

**1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION****Product Name:** **ESCALADE 2 HERBICIDE****EPA Reg. No.:** 228-442**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 the same as the FIFRA label. Certain sections of this SDS are superseded by federal law governed by EPA for a registered pesticide.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:**

Eye irritation	Category 2A
Skin irritation	Category 2
Acute toxicity, oral	Category 4
Specific target organ toxicity – Repeated exposure	Category 2

ENVIRONMENTAL HAZARDS:

Hazardous to aquatic environment, acute	Category 1
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SIGNAL WORD:

WARNING

HAZARD STATEMENTS:

Causes serious eye irritation. Harmful if swallowed. May cause damage to organs (liver, kidneys) through prolonged or repeated exposure. Very toxic to aquatic life.

**PRECAUTIONARY STATEMENTS**

Wash hands and exposed skin thoroughly after handling. Wear chemical resistant gloves. Wear face shield, chemical goggles or shielded safety glasses. Do not eat, drink or smoke when using this product. Do not breathe mist/vapors/spray.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if safe to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

IF ON SKIN: Wash with plenty of water. Specific treatment: See **Section 4** First Aid and product label instructions. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse.

IF SWALLOWED: Call a poison center or doctor if you feel unwell. Rinse mouth.

Get medical advice/attention if you feel unwell.

Avoid unintended release to the environment. Collect spillage

Dispose of contents/container in accordance with state and federal regulations. See **Section 13** and product label for disposal instructions.

SAFETY DATA SHEET**ESCALADE 2 HERBICIDE****3. COMPOSITION / INFORMATION ON INGREDIENTS**

COMPONENT	CAS NO.	% BY WEIGHT
Dimethylamine Salt of 2,4-Dichlorophenoxyacetic Acid	2008-39-1	38.3 – 40.7
1-Methylheptyl Ester of Fluroxypyr	81406-37-3	5.6 – 6.2
Dicamba (3,6-Dichloro-o-Anisic Acid)	1918-00-9	3.9 – 4.3
Solvent Naphtha (Petroleum), Heavy Aromatic	64742-94-5	5.9 – 6.5
Other Ingredients:	Trade Secret	Trade Secret

Synonyms: Mixture of 2,4-D DMA, Fluroxypyr MHE, and Dicamba

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 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 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.

Most Important symptoms/effects: Eye exposure may cause moderate irritation. Skin exposure may cause irritation.

Indication of Immediate medical attention and special treatment if needed: There is no specific antidote if this product is ingested. Treat symptomatically.

5. FIRE FIGHTING MEASURES

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

Hazardous Decomposition Materials (Under Fire Conditions): May produce gases such as hydrogen chloride and 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: 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:**

Do not get in eyes or on clothing. Avoid contact with 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. If pesticide gets on skin,

SAFETY DATA SHEET

ESCALADE 2 HERBICIDE

wash immediately with soap and water. 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:

Always use original container to store pesticides in a secured warehouse or storage building. Store at temperatures above 25° F. Protect from freezing. If allowed to freeze, remix well before using. This does not alter the product. Containers should be opened in well-ventilated areas. Keep container tightly sealed when not in use. Do not stack cardboard cases more than two pallets high. Do not store near open containers of fertilizer, seed or other pesticides. 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. An emergency eyewash or water supply should be readily accessible to the work area.

Skin Protection: To avoid contact with skin, wear long-sleeved shirt, long pants, shoes, socks and chemical-resistant gloves. When mixing or loading, cleaning up spills or equipment or otherwise expose to the concentrate also wear a chemical-resistant apron. 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	
DMA Salt of 2,4-D	10*	NE	10*	NE	mg/m ³
Fluroxypyr	NE	NE	NE	NE	
Dicamba	NE	NE	NE	NE	
Solvent Naphtha (Petroleum), Heavy Aromatic**	NE	NE	NE	NE	
Other Ingredients	NE	NE	NE	NE	

*Based on adopted limit for 2,4-D

NE = Not Established

** Manufacturer recommended limit of 100 mg/m³ total hydrocarbon vapor.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Amber colored liquid
Odor:	Mild amine odor
Odor threshold:	No data available
pH:	5.5 - 8
Melting point/freezing point:	25° F (-4° C)
Initial boiling point and boiling range	No data available
Flash point:	>230° F (>110° C) Setflash
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:	1.169 @ 25° C
Solubility(ies):	Soluble
Partition coefficient: n-octanol/water:	No data available
Autoignition temperature:	No data available
Decomposition temperature:	No data available
Viscosity:	51.6 cPs @ 25° C

SAFETY DATA SHEET

ESCALADE 2 HERBICIDE

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 and oxides of carbon and nitrogen.

