



# MATERIAL SAFETY DATA SHEET

BAYER CORPORATION  
AGRICULTURE DIVISION  
P.O. Box 4913 Hawthorn Road  
Kansas City, MO 64120-001

## TRANSPORTATION EMERGENCY:

CALL CHEMTREC: (800) 424-9300  
DISTRICT OF COLUMBIA: (202) 483-7616

## NON-TRANSPORTATION:

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

### 1. CHEMICAL PRODUCT IDENTIFICATION:

**PRODUCT NAME:** ADMIRE 2F  
**PRODUCT CODE:** 11651  
**EPA REGISTRATION NO.:** 3125-422  
**CHEMICAL FAMILY:** Chloronicotinyl  
**CHEMICAL NAME:** 1-[(6-chloro-3-pyridinyl)methyl]-N-nitro-2-imidazolidinimine  
**SYNONYMS:** Imidacloprid; BAY NTN 33893  
**FORMULA:** C<sub>9</sub> H<sub>10</sub> Cl N<sub>5</sub> O<sub>2</sub>  
**PRODUCT USE:** Commercial Insecticide

### 4. FIRE AND EXPLOSION DATA:

**FLASH POINT:** Greater than 200 °F (93 °C)  
**FLAMMABLE LIMITS:**  
**UPPER EXPLOSIVE LIMIT (UEL) (%):** Not Applicable  
**LOWER EXPLOSIVE LIMIT (LEL) (%):** 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 waterways. Equipment or materials involved in pesticide fires may become contaminated.

### 2. HAZARDOUS INGREDIENTS:

INGREDIENT NAME /	EXPOSURE LIMITS	CONCENTRATION (%)
<b>Imidacloprid</b>		22 %
138261-41-3	OSHA : Not Established ACGIH: Not Established	
<b>Ingredient 1979</b>		1-3 %
Specific chemical identity is withheld as a trade secret.	OSHA : Not Established ACGIH: Not Established	
<b>Ingredient 2035</b>		1-3 %
Specific chemical identity is withheld as a trade secret.	OSHA : Not Established ACGIH: Not Established	

### 5. HUMAN HEALTH DATA:

**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. Animal studies have shown that this material is mildly toxic by the oral and dermal routes. It is minimally irritating to the conjunctiva of the eye but the irritation is reversible within 72 hours. It is not a dermal irritant or a dermal sensitizer.  
**CHRONIC EFFECTS OF EXPOSURE:** No specific symptoms of chronic overexposure are known to occur in humans.  
**CARCINOGENICITY:** This product is not listed by NTP, IARC or regulated as a carcinogen by OSHA.  
**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:** No specific medical conditions are known which may be aggravated by exposure to this product.

### 3. PHYSICAL PROPERTIES:

**PHYSICAL FORM:** Viscous Liquid; Suspension  
**COLOR:** Off-white to tan  
**ODOR:** Mild, non-offensive  
**ODOR THRESHOLD:** Not established  
**MOLECULAR WEIGHT:** 255.7 (for imidacloprid)  
**pH:** 7.5  
**BOILING POINT:** Not established  
**MELTING/FREEZING POINT:** Freezing: 20 °F  
**VISCOSITY:** 350-500 cps @ 25 °C  
**SOLUBILITY IN WATER:** 75% of mixture  
**SPECIFIC GRAVITY:** 1.12  
**BULK DENSITY:** Not applicable  
**% VOLATILE BY VOLUME:** Not established  
**VAPOR PRESSURE:** 1.5 x 10<sup>-9</sup> mm @ 20 °C (for imidacloprid)  
**VAPOR DENSITY:** Not established (Air = 1)

### 6. EMERGENCY AND FIRST AID PROCEDURES:

**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 Corporation, Agriculture Division, Kansas City, Missouri, be notified. Telephone: 816/242-2582  
**ANTIDOTES:** None

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### 7. EMPLOYEE PROTECTION RECOMMENDATIONS:

**EYE PROTECTION REQUIREMENTS:** Splash-proof goggles should be used to prevent liquid splashes 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, when potential exposure to this product is excessive, wear a respirator approved for dusts and mists or for pesticides.

**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.

### 8. REACTIVITY DATA:

**STABILITY:** This is a stable material.

**HAZARDOUS POLYMERIZATION:** Will not occur.

**INCOMPATIBILITIES:** None known

**INSTABILITY CONDITIONS:** Strong exothermic reaction above 200 °C (imidacloprid)

**DECOMPOSITION PRODUCTS:** Proposed: HCl, HCN, CO, NOx (for imidacloprid)

### 9. SPILL AND LEAK PROCEDURES:

**SPILL OR LEAK PROCEDURES:** Isolate area and keep unauthorized people away. Do not walk through spilled material. Avoid breathing vapors and skin contact. Remove sources of ignition if combustible or flammable vapors may be present and ventilate area. Wear proper protective equipment. Dike contaminated area with absorbent granules, soil, sand, etc. If large spill, material should be recovered. Small spills can be absorbed with absorbent granules, spill control pads, or any absorbent material. Carefully sweep up absorbed spilled material. Place in covered container for reuse or disposal. Scrub contaminated area with soap and 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 or contact vegetation.

**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.

### 10. SPECIAL PRECAUTIONS & STORAGE DATA:

**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.

### 11. SHIPPING 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

### 12. ANIMAL TOXICITY DATA:

**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 Rat: >4870 mg/kg; Female Rat: 4143 mg/kg

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

**INHALATION LC50:** 4 Hr. Exposure to Liquid Aerosol: Male and Female Rat: >5.33 mg/l (analytical) -- 1Hr. Exposure to Liquid Aerosol (extrapolated from 4 Hr. LC50): Male and Female Rat: >20 mg/l (analytical)

**EYE EFFECTS:** Rabbit: Only minimal irritation to the conjunctiva was observed with all irritation resolving within 72 hours.

**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 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.

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### ANIMAL TOXICITY DATA - continued

#### 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 ppm. 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.

### 13. FEDERAL 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)

### 14. OTHER REGULATORY INFORMATION:

#### NFPA 704M RATINGS:

Health: 1      Flammability: 1      Reactivity: 1      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 Corporation as a customer service.

### 15. APPROVALS:

**REASON FOR ISSUE:** Add EPA Registration Number (Section I); revise neurotoxicity data (Section XII); revise TSCA Status (Section XIII)

**PREPARED BY:** V. C. Standart

**APPROVED BY:** D. C. Eberhart

**TITLE:** Product Safety Manager

**APPROVAL DATE:** 12/08/94

**SUPERSEDES DATE:** 09/26/94

**MSDS NUMBER:** 16611

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