



1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Nufarm Imazuron Herbicide

EPA Reg. No.: 228-654

Product Type: Herbicide

Company Name: Nufarm Americas, 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 Certain sections are superseded by federal law governed by EPA for a registered pesticide.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

For EPA FIFRA-Specific Information see Section 15

PHYSICAL HAZARDS:

Combustible Dust

HEALTH HAZARDS:

Carcinogen

Category 2

Specific Target Organ Toxicity – Repeat Exposure

Category 2

ENVIRONMENTAL HAZARDS:

Aquatic Acute Toxicity

Category 1

Aquatic Chronic Toxicity

Category 1

SIGNAL WORD:

WARNING

HAZARD STATEMENTS:

May form combustible dust concentrations in air. Suspected of causing cancer. May cause damage to blood, spleen and bladder through prolonged or repeated exposure. Very toxic to aquatic life with long lasting effects.



PRECAUTIONARY STATEMENTS

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Do not breathe dust. Avoid release to the environment.

IF exposed or concerned: Get medical advice or attention. Collect spillage.

Store locked up.

Dispose of contents in accordance with local, state, and federal regulations.

3. COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENTS	CAS NO.	% BY WEIGHT
Imazapyr	81334-34-1	7.70 – 8.51
Diuron	330-54-1	60.35 – 64.09
Other Ingredients	Trade Secret	Trade Secret

Synonyms:

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

4. FIRST AID MEASURES

If in Eyes: Hold eye open and rinse slowly and gently with water for several minutes. Remove contact lenses, if present, then continue rinsing eye. Call a poison control center or doctor for treatment advice if irritation occurs or persists.

If Inhaled: Move person to fresh air. Call a poison control center or doctor for further treatment advice if symptoms develop.

If Swallowed: Call a poison control center or doctor for treatment advice. Do not induce vomiting unless told to do so by the poison control center or doctor. **If on Skin or Clothing:** Take off contaminated clothing. Rinse skin immediately with plenty of water. Call a poison control center or doctor for treatment advice if irritation or symptoms develop.

Most Important symptoms/effects, acute and delayed: May cause slight eye and skin irritation. Suspected of causing cancer. Prolonged or repeated exposure may cause damage to blood, spleen, and bladder.

Indication of Immediate medical attention and special treatment if needed, if necessary: Immediate medical attention should not be required.

5. FIRE FIGHTING MEASURES

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 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. Scrape up and place in appropriate closed container. Wash entire spill area with a detergent slurry, absorb and sweep into container 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: Do not get in eyes or on clothing or skin. 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 Personal Protective Equipment (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: Do not contaminate water, food, or feed by storage or disposal.

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: 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 and shoes. 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	
Imazapyr	NE	NE	NE	NE	
Diuron	NE	NE	10	NE	Mg/m ³

NE = Not Established

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Beige to brown granule
Odor:	No odor
Odor threshold:	No data available
pH:	2.5 - 3.07 (1% w/w solution)
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:	0.619 g/ml (pour) 0.639 (tapped)
Solubility(ies):	Soluble
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: Hazardous polymerization will not occur.

Conditions to Avoid: Excessive heat. Do not store near heat or flame. Spray solutions of this product should be mixed, stored, and applied **ONLY** in stainless steel, fiberglass, plastic, and plastic-lined steel containers. **DO NOT** mix, store or apply this product or spray solutions of this product in unlined steel (except stainless steel) containers or spray tanks.

Incompatible Materials: Strong oxidizing agents: bases and acids. Spray solutions of this product should be mixed, stored and applied only in stainless steel, fiberglass, plastic, and plastic-lined steel containers.

Hazardous Decomposition Products: Under fire conditions may produce organochloric compounds, carbon monoxide, carbon dioxide, and nitrogen oxides.

11. TOXICOLOGICAL INFORMATION

Likely Routes of Exposure: Dermal, inhalation

Symptoms of Exposure:

Eye Contact: Mildly irritating based on toxicity studies.

Skin Contact: Minimally toxic and slightly irritating based on toxicity studies.

Ingestion: Slightly toxic if ingested based on toxicity studies.

Inhalation: Low inhalation toxicity based on toxicity studies.

Delayed, immediate and chronic effects of exposure:

Toxicological Data:

Data from laboratory studies conducted are summarized below:

Oral: Rat LD₅₀: > 5,000 mg/kg

Dermal: Rat LD₅₀: >2,000 mg/kg

Inhalation: Rat 4-hr LC₅₀: 3.7 mg/L

Eye Irritation: Rabbit: Moderately 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 diuron may cause reduced body weight gain, enlarged spleen, increased liver and kidney weights, and effects in blood, bladder and kidney. For imazapyr, no adverse effects at approximately 1,700 mg/kg/day (highest dose tested).

