



1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Candor® Herbicide

EPA Reg. No.: 228-565

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 Certain sections of this SDS are superseded by federal law governed by EPA for a registered pesticide.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

PHYSICAL HAZARDS:

Flammable Liquid Category 4

HEALTH HAZARDS:

Acute oral toxicity	Category 4
Skin Irritation	Category 2
Eye Irritation	Category 2B
Aspiration Toxicity	Category 1
Carcinogen	Category 2B

ENVIRONMENTAL HAZARDS:

Aquatic Acute Toxicity	Category 1
Aquatic Chronic Toxicity	Category 1

SIGNAL WORD:

DANGER

HAZARD STATEMENTS:

Combustible liquid. Harmful if swallowed. Causes eye irritation. Causes skin irritation. Suspected of causing cancer. May be fatal if swallowed and enters airways. Very toxic to aquatic life with long lasting effects.



PRECAUTIONARY STATEMENTS

Keep away from flames and hot surfaces. No smoking. Wear protective gloves and eye protection. Obtain special instructions before use. Do not use until all safety precautions have been read and understood. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Avoid release to the environment.

IF SWALLOWED: Immediately call a POISON CENTER or doctor. Do NOT induce vomiting.

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 attention.

IF ON SKIN: Wash with plenty of soap and water. If skin irritation occurs: Get medical attention. Take off contaminated clothing and wash it before reuse. If exposed or concerned: Get medical advice.

Collect spillage

In case of fire: Use dry chemical, carbon dioxide, foam or water spray to extinguish.

Store in a well-ventilated place. Keep cool.

Store locked up.

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

3. COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENT	CAS NO.	% BY WEIGHT
Butoxyethyl Ester of 2,4-Dichlorophenoxyacetic Acid	1929-73-3	32.6 – 36.1
Butoxyethyl Ester of 3,5,6-trichloro-2-pyridinyloxyacetic acid)	64700-56-7	15.7 – 17.4
Solvent Naphtha (Petroleum), Heavy Aromatic	64742-94-5	25.3 – 27.2
Distillates (Petroleum), Hydrotreated Light	64742-47-8	15.0 – 16.5
Naphthalene	91-20-3	< 2.8
1,2,4-Trimethylbenzene	95-63-6	< 0.5
1-Hexanol	111-27-3	< 0.3
Other Ingredients	Trade Secret	Trade Secret

Synonyms: Mixture of 2,4-D BEE and Triclopyr BEE

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. Get medical attention if irritation persists.

If Swallowed: Call a poison control center or doctor immediately. Do NOT induce vomiting.

If on Skin or Clothing: Take off contaminated clothing. Wash thoroughly with soap and water. Get medical attention if irritation persists.

If Inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration. Call a poison control center or doctor for further treatment advice.

Most important symptoms/effects, acute and delayed: Causes eye and skin irritation. Harmful if swallowed. Inhalation of vapors or mists may cause respiratory irritation and nervous system effects. Aspiration hazard – may enter the lungs during swallowing or vomiting and cause severe lung damage.

Contains naphthalene which is suspected of causing cancer.

Indication of immediate medical attention and special treatment if needed:

Immediate medical attention is required for ingestion.

Note to Physician: No specific antidote is available. May pose an aspiration pneumonia hazard. Contains petroleum distillates.

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 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: Combustible liquid. Can release vapors that form explosive mixtures at temperatures at or above the flash point. Containers will burst from internal pressure under extreme fire conditions. 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 nitrogen and carbon.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Wear appropriate protective gear for the situation. See Personal Protection information in Section 8. Eliminate ignition sources.

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:

Harmful if swallowed. Do not get in eyes or on clothing. Avoid breathing vapors or mists. Keep product away from excessive heat and open flames. 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 the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

If the container is over one gallon and less than five gallons, mixers and loaders who do not use a mechanical system (such as probe and pump) to transfer the contents of the container must also wear coveralls or a chemical-resistant apron in addition to other required PPE. If the container is five gallons or more in capacity, do not open pour product from the container. A mechanical system (such as a probe and pump or spigot) must be used for transferring the contents of the container. If the contents of a non-refillable pesticide container are emptied, the probe must be rinsed before removal.

