MERIT 2.5 G Ornamental Insecticide

BAYER CORPORATION
AGRICULTURE DIVISION
P.O. Box 4913 Hawthorn Road
Kansas City, MO 64120-0013
TRANSPORTATION EMERGENCY
CALL CHEMTREC: 1-800-424-9300
INTERNATIONAL: 703-527-3887
NON-TRANSPORTATION
BAYER EMERGENCY PHONE: 1-800-414-0244
BAYER INFORMATION PHONE.: 1-800-842-8020

1. CHEMICAL PRODUCT IDENTIFICATION:

PRODUCT NAME: MERIT 2.5 G Ornamental Insecticide
PRODUCT CODE: 21719
CHEMICAL FAMILY: Chloronicotinyl
CHEMICAL NAME: 1-((6-chloro-3-pyridinyl)methyl)-N-nitro-2-imidazolidinimine
SYNONYMS: Imidacloprid; BAY NTN 33893
FORMULA: C9 H10 Cl N5 02
PRODUCT USE: Commercial Insecticide

2. COMPOSITION/INFORMATION ON INGREDIENTS:

INGREDIENT NAME /CAS NUMBER	EXPOSURE LIMITS	CONCENTRATION (%)
*****HAZARDOUS INGREDIENTS*****		
Imidacloprid		
138261-41-3	OSHA: Not Established ACGIH: Not Established	2.5%
Total crystalline silica (quartz)		
14808-60-7	OSHA: .10 mg/m3 TWA (respirable) ACGIH: .10 mg/m3 TWA (respirable)	< 8.5%

3. HAZARDS IDENTIFICATION:

EMERGENCY OVERVIEW
CAUTION!
Color: Gray-brown to rust; **Form:** Granules; Solid; **Odor:** None; Harmful if absorbed through skin; Causes eye irritation; Harmful if swallowed.
POTENTIAL HEALTH EFFECTS:
ROUTE(S) OF ENTRY: Inhalation; Skin Contact; Skin Absorption; Eye Contact
HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE:
ACUTE EFFECTS OF EXPOSURE: No specific symptoms of acute overexposure are known to occur in humans. Animal studies have shown that this material is mildly toxic by the oral and dermal routes. It is mildly irritating to the conjunctiva of the eye, but the irritation is reversible within 48 hours. It is not a dermal irritant or a dermal sensitizer.
CHRONIC EFFECTS OF EXPOSURE: No specific symptoms of chronic overexposure to the active ingredient in this material are known to occur in humans. This product may contain an amount of total crystalline silica (quartz) which ranges from 0 to approximately 9%. However, the amount of respirable crystalline silica is expected to be significantly lower based on data provided by the raw material manufacturer. Excessive long-term exposure to respirable crystalline silica may cause silicosis, a form of progressive pulmonary fibrosis. Severe and permanent lung damage may result.
CARCINOGENICITY: This product is not listed as a carcinogen by NTP or IARC, or regulated as a carcinogen by OSHA. However, it may contain crystalline silica (quartz), a substance which is classified by NTP as a Group 2 carcinogen and by IARC as a Group 1 carcinogen. Crystalline silica is a naturally-occurring mineral component of many sands and clays. Although controversial, the carcinogenic potential of crystalline silica must be considered if it is inhaled under excessive exposure conditions. However, the respirable portion of the silica which may be contained in this product is small, such that excessive inhalation exposure during normal conditions of use is unlikely.
NTP: Crystalline silica is classified as an NTP Anticipated Human Carcinogen—"Substances or groups of substances that may reasonably be anticipated to be carcinogens."
IARC: IARC has classified crystalline silica as a Group 1 carcinogen. "There is sufficient evidence in humans for the carcinogenicity of inhaled crystalline silica (quartz) from occupational sources."
OSHA: Not regulated
MEDICAL CONDITIONS
AGGRAVATED BY EXPOSURE: No specific medical conditions are known which may be aggravated by exposure to the active ingredient in this product. However, pulmonary and respiratory diseases may be aggravated by exposure to respirable crystalline silica.

