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

Pirimiphos Methyl / Lambda-Cyhalothrin Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 04/04/2017
2.2	05/02/2017	1204432-00004	Date of first issue: 01/09/2017

SECTION 1. IDENTIFICATION

Product name : Pirimiphos Methyl / Lambda-Cyhalothrin Formulation

Manufacturer or supplier's details

Company name of supplier : Merck & Co., Inc

Address : 2000 Galloping Hill Road
Kenilworth - New Jersey - USA 1685

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

Acute toxicity (Oral) : Category 4

Acute toxicity (Inhalation) : Category 3

Skin irritation : Category 2

Eye irritation : Category 2B

Carcinogenicity (Inhalation) : Category 2

Specific target organ systemic toxicity - single exposure : Category 1 (Central nervous system, Nervous system)

GHS label elements

Hazard pictograms :

Signal Word : Danger

Hazard Statements : H302 Harmful if swallowed.
H315 + H320 Causes skin and eye irritation.
H331 Toxic if inhaled.

H351 Suspected of causing cancer if inhaled.
H370 Causes damage to organs (Central nervous system, Nervous system).

Precautionary Statements :

Prevention:

P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P260 Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P304 + P340 + P311 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P307 + P311 IF exposed: Call a POISON CENTER or doctor/ physician.
P332 + P313 If skin irritation occurs: Get medical advice/ attention.
P337 + P313 If eye irritation persists: Get medical advice/ attention.
P362 + P364 Take off contaminated clothing and wash it before reuse.

Storage:

P405 Store locked up.

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

Hazardous ingredients

Chemical name	CAS-No.	Concentration (% w/w)
Polyvinyl chloride	9002-86-2	>= 70 - < 90
Pirimiphos-methyl (ISO)	29232-93-7	>= 10 - < 20

lambda-cyhalothrin (ISO)	91465-08-6	>= 5 - < 10
Titanium dioxide	13463-67-7	>= 0.1 - < 1

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 plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.
In case of eye contact	:	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. If easy to do, remove contact lens, if worn. Get medical attention.
If swallowed	:	If swallowed, DO NOT induce vomiting unless directed to do so by medical personnel. Get medical attention. Rinse mouth thoroughly with water. Never give anything by mouth to an unconscious person.
Most important symptoms and effects, both acute and delayed	:	Harmful if swallowed. Causes skin and eye irritation. Toxic if inhaled. Suspected of causing cancer if inhaled. Causes damage to organs.
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 Nitrogen oxides (NOx) Chlorine compounds Fluorine 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. 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	:	Sweep up or vacuum up spillage and collect in suitable container for disposal. 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 with local exhaust ventilation.
Advice on safe handling	:	Do not get on skin or clothing. Do not swallow. Do not get in eyes.

Handle in accordance with good industrial hygiene and safety practice.
Keep container tightly closed.
Take care to prevent spills, waste and minimize release to the environment.

Conditions for safe storage : Keep in properly labeled containers.
Store locked up.
Keep tightly closed.
Keep in a cool, well-ventilated place.
Store in accordance with the particular national regulations.

Materials to avoid : Do not store with the following product types:
Strong oxidizing agents
Organic peroxides
Explosives
Gases

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Ingredients	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Polyvinyl chloride	9002-86-2	TWA (Respirable fraction)	1 mg/m³	ACGIH
Pirimiphos-methyl (ISO)	29232-93-7	TWA	60 µg/m3 (OEB 3)	Merck
	Further information: Skin			
		Wipe limit	600 µg/100 cm²	Merck
lambda-cyhalothrin (ISO)	91465-08-6	TWA	5 µg/m3 (OEB 4)	Merck
	Further information: Skin			
		Wipe limit	50 µg/100 cm²	Merck
Titanium dioxide	13463-67-7	TWA (total dust)	15 mg/m³	OSHA Z-1
		TWA	10 mg/m³ (Titanium dioxide)	ACGIH

Engineering measures : All engineering controls should be implemented by facility design and operated in accordance with GMP principles to protect products, workers, and the environment.
Containment technologies suitable for controlling compounds are required to control at source and to prevent migration of the compound to uncontrolled areas (e.g., open-face containment devices).
Minimize open handling.

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

Remarks : Consider double gloving.

