

SAFETY DATA SHEET

DOW AGROSCIENCES LLC

Product name: VASTLAN™ Herbicide

Issue Date: 05/15/2020

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DOW AGROSCIENCES LLC encourages you and expects you to read and understand the entire SDS as there is important information throughout the document. This SDS provides users with information relating to the protection of human health and safety at the workplace, protection of the environment and supports emergency response. Product users and applicators should primarily refer to the product label attached to or accompanying the product container.

1. IDENTIFICATION

Product name: VASTLAN™ Herbicide

Recommended use of the chemical and restrictions on use

Identified uses: End use herbicide product

COMPANY IDENTIFICATION

DOW AGROSCIENCES LLC
9330 ZIONSVILLE RD
INDIANAPOLIS IN 46268-1053
UNITED STATES

Customer Information Number:

800-992-5994

customerinformation@corteva.com

EMERGENCY TELEPHONE NUMBER

24-Hour Emergency Contact: 800-992-5994

Local Emergency Contact: 352-323-3500

2. HAZARDS IDENTIFICATION

Hazard classification

GHS classification in accordance with 29 CFR 1910.1200

Acute toxicity - Category 4 - Oral

Eye irritation - Category 2A

Skin sensitisation - Sub-category 1B

Label elements

Hazard pictograms



Signal word: **WARNING!**

Hazards

Harmful if swallowed.
May cause an allergic skin reaction.
Causes serious eye irritation.

Precautionary statements**Prevention**

Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
Wash skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
Contaminated work clothing should not be allowed out of the workplace.
Wear eye protection/ face protection.
Wear protective gloves.

Response

IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell. Rinse mouth.
IF ON SKIN: Wash with plenty of soap and water.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If skin irritation or rash occurs: Get medical advice/ attention.
If eye irritation persists: Get medical advice/ attention.
Wash contaminated clothing before reuse.

Disposal

Dispose of contents/ container to an approved waste disposal plant.

Other hazards

No data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature: Mixture

This product is a mixture.

Component	CASRN	Concentration
Triclopyr, Choline salt	1048373-85-8	54.72%
Glycerol	56-81-5	3.0%
Balance	Not available	42.28%

4. FIRST AID MEASURES

Description of first aid measures

General advice:

First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation: Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice.

Skin contact: Take off contaminated clothing. Wash skin with soap and plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice. Wash clothing before reuse. Shoes and other leather items which cannot be decontaminated should be disposed of properly.

Eye contact: Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes. Call a poison control center or doctor for treatment advice. Suitable emergency eye wash facility should be available in work area.

Ingestion: 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. Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed:

Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of any immediate medical attention and special treatment needed

Notes to physician: No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment.

5. FIREFIGHTING MEASURES

Suitable extinguishing media: Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Do not use direct water stream. May spread fire. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

Unsuitable extinguishing media: No data available

Special hazards arising from the substance or mixture

Hazardous combustion products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Nitrogen oxides. Carbon monoxide. Carbon dioxide.

Unusual Fire and Explosion Hazards: Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.

Advice for firefighters

Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Consider feasibility of a controlled burn to minimize environment damage. Foam fire extinguishing system is preferred because uncontrolled water can spread possible contamination. Do not use direct water

stream. May spread fire. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.

Special protective equipment for firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Isolate area. Keep unnecessary and unprotected personnel from entering the area. Refer to section 7, Handling, for additional precautionary measures. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

Methods and materials for containment and cleaning up: Contain spilled material if possible. Small spills: Absorb with materials such as: Clay. Dirt. Sand. Sweep up. Collect in suitable and properly labeled containers. Large spills: Contact the company for clean-up assistance. See Section 13, Disposal Considerations, for additional information.

7. HANDLING AND STORAGE

Precautions for safe handling: Keep out of reach of children. Do not swallow. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated contact with skin. Avoid breathing vapor or mist. Wash thoroughly after handling. Use with adequate ventilation. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Conditions for safe storage: Store in a dry place. Store in original container. Keep container tightly closed when not in use. Do not store near food, foodstuffs, drugs or potable water supplies.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

If exposure limits exist, they are listed below. If no exposure limits are displayed, then no values are applicable.

Component	Regulation	Type of listing	Value/Notation
Glycerol	OSHA Z-1	TWA mist, respirable fraction	5 mg/m3
	OSHA Z-1	TWA mist, total dust	15 mg/m3

RECOMMENDATIONS IN THIS SECTION ARE FOR MANUFACTURING, COMMERCIAL BLENDING AND PACKAGING WORKERS. APPLICATORS AND HANDLERS SHOULD SEE THE PRODUCT LABEL FOR PROPER PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING.

Exposure controls

Engineering controls: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

Individual protection measures

Eye/face protection: Use chemical goggles.

Skin protection

Hand protection: Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Butyl rubber. Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Polyvinyl chloride ("PVC" or "vinyl"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Other protection: Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator.

The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Physical state	Liquid.
Color	Black
Odor	Characteristic
Odor Threshold	No data available
pH	7.0 <i>pH Electrode</i>
Melting point/range	Not applicable
Freezing point	No data available
Boiling point (760 mmHg)	No data available
Flash point	closed cup > 100 °C (> 212 °F) <i>Pensky-Martens Closed Cup ASTM D 93</i>

Evaporation Rate (Butyl Acetate = 1)	No data available
Flammability (solid, gas)	No data available
Lower explosion limit	No data available
Upper explosion limit	No data available
Vapor Pressure	No data available
Relative Vapor Density (air = 1)	No data available
Relative Density (water = 1)	No data available
Water solubility	No data available
Partition coefficient: n-octanol/water	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Dynamic Viscosity	No data available
Kinematic Viscosity	No data available
Explosive properties	No data available
Oxidizing properties	No data available
Liquid Density	1.235 g/ml at 20 °C (68 °F) <i>Digital density meter</i>
Molecular weight	No data available

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity: No dangerous reaction known under conditions of normal use.

