Statements : H317 May cause an allergic skin reaction.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Precautionary Statements :

Prevention:

P261 Avoid breathing mist or vapors.
P272 Contaminated work clothing must not be allowed out of the workplace.
P280 Wear protective gloves.
P285 In case of inadequate ventilation wear respiratory protection.

Response:

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P304 + P341 IF INHALED: If breathing is difficult, remove per-

son to fresh air and keep comfortable for breathing.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P342 + P311 If experiencing respiratory symptoms: Call a POISON CENTER/doctor.
P363 Wash contaminated clothing before reuse.

Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Components

Chemical name	CAS-No.	Concentration (% w/w)
Cloxacillin	61-72-3	>= 1 - < 5

Actual concentration is withheld as a trade secret

SECTION 4. FIRST AID MEASURES

General advice : In the case of accident or if you feel unwell, seek medical advice immediately.
When symptoms persist or in all cases of doubt seek medical advice.

If inhaled : If inhaled, remove to fresh air.
If not breathing, give artificial respiration.
If breathing is difficult, give oxygen.
Get medical attention.

In case of skin contact : In case of contact, immediately flush skin with soap and plenty of water.
Remove contaminated clothing and shoes.
Get medical attention.
Wash clothing before reuse.
Thoroughly clean shoes before reuse.

In case of eye contact : Flush eyes with water as a precaution.
Get medical attention if irritation develops and persists.

If swallowed : If swallowed, DO NOT induce vomiting.
Get medical attention if symptoms occur.
Rinse mouth thoroughly with water.

Most important symptoms and effects, both acute and delayed : May cause an allergic skin reaction.
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Excessive exposure may aggravate preexisting asthma and

other respiratory disorders (e.g. emphysema, bronchitis, reactive airways dysfunction syndrome).

Protection of first-aiders : First Aid responders should pay attention to self-protection, and use the recommended personal protective equipment when the potential for exposure exists.

Notes to physician : Treat symptomatically and supportively.

SECTION 5. FIRE-FIGHTING MEASURES

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

Unsuitable extinguishing media : None known.

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

Hazardous combustion products : Carbon oxides
Chlorine compounds
Nitrogen oxides (NOx)
Sulfur compounds

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 fire-fighters : In the event of fire, wear self-contained breathing apparatus.
Use personal protective equipment.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.
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 diking or other appropriate

containment to keep material from spreading. If diked 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 : Do not get on skin or clothing.
Avoid inhalation of vapor or mist.
Do not swallow.
Avoid contact with eyes.
Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment
Keep container tightly closed.
Already sensitized individuals should consult their physician regarding working with respiratory irritants or sensitizers.
Take care to prevent spills, waste and minimize release to the environment.

Conditions for safe storage : Keep in properly labeled containers.
Keep tightly closed.
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

Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parame-ters / Permissible concentration	Basis
Cloxacillin	61-72-3	TWA	100 µg/m3 (OEB 2)	Internal
	Further information: RSEN			

Engineering measures : Use appropriate engineering controls and manufacturing technologies to control airborne concentrations (e.g., drip-less quick connections).

All engineering controls should be implemented by facility design and operated in accordance with GMP principles to protect products, workers, and the environment.
Laboratory operations do not require special containment.

Personal protective equipment

Respiratory protection : General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn. Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstance where air purifying respirators may not provide adequate protection.

Hand protection
Material : 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.

Hygiene measures : Ensure that eye flushing systems and safety showers are located 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.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	liquid
Color	:	No data available
Odor	:	characteristic
Odor Threshold	:	No data available
pH	:	No data available

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 flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Vapor pressure	:	No data available
Relative vapor density	:	No data available
Relative density	:	No data available
Density	:	No data available
Solubility(ies)		
Water solubility	:	insoluble
Partition coefficient: n-octanol/water	:	No data available
Autoignition 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	:	No data available

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

Information on likely routes of exposure

Inhalation
Skin contact
Ingestion
Eye contact

Acute toxicity

Not classified based on available information.

Components:

Cloxacillin:

Acute oral toxicity	:	LD50 (Rat): 5,000 mg/kg LD50 (Mouse): 5,000 mg/kg
Acute toxicity (other routes of administration)	:	LD50 (Rat): 1,117 mg/kg Application Route: Intramuscular LD50 (Rat): 916 mg/kg Application Route: Intravenous LD50 (Rat): 1,500 mg/kg Application Route: Subcutaneous LD50 (Mouse): 1,660 mg/kg Application Route: Intravenous LD50 (Mouse): 4,200 mg/kg Application Route: Subcutaneous

Skin corrosion/irritation

Not classified based on available information.

