

**1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**

Product Name: Mallet 0.5G
EPA Reg. No.: 228-501
Product Type: Insecticide
Company Name: Nufarm Inc.
11901 S. Austin Avenue
Alsip, IL 60803
1-800-345-3330

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

This product is an EPA FIFRA registered pesticide. Some classifications on this SDS are not exactly the same as on the FIFRA label. Certain sections are superseded by federal law governed by EPA for a registered pesticide. Please see Section 15. REGULATORY INFORMATION for explanation.

2. HAZARDS IDENTIFICATION**HEALTH HAZARDS:**

Acute toxicity, inhalation	Category 4
Skin irritation	Category 2
Eye irritation	Category 2B
Specific target organ toxicity – Repeated exposure	Category 2

ENVIRONMENTAL HAZARDS:

Hazardous to the aquatic environment, acute	Category 1
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SIGNAL WORD:

WARNING

HAZARD STATEMENTS:

Harmful if inhaled. Causes skin irritation. Causes eye irritation. May cause damage to organs (heart, liver, blood chemistry, and thyroid) through prolonged or repeated exposure. Very toxic to aquatic life.

**PRECAUTIONARY STATEMENTS:**

Avoid breathing mist/vapors/spray. Use only outdoors or in a well-ventilated area. If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center/doctor if you feel unwell. See product label and Section 4 First Aid for medical advice.

Wash hands and exposed skin thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection. If on skin: Wash with plenty of water. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse.

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Do not breathe dust. Get medical advice/attention if you feel unwell. Dispose of contents/container in accordance with local/regional/national/international regulations.

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Avoid release to the environment. Collect spillage. Dispose of contents/container in accordance with local/regional/national/international regulations.

3. COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENTS	CAS NO.	% BY WEIGHT
Imidacloprid	138261-41-3	0.45 – 0.55
N-methyl pyrrolidone	872-50-4	1.9 – 2.1
Proprietary carrier	Trade Secret	Trade Secret

Synonyms: 1-[(6-chloro-3-pyridinyl)methyl]-N-nitro-2-imidazolidinimine

Ingredients not precisely identified are proprietary or non-hazardous. Values are not product specifications.

4. FIRST AID MEASURES

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 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.

Most Important symptoms/effects, acute and delayed: Changes in blood chemistry, Damage to organs (heart, liver, blood chemistry, and thyroid) through prolonged or repeated exposure

Indication of Immediate medical attention and special treatment if needed, if necessary: Respiratory, skin, ore eye irritation. No specific antidote is available. Treat symptomatically.

5. FIRE FIGHTING MEASURES

Flash Point: Not applicable due to product form (solid)

Autoignition Temperature: Not Determined

Flammability Limits: Not Determined

Extinguishing Media: Use extinguishing media suitable for surrounding materials. Dry chemical, carbon dioxide, foam, water spray or fog.

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 gases such as oxides of carbon and nitrogen.

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: Avoid creation of dusty conditions. If dry, sweep or scoop up material and place into container for disposal. If wet, pump any free liquid into an appropriate closed container. 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:

Causes moderate eye irritation. Avoid contact with eyes or clothing. Users should wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove Personal Protective Equipment (PPE) immediately

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after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing. Keep children and pets off treated area until dry.

STORAGE:

Store in a cool, dry place and in such a manner as to prevent cross-contamination with other pesticides, fertilizers, food and feed. Store in original container and out of the reach of children, preferably in a locked storage area. Do not contaminate water, food, or feed by storage or disposal. Handle and open container in a manner as to prevent spillage. If the container is leaking or material is spilled for any reason or cause, carefully sweep material into a pile. Refer to Precautionary Statements on label for hazards associated with the handling of this material.

Do not walk through spilled material. Dispose of as directed for pesticides above, or apply uncontaminated product according to Directions For Use. Keep unauthorized people away.

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.

Eye/Face Protection: 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. 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		WEEL
	TWA	STEL	TWA	STEL	TWA
Imidacloprid	NE	NE	NE	NE	NE
N-methyl pyrrolidone	NE	NE	100 mg/l*	NE	10 ppm

NE = Not Established

WEEL = Workplace Environmental Exposure Levels

* Biological Exposure Index at end of shift. California OSHA PEL: 1 ppm.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Brown colored granules
Odor:	Slight odor
Odor threshold:	No data available
pH:	6.4
Melting point/freezing point:	No data available
Initial boiling point and boiling range	No data available
Flash point:	No data available
Evaporation rate:	No data available
Flammability (solid, gas):	No data available
Upper/lower flammability or explosive limits:	No data available
Vapor pressure:	No data available
Vapor density:	No data available
Relative density:	0.747 g/ml
Solubility(ies):	Relatively insoluble
Partition coefficient: n-octanol/water:	No data available
Autoignition temperature:	No data available
Decomposition temperature:	No data available
Viscosity:	No data available

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

Reactivity: Not reactive.

