

MATERIAL SAFETY DATA SHEET



Emergency Phone: 800-992-5994
Dow AgroSciences LLC
Indianapolis, IN 46268

LORSBAN* 15G GRANULAR INSECTICIDE

Effective Date: 5/19/00
Product Code: 45405
MSDS: 000587

1. PRODUCT AND COMPANY IDENTIFICATION:

PRODUCT: Lorsban* 15G Granular Insecticide

COMPANY IDENTIFICATION:

Dow AgroSciences
9330 Zionsville Road
Indianapolis, IN 46268-1189

2. COMPOSITION/INFORMATION ON INGREDIENTS:

Chlorpyrifos: O,O-diethyl-O-(3,4,6-trichloro-2-pyridinyl) phosphorothioate	CAS # 002921-88-2	15%
Inert Ingredients, Total, Including gamma-Butyrolactone	CAS # 000096-48-0	85%

This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). In addition, other substances not 'Hazardous' per this OSHA Standard may be listed. Where proprietary ingredient shows, the identity may be made available as provided in this standard.

3. HAZARDOUS IDENTIFICATIONS:

EMERGENCY OVERVIEW

Hazardous Chemical. Tan/buff free-flowing granule with a mercaptan-like odor. May cause eye irritation. LD₅₀ for skin absorption in rabbits is >5000 mg/kg. Oral LD₅₀ for rats is 2250 mg/kg (males) and 1288 mg/kg (females). Cholinesterase inhibitor. Toxic to avian and aquatic organisms. Store below 100°F (38°C).
EMERGENCY PHONE NUMBER: 800-992-5994

POTENTIAL HEALTH EFFECTS: This section includes possible adverse effects, which could occur if this material is not handled in the recommended manner.

EYE: May cause moderate eye irritation, which may be slow to heal. Corneal injury is unlikely.

SKIN: Prolonged exposure not likely to cause significant skin irritation. A single prolonged exposure is not likely to result in the material being absorbed through skin in harmful amounts. The LD₅₀ for skin absorption in rabbits is >5000 mg/kg. This material is not considered to have significant skin sensitization potential in humans.

INGESTION: Single dose oral toxicity is low. The oral LD₅₀ for rats is 2250 mg/kg (males) and 1288 mg/kg (females). Small amounts swallowed incidental to normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.

INHALATION: Single exposure to dust is not likely to be hazardous.

SYSTEMIC (OTHER TARGET ORGAN) EFFECTS:

Excessive exposure may produce organophosphate type cholinesterase inhibition. Signs and symptoms of excessive exposure to chlorpyrifos may be headache, dizziness, incoordination, muscle twitching, tremors, nausea, abdominal cramps, diarrhea, sweating, pinpoint pupils, blurred vision, salivation, tearing, tightness in chest, excessive urination, and convulsions. Chlorpyrifos produced mild adrenal effects when fed to rats, but only at doses that greatly exceeded any exposure that would be received during use of this product. For a minor component, in animals, effects have been reported on the following organ: adrenal gland.

CANCER INFORMATION: Chlorpyrifos did not cause cancer in animal studies. NTP has concluded that gamma-butyrolactone should be considered not carcinogenic in animals.

TERATOLOGY (BIRTH DEFECTS): Chlorpyrifos did not cause birth defects in laboratory animals. Gamma-butyrolactone did not cause birth defects in laboratory animals.

REPRODUCTIVE EFFECTS: Chlorpyrifos did not interfere with fertility in reproduction studies in laboratory animals. Some evidence of toxicity to the offspring occurred, but only at a dose high enough to produce significant toxicity to the parent animals. Gamma-butyrolactone has been shown to produce testicular effects in laboratory animal studies, which suggest that excessive exposure to the component may interfere with reproduction.

MATERIAL SAFETY DATA SHEET



Emergency Phone: 800-992-5994
Dow AgroSciences LLC
Indianapolis, IN 46268

LORSBAN* 15G GRANULAR INSECTICIDE

Effective Date: 5/19/00
Product Code: 45405
MSDS: 000587

4. FIRST AID:

EYES: Irrigate with flowing water immediately and continuously for 15 minutes. Consult medical personnel.

SKIN: Wash thoroughly with soap and water. Get medical attention if irritation persists.

INGESTION: Call a physician or poison control center immediately. Drink 1 or 2 glasses of water and induce vomiting by touching back of throat with finger. Do not give anything by mouth to an unconscious person.

INHALATION: Remove to fresh air if effects occur. Consult a physician.

