

**1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**

**Product Name:** **Sativa<sup>®</sup> IMF Max**  
**EPA Reg. No.:** 55146-119  
**Synonyms:** Mixture of Fludioxonil, Imidacloprid, Metalaxyl and Tebuconazole  
**Product Type:** Insecticide and Fungicide

**Company Name:** Nufarm Americas Inc. AGT Division  
 11901 South Austin Avenue  
 Alsip, IL 60803

**Telephone Numbers:** **For Chemical Emergency, Spill, Leak, Fire, Exposure, or Accident,  
 Call CHEMTREC Day or Night: 1-800-424-9300  
 For Medical Emergencies Only, Call 1-877-325-1840**

**Date of Issue:** May 21, 2013 **Supersedes:** September 12, 2012  
**Sections Revised:** 1

**2. HAZARDS IDENTIFICATION**

**Emergency Overview:**  
**Appearance and Odor:** Red colored liquid suspension with a faint odor.  
**Warning Statements:** Keep out of reach of children. CAUTION. Harmful if swallowed.  
 Do not place product near or allow product to come into contact with strong oxidizing substances (such as potassium permanganate).

**Potential Health Effects:**  
**Likely Routes of Exposure:** Inhalation, eye and skin contact.  
**Eye Contact:** Minimally irritating based on toxicity studies.  
**Skin Contact:** Minimally toxic and slightly irritating based on toxicity studies.  
**Ingestion:** Moderately toxic based on toxicity studies.  
**Inhalation:** Low inhalation toxicity. Inhalation of glycerin mists may cause irritation of respiratory tract.  
**Medical Conditions Aggravated by Exposure:** Inhalation of product may aggravate existing chronic respiratory problems such as asthma, emphysema or bronchitis. Skin contact may aggravate existing skin disease.

See Section 11: TOXICOLOGICAL INFORMATION for more information.

**Potential Environmental Effects:**  
 This pesticide is highly toxic to birds and aquatic invertebrates. This pesticide is toxic to fish. This product contains imidacloprid and metalaxyl. Imidacloprid is highly toxic to bees. Metalaxyl is known to leach through soil into groundwater under certain conditions as a result of agricultural use.

See Section 12: ECOLOGICAL INFORMATION for more information.

**3. COMPOSITION / INFORMATION ON INGREDIENTS**

COMPONENT	CAS NO.	% BY WEIGHT
Imidacloprid	138261-41-3	11.16
Metalaxyl	57837-19-1	0.60
Tebuconazole	107534-96-3	0.45
Fludioxonil	131341-86-1	0.36
Other Ingredients Including Glycerin	56-81-5	87.43

**4. FIRST AID MEASURES**

**If Swallowed:** Call a 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 the poison control center or doctor. Do not give anything by mouth to an unconscious person.

**If in Eyes:** Hold eye open and rinse slowly and gently with water for 15 to 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.

**If on Skin or Clothing:** Take off contaminated clothing. Rinse skin immediately with plenty of water for 15 to 20 minutes. Call a poison control center or doctor for treatment advice.

**If Inhaled:** 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 advice.

**5. FIRE FIGHTING MEASURES**

**Flash Point:** Not applicable due to aqueous formulation

**Autoignition Temperature:** Not determined

**Flammability Limits:** Not determined

**Extinguishing Media:** Recommended for large fires: foam or water spray. Recommended for small fires: dry chemical or carbon dioxide.

**Special Fire Fighting Procedures:** Firefighters should wear NIOSH/MSHA approved self-contained breathing apparatus and full fire fighting turn out gear. Dike area to prevent runoff and contamination of water sources. Dispose of fire control water later.

**Unusual Fire and Explosion Hazards:** If water is used to fight fire, contain runoff, using dikes to prevent contamination of water supplies. Dispose of fire control water later.

**Hazardous Decomposition Materials (Under Fire Conditions):** May produce oxides of carbon and nitrogen.

**National Fire Protection Association (NFPA) Hazard Rating:**

**Rating for this product: Health: 1 Flammability: 1 Reactivity: 0**

Hazards Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

**6. ACCIDENTAL RELEASE MEASURES**

**Personal Precautions:** Wear appropriate protective gear for the situation. See Personal Protection information in Section 8.

**Environmental Precautions:** Prevent material from entering public sewer systems or any waterways. Do not flush to drain. Large spills to soil or similar surfaces may necessitate removal of topsoil. The affected area should be removed and placed in an appropriate container for disposal.