Chemical stability: Thermally stable at typical use temperatures.

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to avoid: Exposure to elevated temperatures can cause product to decompose.

Incompatible materials: Avoid contact with: Strong oxidizers.

Hazardous decomposition products: Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Carbon monoxide. Carbon dioxide. Nitrogen oxides.

11. TOXICOLOGICAL INFORMATION

Toxicological information appears in this section when such data is available.

Acute toxicity

Acute oral toxicity

Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.

For similar material(s):

LD50, Rat, female, 1,000 mg/kg OECD Test Guideline 423

Acute dermal toxicity

Prolonged skin contact is unlikely to result in absorption of harmful amounts.

For similar material(s):

LD50 Dermal, Rat, male and female, > 5,000 mg/kg OECD Test Guideline 402 No deaths occurred at this concentration.

Acute inhalation toxicity

No adverse effects are anticipated from single exposure to mist. Based on the available data, respiratory irritation was not observed.

For similar material(s):

LC50, Rat, male and female, 4 Hour, dust/mist, > 5.85 mg/l OECD Test Guideline 403 No deaths occurred at this concentration.

Skin corrosion/irritation

Brief contact is essentially nonirritating to skin.

Serious eye damage/eye irritation

May cause moderate eye irritation.

May cause slight corneal injury.

Sensitization

For similar material(s):

Has demonstrated the potential for contact allergy in mice.

For respiratory sensitization:

No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)

Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Specific Target Organ Systemic Toxicity (Repeated Exposure)

For similar active ingredient(s).

Triclopyr.

In animals, effects have been reported on the following organs:

Kidney.

Liver.

For the minor component(s):

Excessive exposure to glycerine may cause increased fat levels in blood.

Carcinogenicity

For similar active ingredient(s). Triclopyr. Did not cause cancer in laboratory animals.

Teratogenicity

For similar active ingredient(s). Triclopyr. Did not cause birth defects or other effects in the fetus even at doses which caused toxic effects in the mother.

Reproductive toxicity

For similar active ingredient(s). Triclopyr. In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals. For the minor component(s): Reproductive effects seen in female animals are believed to be due to altered nutritional states resulting from extremely high doses of glycerine given in the diet. Similar effects have been seen in animals fed synthetic diets.

Mutagenicity

For similar active ingredient(s). Triclopyr. In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

Aspiration Hazard

Based on physical properties, not likely to be an aspiration hazard.

12. ECOLOGICAL INFORMATION

Ecotoxicological information appears in this section when such data is available.

Toxicity**Triclopyr, Choline salt****Acute toxicity to fish**

For similar active ingredient(s).

Material is slightly toxic to aquatic organisms on an acute basis (LC50/EC50 between 10 and 100 mg/L in the most sensitive species tested).

For similar active ingredient(s).

LC50, Oncorhynchus mykiss (rainbow trout), 96 Hour, 117 mg/l

Acute toxicity to aquatic invertebrates

For similar active ingredient(s).

LC50, Daphnia magna (Water flea), 48 Hour, 133 mg/l

Acute toxicity to algae/aquatic plants

Based on information for a similar material:

ErC50, Pseudokirchneriella subcapitata (green algae), 96 Hour, Biomass, 87.7 mg/l

Glycerol**Acute toxicity to fish**

Material is practically non-toxic to aquatic organisms on an acute basis

(LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).

LC50, Pimephales promelas (fathead minnow), static test, 96 Hour, >= 885 mg/l, Method Not Specified.

Acute toxicity to aquatic invertebrates

LC50, Daphnia magna (Water flea), static test, 48 Hour, 1,955 mg/l, Method Not Specified.

Acute toxicity to algae/aquatic plants

EC50, Other, static test, 192 Hour, Growth inhibition (cell density reduction), 2,900 mg/l, Method Not Specified.

Toxicity to bacteria

EC50, activated sludge, 3 Hour, > 1,000 mg/l, OECD 209 Test

Balance

Acute toxicity to fish

No relevant data found.

Persistence and degradability

Triclopyr, Choline salt

Biodegradability: For similar active ingredient(s). Biodegradation under aerobic static laboratory conditions is high (BOD20 or BOD28/ThOD > 40%).

Glycerol

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

10-day Window: Not applicable

Biodegradation: 63 %

Exposure time: 14 d

Method: OECD Test Guideline 301C or Equivalent

Theoretical Oxygen Demand: 1.22 mg/mg

Balance

Biodegradability: No relevant data found.

Bioaccumulative potential

Triclopyr, Choline salt

Bioaccumulation: For similar active ingredient(s). Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Glycerol

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Partition coefficient: n-octanol/water(log Pow): -1.76 at 20 °C Measured

Balance

Bioaccumulation: No relevant data found.

Mobility in soil

Triclopyr, Choline salt

For similar active ingredient(s).

Triclopyr.

Potential for mobility in soil is very high (Koc between 0 and 50).

Glycerol

Potential for mobility in soil is very high (Koc between 0 and 50).

Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process.

Partition coefficient (Koc): 1 Estimated.

Balance

No relevant data found.