NOTE TO PHYSICIAN: Chlorpyrifos is a cholinesterase inhibitor. Treat symptomatically. If exposed, plasma and red blood cell cholinesterase tests may indicate significance of exposure (baseline data are useful). Atropine, only by injection, is the preferable antidote. Oximes, such as 2-PAM/protopam, may be therapeutic if used early; however, use only in conjunction with atropine. In case of severe acute poisoning, use antidote immediately after establishing an open airway and respiration. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

5. FIRE FIGHTING MEASURES:

FLASH POINT: None
METHOD USED: TCC

FLAMMABLE LIMITS

LFL: Not determined
UFL: Not determined

HAZARDOUS COMBUSTION: During a fire, smoke may contain the original material in addition to unidentified toxic and/or irritating compounds. Hazardous combustion products may include and are not limited to sulfur oxides phosphorus compounds, nitrogen oxides, hydrogen chloride, carbon monoxide, and carbon dioxide.

FLAMMABILITY INFORMATION: Mechanical handling can cause formation of dusts. To reduce the potential for dust explosion, do not permit dust to accumulate. Container may vent and/or rupture due to fire.

EXTINGUISHING MEDIA: If product is involved in a fire use, water, carbon dioxide or dry chemical. Foam is preferred. Water, if used, must not be allowed to enter sewers or waterways.

FIRE-FIGHTING INSTRUCTIONS: Keep people away. Isolate fire area and deny unnecessary entry. Consider feasibility of a controlled burn to minimize environmental damage. Foam fire extinguishing system is preferred because uncontrolled water can spread possible contamination. Cool surroundings with water to localize fire zone. Hand held carbon dioxide or dry chemical extinguishers maybe used for small fires. Soak thoroughly with water to cool and prevent re-ignition. Contain firewater run-off if possible. Fire water run-off, if not contained may cause environmental damage. Review the "Accidental Release Measures" and "Ecological Information" sections of this MSDS.

PROTECTIVE EQUIPMENT FOR FIREFIGHTERS: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, pants, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

6. ACCIDENTAL RELEASE MEASURES:

ACTION TO TAKE FOR SPILLS/LEAKS: Sweep up and place into suitable containers for disposal. Report large spills to Dow AgroSciences at 800-992-5994.

7. HANDLING AND STORAGE:

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Harmful if swallowed. Causes eye irritation. Avoid contact with eyes. Keep out of reach of children. Keep away from food, feedstuffs, and domestic water supplies. For handling relative to end-use of this product, read the product label for further information concerning the use of personal protective equipment (PPE) under the Worker Protection Standard of 1993. Store in original package or containers in a dry area at temperatures <100°F (38°C).

MATERIAL SAFETY DATA SHEET



Emergency Phone: 800-992-5994
Dow AgroSciences LLC
Indianapolis, IN 46268

LORSBAN* 15G GRANULAR INSECTICIDE

Effective Date: 5/19/00
Product Code: 45405
MSDS: 000587

8. EXPOSURE CONTROLS/PERSONAL PROTECTION:

These precautions are suggested for conditions where the potential for exposure exists. Emergency conditions may require additional precautions.

EXPOSURE GUIDELINE(S):

Chlorpyrifos: ACGIH TLV and OSHA PEL are 0.2 mg/M³, skin. ACGIH classification is A4.

PELs are in accord with those recommended by OSHA, as in the 1989 revision of PELs.

A 'skin' notation following the exposure guideline refers to the potential for dermal absorption of the material. It is intended to alert the reader that inhalation may not be the only route of exposure and that measures to minimize dermal exposures should be considered.

ENGINEERING CONTROLS: Provide general and/or local exhaust ventilation to control airborne levels below the exposure guideline.

RECOMMENDATIONS FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS:

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guideline. In dusty atmospheres, use a NIOSH approved dust respirator.

SKIN PROTECTION: No precautions other than clean body-covering clothing should be needed.

EYE/FACE PROTECTION: Use safety glasses.

APPLICATORS AND ALL OTHER HANDLERS: Refer to the product label for personal protective clothing and equipment.

9. PHYSICAL AND CHEMICAL PROPERTIES:

BOILING POINT: Not applicable
VAPOR PRESSURE: Low
VAPOR DENSITY: Not applicable
SOLUBILITY IN WATER: Insoluble
BULK DENSITY: 45 lb/cu ft
APPEARANCE: Tan/buff free-flowing granule
ODOR: Mercaptan-like

10. STABILITY AND REACTIVITY:

STABILITY: Stable under recommended storage conditions. Store below <100°F (38°C). Unstable at elevated temperatures.

CONDITIONS TO AVOID: Avoid temperatures above 158°F (70°C). Chlorpyrifos decomposes at elevated temperatures.

