



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.

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Assert[®] Herbicide
Synonyms: Imazamethabenz methyl ester: Methyl esters of 2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-4-methylbenzoic acid and 2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-5-methylbenzoic acid
EPA Reg. No.: 71368-62
Company Name: Nufarm, Inc.
 150 Harvester Drive, Suite 200
 Burr Ridge, IL 60527
Date of Issue: March 25, 2006 **Supersedes:** New
Sections Revised: New

2. HAZARDS IDENTIFICATION

Emergency Overview:

Appearance and Odor: Clear to amber colored liquid with mild amine odor.

Warning Statements: Keep out of reach of children. DANGER. Corrosive. Causes irreversible eye damage. Do not get in eyes. Harmful if swallowed. Avoid breathing vapor or spray mist. Use with adequate ventilation. Avoid contact with skin and clothing.

Potential Health Effects:

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

Eye Contact: Causes irreversible eye damage. May cause pain, redness and tearing.

Skin Contact: Slightly toxic and mildly irritating based on toxicity studies.

Ingestion: Slightly toxic based on toxicity studies.

Inhalation: Low inhalation toxicity.

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:

Available data suggests that this product exhibits low toxicity to fish and wildlife.

See Section 12: ECOLOGICAL INFORMATION for more information.

3. COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENT	CAS NO.	% BY WEIGHT
Imazamethabenz methyl ester	81405-85-8	27.0
N-Methyl 2-pyrrolidinone	872-50-4	49.0
Sulfuric Acid	7664-93-9	5.7
Other Ingredients		18.3

4. FIRST AID MEASURES

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 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 on Skin: 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.

Note to Physician: Probable mucosal damage may contraindicate the use of gastric lavage.

5. FIRE FIGHTING MEASURES

Flash Point: >179.6°F (>82°C) SFCC

Autoignition Temperature: Not determined

Flammability Limits: Not determined

Extinguishing Media: Use water fog, foam, CO₂ or dry chemical extinguishing media.

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 or cool containers, dike to prevent runoff contamination of municipal sewers and waterways.

Hazardous Decomposition Materials (Under Fire Conditions): May produce gases such as oxides of carbon, nitrogen, and sulfur.

National Fire Protection Association (NFPA) Hazard Rating:

Rating for this product: Health: 3 Flammability: 2 Reactivity: 1

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 Clean-Up 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:**

Avoid breathing vapor or spray mist. Use with adequate ventilation. Avoid contact with skin and 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 after handling this product. Wash outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

Storage:

Keep from freezing. Do not store below 40°F (5°C). Ice will form in the container at 5°F (-15°C). If ice occurs from prolonged storage at temperatures of 5°F (-15°C) or below, place container at room temperature until ice melts. Stability of the product is not affected by freezing and thawing. Store this product only in original container. Do not mix or store in unlined containers. 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.

Personal Protective Equipment:

Eye/Face Protection: To avoid contact with eyes, wear face shield, goggles or safety glasses with front, brow and temple protection. 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 or butyl rubber ≥14 mils. 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	
Imazamethabenz methyl ester	NE	NE	NE	NE	
N-Methyl 2-pyrrolidinone	NE	NE	NE	NE	
Sulfuric Acid	1	NE	0.2	NE	mg/m ³

NE = Not Established

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: Clear to amber colored liquid with mild amine odor.

Boiling Point: 372.2°F (189°C)

Solubility in Water: Miscible

Density: 9.2 pounds/gallon

Specific Gravity: 1.1 @ 20°C

Evaporation Rate: Not determined

Vapor Density: Not determined

Freezing Point: Not determined

Vapor Pressure: Not determined

pH: 2.1 (10% dilution)

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. Do not store below 40°F (5°C). Stability not affected by freezing/thawing.

Conditions to Avoid: Do not store near ignition sources, heat or flame.

Incompatible Materials: Strong oxidizing agents: bases and acids.

