

**1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**

Product Name: Longbow EC
EPA Reg. No.: 71368-133
Product Type: Herbicide

Company: Nufarm, Inc.
11901 S. Austin Avenue
Alsip, IL 60803
1-800-345-3330

Active Ingredient: Carfentrazone-ethyl
CAS No. 128639-02-1

Synonyms: Ethyl 2-chloro-3-{2-chloro-4-fluoro-5-{4-(difluoromethyl)-4,5-dihydro-3-methyl-5-oxo-1H-1,2,4-triazol-1-yl}4-fluorophenyl}propionate
Benzenepropanoic acid, alpha.-2-dichloro-5-{4-(difluoromethyl)-4,5-dihydro-3-methyl-5-oxo-1H-1,2,4-triazol-1-yl}-4-fluoro-, ethyl ester

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 Certain sections are superseded by federal law governed by EPA for a registered pesticide.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**OSHA Regulatory Status**

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200)

GHS Label elements including precautionary statements.**EMERGENCY OVERVIEW**

Danger

Hazard Statements

H304 - May be fatal if swallowed and enters airways

H351 - Suspected of causing cancer.

**Precautionary Statements-Prevention**

P201 - Obtain special instructions before use

P202 - Do not handle until all safety precautions have been read and understood

P280 - Wear protective gloves/protective clothing/eye protection/face protection

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Precautionary Statements-Response

P308 + P313 - If exposed or concerned: Get medical advice/attention

P301 + P310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor

P331 - Do NOT induce vomiting

Precautionary Statements – Storage

P405 - Store locked up

Precautionary Statements – Disposal

P501 - Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)

No hazards not otherwise classified were identified.

Other information

May be harmful if swallowed. Very toxic to aquatic life with long lasting effects.

3. COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENTS	CAS NO.	% BY WEIGHT
Carfentrazone-ethyl	128639-02-1	21.9
Naphtha (petroleum), heavy aromatic	64742-94-5	<70
2-Methylnaphthalene	91-57-6	<30
1-Methylnaphthalene	90-12-0	<20
n-Butanol	71-36-3	1-5
Naphthalene	91-20-3	0.1-1
Other Ingredients	Trade Secret	Trade Secret

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. 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 irritation occurs and persists.

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

If Swallowed: Immediately call a poison control center or doctor for treatment advice. Do not give any liquid to the person. 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 with plenty of water. Call a poison control center or doctor for treatment advice if irritation occurs and persists.

Most Important symptoms/effects, acute and delayed: Central nervous system effects. Gastrointestinal effects

Indication of immediate medical attention and special treatment needed, if necessary: Treatment is symptomatic and supportive. Contains petroleum distillate. Vomiting may cause aspiration pneumonia.

5. FIRE FIGHTING MEASURES

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

Specific Hazards Arising from the Chemical: Slightly combustible. May support combustion at elevated temperatures.

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: EXPOSURE CONTROLS / PERSONAL PROTECTION**.

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: Clean and neutralize spill area, tools and equipment by washing with water and soap. 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. Keep in a dry, cool and well-ventilated place. Keep away from open flames, hot surfaces and sources of ignition. Keep out of reach of children and animals. Keep/store only in original container.

INCOMPATIBLE PRODUCTS: Strong oxidizing agents.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines:

Chemical name	ACGIH TLV	OSHA PEL	NIOSH
2-Methylnaphthalene CAS No. 91-57-6	TWA: 0.5 ppm		
1-Methylnaphthalene CAS No. 90-12-0	TWA: 0.5 ppm		
n-Butanol CAS No. 71-36-3	TWA: 20 ppm	TWA: 100 ppm TWA: 300 mg/m ³	IDLH: 1400 ppm Ceiling: 50 ppm Ceiling: 150 mg/m ³
Naphthalene CAS No. 91-20-3	TWA: 10 ppm	TWA: 10 ppm TWA: 50 mg/m ³	IDLH: 250 ppm TWA: 10 ppm TWA: 50 mg/m ³ STEL: 15 ppm STEL: 75 mg/m ³

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 and shoes. An emergency shower or water supply should be readily accessible to the work area.