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

Possibility of Hazardous Reactions: Will not occur.

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

Incompatible Materials: Strong oxidizing agents: bases and acids.

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

11. TOXICOLOGICAL INFORMATION

Likely Routes of Exposure: Inhalation, skin and eye contact.

Symptoms of Exposure: Moderately irritating to the eye based on toxicity studies. Dusts may cause irritation. Slightly toxic and minimally irritating to the skin based on toxicity studies. Slightly toxic if ingested based on toxicity studies. Low inhalation toxicity.

Delayed, immediate and chronic effects of exposure: Inhalation of product may aggravate existing chronic respiratory problems such as asthma, emphysema or bronchitis. Skin contact may aggravate existing skin disease.

Toxicological Data:

Data from laboratory studies conducted are summarized below:

Oral: Rat LD₅₀: > 5,000 mg/kg (female)

Dermal: Rat LD₅₀: >5,000 mg/kg

Inhalation: Rat 4-hr LC₅₀: >2.06 mg/l

Eye Irritation: Rabbit: Moderately irritating

Skin Irritation: Rabbit: Moderately 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 N-Methyl 2-pyrrolidinone (NMP) may cause effects to eyes, skin, respiratory system, central nervous system, liver and kidneys. The solvent component of this product is reported to cause irritation to the eyes and skin and may contribute to the irritation potential reported for this product.

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). No increase in tumors was seen in rats via dietary or inhalation exposure to NMP for two years; however, an increase in liver tumors was noted in mice receiving high dietary doses over a similar period. Liver tumors are not uncommon when non-genotoxic chemicals such as NMP are tested in the mouse bioassay.

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. NMP may adversely affect reproduction in rats after ingestion, although fertility is unaltered.

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. Fetal developmental effects were observed following ingestion, inhalation and dermal exposures to NMP in pregnant animals, and occurred both in the presence and absence of maternal toxicity.

Genotoxicity: The imidacloprid mutagenicity studies, taken collectively, demonstrate that imidacloprid is not genotoxic or mutagenic. Neither *in vitro* nor *in vivo* tests on NMP demonstrated mutagenic effects.

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

12. ECOLOGICAL INFORMATION

Environmental Hazards:

This product is toxic to aquatic invertebrates.

Ecotoxicity:

Data on Imidacloprid Technical:

96-hour LC₅₀ Rainbow Trout:

211 mg/l

Japanese Quail Oral LD₅₀:

31 mg/kg

48-hour EC₅₀ Daphnia:

85 mg/l

Bobwhite Quail Oral LD₅₀:

152 mg/kg

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96-hour LC ₅₀ Mysid:	0.038 ppm	House Sparrow Oral LD ₅₀ :	41 mg/kg
96-hour LC ₅₀ Bluegill:	>105 mg/l	Bobwhite Quail 8-day Dietary LC ₅₀ :	1535 ppm
48-hour Honey Bee Contact LD ₅₀ :	0.078 µg/bee	Mallard Duck 8-day Dietary LC ₅₀ :	>4797 ppm
48-hour Honey Bee Oral LD ₅₀ :	0.0039 µg/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.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method:

Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility. Improper disposal of excess pesticide is a violation of Federal law.

Container Handling and Disposal:

Nonrefillable container. Do not reuse or refill this container. Completely empty bag into application equipment, then offer for recycling if available, or dispose of empty bag in a sanitary landfill or by incineration. Do not burn unless allowed by state and local ordinance. If burned stay out of smoke.

14. TRANSPORTATION INFORMATION

Follow the precautions indicated in Section 7: HANDLING AND STORAGE of this SDS.

DOT

Not regulated by DOT unless shipped by water. See IMO / IMDG description.

IMDG

UN3077, Environmentally hazardous substance, solid, n.o.s.,
(Imidacloprid), 9, III, Marine Pollutant

IATA

UN3077, Environmentally hazardous substance, solid, n.o.s.,
(Imidacloprid), 9, III, Marine Pollutant

15. REGULATORY INFORMATION

EPA FIFRA INFORMATION

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. The hazard information required on the pesticide label is reproduced below. The pesticide label also includes other important information, including directions for use.

CAUTION. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum or using tobacco.

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):

N-methyl pyrrolidone

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

None

RCRA Waste Code:

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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.

State Information:

Other state regulations may apply. Check individual state requirements.

California Proposition 65: WARNING: contains N-methyl pyrrolidone, known in the state of California to cause birth defects or reproductive harm.

16. OTHER INFORMATION

National Fire Protection Association (NFPA) Hazard Rating:

Rating for this product: Health: 2 Flammability: 1 Reactivity: 0

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

This Safety Data Sheet (SDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-ACCEPTED PRODUCT LABELING (attached to and accompanying the product container). This SDS 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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