13. DISPOSAL CONSIDERATIONS

Disposal methods: If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

14. TRANSPORT INFORMATION

DOT

Not regulated for transport

Classification for SEA transport (IMO-IMDG):

**Transport in bulk
according to Annex I or II
of MARPOL 73/78 and the
IBC or IGC Code**

Not regulated for transport
Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

Not regulated for transport

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Acute toxicity (any route of exposure)
Respiratory or skin sensitisation
Serious eye damage or eye irritation

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Pennsylvania Right To Know

The following chemicals are listed because of the additional requirements of Pennsylvania law:

Components

Glycerol

CASRN

56-81-5

California Prop. 65

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

United States TSCA Inventory (TSCA)

This product contains chemical substance(s) exempt from U.S. EPA TSCA Inventory requirements. It is regulated as a pesticide subject to Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) requirements.

Federal Insecticide, Fungicide and Rodenticide Act

EPA Registration Number: 62719-687

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:

WARNING

May be fatal if swallowed.

Causes substantial but temporary eye injury

Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

16. OTHER INFORMATION

Hazard Rating System**NFPA**

Health	Flammability	Instability
1	1	0

Revision

Identification Number: 99037973 / A211 / Issue Date: 05/15/2020 / Version: 1.2

DAS Code: GF-3169

Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

OSHA Z-1	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
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TWA	8-hour time weighted average
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Full text of other abbreviations

AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Information Source and References

This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

DOW AGROSCIENCES LLC urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

US

Specimen Label

TRICLOPYR CHOLINE

GROUP

4

HERBICIDE



Vastlan®

HERBICIDE

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For the control of woody plant species and annual and perennial broadleaf weeds on

- range and permanent grass pastures, grasses grown for hay, Conservation Reserve Program (CRP) sites;
- forest sites, conifer and tree plantations, and Christmas tree plantations;
- non-crop areas for example, airports, barrow ditches, communication transmission lines or structures, manufacturing and storage sites, electrical power and utility rights-of-way, fencerows, gravel pits, industrial sites, military lands, mining and drilling areas, non-irrigation ditch banks, oil and gas pads, parking lots, petroleum tank farms, pipelines, railroads, roadsides, storage areas, storm water retention areas, substations, unimproved rough turf grasses, vacant lots and other non-crop residential areas, and around farm buildings;
- natural areas (open space) for example, campgrounds, parks, prairie management, trails and trailheads, recreation areas, wildlife openings and wildlife habitat and management areas;
- including grazed areas on these sites; and
- aquatic sites

For use in New York State, comply with Section 24(c) Special Local Need labeling for Vastlan, SLN NY-160004.

Active Ingredient:

Triclopyr choline: 2-[(3,5,6-trichloro-2-pyridinyl)oxy]acetic acid, choline salt.....	54.72%
Other Ingredients.....	45.28%
Total	100.0%

Acid equivalent: triclopyr – 39.02% - 4 lb/gal

Precautionary Statements

Hazard to Humans and Domestic Animals

EPA Reg. No. 62719-687

Keep Out of Reach of Children

WARNING

May be fatal if swallowed • Causes substantial but temporary eye injury • Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove and wash contaminated clothing before reuse.

Personal Protective Equipment (PPE)

Applicators and other handlers must wear:

- Protective eyewear
- Long-sleeved shirt and long pants
- Shoes plus socks
- Waterproof gloves

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them.

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

Engineering Controls

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides (40 CFR 170.240(d)(4-6)), the handler PPE requirements may be reduced or modified as specified in the WPS.

User Safety Recommendations

Users should:

- Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- 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.

First Aid

If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 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 a poison control center or doctor. Do not give anything by mouth to an unconscious person.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-992-5994 for emergency medical treatment information.

Environmental Hazards

Do not contaminate water when cleaning equipment or disposing of equipment washwaters. Under certain conditions, treatment of aquatic weeds can result in oxygen depletion or loss due to decomposition of dead plants, which may contribute to fish suffocation. This loss can cause fish suffocation. Therefore, to minimize this hazard, do not treat more than one-third to one-half of the water area in a single operation and wait at least 10 to 14 days between treatments. Begin treatment along the shore and proceed outwards in bands to allow fish to move into untreated areas. Consult with the State agency for fish and game before applying to public water to determine if a permit is needed.

This chemical has properties and characteristics associated with chemicals detected in groundwater. The use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination.

Directions for Use

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Read all Directions for Use carefully before applying.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your state or tribe, consult the agency responsible for pesticide regulation.

Agricultural Use Requirements

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE), and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours.

Agricultural Use Requirements (Cont.)

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:

- Protective eyewear
- Coveralls
- Shoes plus socks
- Waterproof gloves

Non-Agricultural Use Requirements

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for Agricultural Pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.

Entry Restrictions for Non-WPS Uses: For applications to non-cropland areas, do not allow entry into areas until sprays have dried, unless applicator and other handler PPE is worn.

Storage and Disposal

Do not contaminate water, food, or feed by storage and disposal. Open dumping is prohibited.

Pesticide Storage: Agitate before use.

Pesticide Disposal: Wastes resulting from the use of this product must be disposed of on site or at an approved waste disposal facility.

Nonrefillable containers 5 gallons or less:

Container Handling: Nonrefillable container. Do not reuse or refill this container. Offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures allowed by state and local authorities.

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 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. **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 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 5 gallons or larger:

Container Handling: 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.

Nonrefillable containers 5 gallons or larger:

Container Handling: Nonrefillable container. Do not reuse or refill this container. Offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures allowed by state and local authorities.

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 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.

