



III. PHYSICAL PROPERTIES (Continued)

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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 .....: Not applicable  
SOLUBILITY (NON AQUEOUS)..: Not applicable  
SPECIFIC GRAVITY .....: Not applicable  
BULK DENSITY.....: Not established  
% VOLATILE BY VOLUME.....: Not applicable  
VAPOR PRESSURE .....: 1.5 x 10<sup>-9</sup> mm @ 20 C (for imidacloprid)  
VAPOR DENSITY .....: Not applicable (Air = 1)  
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IV. FIRE AND EXPLOSION DATA:  
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FLASH POINT.....: Not Applicable  
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. Fertilizer will become slippery when wet; guard against falls.  
UNUSUAL FIRE / EXPLOSION HAZARDS: If heated to decomposition, the fertilizer contained in this product will give off toxic vapors of ammonia and formaldehyde. Under fire conditions, urea may decompose to cyanuric acid, biuret or ammonia. Dispersion of fine dust in the air may form an explosive mixture.  
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V. HUMAN HEALTH DATA:  
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ROUTE(S) OF ENTRY.....: Inhalation; Skin Contact; Eye Contact  
HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE:  
ACUTE EFFECTS OF EXPOSURE.....: No specific symptoms of acute overexposure to the active ingredient, imidacloprid, are known to occur in humans. Exposure to the fertilizer component in this product may cause eye and skin irritation.  
CHRONIC EFFECTS OF EXPOSURE...: None known  
CARCINOGENICITY.....: This product is not listed by NTP, IARC or regulated as a carcinogen by OSHA.  
MEDICAL CONDITIONS  
AGGRAVATED BY EXPOSURE.....: None known

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VI. EMERGENCY AND FIRST AID PROCEDURES:  
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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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VII. EMPLOYEE PROTECTION RECOMMENDATIONS:  
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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.

RESPIRATOR REQUIREMENTS.....: Under normal handling conditions, no respiratory protection is needed; however, if use conditions generate excessive dust concentrations, wear a dust/mist respirator approved by the National Institute for Occupational Safety and Health (NIOSH).

VENTILATION REQUIREMENTS.....: Control exposure levels through the use of general and local exhaust ventilation where needed.

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.

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VIII. REACTIVITY DATA:  
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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 (for imidacloprid): HCl, HCN, CO, NOx --  
Proposed (for fertilizer): ammonia, formaldehyde as well as oxides of  
sulfur, manganese, magnesium, iron, potassium and phosphorus. Urea can  
yield cyanuric acid or biuret upon heating.

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IX. SPILL AND LEAK PROCEDURES:  
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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.  
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.

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X. SPECIAL PRECAUTIONS & STORAGE DATA:  
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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.

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XI. SHIPPING INFORMATION:  
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TECHNICAL SHIPPING NAME.....: Imidacloprid  
FREIGHT CLASS BULK.....: Fertilizing Compounds, NOI (with Insecticides)  
FREIGHT CLASS PACKAGE.....: Fertilizing Compounds, NOI (with Insecticides)  
PRODUCT LABEL.....: Not Noted

DOT (DOMESTIC SURFACE)  
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PROPER SHIPPING NAME.....: Not hazardous or regulated  
HAZARD CLASS OR DIVISION .....: Non-Regulated

IMO / IMDG CODE (OCEAN)  
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PROPER SHIPPING NAME.....: Not hazardous or regulated  
HAZARD CLASS DIVISION NUMBER...: Non-Regulated

ICAO / IATA (AIR)  
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PROPER SHIPPING NAME.....: Not hazardous or regulated  
HAZARD CLASS DIVISION NUMBER...: Non-Regulated

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XII. ANIMAL TOXICITY DATA:  
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The following acute information is based on a product containing 0.5% imidacloprid and a 32-5-7 granular fertilizer. Although fertilizer mixtures can vary, the 32-5-7 combination is typical and therefore the following acute toxicological data should represent turf fertilizer mixtures when used in combination with imidacloprid 0.5%. The non-acute information provided below pertains only to the active ingredient, imidacloprid.

ACUTE TOXICITY

ORAL LD50.....: Male and Female Rat: >5136 mg/kg

DERMAL LD50.....: Male & Female Rabbit: >2000 mg/kg

INHALATION LC50....: 4 Hr. Exposure to Dust: Male and Female Rat: >5.016 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 clearing within 72 hours.

SKIN EFFECTS.....: Rabbit: Slight 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

XII. ANIMAL TOXICITY DATA (Continued)

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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 developmental toxicity 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



XIV. OTHER REGULATORY INFORMATION (Continued)

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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 Corporation as a customer service.

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XV. APPROVALS:  
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REASON FOR ISSUE.....: Create new MSDS  
PREPARED BY.....: V. C. Standart  
APPROVED BY.....: D. C. Eberhart  
TITLE.....: Product Safety Manager  
APPROVAL DATE.....: 09/12/95  
SUPERSEDES DATE.....: None  
MSDS NUMBER.....: 24335

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