11. TOXICOLOGICAL INFORMATION

Likely Routes of Exposure: Eye contact, Skin contact

Symptoms of Exposure:

Eye Contact: Causes substantial but temporary eye damage. Vapors and mist may cause irritation.

Skin Contact: Slightly toxic and moderately irritating based on toxicity studies. Overexposure by skin absorption may cause symptoms similar to those for ingestion.

Ingestion: Slightly toxic if ingested based on toxicity studies. May cause headache, dizziness, nausea, vomiting, gastrointestinal irritation, weakness and central nervous system depression.

Inhalation: Low inhalation toxicity based on toxicity studies.

Delayed, immediate and chronic effects of exposure: Eye irritation

Toxicological Data:

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

Oral: Rat LD₅₀: 1,750 mg/kg (female) (estimated based on mortalities for doses tested)

Dermal: Rat LD₅₀: >2,000 mg/kg

Inhalation: Rat 4-hr LC₅₀: >2.07 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 may cause effects to liver, kidneys, blood chemistry, testes and gross motor function. Rare cases of peripheral nerve damage have been reported, but extensive animal studies have failed to substantiate these observations, even at high doses for prolonged periods.

Carcinogenicity / Chronic Health Effects: Various animal cancer tests have shown no reliably positive association between 2,4-D exposure and cancer. Epidemiology studies on herbicide use have been both positive and negative with the majority being negative. The U.S. EPA has given 2,4-D and dicamba a Class D classification (not classifiable as to human carcinogenicity). Fluroxypyr did not cause cancer in laboratory animals.

Reproductive Toxicity: No impairment of reproductive function attributable to 2,4-D have been noted in laboratory animal studies. In animal studies, fluroxypyr has been shown not to interfere with reproduction. Dicamba did not interfere with fertility in reproduction studies in laboratory animals.

Developmental Toxicity: Studies in laboratory animals with 2,4-D have shown decreased fetal body weights and delayed development in the offspring at doses toxic to mother animals. Fluroxypyr did not cause birth defects in animals; other effects were seen in the fetus only at doses which caused toxic effects in the mother. Animal tests with dicamba have not demonstrated developmental effects.

Genotoxicity: There have been some positive and some negative studies, but the weight of evidence is that 2,4-D is not mutagenic. Animal tests with fluroxypyr and dicamba did not demonstrate mutagenic effects.

Assessment Carcinogenicity:

This product contains substances that are considered to be probable or suspected human carcinogens as follows:

Component	Regulatory Agency Listing As Carcinogen			
	ACGIH	IARC	NTP	OSHA
Chlorophenoxy Herbicides	No	2B	No	No
Dicamba	No	No	No	No
Fluroxypyr	No	No	No	No
Solvent Naphtha (Petroleum), Heavy Aromatic	No	No	No	No
Other Ingredients	No	No	No	No

12. ECOLOGICAL INFORMATION

Ecotoxicity:**Data on 2,4-D, Dimethylamine Salt:**

96-hour LC ₅₀ Bluegill:	524 mg/l	Bobwhite Quail Oral LD ₅₀ :	500 mg/kg
96-hour LC ₅₀ Rainbow Trout:	250 mg/l	Mallard Duck 8-day Dietary LC ₅₀ :	>5,620 ppm
48-hour EC ₅₀ Daphnia:	184 mg/l		

Data on Fluroxypyr 1-Methylheptyl Ester:

Fluroxypyr 1-Methylheptyl Ester is highly toxic to aquatic invertebrates on an acute basis (LC₅₀ or EC₅₀ is between 0.1 and 1 mg/L). Concentrations for fish were not determined because they exceed water solubility. Fluroxypyr 1-Methylheptyl Ester is highly insoluble in water. Fluroxypyr 1-Methylheptyl Ester is practically non-toxic to birds on an acute and dietary basis (LD₅₀ >2,000 mg/kg and LC₅₀ >5,000 ppm).