Product Information for All Use Sites

Use Vastlan® for the control of woody plants and broadleaf weeds in range and pasture, grasses grown for hay, Conservation Reserve Program (CRP) sites; forest sites, conifer and tree plantations, and Christmas tree plantations; non-crop areas for example, airports, barrow ditches, communication transmission lines or structures, manufacturing and storage sites, electrical power and utility rights-of-way, fencerows, gravel pits, industrial sites, military lands, mining and drilling areas, non-irrigation ditch banks, oil and gas pads, parking lots, petroleum tank farms, pipelines, railroads, roadsides, storage areas, storm water retention areas, substations, unimproved rough turf grasses, vacant lots and other non-crop residential areas, and around farm buildings; natural areas (open space) for example, campgrounds, parks, prairie management, trails and trailheads, recreation areas, wildlife openings and wildlife habitat and management areas and aquatic sites.

Obtain Required Permits: Consult with appropriate state or local water authorities before applying this product to public waters. State or local public agencies may require permits.

Use Precautions

When making applications to control unwanted plants on banks or shorelines of moving water sites, minimize overspray to open water.

It is permissible to treat non-irrigation ditch banks, seasonally dry wetlands (such as flood plains, deltas, marshes, swamps, or bogs), and transitional areas between upland and lowland sites.

It is the pesticide user's responsibility to ensure that all products in the listed mixtures are registered for the intended use. Users must follow the most restrictive directions for use and precautionary statements of each product in the tank mixture.

Use Restrictions

For use in New York State, comply with Section 24(c) Special Local Need labeling for Vastlan, SLN NY-160004.

Chemigation: Do not apply this product through any type of irrigation system.

Do not apply Vastlan directly to, or otherwise permit it to come into direct contact with, grapes, tobacco, vegetable crops, flowers, or other desirable broadleaf plants. Do not permit spray mists containing Vastlan to drift onto such plants.

Do not apply to salt water bays or estuaries.

Do not apply directly to un-impounded rivers or streams.

Do not apply where runoff water may flow onto agricultural land as injury to crops may result.

Do not apply with a mistblower.

Irrigation waters:

Do not apply on ditches or canals currently being used to transport irrigation water or that will be used for irrigation within 4 months following treatment. It is permissible to treat non-irrigation ditch banks and the outer banks of irrigation ditches.

Water treated with Vastlan may not be used for irrigation purposes for 120 days after application or until residue levels of Vastlan are determined by laboratory analysis, or other appropriate means of analysis, to be 1 ppb or less.

Seasonal Irrigation Waters: Vastlan may be applied during the off-season to surface waters that are used for irrigation on a seasonal basis provided that there is a minimum of 120 days between applying Vastlan and the first use of treated water for irrigation purposes, or until residue levels of Vastlan are determined by laboratory analysis, or other appropriate means of analysis, to be 1 ppb or less.

Irrigation Canals/Ditches: Do not apply Vastlan to irrigation canals/ditches unless the 120-day restriction on irrigation water usage can be observed or residue levels of Vastlan are determined by laboratory analysis, or other appropriate means of analysis, to be 1 ppb or less.

Restrictions for Potable Water Intakes for Emerged Aquatic Weed Control – Lakes, Reservoirs, Ponds:

See chart below for specific setback distances near functioning potable water intakes.

Note: Existing potable water intakes which are no longer in use, such as those replaced by potable water wells or connections to a municipal water system, are not considered to be functioning potable water intakes. These setback restrictions do not apply to terrestrial applications made adjacent to potable water intakes.

Area Treated (acres)	Vastlan Application Rate			
	1.5 qt/acre	3 qt/acre	4.5 qt/acre	6 qt/acre
4	0	200	400	500
>4 - 8	0	200	700	900
>8 - 16	0	200	700	1000
>16	0	200	900	1300

To apply Vastlan around and within the distances noted above from a functioning potable water intake, the intake must be turned off until the triclopyr level in the intake water is determined to be 0.4 parts per million (ppm) or less by laboratory analysis or immunoassay.

Area Treated (acres)	Concentration of Triclopyr Acid in Water (ppm ae)				
	0.75 ppm	1 ppm	1.5 ppm	2 ppm	2.5 ppm
	Required Setback Distance (ft) from Potable Water Intake				
<4	300	400	600	800	1000
>4 - 8	420	560	840	1120	1400
>8 - 16	600	800	1200	1600	2000
>16 - 32	780	1040	1560	2080	2600
>32 acres, calculate a setback using the formula for the appropriate rate	Setback (ft) = $(800 \times \ln(\text{acres}) - 160) / 3.33$	Setback (ft) = $(800 \times \ln(\text{acres}) - 160) / 2.50$	Setback (ft) = $(800 \times \ln(\text{acres}) - 160) / 1.67$	Setback (ft) = $(800 \times \ln(\text{acres}) - 160) / 1.25$	Setback (ft) = $(800 \times \ln(\text{acres}) - 160)$

Example Calculation 1: to apply 2.5 ppm Vastlan to 50 acres:

$$\begin{aligned}\text{Setback in feet} &= (800 \times \ln(50 \text{ acres}) - 160) \\ &= (800 \times 3.912) - 160 \\ &= 2970 \text{ feet}\end{aligned}$$

Example Calculation 2: to apply 0.75 ppm Vastlan to 50 acres:

$$\begin{aligned}\text{Setback in feet} &= (800 \times \ln(50 \text{ acres}) - 160) / 3.33 \\ &= (800 \times 3.912) - 160 / 3.33 \\ &= 892 \text{ feet}\end{aligned}$$

Note: Existing potable water intakes which are no longer in use, such as those replaced by potable water wells or connections to a municipal water system, are not considered to be functioning potable water intakes. These setback restrictions do not apply to terrestrial applications made adjacent to potable water intakes.