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.
Additional body garments should be used based upon the task being performed (e.g., sleevelets, apron, gauntlets, disposable suits) to avoid exposed skin surfaces.
Use appropriate degowning techniques to remove potentially contaminated clothing.

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	:	solid
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	:	Not applicable
Evaporation rate	:	No data available
Flammability (solid, gas)	:	Not classified as a flammability hazard
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
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 reac-	:	Can react with strong oxidizing agents.

tions

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

Skin contact
Ingestion
Eye contact

Acute toxicity

Harmful if swallowed.
Toxic if inhaled.

Product:

Acute oral toxicity	:	Acute toxicity estimate: 685.81 mg/kg Method: Calculation method
Acute inhalation toxicity	:	Acute toxicity estimate: 0.75 mg/l Exposure time: 4 h Test atmosphere: dust/mist Method: Calculation method
Acute dermal toxicity	:	Acute toxicity estimate: 4,963 mg/kg Method: Calculation method

Ingredients:

Pirimiphos-methyl (ISO):

Acute oral toxicity	:	LD50 (Rat): 2,400 - 5,976 mg/kg LD50 (Mouse): > 575 mg/kg LD50 (Dog): > 1,500 mg/kg
Acute inhalation toxicity	:	LC50 (Rat): > 5.04 mg/l Exposure time: 4 h
Acute dermal toxicity	:	LD50 (Rabbit): 2,000 mg/kg LD50 (Rat): > 4,592 mg/kg

lambda-cyhalothrin (ISO):

Acute oral toxicity	:	LD50 (Rat): 56 - 79 mg/kg LD50 (Mouse): 20 mg/kg

Acute inhalation toxicity	:	LC50 (Rat): 0.06 mg/l Exposure time: 4 h Test atmosphere: dust/mist
Acute dermal toxicity	:	LD50 (Rat): 632 - 696 mg/kg
Acute toxicity (other routes of administration)	:	LD50 (Rat): 250 - 750 mg/kg Application Route: Intraperitoneal

Titanium dioxide:

Acute oral toxicity	:	LD50 (Rat): > 5,000 mg/kg
Acute inhalation toxicity	:	LC50 (Rat): > 6.82 mg/l Exposure time: 4 h Test atmosphere: dust/mist Assessment: The substance or mixture has no acute inhalation toxicity

Skin corrosion/irritation

Causes skin irritation.

Ingredients:

Pirimiphos-methyl (ISO):

Species: Rabbit
Result: irritating

lambda-cyhalothrin (ISO):

Species: Rabbit
Result: No skin irritation

Titanium dioxide:

Species: Rabbit
Result: No skin irritation

Serious eye damage/eye irritation

Causes eye irritation.

Ingredients:

Pirimiphos-methyl (ISO):

Species: Rabbit
Result: Mild eye irritation

lambda-cyhalothrin (ISO):

Species: Rabbit
Result: Mild eye irritation

Titanium dioxide:

Species: Rabbit
Result: No eye irritation

Respiratory or skin sensitization

Skin sensitization

Not classified based on available information.

Respiratory sensitization

Not classified based on available information.

Ingredients:

Pirimiphos-methyl (ISO):

Test Type: Maximization Test
Routes of exposure: Dermal
Species: Guinea pig
Result: Not a skin sensitizer.

lambda-cyhalothrin (ISO):

Test Type: Magnusson-Kligman-Test
Routes of exposure: Dermal
Species: Guinea pig
Result: Not a skin sensitizer.

Titanium dioxide:

Test Type: Local lymph node assay (LLNA)
Routes of exposure: Skin contact
Species: Mouse
Result: negative

Germ cell mutagenicity

Not classified based on available information.

Ingredients:

Pirimiphos-methyl (ISO):

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Result: equivocal

: Test Type: sister chromatid exchange assay
Result: positive

Genotoxicity in vivo : Test Type: Micronucleus test
Species: Mouse
Result: negative

Test Type: Rodent dominant lethal test (germ cell) (in vivo)
Species: Mouse
Result: negative

lambda-cyhalothrin (ISO):

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Result: negative

: Test Type: Chromosomal aberration
Species: Human lymphocytes
Result: negative

: Test Type: unscheduled DNA synthesis assay
Species: rat hepatocytes
Result: negative

: Test Type: In vitro mammalian cell gene mutation test
Species: mouse lymphoma cells
Result: negative

Genotoxicity in vivo : Test Type: Micronucleus test
Species: Mouse
Cell type: Bone marrow
Application Route: Intraperitoneal
Result: negative

Titanium dioxide:

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Result: negative

Genotoxicity in vivo : Test Type: In vivo micronucleus test
Species: Mouse
Result: negative

Carcinogenicity

Suspected of causing cancer if inhaled.