STORAGE:

Store in original container in a dry secured storage area. Keep container tightly closed when not in use. Store above 10°F or agitate before use. Do not contaminate water, foodstuffs, feed or seed 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 chemical goggles. 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, shoes plus socks and chemical-resistant gloves. When mixing, loading, cleaning up spills or equipment, or otherwise expose to the concentrate, wear a chemical-resistant apron. Washing facilities 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 organic vapors and 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	
2,4-D Butoxyethyl Ester*	10*	NE	10* (inhalable, skin)	NE	mg/m ³
Butoxyethyl Ester of 3,5,6-trichloro-2-pyridinyloxyacetic acid)	NE	NE	NE	NE	
Solvent Naphtha (Petroleum), Heavy Aromatic**	NE	NE	NE	NE	
Distillates (Petroleum), Hydrotreated Light***	NE	NE	NE	NE	
Naphthalene	10	NE	10 skin	NE	ppm

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1,2,4-Trimethylbenzene	NE	NE	25	NE	ppm
1-Hexanol ****	NE	NE	NE	NE	
Other Ingredients	NE	NE	NE	NE	

*Based on adopted limit for 2,4-D

NE = Not Established

Manufacturer recommended exposure limit 17 ppm (100 mg/m³) TWA*Manufacturer recommended exposure limit 143 ppm (1200 mg/m³) TWA

**** AIHA WEEL 40 ppm TWA

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Reddish-brown translucent liquid
Odor:	Pungent odor
Odor threshold:	No data available
pH:	3.18 (1% w/w dispersion in DIW)
Melting point/freezing point:	No data available
Initial boiling point and boiling range	No data available
Flash point:	149° F (65° 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:	1.017 g/mL @ 21° C
Solubility(ies):	Emulsifiable
Partition coefficient: n-octanol/water:	No data available
Autoignition temperature:	No data available
Decomposition temperature:	No data available
Viscosity:	8.999 cPs @ 20° C; 4.775 cPs @ 40° C
VOC Emission Potential (%):	67.19

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: Avoid temperatures near or above flash point 149° F (65° C).

Incompatible Materials: Strong oxidizing agents: bases and acids.

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

11. TOXICOLOGICAL INFORMATION

Likely Routes of Exposure: Eye contact, Skin contact

Eye Contact: Causes moderate eye irritation. Vapors and mists can cause irritation.

Skin Contact: Slightly toxic and moderately irritating based on toxicity studies. Prolonged or frequently repeated skin contact may cause allergic skin reactions in some individuals. Not sensitizing in animal studies.

Ingestion: Harmful if swallowed. The petroleum hydrocarbon component, if aspirated into the respiratory system during ingestion or vomiting may cause mild or severe pulmonary injury, possibly progressing to death.

Inhalation: Low inhalation toxicity. Overexposure to petroleum hydrocarbon component may cause irritation to respiratory tract, headaches, anesthesia, drowsiness, unconsciousness and other central nervous system effects, possibly including death.

Delayed, immediate and chronic effects of exposure: Prolonged or frequently repeated skin contact may cause drying and cracking of the skin and possible allergic skin reaction in some individuals.

Toxicological Data:

Except as noted, data from laboratory studies conducted on this product:

Oral: Rat LD₅₀: 1,800 mg/kg

Dermal: Rat LD₅₀: >5,000 mg/kg

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Inhalation: Rat, LC₅₀: >2.09 mg/l (No mortalities at highest dose tested)

Eye Irritation: Rabbit: Moderately irritating (MMTS=24.0)

Skin Irritation: Rabbit: Moderately irritating (PDII= 4.8)

Skin Sensitization: Guinea pig: Not a sensitizer

Subchronic (Target Organ) Effects: Repeated overexposure to phenoxy herbicides may cause effects to liver, kidneys, blood chemistry, 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. Excessive exposure to Triclopyr BEE may effect blood, kidneys and liver.

Carcinogenicity / Chronic Health Effects: Prolonged overexposure can cause liver, kidney and muscle damage. The International Agency for Research on Cancer (IARC) lists exposure to chlorophenoxy herbicides as a class 2B carcinogen, the category for limited evidence for carcinogenicity in humans. However, more current 2,4-D lifetime feeding studies in rats and mice did not show carcinogenic potential. The U.S. EPA has given 2,4-D a Class D classification (not classifiable as to human carcinogenicity). Triclopyr BEE did not cause cancer in laboratory studies. The hydrocarbon component may contain naphthalene, which is listed by IARC as a class 2B and the U.S. National Toxicology Program as reasonably anticipated to be a human carcinogen.

Reproductive Toxicity: No impairment of reproductive function attributable to 2,4-D has been noted in laboratory animal studies. For Triclopyr BEE, in laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent 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. For Triclopyr BEE, birth defects are unlikely. Exposures having no effect on the mother should have no effect on the fetus. Did not cause birth defects in animals; other effects were seen in the fetus only at doses which caused toxic effects to the mother.