4. FIRST AID MEASURES:

FIRST AID FOR EYES: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.
FIRST AID FOR SKIN: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.
FIRST AID FOR INHALATION: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment information.
FIRST AID FOR INGESTION.: Call poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by physician or poison control center. Do not give anything by mouth to an unconscious person.
NOTE TO PHYSICIAN: Treat symptomatically. It is requested that Bayer Corporation, Agriculture Division, Kansas City, MO., be notified. Telephone: 1-800-414-0244.
ANTIDOTES: None

5. FIRE FIGHTING MEASURES:

FLASH POINT: Not Applicable
FLAMMABLE LIMITS:
UPPER EXPLOSIVE LIMIT (UEL) (%): Not Established
LOWER EXPLOSIVE LIMIT (LEL) (%): Not Established
EXTINGUISHING MEDIA: Water; Carbon Dioxide; Dry Chemical; Foam
SPECIAL FIRE FIGHTING PROCEDURES: Keep out of smoke, cool exposed containers with water spray. Fight fire from upwind position. Use self-contained breathing equipment. Contain run-off by diking to prevent entry into sewers or waterways. Equipment or materials involved in pesticide fires may become contaminated.

6. ACCIDENTAL RELEASE MEASURES:

SPILL OR LEAK PROCEDURES: Isolate area and keep unauthorized people away. Do not walk through spilled material. Avoid breathing dusts and skin contact. Avoid generating dust (a fine water spray mist, plastic film cover, or floor sweeping compound may be used if necessary). Use recommended protective equipment while carefully sweeping up spilled material. Place in covered container for reuse or disposal. Scrub contaminated area with soap and water. Rinse with water. Use dry absorbent material such as clay granules to absorb and collect wash solution for proper disposal. Contaminated soil may have to be removed and disposed. Do not allow material to enter streams, sewers, or other waterways.

7. HANDLING AND STORAGE:

STORAGE TEMPERATURE (MIN/MAX): None/30 day average not to exceed 100 F
SHELF LIFE: Time/temperature-dependent. Contact Bayer for details.
SPECIAL SENSITIVITY: Not Noted
HANDLING/STORAGE PRECAUTIONS: Store in a cool dry area designated specifically for pesticides. Do not store near any material intended for use or consumption by humans or animals.

8. PERSONAL PROTECTION:

EYE PROTECTION REQUIREMENTS: Goggles should be used when needed to prevent granular material or dust from getting into the eyes.
SKIN PROTECTION REQUIREMENTS: Wear long sleeves and trousers to prevent skin contact.
HAND PROTECTION REQUIREMENTS: The use of chemical-resistant gloves to prevent skin contact is recommended as good practice.
VENTILATION REQUIREMENTS: Maintain exposure levels below the applicable exposure limits through the use of general and local exhaust ventilation where needed.
RESPIRATOR REQUIREMENTS: Under normal handling conditions, no respiratory protection is needed; however, when potential exposure to product dust is excessive, wear a NIOSH-approved particulate respirator.
ADDITIONAL PROTECTIVE MEASURES: Clean water should be available for washing in case of eye or skin contamination. Educate and train employees in safe use of the product. Follow all label instructions. Launder clothing after use. Wash thoroughly after handling.

9. PHYSICAL AND CHEMICAL PROPERTIES:

PHYSICAL FORM: Granules; Solid
COLOR: Gray-brown to rust
ODOR: None
ODOR THRESHOLD: None
MOLECULAR WEIGHT: 255.7 (for imidacloprid)
pH: Not established
BOILING POINT: Not applicable
MELTING/FREEZING POINT: Melting: 120-134 C (for imidacloprid)
SOLUBILITY IN WATER: 0.3% of mixture
SOLUBILITY (NON AQUEOUS): Not soluble in common solvents
SPECIFIC GRAVITY: Not established
BULK DENSITY: 40-48 lbs/cu-ft
% VOLATILE BY VOLUME: Not applicable
% VOLATILE BY WEIGHT: Not applicable
EVAPORATION RATE: Not applicable (Butyl acetate = 1)
VAPOR PRESSURE: 1.5 x 10 -9 mm @ 20 C (for imidacloprid)
VAPOR DENSITY: Not applicable (Air = 1)
NITROGEN CONTENT: Less than 1%