**Methods for Containment:** Dike spill using absorbent or impervious materials such as earth, sand or clay. Collect and contain contaminated absorbent and dike material for disposal.

**Methods for Cleanup and Disposal:** Pump any free liquid into an appropriate closed container. Collect washings for disposal. Decontaminate tools and equipment following cleanup. See Section 13: DISPOSAL CONSIDERATIONS for more information.

**Other Information:** Large spills may be reportable to the National Response Center (800-424-8802) and to state and/or local agencies.

**7. HANDLING AND STORAGE****Handling:**

Harmful if swallowed. Users should wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove clothing/Personal Protective Equipment (PPE) immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove PPE immediately after handling this

product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

**Storage:**

Store in cool place. Do not store in direct sunlight. Protect from freezing temperatures. Do not contaminate water, food or feed by storage or disposal. Do not place product near or allow product to come into contact with strong oxidizing substances (such as potassium permanganate).

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**Engineering Controls:**

Where engineering controls are indicated by specific use conditions or a potential for excessive exposure, use local exhaust ventilation at the point of generation.

**Personal Protective Equipment:**

**Eye/Face Protection:** Not normally required. To avoid contact with eyes, wear chemical goggles or shielded safety glasses. An emergency eyewash or water supply should be readily accessible to the work area.

**Skin Protection:** To avoid contact with skin, wear long pants, long-sleeved shirt, socks, shoes and chemical-resistant gloves such as barrier laminate, nitrile rubber, neoprene rubber or Viton. An emergency shower or water supply should be readily accessible to the work area.

**Respiratory Protection:** Not normally required. If vapors or mists exceed acceptable levels, wear NIOSH approved air-purifying respirator with cartridges/canisters approved for use against pesticides.

**General Hygiene Considerations:** Personal hygiene is an important work practice exposure control measure and the following general measures should be taken when working with or handling this material: 1) do not store, use and/or consume foods, beverages, tobacco products, or cosmetics in areas where this material is stored; 2) wash hands and face carefully before eating, drinking, using tobacco, applying cosmetics or using the toilet.

**Exposure Guidelines:**

Component	OSHA		ACGIH		Unit
	TWA	STEL	TWA	STEL	
Tebuconazole	NE	NE	NE	NE	
Imidacloprid	NE	NE	NE	NE	
Metalaxyl	NE	NE	NE	NE	
Fludioxonil	NE	NE	NE	NE	
Glycerin Mist	15 (T) 5 (R)	NE	10	NE	mg/m <sup>3</sup>

T = Total Dust  
R = Respirable Fraction

NE = Not Established

**9. PHYSICAL AND CHEMICAL PROPERTIES**

**Appearance and Odor:** Red colored liquid suspension with a faint odor.

**Boiling Point:** Not determined

**Solubility in Water:** Dispersible

**Density:** 8.971 lb/gal

**Specific Gravity:** 1.077 @ 20°C

**Evaporation Rate:** Not determined

**Vapor Density:** Not determined

**Freezing Point:** Not determined

**Vapor Pressure:** Not determined

**pH:** 7.67 (1% solution)

**Viscosity:** Not determined

**Note:** Physical data are typical values, but may vary from sample to sample. A typical value should not be construed as a guaranteed analysis or as a specification.

**10. STABILITY AND REACTIVITY**

**Chemical Stability:** This material is stable under normal handling and storage conditions.

**Conditions to Avoid:** Excessive heat. Do not store near heat or flame.

**Incompatible Materials:** Strong oxidizing agents: bases and acids; potassium permanganate.

**Hazardous Decomposition Products:** Under fire conditions may produce gases such as hydrogen chloride and oxides of carbon and nitrogen.