Components:

Cloxacillin:

Remarks	:	Not classified due to lack of data.

Serious eye damage/eye irritation

Not classified based on available information.

Components:

Cloxacillin:

Remarks : Not classified due to lack of data.

Respiratory or skin sensitization

Skin sensitization

May cause an allergic skin reaction.

Respiratory sensitization

May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Components:

Cloxacillin:

Routes of exposure : Dermal
Assessment : Probability or evidence of skin sensitization in humans
Result : positive

Assessment : Probability of respiratory sensitization in humans based on animal testing
Result : positive

Germ cell mutagenicity

Not classified based on available information.

Components:

Cloxacillin:

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Result: negative
Remarks: Information given is based on data obtained from similar substances.

Genotoxicity in vivo : Test Type: Micronucleus test
Species: Mouse
Result: negative
Remarks: Information given is based on data obtained from similar substances.

Carcinogenicity

Not classified based on available information.

Components:

Cloxacillin:

Remarks : Not classified due to lack of data.

IARC No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Reproductive toxicity

Not classified based on available information.

Components:

Cloxacillin:

Effects on fertility	:	Test Type: Multi-generation study Species: Rat Application Route: Oral Fertility: NOAEL: 500 mg/kg body weight Result: No effects on fertility., No effects on reproduction parameters.
Effects on fetal development	:	Test Type: Development Species: Rabbit Application Route: Oral Developmental Toxicity: NOAEL: 100 mg/kg body weight Result: No malformations were observed. Test Type: Development Species: Rabbit Application Route: Intramuscular Developmental Toxicity: NOAEL: 250 mg/kg body weight Result: No effects on fetal development.

STOT-single exposure

Not classified based on available information.

STOT-repeated exposure

Not classified based on available information.

Repeated dose toxicity

Components:

Cloxacillin:

Species	:	Rat
LOAEL	:	7,000 mg/kg
Application Route	:	Intravenous
Exposure time	:	4 Weeks
Symptoms	:	Hypoglycemia

Aspiration toxicity

Not classified based on available information.

Experience with human exposure

Components:

Cloxacillin:

Inhalation	:	Remarks: May cause sensitization of susceptible persons.

Skin contact	:	Symptoms: Dermatitis Remarks: May irritate skin.
Eye contact	:	Remarks: May irritate eyes.
Ingestion	:	Symptoms: May cause, Gastrointestinal disturbance, Rash Remarks: May cause sensitization of susceptible persons.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

No data available

Persistence and degradability

No data available

Bioaccumulative potential

Components:

Cloxacillin:

Partition coefficient: n-octanol/water	:	log Pow: 2.44

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.

Domestic regulation

49 CFR

Not regulated as a dangerous good

SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know

CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : Respiratory or skin sensitization

SARA 313 : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

US State Regulations

Pennsylvania Right To Know

Glycerides, mixed decanoyl and octanoyl	73398-61-5

California Prop. 65

This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

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

AICS : not determined

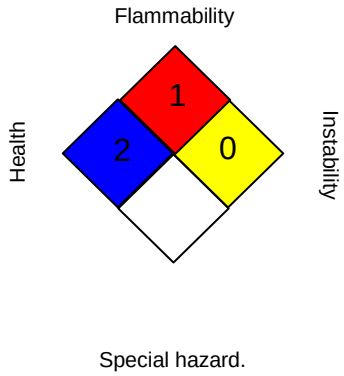
DSL : not determined

IECSC : not determined

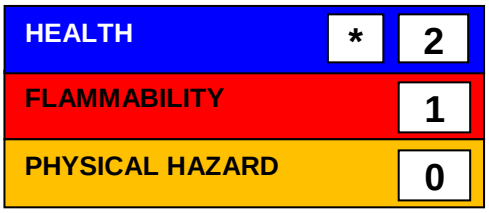
SECTION 16. OTHER INFORMATION

Further information

NFPA 704:



HMIS® IV:



HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

Full text of other abbreviations

AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; 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; HMIS - Hazardous Materials Identification System; 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 Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG -

United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Sources of key data used to compile the Material Safety Data Sheet	:	Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agency, http://echa.europa.eu/
Revision Date	:	08/13/2018

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

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.

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