Data on Dicamba:

96-hour LC ₅₀ Bluegill:	135 mg/l	Bobwhite Quail 8-day Dietary LC ₅₀ :	>10,000 ppm
96-hour LC ₅₀ Rainbow Trout:	135 mg/l	Mallard Duck 8-day Dietary LC ₅₀ :	>10,000 ppm
48-hour EC ₅₀ Daphnia:	110 mg/l		

Environmental Fate:

In laboratory and field studies, 2,4-D DMA salt rapidly dissociated to parent acid in the environment. The typical half-life of the resultant 2,4-D acid ranged from a few days to a few weeks.

In laboratory and field studies, Fluroxypyr 1-Methylheptyl Ester rapidly de-esterified to parent acid in the environment. The typical soil half-life for fluroxypyr (acid and ester) ranged from one to four weeks. Microbial metabolism is the primary degradation mechanism in soil. The typical aquatic half-life ranged from 4 to 14 days.

Dicamba poorly binds to soil particles, is potentially mobile in the soil and highly soluble in water. Aerobic soil metabolism is the main degradative process for dicamba with a typical half-life of 2 weeks. Degradation is slower when low soil moisture limits microbe populations. In water, microbial degradation is the main route of dicamba dissipation. Aquatic hydrolysis, volatilization, adsorption to sediments, and bioconcentration are not expected to be significant.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method:

Pesticide wastes are toxic. If container is damaged or if pesticide has leaked, contain all spillage. Absorb and clean up all spilled material with granules or sand. Place in a closed, labeled container for proper disposal. Improper disposal of excess pesticide, spray mixtures, or rinsate is a violation of Federal law and may contaminate groundwater. 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:

Nonrefillable Containers 5 Gallons or Less: Nonrefillable container. Do not reuse or refill this container. 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. Offer for recycling if available. If recycling or recondition are not available, 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. Triple rinse or pressure rinse container (or equivalent) promptly after emptying. **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

SAFETY DATA SHEET

ESCALADE 2 HERBICIDE

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. 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.

Refillable Container: Refill this container with pesticide only. Do not reuse this container for any other purpose. Close all openings and replace all caps. Contact Nufarm's Customer Service Department at 1-800-345-3330 to arrange for return of the empty refillable container.

For Residential Use:

Container Handling: If empty - Do not reuse this container. Place in trash or offer for recycling if available. If partly filled - If product cannot be used as directed, call your local solid waste agency for disposal instructions. Never place unused product down any indoor (including toilet) or outdoor (including sewer) drain.

14. TRANSPORTATION INFORMATION

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

DOT

<30 gallons per completed package
Non Regulated

≥ 30 and < 119 gallons per complete package

UN 3082, Environmentally hazardous substance, liquid, n.o.s., (2,4-D Salt), 9, III, RQ

≥ 119 gallons per complete package

UN 3082, Environmentally hazardous substance, liquid, n.o.s., (2,4-D Salt), 9, III, RQ, Marine Pollutant

IMDG

UN 3082, Environmentally hazardous substance, liquid, n.o.s., (2,4-D Salt), 9, III, Marine Pollutant

IATA

Non regulated

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.

WARNING. Causes substantial but temporary eye injury. Harmful if swallowed or absorbed through the skin. Do not get in eyes or on clothing. Avoid contact with skin.

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 370.66):

Immediate and Delayed

Section 313 Toxic Chemical(s):

Dicamba (CAS No. 1918-00-9), 3.9 -4.3% by weight in product

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

Dicamba (CAS No. 1918-00-9) 1,000 pounds

SAFETY DATA SHEET

ESCALADE 2 HERBICIDE

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: Not Listed.

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.

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.

Date of Issue: June 11, 2015

Supersedes: February 6, 2015

Escalade 2 is a registered trademark of Nufarm Americas Inc.

