Bayer CropScience

MATERIAL SAFETY DATA SHEET

BAYER CROP SCIENCE

P.O. Box 4913 Hawthorn Road
Kansas City, MO 64120-0013

TRANSPORTATION EMERGENCY
CALL CHEMTREC: 800-424-9300
INTERNATIONAL: 703-527-3887

NON-TRANSPORTATION
BAYER EMERGENCY PHONE...: (800) 414-0244
BAYER INFORMATION PHONE.: (800) 842-8020

1. CHEMICAL PRODUCT IDENTIFICATION:

PRODUCT NAME.....: MERIT 0.5 G Insecticide
PRODUCT CODE.....: 21654
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

2. COMPOSITION/INFORMATION ON INGREDIENTS:

INGREDIENT NAME /CAS NUMBER	EXPOSURE LIMITS	CONCENTRATION (%)
***** HAZARDOUS INGREDIENTS *****		
Imidacloprid 138261-41-3	OSHA : Not Established ACGIH: Not Established	0.5 %
Total crystalline silica (quartz) 14808-60-7	OSHA : .10 mg/m3 TWA (respirable) ACGIH: .10 mg/m3 TWA (respirable)	< 6 %

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3. HAZARDS IDENTIFICATION:

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* EMERGENCY OVERVIEW *
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* Color: Gray; Form: Granules; Solid; Odor: None. *
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POTENTIAL HEALTH EFFECTS:

ROUTE(S) OF ENTRY.....: Inhalation; Skin Contact; Skin Absorption

HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE:

ACUTE EFFECTS OF EXPOSURE.....: No specific symptoms of acute overexposure are known to occur in humans. Data extrapolated from animal studies performed on a similar product have shown that this material is mildly toxic by the oral and dermal routes. It is not a dermal irritant or a dermal sensitizer. An acute eye irritation study on this product has shown that this material is mildly irritating to the conjunctiva of the eye, but the irritation is reversible within 7 days.

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 approximately 2 to 6%. 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 disabling, progressive and sometimes fatal fibrotic lung disease. Severe and permanent lung damage may result.

CARCINOGENICITY

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 Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans," Vol. 42 - for crystalline silica (quartz) - has concluded that there is "sufficient evidence for the carcinogenicity of crystalline silica to experimental animals" and "limited evidence for the carcinogenicity of crystalline silica to humans."

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.

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4. FIRST AID MEASURES:

FIRST AID FOR EYES.....: Hold eyelids open and flush with copious amounts of water for 15 minutes. Call a physician if irritation persists or develops after flushing.

FIRST AID FOR SKIN.....: Remove contaminated clothing. Wash skin with soap and water. Get medical attention if irritation persists. If signs of intoxication (poisoning) occur, get medical attention immediately.

FIRST AID FOR INHALATION: First, remove victim to fresh air or uncontaminated area. If not breathing, give artificial respiration, preferably mouth-to-mouth. Get medical attention as soon as possible.

FIRST AID FOR INGESTION.: If ingestion is suspected, call a physician or poison control center. Drink one or two glasses of water and induce vomiting by touching back of throat with finger, or, if available, by administering syrup of ipecac. If syrup of ipecac is available, administer 1 tablespoonful (15 mL) of syrup of ipecac followed by 1 to 2 glasses of water. If vomiting does not occur within 20 minutes, repeat the dose once. Do not induce vomiting or give anything by mouth to an unconscious person.

NOTE TO PHYSICIAN.....: Treat symptomatically. In case of poisoning, it is also requested that Bayer Corp., Agriculture Division, Kansas City, Missouri, be notified. Telephone: 816/242-2582

ANTIDOTES.....: None

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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 waterway. Equipment or materials involved in pesticide fires may become contaminated.

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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.....: Not Noted
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-resisant gloves to prevent skin contact is recommended as good practice.
VENTILATION REQUIREMENTS.....: Maintain exposure levels below the applicable exposure limit through the use of general and local exhaust ventilation where needed.
RESPIRATOR REQUIREMENTS.....: Under normal handling conditions, no respiratory protection is needed; however, if use conditions generate excessive dust concentrations, wear a respirator approved for pesticide use by the National Institute for Occupational Safety and Health (NIOSH).
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
ODOR.....: None
ODOR THRESHOLD.....: Not established

9. PHYSICAL AND CHEMICAL PROPERTIES (Continued)

MOLECULAR WEIGHT.....: 255.7 (for imidacloprid)
BOILING POINT.....: Not applicable
MELTING/FREEZING POINT....: Melting: 120-134 C (for imidacloprid)
VISCOSITY.....: Not applicable
SOLUBILITY IN WATER .....: Granules disperse in water; not soluble
SOLUBILITY (NON AQUEOUS)..: Not soluble in common solvents
SPECIFIC GRAVITY .....: Not applicable
BULK DENSITY.....: 55-62 lb/cu-ft
% VOLATILE BY VOLUME.....: Not applicable
VAPOR PRESSURE .....: 1.5 x 10-9 mm @ 20 C (for imidacloprid)
VAPOR DENSITY .....: Not applicable (Air = 1)

10. STABILITY AND REACTIVITY:

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

11. TOXICOLOGICAL INFORMATION:

Only an acute eye irritation study has been performed on this product as formulated. All other acute toxicity data have been extrapolated from studies performed on a similar product, Provado 2.5% Granular, containing a higher percentage of the active ingredient, Imidacloprid. The non-acute information pertains to the technical-grade active ingredient.

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/L (analytical) -- 1 Hr. Exposure to Dust (extrapolated from 4 Hr. LC50: Male and Female Rat: >20 mg/L (analytical)
EYE EFFECTS.....: Rabbit: Mild irritation to the conjunctiva was observed with all irritation resolving within 7 days.
SKIN EFFECTS.....: Rabbit: Not a dermal irritant.
SENSITIZATION.....: Guinea Pig:: Not a dermal sensitizer.
SUBCHRONIC TOXICITY...: In a 3 week dermal 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 throid 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. 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 ppm. At the mid-and high dose, effects observed included reductions in body weight and feed consumption, and clinical chemistry findings. Neurobehavorial 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:

NO ECOLOGICAL INFORMATION AVAILABLE

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 EPA approved landfill or burn in an incinerator approved for pesticide destruction. Do not reuse container.

14. TRANSPORTATION INFORMATION:

TECHNICAL SHIPPING NAME.....: Imidacloprid
FREIGHT CLASS BULK.....: Insecticides, NOI-NMFC 102120
FREIGHT CLASS PACKAGE.....: Insecticides, NOI-NMFC 102120
PRODUCT LABEL.....: Not Noted

DOT (DOMESTIC SURFACE)

PROPER SHIPPING NAME.....: Not hazardous or regulated
HAZARD CLASS OR DIVISION .....: Non-Regulated

IMO / IMDG CODE (OCEAN)

PROPER SHIPPING NAME.....: Not hazardous or regulated
HAZARD CLASS DIVISION NUMBER...: Non-Regulated

ICAO / IATA (AIR)

PROPER SHIPPING NAME.....: Not hazardous or regulated
HAZARD CLASS DIVISION NUMBER...: Non-Regulated

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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)

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16. OTHER INFORMATION:

NFPA 704M RATINGS:	Health	Flammability	Reactivity	Other
	1	1	1	

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.....: Remove EPA Registration Number
PREPARED BY.....: V. C. Standart
APPROVED BY.....: D. C. Eberhart
TITLE.....: Director Product Safety & Stewardship
APPROVAL DATE.....: 09/19/2002
SUPERSEDES DATE.....: 09/23/1994
MSDS NUMBER.....: 17326

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