HAZARDOUS DECOMPOSITION: Hazardous decomposition products depend upon temperature, air supply and the presence of other materials. Hazardous decomposition products may include and are not limited to hydrogen chloride, organic sulfides, and sulfur dioxide.

INCOMPATIBLE MATERIALS: Avoid contact with oxidizing materials and bases.

HAZARDOUS POLYMERIZATION: Not known to occur.

11. TOXICOLOGICAL INFORMATION:

MUTAGENICITY: Based on a majority of negative data and some equivocal or marginally positive results, chlorpyrifos is considered to have minimal mutagenic potential. For the minor component(s), in-vitro mutagenicity studies were negative in some cases and positive in other cases.

12. ECOLOGICAL INFORMATION:

ENVIRONMENTAL FATE:

MOVEMENT & PARTITIONING:

Based largely or completely on information for chlorpyrifos. Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5). Expected to be relatively immobile in soil (Koc >5000).

*Trademark of Dow AgroSciences

MATERIAL SAFETY DATA SHEET



Emergency Phone: 800-992-5994
Dow AgroSciences LLC
Indianapolis, IN 46268

LORSBAN* 15G GRANULAR INSECTICIDE

Effective Date: 5/19/00
Product Code: 45405
MSDS: 000587

DEGRADATION & PERSISTENCE:

Based largely or completely on information for chlorpyrifos. The photolysis half-life in water is 3-4 weeks. The atmospheric half-life is 1.4 hours. Degradation is expected in the soil environment within days to weeks. Under aerobic soil conditions the half-life is generally 30-60 days.

ECOTOXICOLOGY:

Based largely or completely on information for chlorpyrifos. Material is very highly toxic to aquatic organism on an acute basis ($LC_{50}/EC_{50} < 0.1$ mg/L in most sensitive species). Material is highly toxic to birds on a dietary basis (LC_{50} between 50 and 500 ppm). Material is moderately toxic to birds on an acute basis (LC_{50} between 51 and 500 mg/kg).

13. DISPOSAL CONSIDERATIONS:

DISPOSAL METHOD: Do not contaminate food, feed, or water by storage or disposal. Wastes are toxic. Improper disposal of excess waste material is a violation of federal law. If these wastes cannot be disposed by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the hazardous waste representative at the nearest EPA regional office for guidance.

14. TRANSPORT INFORMATION:

For DOT regulatory information, if required, consult transportation regulations, product-shipping papers, or contact your Dow AgroSciences representative.

15. REGULATORY INFORMATION:

NOTICE: The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations.

U.S. REGULATIONS

SARA 313 INFORMATION: To the best of our knowledge, this product contains no chemical subject to SARA Title III Section 313 supplier notification requirements.

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

An immediate health hazard
A delayed health hazard

TOXIC SUBSTANCES CONTROL ACT (TSCA): All ingredients are on the TSCA inventory or are not required to be listed on the TSCA inventory.

MATERIAL SAFETY DATA SHEET



Emergency Phone: 800-992-5994
Dow AgroSciences LLC
Indianapolis, IN 46268

LORSBAN* 15G GRANULAR INSECTICIDE

Effective Date: 5/19/00
Product Code: 45405
MSDS: 000587

STATE RIGHT-TO-KNOW: The following product components are cited on certain state lists as mentioned. Non-listed components may be shown in the composition section of the MSDS.

CHEMICAL NAME	CAS NUMBER	LIST
CHLORPYRIFOS	002921-88-2	PA3 NJ3 PA1

NJ3=New Jersey Workplace Hazardous Substance (present at greater than or equal to 1.0%).
PA1=Pennsylvania Hazardous Substance (present at greater than or equal to 1.0%).
PA3=Pennsylvania Environmental Hazardous Substance (present at greater than or equal to 1.0%).

OSHA HAZARD COMMUNICATION STANDARD: This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) RATINGS:

Category	Rating
----------	--------

Health	1
Flammability	1
Reactivity	1

COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT (CERCLA, or SUPERFUND): This product contains the following substance(s) listed as "Hazardous Substances" under CERCLA which may require reporting of releases:

Chemical Name	CAS Number	RQ	% in Product
Chlorpyrifos	002921-88-2	1	15%

16. OTHER INFORMATION:

MSDS STATUS: Revised Sections 3, 5, 7, 8, 10 & 15
Reference: DR-0166-9461
Replaces MSDS dated: 1/14/99
Document Code: D03-061-234
Replaces Document Code: D03-061-233

The Information Herein Is Given In Good Faith, But No Warranty, Express or Implied, Is Made. Consult Dow AgroSciences for Further Information.