BARRICADE® 4FL Herbicide

Date: 10/17/2014
Replaces: 9/18/2014

1. PRODUCT IDENTIFICATION

Product identifier on label: **BARRICADE® 4FL Herbicide**

Product No.: A12333D

Use: Herbicide

Manufacturer: Syngenta Crop Protection, LLC
Post Office Box 18300
Greensboro NC 27419

Manufacturer Phone: 1-800-334-9481

Emergency Phone: 1-800-888-8372

2. HAZARDS IDENTIFICATION

Classifications: Skin Sensitizer: Category 1B
Carcinogenicity: Category 2
Specific Target Organ Toxicity: Repeated Category 2
Specific Target Organ Toxicity: Drowsiness Category 3
Eye Damage/Irritation: Category 2B

Signal Word (OSHA): Warning

Hazard Statements: May cause an allergic skin reaction
Causes eye irritation
May cause drowsiness or dizziness
Suspected of causing cancer
May cause damage to organs through prolonged or repeated exposure

Hazard Symbols:



Precautionary Statements: 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 or Syngenta if you feel unwell.
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Do not breathe mist, vapors, spray.
Wash hands and face thoroughly after handling.
Contaminated work clothing must not be allowed out of the workplace.
Wear protective gloves, protective clothing, eye protection.
If on skin: Wash with plenty of soap and water.

BARRICADE® 4FL Herbicide

Date: 10/17/2014
Replaces: 9/18/2014

If skin irritation or rash occurs: Get medical advice.
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.
If exposed or concerned: Get medical advice/attention.
See Section 4 First Aid Measures.
Wash contaminated clothing before reuse.
Store locked up.
Dispose of contents and container in accordance with local regulations.

Other Hazard Statements: None

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Common Name	CAS Number	Concentration
1,2-Propanediol	Propylene Glycol	57-55-6	Trade Secret
Attapulgite Clay	Attapulgite Clay	12174-11-7	Trade Secret
Other ingredients	Other ingredients	Trade Secret	59.3%
N3, N3-Di-n-propyl-2,4-dinitro-6-(trifluoromethyl)-m-phenylenediamine	Prodiamine	29091-21-2	40.7%

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

4. FIRST AID MEASURES

Have the product container, label or Safety Data Sheet with you when calling Syngenta (800-888-8372), a poison control center or doctor, or going for treatment.

Ingestion: If swallowed: Call Syngenta (800-888-8372), a poison control center or doctor immediately for treatment advice. Have the person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so after calling 800-888-8372 or by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

Eye Contact: If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after 5 minutes, then continue rinsing eye. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.

Skin Contact: If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.

Inhalation: If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call Syngenta (800-888-8372), a poison control center or doctor for further treatment advice.

Most important symptoms/effects:

Eye irritation
Allergic skin reaction
Drowsiness or dizziness

BARRICADE® 4FL Herbicide

Date: 10/17/2014

Replaces: 9/18/2014

Indication of immediate medical attention and special treatment needed:

There is no specific antidote if this product is ingested.

Treat symptomatically.

Persons suffering a temporary allergic reaction may respond to treatment with antihistamines or steroid creams and/or systemic steroids.

5. FIRE FIGHTING MEASURES

Suitable (and unsuitable) extinguishing media:

Use dry chemical, foam or CO2 extinguishing media. If water is used to fight fire, dike and collect runoff.

Specific Hazards:

During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion.

Special protective equipment and precautions for firefighters:

Wear full protective clothing and self-contained breathing apparatus. Evacuate nonessential personnel from the area to prevent human exposure to fire, smoke, fumes or products of combustion.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment, and emergency procedures:

Follow exposure controls/personal protection outlined in Section 8.

Methods and materials for containment and cleaning up:

Control the spill at its source. Contain the spill to prevent from spreading or contaminating soil or from entering sewage and drainage systems or any body of water. Clean up spills immediately, observing precautions outlined in Section 8. Cover entire spill with absorbing material and place into compatible disposal container. Scrub area with hard water detergent (e.g. commercial products such as Tide, Joy, Spic and Span). Pick up wash liquid with additional absorbent and place into compatible disposal container. Once all material is cleaned up and placed in a disposal container, seal container and arrange for disposition.

7. HANDLING AND STORAGE

Precautions for safe handling:

Store the material in a well-ventilated, secure area out of reach of children and domestic animals. Do not store food, beverages or tobacco products in the storage area. Prevent eating, drinking, tobacco use, and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.