**Hazardous Reactions:** Hazardous polymerization will not occur.

**11. TOXICOLOGICAL INFORMATION****Toxicological Data:**

Data from laboratory studies conducted on a similar, but not identical, formulation:

**Oral:** Rat LD<sub>50</sub>: >2,000 mg/kg (female)

**Dermal:** Rat LD<sub>50</sub>: >5,000 mg/kg

**Inhalation:** Rat 4-hr LC<sub>50</sub>: >2.06 mg/L

**Eye Irritation:** Rabbit: Minimally irritating

**Skin Irritation:** Rabbit: Slightly irritating

**Skin Sensitization:** Not a contact sensitizer in guinea pigs following repeated skin exposure.

**Subchronic (Target Organ) Effects:** Repeated overexposure to imidacloprid, may affect heart, thyroid, blood chemistry, and liver. Repeated overexposure to metalaxyl may affect the liver. Repeated overexposure to fludioxonil may cause effects in the kidney and liver. Prolonged overexposure to tebuconazole may cause effects to liver, spleen, adrenals and/or eyes

**Carcinogenicity / Chronic Health Effects:** Prolonged overexposure to imidacloprid can cause effects to the thyroid. Imidacloprid did not cause cancer in laboratory animal studies. The U.S. EPA has given imidacloprid a Group E classification (evidence of non-carcinogenicity in humans). Prolonged overexposure to metalaxyl may affect liver and blood. Metalaxyl did not cause cancer in laboratory animals. The U.S. EPA has given metalaxyl a Class E classification (evidence of non-carcinogenicity for humans). Prolonged overexposure to tebuconazole may cause effects to liver, spleen, adrenals and/or eyes. Tebuconazole was not carcinogenic in a chronic feeding study in rats. In a mice study, there was an increased incidence of liver tumors at the highest dose tested, a dose exceeding the Maximum Tolerated Dose (MTD). EPA classified tebuconazole as a Group C (possible human carcinogen) chemical based on liver tumors. Fludioxonil did not cause cancer in laboratory animals.

**Reproductive Toxicity:** In a two-generation reproduction study in rats, imidacloprid produced reduced mean body weights and body weight gains. No other reproductive effects were observed. In animal studies, Metalaxyl and Fludioxonil did not interfere with reproduction. Animal studies on tebuconazole resulted in decreased pup body weights and smaller litters at doses that were also toxic to mother animals.

**Developmental Toxicity:** Rat and rabbit studies on imidacloprid resulted in skeletal abnormalities, increased resorptions (rabbits) and reduced body weight gains at doses that were also toxic to mother animals. For metalaxyl, a study using rats resulted in maternal toxicity and fetotoxicity at the higher dose levels. However, no treatment-related developmental effects were noted in a study using rabbits. In animal studies with tebuconazole, developmental effects were observed at doses that were also toxic to the maternal animal. Fludioxonil did not cause birth defects in animals.

**Genotoxicity:** The imidacloprid mutagenicity studies, taken collectively, demonstrate that imidacloprid is not genotoxic or mutagenic. No mutagenic effect was found in various tests with microorganisms and mammals with metalaxyl. Neither *in vitro* nor *in vivo* tests on tebuconazole demonstrated mutagenic effects. *In vitro* bacterial assays and animal tests with fludioxonil did not demonstrate mutagenic effects.

**Assessment Carcinogenicity:** None listed with ACGIH, IARC, NTP or OSHA.

See Section 2: HAZARDS IDENTIFICATION for more information.

<b>12. ECOLOGICAL INFORMATION</b>
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**Ecotoxicity:**

## Data on Imidacloprid Technical:

96-hour LC <sub>50</sub> Rainbow Trout:	211 mg/l	Japanese Quail Oral LD <sub>50</sub> :	31 mg/kg
48-hour EC <sub>50</sub> Daphnia:	85 mg/l	Bobwhite Quail Oral LD <sub>50</sub> :	152 mg/kg
48-hour Honey Bee Oral LD <sub>50</sub> :	0.0039 µg/bee	House Sparrow Oral LD <sub>50</sub> :	41 mg/kg
48-hour Honey Bee Contact LD <sub>50</sub> :	0.078 µg/bee		

## Data on Metalaxyl Technical:

96-hour LC <sub>50</sub> Bluegill:	139 mg/l	Bobwhite Quail 8-day Dietary LC <sub>50</sub> :	>10,000 ppm
96-hour LC <sub>50</sub> Rainbow Trout:	132 mg/l	Mallard Duck Oral LD <sub>50</sub> :	1,466 mg/kg
48-hour EC <sub>50</sub> Daphnia:	29 mg/l		

## Data on Tebuconazole Technical:

96-hour LC <sub>50</sub> Bluegill Sunfish:	5.7 ppm	Bobwhite Quail Oral LD <sub>50</sub> :	1,988 mg/kg
96-hour LC <sub>50</sub> Rainbow Trout:	4.4 ppm	Mallard Duck 8-day Dietary LC <sub>50</sub> :	>4,816 ppm
48-hour LC <sub>50</sub> Daphnia magna:	4.0 ppm		