Ingredients:

Pirimiphos-methyl (ISO):

Species: Rat
Application Route: Oral
Exposure time: 2 Years
Result: negative

Species: Mouse
Application Route: Oral
Exposure time: 80 weeks
Result: negative

Carcinogenicity - Assessment : Animal testing did not show any carcinogenic effects.

lambda-cyhalothrin (ISO):

Species: Mouse
Application Route: oral (feed)

Exposure time: 2 Years
Result: negative
Remarks: Based on data from similar materials

Species: Rat
Application Route: oral (feed)
Exposure time: 2 Years
Result: negative
Remarks: Based on data from similar materials

Titanium dioxide:

Species: Rat
Application Route: inhalation (dust/mist/fume)
Exposure time: 2 Years
Method: OECD Test Guideline 453
Result: positive
Remarks: The mechanism or mode of action may not be relevant in humans.

Carcinogenicity - Assessment	:	Limited evidence of carcinogenicity in inhalation studies with animals.
IARC		Group 2B: Possibly carcinogenic to humans
		Titanium dioxide 13463-67-7
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.

Ingredients:

Pirimiphos-methyl (ISO):

Effects on fertility	:	Test Type: Two-generation reproduction toxicity study Species: Rat Application Route: Oral Fertility: NOAEL: 15.4 mg/kg body weight Result: No effects on fertility.
Effects on fetal development	:	Test Type: Development Species: Rat Application Route: Oral Developmental Toxicity: NOAEL: 150 mg/kg body weight Result: No effects on early embryonic development. Remarks: Maternal toxicity observed. Test Type: Development Species: Rabbit

Application Route: Oral
Developmental Toxicity: NOAEL: 48 mg/kg body weight
Result: No effects on early embryonic development.
Remarks: Maternal toxicity observed.

lambda-cyhalothrin (ISO):

Effects on fertility : Test Type: Three-generation study
Species: Rat
Application Route: oral (feed)
General Toxicity Parent: NOAEL: 2 mg/kg body weight
General Toxicity F1: LOAEL: 6.7 mg/kg body weight
Symptoms: Reduced offspring weight gain.
Result: No effects on fertility.
Remarks: Based on data from similar materials

Effects on fetal development : Test Type: Development
Species: Rat
Application Route: Oral
General Toxicity Maternal: NOAEL: 10 mg/kg body weight
Developmental Toxicity: LOAEL: 15 mg/kg body weight
Result: No effects on fetal development., Reduced maternal body weight gain., Reduced fetal weight.
Remarks: Based on data from similar materials

Test Type: Development
Species: Rabbit
Application Route: Oral
General Toxicity Maternal: NOAEL: 10 mg/kg body weight
Developmental Toxicity: NOAEL: 30 mg/kg body weight
Result: No effects on fetal development., Reduced maternal body weight gain., Reduced fetal weight.

STOT-single exposure

Causes damage to organs (Central nervous system, Nervous system).

Ingredients:

Pirimiphos-methyl (ISO):

Target Organs: Central nervous system
Assessment: Causes damage to organs.

lambda-cyhalothrin (ISO):

Target Organs: Nervous system
Assessment: Causes damage to organs.

STOT-repeated exposure

Not classified based on available information.

Ingredients:

Pirimiphos-methyl (ISO):

Remarks: Not classified due to inconclusive data.