10. STABILITY AND REACTIVITY:

STABILITY: This is a stable material.
HAZARDOUS POLYMERIZATION: Will not occur.
INCOMPATIBILITIES: None known
INSTABILITY CONDITIONS: Stong exothermal reaction above 200 C (for imidacloprid)
DECOMPOSITION PRODUCTS: Proposed: HCl, HCN, CO, NOx (for imidacloprid)

11. TOXICOLOGICAL INFORMATION:

Only acute studies have been performed on this product as formulated. The non-acute information pertains to the technical-grade active ingredient, imidacloprid.
ACUTE TOXICITY
ORAL LD50: Male and Female Rat: >4820 mg/kg
DERMAL LD50: Male & Female Rabbit: >2000 mg/kg
INHALATION LC50: 4 Hr. Exposure to Dust: Male and Female Rat: >5.09 mg/1 (analytical)—1 Hr. Exposure to Dust (extrapolated from 4 Hr. LC50): Male and Female Rat: >20 mg/1 (analytical)
EYE EFFECTS: Rabbit: Mild irritation to the conjunctiva was observed with all remarkable irritation resolving within 48 hours.
SKIN EFFECTS: Rabbit: Not a dermal irritant.
SENSITIZATION: Guinea Pig: Not a dermal sensitizer.
SUBCHRONIC TOXICITY: In a 3 week toxicity study, rabbits were treated with the active ingredient, imidacloprid, at the limit dose level of 1000 mg/kg for 6 hours/day, 5 days/week. There were no local or systemic effects observed at any of the levels tested. The no-observed-effect-level (NOEL) was 1000 mg/kg. In a 4 week inhalation study, rats were exposed to dust concentrations of imidacloprid at 5.5, 30.5 and 191.2 mg/cubic meter for 6 hours/day, 5 days/week. Effects observed at the high concentration included decreased body weight gains, decreased heart and

thymus weights, increased liver weights, and induction of the hepatic mixed-function oxidases. Histopathological examinations did not reveal any organ damage or local injury to the respiratory tract. The NOEL was 5.5 mg/cubic meter based on induction of the hepatic mixed-function oxidases.

CHRONIC TOXICITY: Dogs were administered imidacloprid for 1 year at dietary concentrations of 200, 500 or 1250 ppm. Due to the lack of significant effects, the high dose was increased to 2500 ppm at 17 weeks for the remainder of the study. Effects observed at the high dose included decreased food consumption, increased liver weights and elevated serum chemistries. The NOEL was 500 ppm. In chronic studies using rats, imidacloprid was administered for 2 years to rats at dietary concentrations of 100, 300, 900 or 1800 ppm. Histopathology examinations revealed an increased incidence of mineralization in the colloid of the thyroid follicles at concentrations of 300 ppm and greater. At 1800 ppm, there were changes in the serum chemistries and a slight increase in the incidence of parafollicular hyperplasia seen in the thyroids. Body weight gains were reduced at 900 and 1800 ppm. The overall NOEL was 100 ppm.

CARCINOGENICITY: Imidacloprid was investigated for carcinogenicity in chronic feeding studies using mice and rats at maximum levels of 2000 and 1800 ppm, respectively. There was no evidence of a carcinogenic potential observed in either species.

MUTAGENICITY: The imidacloprid mutagenicity studies, taken collectively, demonstrate that the active ingredient is not genotoxic or mutagenic.

DEVELOPMENTAL TOXICITY: In a teratology study using rats, imidacloprid was administered by oral gavage during gestation at doses of 10, 30 or 100 mg/kg. At the maternally toxic dose of 100 mg/kg, skeletal examinations of the fetuses revealed a slight increase in the incidence of wavy ribs. The NOELs for maternal and developmental toxicity were 10 and 30 mg/kg, respectively. Teratogenic effects were not observed at any of the doses tested. Rabbits were administered imidacloprid during gestation at oral doses of 8, 24 or 72 mg/kg. At the maternally toxic dose of 72 mg/kg, reduced body weights and delayed skeletal ossification were observed in the fetuses. The NOELs for maternal and developmental toxicity were 8 and 24 mg/kg, respectively. Teratogenic effects were not observed at any of the doses tested.