Carcinogenicity / Chronic Health Effects: Chronic effects from diuron in blood, bladder and kidney. In animal studies with diuron, an increase in urinary bladder tumors in rats and an increase of mammary tumors in mice were observed at very high doses in excess of 600 mg/kg/day. Imazapyr did not cause cancer in laboratory animals. EPA has classified imazapyr as a Group E (evidence of non-carcinogenicity for humans) carcinogen.

Reproductive Toxicity: Diuron did not demonstrate reproductive effects in animal studies. Similarly, the results of the animal studies with imazapyr gave no indication of a fertility impairing effect.

Developmental Toxicity: Diuron did not cause developmental effects in rabbits. In rat studies, effects were observed only at maternally toxic dose levels. No indications of a developmental toxic / teratogenic effect were seen in animal studies with imazapyr.

Genotoxicity: Studies indicate that diuron and imazapyr did not produce genetic damage in in vitro bacterial cell cultures or in vivo mammalian animal studies.

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

12. ECOLOGICAL INFORMATION

Ecotoxicity:

Data on Diuron:

96-hour LC ₅₀ Bluegill:	2.8 mg/l	Bobwhite Quail 8-day Dietary LC ₅₀ :	1,730 mg/l
96-hour LC ₅₀ Rainbow Trout:	1.95 mg/l	Mallard Duck Oral LD ₅₀ :	>2,000 mg/kg

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96-hour LC₅₀ Fathead Minnow: 14.2 mg/l
48-hour EC₅₀ Daphnia: 1.4 mg/l

Mallard Duck 8-day Dietary LC₅₀: >5,000 mg/l

Data on Imazapyr:

96-hour LC₅₀ Bluegill: >100 mg/l

Bobwhite Quail 8-day Dietary LC₅₀: >5,000 mg/l

96-hour LC₅₀ Rainbow Trout: >100 mg/l

Bobwhite Quail Oral LD₅₀: >2,150 mg/kg

48-hour EC₅₀ Daphnia: >100 mg/l

Mallard Duck 8-day Dietary LC₅₀: >5,000 mg/l

14-day EC₅₀ Duckweed: 0.024 mg/l

Mallard Duck Oral LD₅₀: >2,150 mg/kg

7-day EC₅₀ Green Algae: 71 mg/l

Honey Bee LD₅₀: >100 mg/bee

Environmental Fate:

Diuron is mobile and very persistent in soils. Binding or absorption of diuron to soil is highly correlated with soil organic matter. The average half-life in soils ranges from months to a year. The major route of dissipation for diuron in the environment is microbial degradation. Diuron also degrades through photolysis in both water and soil, but at a slower rate.

Imazapyr is degraded by microbial metabolism and can be relatively persistent in soils. It has an average half-life in soils that ranges from 2 weeks to 5 months. Half-lives tend to be shorter in forest litter and soils. Imazapyr is water-soluble and variably binds to organic materials in soils. Although the potential to leach is high, leaching is limited under typical field conditions. In water, imazapyr can be rapidly degraded by photolysis with a half-life averaging 2 days. Due to its rapid photodegradation by sunlight, water contamination by imazapyr is generally not of concern.

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 or, if allowed by state and local authorities, by burning. If burned, stay out of smoke. Wastes resulting from the use of this product must be disposed of on site or at an approved waste disposal facility.

14. TRANSPORTATION INFORMATION

DOT

≤ 160 pounds per completed package

Non Regulated

> 160 pounds per completed package

UN 3077, Environmentally hazardous substances, solid, n.o.s., (Diuron), 9, III, RQ

> 882 pounds per completed package

UN 3077, Environmentally hazardous substances, solid, n.o.s., (Diuron), 9, III, RQ, Marine pollutant

IMDG

UN 3077, Environmentally hazardous substances, solid, n.o.s., (Diuron), 9, III, Marine pollutant

IATA

UN 3077, Environmentally hazardous substances, solid, n.o.s., (Diuron), 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.

SAFETY DATA SHEET

Nufarm Imazuron Herbicide

CAUTION. Harmful if absorbed through skin. Causes moderate eye irritation. Avoid contact with skin, eyes or clothing.

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):

Chronic Health

Section 313 Toxic Chemical(s):

Diuron 330-54-1

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

Diuron 100 lb

RCRA Waste Code:

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: This product contains a chemical known to the State of California to cause cancer (diuron).

16. OTHER INFORMATION

National Fire Protection Association (NFPA) Hazard Rating:

Rating for this product: Health: 1 Flammability: 2 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.

Although the information and recommendations set forth herein (hereinafter "Information") are presented in good faith and believed to be correct as of the date hereof, Nufarm Americas Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will Nufarm Americas Inc. be responsible for damages of any nature whatsoever resulting from the use of or reliance upon Information. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH INFORMATION REFERS AND ALL SUCH WARRANTIES ARE HEREBY SPECIFICALLY DISCLAIMED.

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