Repeated dose toxicity

Ingredients:

Pirimiphos-methyl (ISO):

Species: Rat
NOAEL: 0.5 mg/kg
LOAEL: 2.5 mg/kg
Application Route: Oral
Exposure time: 28 d
Target Organs: Central nervous system
Symptoms: cholinesterase inhibition

Species: Dog
LOAEL: 2 mg/kg
Application Route: Oral
Exposure time: 13 Weeks
Target Organs: Central nervous system
Symptoms: cholinesterase inhibition

Species: Rat
NOAEL: 25 mg/kg
Application Route: Oral
Exposure time: 90 d
Target Organs: Central nervous system
Symptoms: cholinesterase inhibition
Remarks: No significant adverse effects were reported

Species: Dog
LOAEL: 0.5 mg/kg
Application Route: Oral
Exposure time: 2 y
Target Organs: Central nervous system
Symptoms: cholinesterase inhibition

Species: Rat
LOAEL: 2.1 mg/kg
Application Route: Oral
Exposure time: 2 y
Target Organs: Central nervous system
Symptoms: cholinesterase inhibition

lambda-cyhalothrin (ISO):

Species: Dog
NOAEL: 2.5 mg/kg
LOAEL: 12.5 mg/kg
Application Route: oral (feed)
Exposure time: 90 d

Species: Rat
NOAEL: 10 mg/kg
LOAEL: 50 mg/kg

Application Route: Dermal
Exposure time: 21 d
Target Organs: Nervous system

Species: Rat
NOAEL: 0.08 mg/kg
LOAEL: 0.9 mg/kg
Application Route: Inhalation
Exposure time: 21 d
Target Organs: Nervous system

Species: Dog
NOAEL: 0.1 mg/kg
LOAEL: 0.5 mg/kg
Application Route: Oral
Exposure time: 1 y
Target Organs: Nervous system
Symptoms: Gastrointestinal disturbance, Vomiting, Convulsions

Titanium dioxide:

Species: Rat
NOAEL: 24,000 mg/kg
Application Route: Ingestion
Exposure time: 28 Days

Species: Rat
NOAEL: 10 mg/m³
Application Route: inhalation (dust/mist/fume)
Exposure time: 2 y

Aspiration toxicity

Not classified based on available information.

Experience with human exposure

Ingredients:

Pirimiphos-methyl (ISO):

Ingestion	:	Symptoms: Nausea, Vomiting, Dizziness, confusion, Headache, Weakness, stomach discomfort, Blurred vision, muscle twitching

lambda-cyhalothrin (ISO):

Inhalation	:	Symptoms: Cough, Local irritation
Skin contact	:	Symptoms: Skin irritation, tingling, superficial burning sensation, Local irritation Remarks: Can be absorbed through skin.
Eye contact	:	Symptoms: Eye irritation
Ingestion	:	Symptoms: May cause, Gastrointestinal disturbance

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Ingredients:

Pirimiphos-methyl (ISO):

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): 0.2 mg/l Exposure time: 96 h Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 0.00021 mg/l Exposure time: 48 h Method: OECD Test Guideline 202
Toxicity to algae	:	EC50 (Pseudokirchneriella subcapitata (green algae)): > 1 mg/l Exposure time: 72 h Method: OECD Test Guideline 201
M-Factor (Acute aquatic toxicity)	:	1,000
Toxicity to fish (Chronic toxicity)	:	NOEC (Pimephales promelas (fathead minnow)): 0.13 mg/l Exposure time: 35 d Method: OECD Test Guideline 210
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC (Daphnia magna (Water flea)): 0.00011 mg/l Exposure time: 21 d Method: OECD Test Guideline 211
M-Factor (Chronic aquatic toxicity)	:	100

lambda-cyhalothrin (ISO):

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): 0.00019 mg/l Exposure time: 96 h Method: OECD Test Guideline 203 Remarks: Based on data from similar materials LC50 (Lepomis macrochirus (Bluegill sunfish)): 0.00021 mg/l Exposure time: 96 h Method: OECD Test Guideline 203 Remarks: Based on data from similar materials
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 0.00004 mg/l Exposure time: 48 h Method: OECD Test Guideline 202 Remarks: Based on data from similar materials
M-Factor (Acute aquatic tox-	:	10,000

icity)

Toxicity to fish (Chronic toxicity)	:	NOEC (Pimephales promelas (fathead minnow)): 0.000062 mg/l Exposure time: 32 d Method: OECD Test Guideline 210 Remarks: Based on data from similar materials
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC (Daphnia magna (Water flea)): 0.0035 µg/l Exposure time: 21 d Method: OECD Test Guideline 211 Remarks: Based on data from similar materials
M-Factor (Chronic aquatic toxicity)	:	10,000

Titanium dioxide:

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): > 100 mg/l Exposure time: 96 h Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): > 100 mg/l Exposure time: 48 h
Toxicity to algae	:	EC50 (Skeletonema costatum (marine diatom)): > 10,000 mg/l Exposure time: 72 h
Toxicity to microorganisms	:	EC50: > 1,000 mg/l Exposure time: 3 h Method: OECD Test Guideline 209

Persistence and degradability

Ingredients:

Polyvinyl chloride:

Biodegradability	:	Result: Not readily biodegradable.