REPRODUCTION: In a reproduction study, imidacloprid was administered to rats for 2 generations at dietary concentrations of 100, 250 or 700 ppm. Offspring at 700 ppm, exhibited reduced mean body weights and body weight gains. No other reproductive effects were observed. The maternal and reproductive NOELs were 100 and 250 ppm, respectively.

NEUROTOXICITY: In an acute oral neurotoxicity study using rats, imidacloprid was administered as a single dose at concentrations of 42, 151 or 307 mg/kg. Clinical observations and neurotoxicity evaluations were performed over a period of 15 days followed by a neurohistopathological examination. Deaths attributed to imidacloprid were observed at the high dose within a day of treatment. The NOEL for motor and locomotor activity was 42 mg/kg for males. Females at the low dose exhibited minimal decrease in activity in the figure-eight maze. In a subsequent study, the NOEL for motor and locomotor activity in females was 20 mg/kg. All clinical signs and neurobehavioral effects were ascribed to acute cholinergic toxicity, with complete recovery at sub-lethal doses within 7 days following treatment. The NOEL for neurotoxicity was 307 mg/kg based on the absence of treatment-related microscopic lesions in skeletal muscle or neural tissue. In a 13 week neurotoxicity study, imidacloprid was administered to rats at dietary concentrations of 140, 963 or 3027 pppm. At the mid- and high dose, effects observed included reductions in body weight and feed consumption, and clinical chemistry findings. Neurobehavioral changes were observed only in males at the high dose. There were no correlative micropathologic findings in muscle or neural tissues in any animals at any treatment level. The NOEL for neurotoxicity was 3027 ppm. The overall NOEL was 140 ppm.

12. ECOLOGICAL INFORMATION:

This product is highly toxic to aquatic invertebrates. Bayer will provide a summary of specific data upon written request. As with any pesticide, this product should be used according to label directions and should be kept out of streams, lakes and other aquatic habitats of concern. In event of a spill emergency, call 1-800-414-0244.

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: Follow container label instructions for disposal of wastes generated during use in compliance with the product label. In other situations, bury in an approved landfill or burn in an incinerator approved for pesticide destruction. Do not reuse container.

14. TRANSPORTATION INFORMATION:

TECHNICAL SHIPPING NAME: Imidacloprid
FREIGHT CLASS PACKAGE: Insecticides, NOI-NMFC 102120
PRODUCT LABEL: MERIT 2.5 G Ornamental Insecticide
DOT (DOMESTIC SURFACE)
HAZARD CLASS OR DIVISION: Non-Regulated
IMO / IMDG CODE (OCEAN)
HAZARD CLASS DIVISION NUMBER: Non-Regulated
ICAO / IATA (AIR)
HAZARD CLASS DIVISION NUMBER: Non-Regulated

15. REGULATORY INFORMATION:

OSHA STATUS: This product is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29 CFR 1910.1200.
TSCA STATUS: This product is exempt from TSCA Regulation under FIFRA Section 3 (2) (B)(ii) when used as a pesticide.
CERCLA REPORTABLE QUANTITY: No components listed
SARA TITLE III:
SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES: None
SECTION 311/312 HAZARD CATEGORIES: Immediate Health Hazard
SECTION 313 TOXIC CHEMICALS: None
RCRA STATUS: If discarded in its purchased form, this product would not be a hazardous waste either by listing or by characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste. (40 CFR 261.20-24)

16. OTHER INFORMATION:

NFPA 704M RATINGS:
Health 1
Flammability 1
Reactivity
Other
0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme
Bayer's method of hazard communication is comprised of Product Labels and Material Safety Data Sheets. NFPA ratings are provided by Bayer as a customer service.
REASON FOR ISSUE: Create New MSDS
PREPARED BY: V. C. Standart
APPROVED BY: D. C. Eberhart
TITLE: Director Product Safety & Stewardship
APPROVAL DATE: 05/30/2002
SUPERSEDES DATE: None
MSDS NUMBER: 45960
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Product Code: 21719
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