Respiratory Protection: 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

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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.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Liquid, brown-orange
Odor:	Mild, sweet
Odor threshold:	No data available
pH:	5.3 (1% dispersion)
Melting point/freezing point:	No data available
Initial boiling point and boiling range	No data available
Flash point:	75.6° C / 168 ° F
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:	9.0 lb/gal
Solubility(ies):	No data available
Partition coefficient: n-octanol/water:	No data available
Autoignition temperature:	No data available
Decomposition temperature:	No data available
Viscosity:	No data available
VOC Emission Potential (%)	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 normally reactive.

Chemical Stability: Stable under normal handling conditions.

Possibility of Hazardous Reactions: None known.

Conditions to Avoid: Heat, flames and sparks.

Incompatible Materials: Avoid strong oxidizers.

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide, hydrogen chloride, hydrogen fluoride, nitrogen oxides, sulfur 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: Harmful if ingested based on toxicity studies.

Inhalation: Low inhalation toxicity based on toxicity studies.

Delayed, immediate and chronic effects of exposure: None expected.

Toxicological Data:

Data from laboratory studies conducted on a similar product are summarized below:

Oral: Rat LD₅₀: 4077 mg/kg (females)

Dermal: Rat LD₅₀: > 4,000 mg/kg

Inhalation: Rat 4-hr LC₅₀: > 6.31 mg/L

Eye Irritation: Mildly irritating

Skin Irritation: Mildly irritating

Skin Sensitization: Non-sensitizer

Information on toxicological effects:

Symptoms: Signs of toxicity in laboratory animals included mydriasis, cyanosis, ataxia, dyspnea, lacrimation and diarrhea.

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Delayed and immediate effects as well as chronic effects from short and long-term exposure

Chronic toxicity Carfentrazone-ethyl: Long-term exposure caused hematotoxicity and deposit of porphyrin in the liver in animal studies.

Mutagenicity Carfentrazone-ethyl: Not genotoxic in laboratory studies.

Carcinogenicity Carfentrazone-ethyl: No evidence of carcinogenicity from animal studies. There was no evidence of carcinogenic activity of naphthalene in male mice, but there was some evidence of carcinogenic activity in female mice and clear evidence of carcinogenic activity in male and female rats in 2-year inhalation studies conducted by the National Toxicology Program (NTP).

Neurological effects Carfentrazone-ethyl: Not neurotoxic.

Reproductive toxicity Carfentrazone-ethyl: No toxicity to reproduction in animal studies.

Developmental toxicity Carfentrazone-ethyl: Not teratogenic in animal studies.

STOT – single exposure Not classified.

STOT – repeated exposure Not classified.

Aspiration hazard: Potential for aspiration if swallowed. Vomiting after ingestion of this product may cause aspiration of aromatic hydrocarbons into the lungs, which may result in fatal pulmonary edema.

Chemical name	ACGIH	IARC	NTP	OSHA
Naphthalene CAS No. 91-20-3	A3	Group 2B	Reasonably anticipated	X

Legend:

ACGIH (American Conference of Governmental Industrial Hygienists): A3 - Animal Carcinogen

IARC (International Agency for Research on Cancer): Group 2B – Possibly Carcinogenic to Humans

NTP (National Toxicology Program): Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen

OSHA (Occupational Safety and Health Administration of the US Department of Labor): X-Present

12. ECOLOGICAL INFORMATION

Ecotoxicity

Chemical name	Toxicity to algae	Toxicity to fish	Toxicity to daphnia and other aquatic invertebrates
n-Butanol CAS No. 71-36-3	96 h EC50: > 500 mg/L (Desmodesmus subspicatus) 72 h EC50: > 500 mg/L (Desmodesmus subspicatus)	96 h LC50: 1730 -1910 mg/L (Pimephales promelas) static (Pimephales promelas) static 96 h LC50: = 1740 mg/L (Pimephales promelas) flow-through 96 h LC50: 100000 - 500000 µg/L (Lepomis macrochirus) static 96 h LC50: = 1910000 µg/L (Pimephales promelas) static	48 h EC50: 1897 - 2072 mg/L (Daphnia magna) Static 48 h EC50: = 1983 mg/L (Daphnia magna)

Carfentrazone-ethyl CAS No. 128639-02-1			
Duration	Species	Value	Units
72 h EC50	Algae	0.012	mg/L
96 h LC50	Fish	1.6	mg/L
48 h LC50	Daphnia	>9.8	mg/L
96 h NOEC	Algae	1.0	µg/L
21 d NOEC	Fish	0.0187	mg/L
21 d NOEC	Crustacea	0.22	mg/L

Persistence and degradability Carfentrazone-ethyl: Non-persistent. Readily hydrolyzed. Not readily biodegradable.