Conditions for safe storage, including any incompatibilities:

Store locked up.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

THE FOLLOWING RECOMMENDATIONS FOR EXPOSURE CONTROLS/PERSONAL PROTECTION ARE INTENDED FOR THE MANUFACTURE, FORMULATION AND PACKAGING OF THIS PRODUCT.

FOR COMMERCIAL APPLICATIONS AND/OR ON-FARM APPLICATIONS CONSULT THE PRODUCT LABEL.

Occupational Exposure Limits:

Chemical Name	OSHA PEL	ACGIH TLV	Other	Source
Propylene Glycol	Not Established	Not Established	10 mg/m ³ TWA	AIHA
Attapulgite Clay	Not Established	Not Established	Not Established	Not Applicable

Safety Data Sheet



BARRICADE® 4FL Herbicide

Date: 10/17/2014

Replaces: 9/18/2014

Other ingredients	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Prodiamine	Not Established	Not Established	10 mg/m ³ TWA	Syngenta

Appropriate engineering controls:

Use effective engineering controls to comply with occupational exposure limits (if applicable).

Individual protection measures:

Ingestion:

Prevent eating, drinking, tobacco usage and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.

Eye Contact:

Where eye contact is likely, use chemical splash goggles.

Skin Contact:

Where contact is likely, wear chemical-resistant gloves (such as barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, natural rubber, polyethylene, polyvinyl chloride [PVC] or Viton), coveralls, socks and chemical-resistant footwear.

Inhalation:

A respirator is not normally required when handling this substance. Use effective engineering controls to comply with occupational exposure limits.

In case of emergency spills, use a NIOSH certified respirator with any N, R, P or HE filter.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Yellow liquid

Odor: Weak odor of ammonia

Odor Threshold: Not Available

pH: 8 - 10 (1% suspension in water)

Melting point/freezing point: Not Applicable

Initial boiling point and boiling range: Not Available

Flash Point (Test Method): > 212°F

Flammable Limits (% in Air): Not Available

Flammability: Not Applicable

Vapor Pressure: Prodiamine <5.6 x 10⁻⁶ mmHg @ 68°F (20°C)

Vapor Density: Not Available

Relative Density: 1.17 g/cm³ @ 68°F ; 9.76 lb/gal @ 68°F

Solubility (ies): Prodiamine 0.013 ppm @ 77°F (25°C)

Partition coefficient: n-octanol/water: Not Available

Autoignition Temperature: Not Available

Decomposition Temperature: Not Available

Viscosity: Not Available

Other: None

BARRICADE® 4FL Herbicide

Date: 10/17/2014
Replaces: 9/18/2014

10. STABILITY AND REACTIVITY

Reactivity: Not reactive.
Chemical stability: Stable under normal use and storage conditions.
Possibility of hazardous reactions: Will not occur.
Conditions to Avoid: Thermal, mechanical and electrical ignition sources.
Incompatible materials: None known.
Hazardous Decomposition Products: None known.

11. TOXICOLOGICAL INFORMATIONHealth effects information

Likely routes of exposure: Dermal, Inhalation

Symptoms of exposure: Eye irritation, Drowsiness or dizziness

Delayed, immediate and chronic effects of exposure: Possible carcinogenicity, Eye irritation, Allergic skin reaction, Drowsiness or dizziness

Numerical measures of toxicity (acute toxicity/irritation studies (finished product))

Ingestion:	Oral (LD50 Rat) :	> 5000 mg/kg body weight
Dermal:	Dermal (LD50 Rat) :	> 5000 mg/kg body weight
Inhalation:	Inhalation (LC50 Rat) :	> 2.55 mg/l air - 4 hours
Eye Contact:	Minimally Irritating (Rabbit)	
Skin Contact:	Slightly Irritating (Rabbit)	
Skin Sensitization:	Sensitizing (Guinea Pig)	

Reproductive/Developmental Effects

Prodiamine: Fetal toxicity at high dose levels (rats); developmental and maternal toxicity observed at 1g/kg/day.

Chronic/Subchronic Toxicity Studies

Prodiamine: Liver (alteration and enlargement) and thyroid effects (hormone imbalances) at high dose levels (rats); decreased body weight gains.