To apply Vastlan around and within the distances noted above from a functioning potable water intake, the intake must be turned off until the triclopyr level in the intake water is determined to be 0.4 parts per million (ppm) or less by laboratory analysis or immunoassay.

Maximum Use Rates

- Apply no more than 6 lb ae of triclopyr (6 quarts of Vastlan) per acre per year on aquatic sites.
- Apply no more than 2 lb ae of triclopyr (2 quarts of Vastlan) per acre per growing season on range and pasture sites, including rights-of-way, fence rows or any area where grazing or harvesting of hay is allowed.
- On forestry sites, Vastlan may be used at rates up to 6 lb ae of triclopyr (6 quarts of Vastlan) per acre per year.
- For all terrestrial use sites other than range, pasture, forestry sites, and grazed/hayed areas, the maximum application rate is 9 lb ae of triclopyr (9 quarts of Vastlan) per acre per year.
- See Maximum Labeled Rate versus Spray Volume per Acre table below for relationship between mixing rate, spray volume and maximum application rate.

Maximum Labeled Rate versus Spray Volume per Acre

Total Spray Volume (gal/acre)	Maximum Rate of Vastlan		
	Range and Pasture Sites ¹ (gal/100 gal of spray)	Forestry Sites ² (gal/100 gal of spray)	Non-Cropland Sites ³ (gal/100 gal of spray)
400	Do not use	0.375	0.57
300	Do not use	0.5	0.75
200	Do not use	0.75	1.125
100	0.5	1.5	2.25
50	1	3	4.5

Recreational Use of Water in Treatment Area: There are no restrictions on use of water in the treatment area for recreational purposes, including swimming and fishing.

Livestock Use of Water from Treatment Area: There are no restrictions on livestock consumption of water from the treatment area.

Restrictions for Potable Water Intakes for Submerged Weed Control – Lakes, Reservoirs, Ponds:

For applications of Vastlan to control submerged weeds in lakes, reservoirs, or ponds that contain a functioning potable water intake for human consumption, see the chart below to determine the minimum setback distances of the application from the functioning potable water intakes.

Maximum Labeled Rate versus Spray Volume per Acre (Cont.)

Total Spray Volume (gal/acre)	Maximum Rate of Vastlan		
	Range and Pasture Sites ¹ (gal/100 gal of spray)	Forestry Sites ² (gal/100 gal of spray)	Non-Cropland Sites ³ (gal/100 gal of spray)
40	1.25	3.75	5.63
30	1.67	5	7.5
20	2.5	7.5	11.25
10	5	15	22.5

¹Do not exceed the maximum use rate of 2 lb ae of triclopyr (2 quarts of Vastlan)/acre/year.

²Do not exceed the maximum use rate of 6 lb ae of triclopyr (6 quarts of Vastlan)/acre/year.

³Do not exceed the maximum use rate of 9 lb ae of triclopyr (9 quarts of Vastlan)/acre/year on non-cropland use sites other than rangeland, pasture, forestry, and grazed/hayed areas.

Use the higher dosage rates in the chart when woody plants approach an average of 15 feet in height or when the brush covers more than 60% of the area to be treated. If lower rates are used on hard to control species, resprouting may occur the year following treatment.

Haying Restrictions

Haying (harvesting of dried forage)

- Do not harvest hay for 14 days after application.

Slaughter Restriction: During the season of application, withdraw livestock from grazing treated grass at least 3 days before slaughter.

Avoiding Injurious Spray Drift

Make applications only when there is little or no hazard from spray drift. Small quantities of spray, which may not be visible, may seriously injure susceptible plants. Do not spray when wind is blowing toward susceptible crops or ornamental plants that are near enough to be injured. It is suggested that a continuous smoke column at or near the spray site or a smoke generator on the spray equipment be used to detect air movement, lapse conditions, or temperature inversions (stable air). If the smoke layers or indicates a potential of hazardous spray drift, do not spray.

Spray Drift Management

Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment and weather related factors determine the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions.

Aerial Application:

The following drift management requirements must be followed to avoid off-target drift movement from aerial applications with aerial applications:

1. The distance of the outer most operating nozzles on the boom must not exceed 3/4 the length of the wingspan or rotor.
2. Nozzles must always point backward parallel with the air stream and never be pointed downwards more than 45 degrees.

Where states have more stringent regulations, they must be observed.

The applicator should be familiar with and take into account the information covered in the following Aerial Drift Reduction Advisory, below.

Aerial Drift Reduction Advisory

Information on Droplet Size: The most effective way to reduce drift potential is to apply large droplets. The best drift management strategy is to apply the largest droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly, or under unfavorable environmental conditions (see Wind, Temperature and Humidity, and Temperature Inversions).

For aerial application on rights-of-way or other areas near susceptible crops, apply through a Microfoil† or Thru-Valve boom†, or use an agriculturally labeled drift control additive. Other drift reducing systems or thickened sprays prepared by using high viscosity inverting systems may be used if they are made as drift-free as mixtures containing agriculturally labeled thickening agents or applications made with the Microfoil or Thru-Valve boom. Do not use a thickening agent with the Microfoil or Thru-Valve booms, or other systems that cannot accommodate thick sprays. If a spray thickening agent is used, follow all use directions and precautions on the product label.