Pirimiphos-methyl (ISO):

Stability in water	:	Hydrolysis: 50 %(117 d)

Bioaccumulative potential

Ingredients:

Pirimiphos-methyl (ISO):

Partition coefficient: n-octanol/water	:	log Pow: 4.2

lambda-cyhalothrin (ISO):

Bioaccumulation	:	Bioconcentration factor (BCF): 2,240

Method: OECD Test Guideline 305

Partition coefficient: n-octanol/water : log Pow: 7.0 (20 °C)

Mobility in soil

Ingredients:

lambda-cyhalothrin (ISO):

Distribution among environmental compartments : log Koc: 5.5

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

UN number	:	UN 2811
Proper shipping name	:	TOXIC SOLID, ORGANIC, N.O.S. (lambda-cyhalothrin (ISO), Pirimiphos-methyl (ISO))
Class	:	6.1
Packing group	:	III
Labels	:	6.1

IATA-DGR

UN/ID No.	:	UN 2811
Proper shipping name	:	Toxic solid, organic, n.o.s. (lambda-cyhalothrin (ISO), Pirimiphos-methyl (ISO))
Class	:	6.1
Packing group	:	III
Labels	:	Toxic
Packing instruction (cargo aircraft)	:	677
Packing instruction (passenger aircraft)	:	670

IMDG-Code

UN number	:	UN 2811
Proper shipping name	:	TOXIC SOLID, ORGANIC, N.O.S.

(lambda-cyhalothrin (ISO), Pirimiphos-methyl (ISO))

Class	:	6.1
Packing group	:	III
Labels	:	6.1
EmS Code	:	F-A, S-A
Marine pollutant	:	yes

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

UN/ID/NA number	:	UN 2811
Proper shipping name	:	Toxic solids, organic, n.o.s. (lambda-cyhalothrin (ISO), Pirimiphos-methyl (ISO))
Class	:	6.1
Packing group	:	III
Labels	:	TOXIC
ERG Code	:	154
Marine pollutant	:	yes(Pirimiphos-methyl (ISO), lambda-cyhalothrin (ISO))

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 : Acute Health Hazard
Chronic Health Hazard

SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313:

Pirimiphos-methyl (ISO)	29232-93-7	>= 10 - < 20 %

US State Regulations

Pennsylvania Right To Know

Polyvinyl chloride	9002-86-2
Pirimiphos-methyl (ISO)	29232-93-7
lambda-cyhalothrin (ISO)	91465-08-6

California Prop. 65

WARNING! This product contains a chemical known in the State of California to cause cancer.

Titanium dioxide	13463-67-7

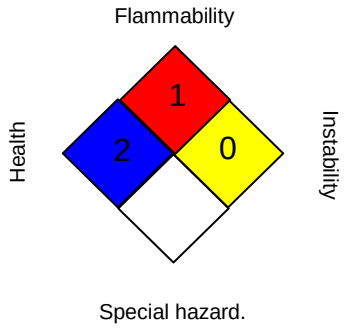
The ingredients of this product are reported in the following inventories:

AICS	:	not determined
DSL	:	not determined
IECSC	:	not determined

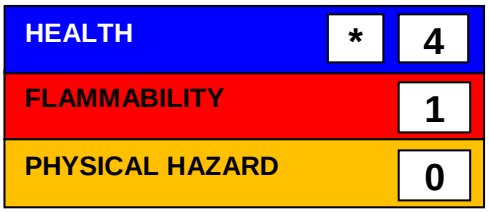
SECTION 16. OTHER INFORMATION

Further information

NFPA:



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

ACGIH	:	USA. ACGIH Threshold Limit Values (TLV)
OSHA Z-1	:	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
ACGIH / TWA	:	8-hour, time-weighted average
OSHA Z-1 / TWA	:	8-hour time weighted average

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 Pre-

vention 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 : 05/02/2017

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.

US / Z8