Genotoxicity: There have been some positive and some negative studies, but the weight of evidence is that 2,4-D is not mutagenic. For Triclopyr BEE, *in-vitro* and animal mutagenicity studies were negative.

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 (2,4-D)	No	2B	No	No
Triclopyr BEE	No	No	No	No
Solvent Naphtha (Petroleum), Heavy Aromatic	No	No	No	No
Distillates (Petroleum), Hydrotreated Light	No	No	No	No
Naphthalene	A3	2B	Yes	No
1,2,4-Trimethylbenzene	No	No	No	No
1-Hexanol	No	No	No	No
Other Ingredients	No	No	No	No

12. ECOLOGICAL INFORMATION

Ecotoxicity:

Data on 2,4-D Butoxyethyl Ester:

96-hour LC ₅₀ Bluegill:	0.61 mg/l	Bobwhite Quail Oral LD ₅₀ :	>2,000 mg/kg
96-hour LC ₅₀ Rainbow Trout:	2.0 mg/l	Bobwhite Quail Dietary LC ₅₀ :	>5,620 ppm
48-hour EC ₅₀ Daphnia:	7.2 mg/l	Mallard Duck Dietary LC ₅₀ :	>5,620 ppm

Data on Triclopyr Butoxyethyl Ester:

96-hour LC ₅₀ Bluegill:	0.36 mg/l	Bobwhite Quail Oral LD ₅₀ :	735 mg/kg
96-hour LC ₅₀ Rainbow Trout:	0.65 mg/l	Bobwhite Quail 8-day Dietary LC ₅₀ :	5,401 ppm
48-hour EC ₅₀ Daphnia:	10.1 mg/l	Mallard Duck 8-day Dietary LC ₅₀ :	>5,401 ppm

Environmental Fate:

In laboratory and field studies, 2,4-D, butoxyethyl ester rapidly de-esterified 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, Triclopyr butoxyethyl ester hydrolyzes to parent acid in the environment. Triclopyr is moderately persistent and mobile. In soil, the predominant degradation pathway is microbial and the average half-life is 30 days. Half-lives tend to be shorter in warm, moist soils with a high organic content. The predominant degradation pathway for triclopyr in water is photodegradation and the average half-life is one day. Initially, triclopyr butoxyethyl ester may

bind to suspended organic particles or sediments in the water and while bound effectively lengthen the half-life in water.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method:

Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, 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. Offer for recycling if available. 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. 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 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 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 and, if possible, spray all sides while adding water. If practical, 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.

14. TRANSPORTATION INFORMATION

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

DOT

≤ 34 gallons per completed package

Non-regulated

> 34 gallons and < 119 gallons per completed package

UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, NOS,
(TRICLOPYR BUTOXYETHYL ESTER, 2,4-D BUTOXYETHYL ESTER), 9, III, RQ

≥ 119 gallons per completed package

NA1993, COMBUSTIBLE LIQUID, NOS, (NAPHTHALANE), (TRICLOPYR BUTOXYETHYL ESTER,
2,4-D BUTOXYETHYL ESTER), 3, III, RQ, MARINE POLLUTANT

IMDG

UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, NOS, (TRICLOPYR BUTOXYETHYL ESTER, 2,4-D BUTOXYETHYL ESTER), 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.

CAUTION. Causes moderate eye irritation. Harmful if swallowed. Prolonged or frequently repeated skin contact may cause allergic skin reactions in some individuals. Avoid contact with skin, eyes or clothing. When mixing, loading or applying this product, or repairing, or cleaning equipment, wear long-sleeved shirt, long pants, socks, shoes, chemical-resistant gloves and eye protection (face shield or safety glasses).

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):**

Acute Health, Chronic Health, Fire Hazard

Section 313 Toxic Chemical(s):

2,4-D Butoxyethyl Ester (CAS No. 1929-73-3) 32.6 – 36.1% by weight in product

Naphthalene (CAS 91-20-3) < 2.8% by weight in product

1,2,4-Trimethylbenzene (CAS 95-63-6) <0.5% by weight in product

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

2,4-D Butoxyethyl Ester (CAS No. 1929-73-3) 100 pounds

Naphthalene (CAS 91-20-3) 100 lbs

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 chemicals known to the State of California to cause cancer or birth defects or other reproductive harm.

16. OTHER INFORMATION**National Fire Protection Association (NFPA) Hazard Rating:**

Rating for this product: Health: 2 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.

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Candor[®] Herbicide

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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