Carcinogenicity

Prodiamine: Possible human carcinogen based on limited animal evidence in the absence of human data.

Chemical Name	NTP/IARC/OSHA Carcinogen
1,2-Propanediol	No
Attapulgite Clay	IARC 2B
Other ingredients	No
N3, N3-Di-n-propyl-2,4-dinitro-6-(trifluoromethyl)-m-phenylenediamine	No

Safety Data Sheet



BARRICADE® 4FL Herbicide

Date: 10/17/2014

Replaces: 9/18/2014

Other Toxicity Information

None

Toxicity of Other Components

Attapulgit Clay

Prolonged or repeated inhalation of dust may cause a disabling, progressive pulmonary fibrosis. Inhalation hazard may not exist in the liquid form. May cause eye irritation.

Other ingredients

Not Applicable

Propylene Glycol

Reported to cause central nervous system depression (anesthesia, dizziness, confusion), headache and nausea. Also, eye irritation may occur with lacrimation but no residual discomfort or injury. Prolonged contact to skin may cause mild to moderate irritation and possible allergic reactions. Chronic dietary exposure caused kidney and liver injury in experimental animals.

Target Organs

Active Ingredients

Prodiamine: Liver, thyroid

Inert Ingredients

Attapulgit Clay: Lung, eye

Other ingredients: Not Applicable

Propylene Glycol: CNS, kidney, liver

12. ECOLOGICAL INFORMATION

Eco-Acute Toxicity

Prodiamine:

Fish (Bluegill Sunfish) 96-hour LC50 > 552 ppb

Invertebrate (Water Flea) Daphnia Magna 48-hour EC50 > 83 ppb

Bird (Bobwhite Quail) 14-day LD50 > 2250 mg/kg

Environmental Fate

Prodiamine:

The information presented here is for the active ingredient, prodiamine.

Does not bioaccumulate. Persistent in soil. Stable in water. Immobile in soil. Sinks in water (after 24 h).

13. DISPOSAL CONSIDERATIONS

Disposal:

Do not reuse product containers. Dispose of product containers, waste containers, and residues according to local, state, and federal health and environmental regulations.

Characteristic Waste: Not Applicable

Listed Waste: Not Applicable

Safety Data Sheet



BARRICADE® 4FL Herbicide

Date: 10/17/2014

Replaces: 9/18/2014

14. TRANSPORT INFORMATION

DOT Classification

Ground Transport - NAFTA

Not regulated

Comments

Water Transport - International

Proper Shipping Name: Environmentally Hazardous Substance, Liquid, N.O.S. (Prodiamine), Marine Pollutant

Hazard Class: Class 9

Identification Number: UN 3082

Packing Group: PG III

Air Transport

Proper Shipping Name: Environmentally Hazardous Substance, Liquid, N.O.S. (Prodiamine)

Hazard Class: Class 9

Identification Number: UN 3082

Packing Group: PG III

15. REGULATORY INFORMATION

Pesticide Registration:

This chemical is a pesticide product registered by the 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, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

Caution: May be harmful if swallowed, absorbed through skin, or inhaled. Avoid breathing vapor. Avoid contact with skin, eyes, or clothing. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash clothing before reuse.

EPA Registration Number(s):

100-1139

EPCRA SARA Title III Classification:

Section 311/312 Hazard Classes: Acute Health Hazard
Chronic Health Hazard

Section 313 Toxic Chemicals: None

CERCLA/SARA 304 Reportable Quantity (RQ):

None

RCRA Hazardous Waste Classification (40 CFR 261):

Not Applicable

TSCA Status:

Exempt from TSCA, subject to FIFRA

Safety Data Sheet



BARRICADE® 4FL Herbicide

Date: 10/17/2014

Replaces: 9/18/2014

16. OTHER INFORMATION

NFPA Hazard Ratings

Health: 2
Flammability: 1
Instability: 0

HMIS Hazard Ratings

Health: 2
Flammability: 1
Reactivity: 0

0	Minimal
1	Slight
2	Moderate
3	Serious
4	Extreme
*	Chronic

Syngenta Hazard Category: C,S

For non-emergency questions about this product call:

1-800-334-9481

Original Issued Date: 10/1/2001

Revision Date: 10/17/2014

Replaces: 9/18/2014

Section(s) Revised: 11

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein.