†Reference within this label to a particular piece of equipment produced by or available from other parties is provided without consideration for use by the reader at its discretion and subject to the reader's independent circumstances, evaluation, and expertise. Such reference by Dow AgroSciences is not intended as an endorsement of such equipment, shall not constitute a warranty (express or implied) of such equipment, and is not intended to imply that other equipment is not available and equally suitable. Any discussion of methods of use of such equipment does not imply that the reader should use the equipment other than as advised in directions available from the equipment's manufacturer. The reader is responsible for exercising its own judgment and expertise, or consulting with sources other than Dow AgroSciences, in selecting and determining how to use its equipment.

Controlling Droplet Size:

- **Volume** - Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.
- **Pressure** - Do not exceed the nozzle manufacturer's recommended pressures. For many nozzle types, lower pressure produces larger droplets. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.
- **Number of Nozzles** - Use the minimum number of nozzles that provide uniform coverage.
- **Nozzle Orientation** - Orienting nozzles so that the spray is released parallel to the airstream produces larger droplets than other orientations and is the recommended practice. Significant deflection from horizontal will reduce droplet size and increase drift potential.
- **Nozzle Type** - Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce the largest droplets and the lowest drift.

Boom Length: The distance of the outer most operating nozzles on the boom must not exceed 75% of wingspan or rotor diameter.

Application Height: Applications should not be made at a height greater than 10 feet above the top of the largest plants unless a greater height is required for aircraft safety. Making applications at the lowest height that is safe reduces exposure of droplets to evaporation and wind.

Swath Adjustment: When applications are made with a crosswind, the swath will be displaced downwind. Therefore, on the up and downwind edges of the field, the applicator must compensate for this displacement by adjusting the path of the aircraft upwind. Swath adjustment distance should increase, with increasing drift potential (higher wind, smaller drops, etc.).

Wind: Drift potential is lowest between wind speeds of 2 to 10 mph. However, many factors, including droplet size and equipment type, determine drift potential at any given speed. Application should be avoided below 2 mph due to variable wind direction and high inversion potential.

Note: Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

Temperature and Humidity: When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

Temperature Inversions: Applications should not occur during a local, low level temperature inversion because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of the smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

Sensitive Areas: The pesticide should only be applied when the potential for drift to adjacent sensitive areas (e.g., residential areas, bodies of water, known habitat for threatened or endangered species, non-target crops) is minimal (e.g., when wind is blowing away from the sensitive areas).

Ground Equipment: To aid in reducing spray drift, Vastlan should be used in thickened (high viscosity) spray mixtures using an agriculturally labeled drift control additive, high viscosity invert system, or equivalent as directed by the manufacturer. With ground equipment, spray drift can be reduced by keeping the spray boom as low as possible; by applying 20 gallons or more of spray per acre; by keeping the operating spray pressures at the lower end of the manufacturer's recommended pressures for the specific nozzle type used (low pressure nozzles are available from spray equipment manufacturers); and by spraying when wind velocity is low (follow state regulations). In hand-gun applications, select the minimum spray pressure that will provide adequate plant coverage (without forming a mist). Do not apply with nozzles that produce a fine-droplet spray.

High Volume Leaf-Stem Treatment: To minimize spray drift, do not use pressure exceeding 50 psi at the spray nozzle and keep sprays no higher than brush tops. An agriculturally labeled thickening agent may be used to reduce drift.

Use Information

Use Vastlan at rates of 0.75 to 9 quarts of Vastlan per acre to control broadleaf weeds and woody plants. In all cases, use the amount specified in enough water to give uniform and complete coverage of the plants to be controlled. Refer to Maximum Use Rates paragraph - follow defined rates restrictions based on use sites and whether or not grazing or haying is involved.

Surfactants

For best results, use a surfactant with foliar applications and apply when woody plants and weeds are actively growing. When hard to control species such as ash, blackgum, choke cherry, elm, maples, oaks, pines, or winged elm are prevalent and during applications made in late summer when the plants are mature or during drought conditions, use the higher rates of Vastlan alone or in combination with Milestone, Opensight, Tordon® or other herbicides to broaden the spectrum of activity.

Tank Mixing

Before using any recommended tank mixtures, read the directions and all use precautions and restrictions on all labels in the tank mix. Prior to large scale batch mixing, conduct a "jar test" for spray mixture compatibility by mixing each component in the required order and proportion in a clear glass jar. **Note:** If tank mixing with glyphosate herbicides, mix the Vastlan with at least 75% of the total spray volume desired and ensure that Vastlan is well mixed before adding the glyphosate herbicides to avoid incompatibility. When using Vastlan in combination with Freelexx, 2,4-D amine (like DMA 4 IVM) or low volatile ester herbicides, generally the higher rates should be used for satisfactory brush control.

A surfactant should be added to the spray tank last or as recommended on the product label. If combined with emulsifiable concentrate herbicides, moderate continuous adequate agitation is required. It is the pesticide user's responsibility to ensure that all products are registered for the intended use. Read and follow the applicable restrictions and limitations and directions for use on all product labels involved in tank mixing. Users must follow the most restrictive directions for use and precautionary statements of each product in the tank mixture.

Broadcast Applications With Ground Equipment

Apply using equipment that will ensure uniform coverage of the spray volumes applied. To improve spray coverage, add a non-ionic surfactant. See Maximum Labeled Rate versus Spray Volume per Acre table below for relationship between mixing rate, spray volume and maximum application rate.

Aerial Application

Aerial sprays should be applied using suitable drift control. (See Use Precautions and Restrictions.) Add a non-ionic surfactant. See Maximum Labeled Rate versus Spray Volume per Acre table above for relationship between mixing rate, spray volume and maximum application rate.