## Data on Fludioxonil Technical:

96-hour LC <sub>50</sub> Bluegill Sunfish:	0.74 ppm	Bobwhite Quail 8-day Oral LD <sub>50</sub> :	>5200 ppm
96-hour LC <sub>50</sub> Rainbow Trout:	0.47 ppm	Mallard Duck 8-day Dietary LC <sub>50</sub> :	>5200 ppm
48-hour LC <sub>50</sub> Daphnia magna:	0.90 ppm	48-hour Honey Bee Contact LD <sub>50</sub> :	> 25 ug/bee

**Environmental Fate:**

Hydrolysis half-life of imidacloprid is greater than 30 days at pH 7 and 25°C. The aqueous photolysis half-life is less than 3 hours. The soil surface photolysis of imidacloprid has a half-life of 39 days, and in soil, the half-life ranged from 26 to 229 days. In soils, metalaxyl is moderately stable under normal environmental conditions. The primary routes of dissipation in surface soil are aerobic soil metabolism from microbial degradation and uptake by plants. Hydrolysis, photolysis and volatilization are not significant routes of breakdown. Metalaxyl is very water-soluble and variably binds to organic materials in the soils. In the aquatic environment, metalaxyl degrades moderately under both aerobic and anaerobic conditions by microbial degradation. Tebuconazole is soluble in water. It is stable to hydrolysis and photolysis on soil and in water. The photolysis half-life of tebuconazole in soil averages 190 days and in

water averages 590 days. Tebuconazole has a low to moderate mobility in soils. Absorption to soil increases as level of organic matter and clay increases. Fludioxonil, does not bioaccumulate; however it is persistent in soil and is stable in water. It has low mobility in soil. The material sinks in water (after 24 hours).

<b>13. DISPOSAL CONSIDERATIONS</b>
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**Waste Disposal Method:**

Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

**Container Handling and Disposal:**

**Nonrefillable Containers 5 Gallons or Less: Nonrefillable container.** Do not reuse or refill this container. Offer for recycling if available. Triple rinse container (or equivalent) promptly after emptying. **Triple rinse as follows:** Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures

approved by State and local authorities. Plastic containers are also disposable by incineration, or, if allowed by State and local authorities, by burning. If burned stay out of smoke.

**Nonrefillable containers larger than 5 gallons: Nonrefillable container.** Do not reuse or refill this container. Triple rinse or pressure rinse container (or equivalent) promptly after emptying. Offer for recycling if available. If recycling or reconditioning is not available, puncture and dispose of in a sanitary landfill, or by other procedures approved by State and local authorities. **Triple rinse as follows:** Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. **Pressure rinse as follows:** Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 psi for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

**Refillable containers larger than 5 gallons:** Refillable container. Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or a mix tank. Fill the container about 10% full with water and, if possible, spray all sides while adding water. Agitate vigorously or recirculate water with the pump for two minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times. For final disposal, offer for recycling if available. If recycling or reconditioning is not available, puncture and dispose of in a sanitary landfill, or by other procedures approved by State and local authorities.

#### 14. TRANSPORTATION INFORMATION

**DOT**

Not Regulated

**IMDG**

Not Regulated

**IATA**

Not Regulated

#### 15. REGULATORY INFORMATION

**U.S. Federal Regulations:**

**TSCA Inventory:** This product is exempted from TSCA because it is solely for FIFRA regulated use.

**SARA Hazard Notification/Reporting:**

**Hazard Categories Under Criteria of SARA Title III Rules (40 CFR Part 370):**

Immediate and Delayed

**Section 313 Toxic Chemical(s):**

None

**Reportable Quantity (RQ) under U.S. CERCLA:**

None

**RCRA Waste Code:**

None

**State Information:**

Other state regulations may apply. Check individual state requirements.

**California Proposition 65:** Not Listed**16. OTHER INFORMATION**

This Material Safety Data Sheet (MSDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA ACCEPTED PRODUCT LABELING (attached to and accompanying the product container). This MSDS provides important health, safety and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use, while the labeling provides that information specifically for product use in the ordinary course.

Use, storage and disposal of pesticide products are regulated by the EPA under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) through the product labeling, and all necessary and appropriate precautionary, use, storage, and disposal information is set forth on that labeling. It is a violation of Federal law to use a pesticide product in any manner not prescribed on the EPA accepted label.

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