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

Hazardous Reactions: Hazardous polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

Toxicological Data:

Data from laboratory studies on this product are summarized below:

Oral: Rat LD₅₀: 2,333 mg/kg (female) and 3,078 mg/kg (male); FIFRA Category III

Dermal: Rabbit LD₅₀: >2,000 mg/kg; FIFRA Category III

Inhalation: Rat 4-hr LC₅₀: 5.6 mg/l; FIFRA Category IV

Eye Irritation: Rabbit: Severely irritating/corrosive; FIFRA Category I

Skin Irritation: Rabbit: Mildly irritating; FIFRA Category IV

Subchronic (Target Organ) Effects: Repeated overexposure to N-Methyl 2-pyrrolidinone (NMP) may cause effects to eyes, skin, respiratory system, central nervous system, liver and kidneys. Overexposure to sulfuric acid may cause effects to lung function and respiratory tract damage (nose, throat and airways).

Carcinogenicity / Chronic Health Effects: Imazamethabenz methyl did not cause cancer in laboratory animals. 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 multi-generational reproduction study in rats, imazamethabenz methyl has been shown not to interfere with reproduction. NMP may adversely affect reproduction in rats after ingestion, although fertility is unaltered.

Developmental Toxicity: Animal tests with imazamethabenz methyl have not demonstrated developmental effects. 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: Animal tests with imazamethabenz methyl did not demonstrate mutagenic effects. Neither *in vitro* nor *in vivo* tests on NMP demonstrated mutagenic effects.

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

See Section 2: HAZARDS IDENTIFICATION for more information.

12. ECOLOGICAL INFORMATION

Ecotoxicity:

Data on Imazamethabenz methyl ester technical:

96-hour LC ₅₀ Bluegill:	>100 mg/l	Bobwhite Quail 8-day Dietary LC ₅₀ :	>5,000 ppm
96-hour LC ₅₀ Rainbow Trout:	>100 mg/l	Bobwhite Quail Acute Oral LD ₅₀ :	>2,150 mg/kg
48-hour EC ₅₀ Daphnia:	>100 mg/l	Mallard Duck 8-day Dietary LC ₅₀ :	>5,000 ppm
Bees LC ₅₀ :	>100 ug/bee	Mallard Duck Acute Oral LD ₅₀ :	>2,150 mg/kg

Environmental Fate:

Imazamethabenz methyl ester is primarily degraded by microbes in soil. Non-microbial hydrolysis occurs more rapidly in high pH soils and produces the desterified imazamethabenz acid. Both water solubility

and soil retention of imazamethabenz methyl are influenced by pH. The average half-life ranges from 25 – 36 days. Photodegradation half-life in soil is 30 – 60 days. Degradation by sunlight is rapid in water.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method:

Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Container Handling and Disposal:

Plastic Bottles and Non-Returnable Plastic Drums: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

Returnable/Refillable Containers: After use, return the container to the point of purchase or designated locations. The container must only be refilled with this product. DO NOT REUSE THE CONTAINER FOR ANY OTHER PURPOSE. Prior to refilling, inspect thoroughly for damage such as cracks, punctures, abrasions and damaged or worn out threads on closure devices. Do not refill or transport damaged or leaking containers. Check for leaks after refilling and before transportation. If the container is not being refilled, return it to the point of purchase.

14. TRANSPORTATION INFORMATION

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

For Department of Transportation (DOT) regulatory information, if required, consult transportation regulations, product shipping papers or call Nufarm's DOT Manager at 708-755-2104, Monday through Friday, 8:00 AM to 5:00 PM Central Time.

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

Section 313 Toxic Chemical(s):

N-Methyl 2-pyrrolidinone (CAS No. 872-50-4), 49.0% by weight in product

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

Sulfuric Acid (CAS No. 7664-93-9) 1,000 pounds

RCRA Waste Code:

None

State Information:

Other state regulations may apply. Check individual state requirements.

California Proposition 65: WARNING. This product contains chemicals known to the State of California to cause cancer or birth defects or other reproductive harm.

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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