Woody Plant Control With Ground Equipment for Noncropland sites

High Volume Foliage Treatment

For control of woody plants, use Vastlan at the rate of 3 to 9 quarts per 100 gallons of spray solution, or Vastlan at 0.75 to 3 quarts may be tank mixed with Freelexx, 2,4-D (like DMA 4 IVM, or low volatile esters), or products such as Milestone, Opensight, Tordon* and diluted to make 100 gallons of spray solution. Apply at a volume of 100 to 400 gallons of total spray per acre depending upon size and density of woody plants. Applications should be sufficient to provide thorough plant coverage. (See Use Precautions and Restrictions.) Do not exceed maximum allowable use rates per acre.

* Tordon is not registered for use in the states of California and Florida. This product is a restricted use pesticide. Check to ensure tank mix partners are state registered before use. See this product label for more information.

Low Volume Foliage Treatment

To control susceptible woody plants, apply up to 9 quarts of Vastlan in 10 to 100 gallons of finished spray. The maximum volume of the finish spray applied to an acre is limited by the maximum use rate per site type (See Maximum Use Rate section - Range and Pasture, Grazing, Haying sites 2 lb ae, Forestry and aquatic sites 6 lb ae, and all other sites 9 lb ae triclopyr). For best results, a surfactant should be added to all spray mixtures. The spray concentration of Vastlan and total spray volume per acre should be adjusted according to the size and density of target woody plants and kind of spray equipment used. With low volume sprays, use sufficient spray volume to obtain uniform coverage of target plants including the surfaces of all foliage, stems, and root collars (see Use Precautions and Restrictions). Match equipment and delivery rate of spray nozzles to height and density of woody plants. When treating tall, dense brush, a truck mounted spray gun with spray tips that deliver up to 2 gallons per minute at 40 to 60 psi may be required. Backpack or other types of specialized spray equipment with spray tips that deliver less than 1 gallon of spray per minute may be appropriate for short, low to moderate density brush.

Tank Mixing: As a low volume foliar spray, up to 9 quarts of Vastlan may be applied in tank mix combination with Tordon* or Graslan L* in 10 to 100 gallons of finished spray. The maximum volume of the finish spray applied to an acre is limited by the maximum use rate per site type (See Maximum Use Rate section - Range and Pasture, Grazing, Haying sites 2 lb ae, Forestry and aquatic sites 6 lb ae, and all other sites 9 lb ae triclopyr).

* Tordon and Graslan L are not registered for use in the states of California and Florida. These products are restricted use pesticides. See product labels for more information.

Foliage Treatment (Non-Grazed/Non-Hayed Areas)

Use 6 to 9 quarts of Vastlan alone or in a tank mix combination with other herbicides such as Freelexx, 2,4-D (like DMA 4 IVM, or low volatile esters) or Milestone, Opensight, Tordon*, or Graslan L* and apply in a total spray volume of 10 to 30 gallons per acre. Use the higher rates and volumes when plants are dense or under drought conditions.

Interspersed areas in non-grazed/hayed rights-of-ways that may be subject to grazing or haying may be spot treated with this rate if the treated area comprises no more than 10% of the total grazed/hayed area.

* Tordon and Graslan L are not registered for use in the states of California and Florida. These products are restricted use pesticides. See product labels for more information.

Foliage Treatment (Range and Pasture and Grazed/Hayed Areas)

Use 1 to 2 quarts of Vastlan per acre. Apply as a broadcast spray in a total volume of 10 gallons or more per acre. Apply anytime the weeds are actively growing. Tank mixtures can be made with other herbicides registered for use on grazed/hayed sites such as Milestone, Opensight, PastureGard HL, Surmount, Freelexx, or Tordon* or Graslan L.*

* Tordon and Graslan L are not registered for use in the states of California and Florida. These products are restricted use pesticides. Check to ensure tank mix partners are state registered before use. See product labels for more information.

Weed Resistance Management

Triclopyr, the active ingredient in this product, is a Group 4 herbicide based on the mode of action classification system of the Weed Science Society of America. Any weed population may contain or develop plants resistant to Group 4 herbicides. Resistant weeds may dominate the weed population if these herbicides are used repeatedly in the same field. Such

resistant weed plants may not be effectively managed using Group 4 herbicides but may be effectively managed utilizing other herbicides alone or in mixtures from different herbicide Groups that are labeled for control of these weeds and/or by using cultural or mechanical practices. Consult your local company representative, state cooperative extension service, professional consultants, or other qualified authorities to determine appropriate actions for treating specific resistant weeds.

Best Management Practices:

Proactively implementing diversified weed control strategies to minimize selection for weed populations resistant to one or more herbicides is recommended. A diversified weed management program may include the use of multiple herbicides with different modes of action and overlapping weed spectrum with or without tillage operations and/or other cultural practices. Research has demonstrated that using the labeled rate and directions for use is important to delay the selection for resistant weeds. Scouting after a herbicide application is important because it can facilitate the early identification of weed shifts and/or weed resistance and thus provide direction on future weed management practices. One of the best ways to contain resistant weed populations is to implement measures to avoid allowing weeds to reproduce by seed or to proliferate vegetatively. Cleaning equipment between sites and avoiding movement of plant material between sites will greatly aid in reducing the spread of resistant weed seed.