Safety Data Sheet
SYNATEK® LIQUID TURF FERTILIZERS

SECTION 1: PRODUCT AND COMPANY INFORMATION

Product Name(s) SynaTek® Liquid Turf Fertilizers including TurFlo®, ArborFlo®, FertAminos®, RootFlo®, and Fertimate™ Fertigation Liquids.
Uses and Restrictions Fertilizer / For commercial or professional use only
Manufacturer SynaTek, LP, 737 Hagey Rd – Unit A, Souderton, PA 18964
Telephone (888) 408-5433 **Web Site** www.synateksolutions.com
Emergency Contact / Number CHEMTREC 1-800-424-9300

SECTION 2: HAZARD IDENTIFICATION



Hazards

Skin Corrosion/Irritation Category 2 – Causes skin irritation
Eye Damage/Irritation Category 2B – Causes eye irritation
Specific target organ toxicity, single occurrence Category 3 – May cause respiratory irritation

Signal Word WARNING

Precautionary Statements

Avoid breathing dust. Wash hands thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear protective gloves and eye protection. Call a POISON CENTER or a doctor/physician if you feel unwell.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do so - continue rinsing.
If eye irritation persists get medical advice/attention.
IF ON SKIN: Wash with soap and water.
If skin irritation occurs: get medical advice/attention.
Take off contaminated clothing and wash before reuse. Store in a well ventilated place. Keep container tightly closed. Store locked up. Dispose of contents/container to an approved waste disposal plant.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Component Name	CAS Number	Percentage
Diammonium phosphate	7783-28-0	0 – 60
Potassium chloride	7747-40-7	0 – 35
Non-hazardous ingredients	Mixture	balance

SECTION 4: FIRST AID MEASURES

Most Important Symptoms / Effects

Working around the product for long periods or vapors from the product may cause slight irritation to the eyes or skin. Direct contact may cause a skin rash or irritation; direct eye contact may cause blurred vision or eye irritation. Inhalation can cause respiratory irritation, dizziness or nausea. Ingesting large amounts may cause gastrointestinal irritation, nausea, vomiting or diarrhea.

Indication of Immediate Medical Attention and Special Treatment, If Necessary

Persistent eye or skin irritation, ingestion, difficulty in breathing, unconsciousness or respiratory distress.

Eye Contact

Flush eyes immediately with water for at least 15 minutes. Seek immediate medical advice or attention if irritation persists.

Skin Contact

Wash exposed areas promptly with water and mild soap. Remove contaminated clothing immediately and launder before reuse. Seek medical advice or attention if irritation occurs and persists.

Ingestion

Never give anything by mouth to an unconscious person. Rinse mouth if conscious. Drink one to two glasses or more of water to dilute swallowed material. Do not induce vomiting due to danger of aspiration into the lungs. Obtain medical advice or contact your local Poison Control Center 1-800-222-1222.

Inhalation

Move to fresh air. If not breathing, if breathing is irregular, or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel and seek medical attention.

SECTION 5: FIREFIGHTING MEASURES

Suitable Extinguishing Media

Product does not burn. Use water spray, dry chemical, foam or CO₂ as applicable for burning materials. Use a water spray to cool fire-exposed containers, structures and to protect personnel.

Special Firefighting Procedures

May produce noxious or toxic fumes, gases, and vapors in an intense fire. Exposed firefighters should wear MSHA/NIOSH approved self-contained breathing apparatus with full-face mask and full protective equipment. Do not enter confined fire space without full equipment and a positive pressure NIOSH approved self-contained breathing apparatus.

Unusual Firefighting Hazards

None known

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions

Isolate release area and keep unnecessary people away. See Section 8 for personal protection gear.

Methods for Cleaning Up

Clean up spills observing precautions in Section 8. Prevent material from entering storm drains or waterways. Small amounts may be flushed with water; large amounts should be collected for later use or disposal.

SECTION 7: HANDLING AND STORAGE

Handling

Follow accepted work and hygiene practices for neutral liquid materials. Avoid contact with eyes or prolonged contact with skin. Avoid inhalation. Empty containers may contain residue.