Bioaccumulation Carfentrazone-ethyl: The substance does not have a potential for bioconcentration.

Mobility Carfentrazone-ethyl: Mobility in soil: not relevant.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method: Improper disposal of excess pesticide, spray mixture, or rinsate is prohibited. If these wastes cannot be disposed of by use according to label instructions, contact appropriate disposal authorities for guidance. Proper personal protective equipment, as described in **SECTIONS 7 and 8**, must be worn while handling materials for waste disposal.

Contaminated Packaging Containers must be disposed of in accordance with local, state and federal regulations. Refer to the product label for container disposal instructions. Do not reuse or refill this container.

14. TRANSPORTATION INFORMATION

DOT This material is a Combustible liquid and is, therefore, not subject to the hazardous materials regulations when in non-bulk packages shipped within the USA per 49 CFR § 173.150(f)(2).

UN/ID number NA1993
Proper shipping name: Combustible liquid, n.o.s.
Hazard class: 3
Packing group: III
Reportable Quantity (RQ): Napthalene

TDG Classification below is only applicable when shipped by vessel and is not applicable when shipped by road or rail only.

UN/ID number: UN3082
Hazard Class: 9
Packing Group: III
Marine Pollutant: Carfentrazone-ethyl .
Description: UN3082, Environmentally hazardous substance, liquid, n.o.s. (Carfentrazone-ethyl), 9, PG III, Marine Pollutant

ICAO/IATA

UN/ID number: UN3082
Hazard Class: 9
Packing Group: III
Description: UN3082, Environmentally hazardous substance, liquid, n.o.s. (Carfentrazone-ethyl), 9, PG III, Marine Pollutant

IMDG/IMO

UN/ID number: UN3082
Hazard Class: 9
Packing Group: III
EmS number: F-A, S-F
Marine Pollutant: Carfentrazone-ethyl .
Description: UN3082, Environmentally hazardous substance, liquid, n.o.s. (Carfentrazone-ethyl), 9, PG III, Marine Pollutant

15. REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS

Superfund Amendments and Reauthorization Act of 1986 (SARA) Notification/Reporting

This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372:

Chemical name CAS Number	Weight %	SARA 313 – Threshold Values %
n-Butanol CAS No. 71-63-3	1-5	1.0
Napthalene CAS No. 91-20-3	0.1-1	0.1

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SARA 311/312 Hazard Categories

Acute health hazard	Yes
Chronic health hazard	Yes
Fire hazard	Yes
Sudden release of pressure hazard	No
Reactive Hazard	No

Clean Water Act:

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42):

Chemical name CAS Number	CWA – Reportable Quantities	CSW-Toxic Pollutants	CWA – Priority Pollutants	CWA-Hazardous Substances
Napthalene CAS No. 91-20-3	100 lb	X	X	X

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302):

Chemical name CAS Number	Hazardous Substances RQs	Extremely Hazardous Substances RQs
n-Butanol CAS No. 71-63-3	5000 lb 2270 kg	
Napthalene CAS No. 91-20-3	100 lb 45.4 kg	

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.

California Proposition 65: This product contains the following Proposition 65 chemicals:

Chemical name	California Prop 65
Napthalene	Carcinogen

US State Right-to-Know Regulations

Chemical name CAS Number	New Jersey	Massachusetts	Pennsylvania
n-Butanol CAS No. 71-36-3	X	X	X
2-Methylnapthalene CAS No. 91-12-0	X		
1-Methylnapthalene CAS No. 90-12-0	X	X	X
Napthalene CAS No. 91-20-3	X	X	X

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

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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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