Storage

Keep containers in a dry, cool, well-ventilated area. Keep away from incompatible materials, foodstuffs, children or pets.

SECTION 8: EXPOSURE CONTROL AND PERSONAL PROTECTION

Exposure Limits

Component Name	ACGIH TLV-TWA	OSHA PEL-TWA
Diammonium phosphate	25 ppm	50 ppm

Engineering Controls

Use appropriate ventilation to maintain good air quality. Have eye wash stations and safety showers readily available.

Eye and Face Protection

Wear safety glasses with side-shields conforming to ANSI Z-87; use face shield if splashing is possible.

Skin Protection

Wear protective gloves to avoid repeated or prolonged contact. Additional body garments should be used based upon the task being performed.

Respiratory Protection

Not normally required. Use a properly fitted NIOSH respirator in areas where the exposure is unknown or above the OSHA PEL or ACGIH TLV.

General Hygiene

Wash thoroughly with soap and water after task or shift, when using the restroom or before eating.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance/Physical State	Liquid, color varies	Flash Point	Not Applicable
Specific Gravity (Water=1)	1.1 – 1.3	Upper Flammability Limits	Not Applicable
Evaporation Rate	Not Determined	Lower Flammability Limits	Not Applicable
pH	5.5 – 9.5	Auto-ignition Temperature	Not Applicable
Solubility in Water	Complete	Decomposition Temperature	Not Determined
Odor	Characteristic	Vapor Pressure	Not Determined
Odor Threshold	Not Determined	Vapor Density (Air=1)	Not Determined
Melting/Freezing Point	Not Determined	Partition Coefficient (n-octanol/water)	Not Determined
Boiling Range	Not Determined	Viscosity	Not Determined
Initial Boiling Point	212 °F	Critical Temperature	Not Applicable

Note: Physical and chemical properties are provided for safety, health and environmental considerations and do not fully represent product specifications. Those should be requested separately.

SECTION 10: STABILITY AND REACTIVITY

Reactivity

Does not react

Chemical Stability

Stable under normal conditions of storage and handling.

Possibility of Hazardous Reactions

Will not occur

Conditions to Avoid

Storage in direct sunlight or temperatures above 120 °F.

Incompatible Materials

Strong oxidizing agents

Hazardous Decomposition Products

Ammonia, nitrogen oxides, formic acid and formaldehyde

SECTION 11: TOXICOLOGICAL INFORMATION

Specific toxicity tests have not been conducted on this mixture. In accordance with OSHA's Hazard Communication Standard 1910.1200, this mixture is assumed to have the same health hazards as its significant components.

Acute Effects

May cause slight irritation to the eyes and skin. Ingestion may cause gastrointestinal irritation and vomiting. Irritating to the respiratory system.

Target Organ Effects

None known

Chronic Effects

Repeated or long term exposure may aggravate acute symptoms.

Carcinogenicity

This product does not contain carcinogens or potential carcinogens as listed by OSHA, IARC or NTP.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity	Not Determined
Mobility	Not Determined
Degradability	Not Determined
Bioaccumulation	Not Determined

SECTION 13: DISPOSAL CONSIDERATION

Dispose of this product in compliance with all applicable federal, state and local regulations. Empty containers may contain residues.

SECTION 14: TRANSPORT INFORMATION

Proper Shipping Name Not Regulated

SECTION 15: REGULATORY INFORMATION

TSCA Status

All components are listed in the TSCA inventory

SARA 311/312 Reporting Categories

None

SARA 313 Reportable Ingredients

None

SECTION 16: OTHER INFORMATION

Department Issuing SDS Health and Safety

Disclaimer

The data presented herein is believed accurate for the specific material, but is in no way guaranteed. The information herein may not be applicable if this specific material is used in combination with other material(s). SynaTek assumes no liability and makes no warranty in connection with any use for this specific material. Other safety measures in addition to those indicated may be required. The user, therefore, assumes full responsibility, both as to persons and to property, for the safe use of these materials.

Information listed herein, such as Hazards, First Aid, etc., is abbreviated. For more detailed information, contact the manufacturer at our address, or review the information contained in the reference section listed above.