Woody Plants and Weeds Controlled

alder	dogwood	salt cedar ²
arrowwood	elderberry	salmonberry
ash	elm	sassafras
aspen	gallberry	scotch broom
Australian pine	gorse	sumac
bear clover (bearmat)	hazel	sweetbay magnolia
beech	hornbeam	sweetgum
birch	kudzu ¹	sycamore
blackberry	locust	tanoak
blackgum	madrone	thimbleberry
Brazilian pepper	maples	tulip poplar
broom, Scotch, French, Spanish, Portuguese	melaleuca (seedlings)	waxmyrtle
cascara	mulberry	western hemlock
ceanothus	oaks	wild rose
cherry	persimmon	willow
chinquapin	pine	winged elm
choke cherry	poison ivy	
cottonwood	poison oak	
crataegus (hawthorn)	poplar	
Douglas fir	Russian olive 1/ salt-bush (<i>Baccharis</i> spp.)	

¹For complete control, re-treatment may be necessary.

²Use cut surface treatments for best results.

Annual and Perennial Broadleaf Weeds

bindweed	lambsquarier	Spanish needles/ common
burdock	lespedeza	beggarthicks
Canada thistle	Mexican petunia	tansy ragwort
chicory	plantain	thistle
clover	purple loosestrife 2/ oxalis	tropical soda apple
curly dock	ragweed	vetch
dandelion	smartweed	wedelia
field bindweed		wild lettuce
ground ivy		

Aquatic Weeds

alligatorweed	nuphar (spatterdock)	purple loosestrife
American lotus	parrotfeather*	Waterhyacinth
American frogbit	phragmites 3/ pickerelweed	Waterlily
aquatic sodaapple	pennywort	Waterprimrose
Eurasian watermilfoil		Watershield
milfoil species		

*Re-treatment may be needed to achieve desired level of control.

1/ Russian olive

Apply Vastlan at 3 quarts per acre plus Milestone® and a non-ionic surfactant at 0.25 to 0.5% v/v or 1 quart/acre of crop oil concentrate or methylated seed oil. Treatments can be made to small (usually less than 6 feet in height) trees or to regrowth of trees after cutting, mowing, or shredding operations. For foliar applications, apply until foliage is wet, but not to runoff. When treating regrowth of mowed trees, allow time for the plants to re-grow and develop adequate leaf area for a foliar application. This may mean the application will need to be done the year after cutting or, at least, in September or October after mowing the previous winter or early spring.

These treatments may need to be re-applied in subsequent years to achieve the desired level of long term control if trees resprout after the initial treatment

2/ Purple Loosestrife

Purple loosestrife can be controlled with foliar applications of Vastlan. For broadcast applications, use a minimum of 4.5 to 6 quarts of Vastlan per acre. Apply Vastlan when purple loosestrife is at the bud to mid-flowering stage of growth. Follow-up applications for control of regrowth should be made the following year in order to achieve increased control of this weed species. For all applications, a non-ionic surfactant should be added to the spray mixture. Follow all directions and use precautions on the label of the surfactant. Thorough wetting of the foliage and stems is necessary to achieve satisfactory control. A minimum spray volume of 50 gallons per acre is needed for ground broadcast applications.

If using a backpack sprayer, a spray mixture containing 0.75% to 1.25% Vastlan should be used. All purple loosestrife plants should be thoroughly wetted.

3/ Phragmites (*Phragmites australis*)

Phragmites can be selectively controlled with foliar applications of Vastlan. For broadcast applications, a minimum of 2 1/4 lb ae of triclopyr (2 1/4 quarts of Vastlan) per acre should be used. For optimum control, apply Vastlan when phragmites is in the early state of growth, 1/2 to 3 feet in height, prior to seed head development. Follow-up applications for control of regrowth may be made the following year in order to achieve increased control of this weed species. For all applications, a non-ionic surfactant labeled for aquatics should be added to the spray mixture. Follow all directions and use precautions on the label of the surfactant. Thorough wetting of the foliage and stems is necessary to achieve satisfactory control. A minimum spray volume of 50 gallons per acre is recommended for ground broadcast applications.

If a backpack sprayer is used, a spray mixture containing 0.75% to 1.25% of Vastlan should be used. All phragmites foliage should be thoroughly wetted.

Aerial application by helicopter may be needed when treating restoration sites that are inaccessible, remote, difficult to traverse, isolated, or otherwise unsuited to ground application, or in circumstances where invasive exotic weeds dominate native plant populations over extensive areas and efforts to restore native plant diversity are being conducted. By air, apply in a minimum spray volume of 30 gallons per acre.

Cut Surface Treatments

Individual plant treatments such as cut surface applications may be used on any use site listed on this label at a maximum use rate of 6 or 9 quarts of Vastlan (6 lb ae on forestry sites and 9 lb ae of triclopyr on other sites) per acre. These types of applications are made directly to ungrazed parts of plants and, therefore, are not restricted by the grazing maximum rate of 2 quarts of Vastlan (2 lb ae of triclopyr) per acre on a grazed site.

To control unwanted hardwood trees such as elm, maple, oak and conifers in labeled sites, apply Vastlan, either undiluted or diluted in a 1 to 1 ratio with water, as directed below.

Tree Injector Method

Apply by injecting 1/2 milliliter of undiluted Vastlan or 1 milliliter of the diluted solution through the bark at intervals of 3 to 4 inches between centers of the injector wound. The injections should completely surround the tree at any convenient height. **Note: No Worker Protection Standard worker entry restrictions or worker notification requirements apply when this product is injected directly into plants.**

Hack and Squirt Method

Make cuts around the tree trunk at a convenient height with a hatchet or similar equipment so that the cuts overlap slightly and make a continuous circle around the trunk. Spray 1/2 milliliter of undiluted Vastlan or 1 milliliter of the diluted solution into the pocket created between the bark and the inner stem/trunk by each cut.

Frill or Girdle Method

Make a single girdle through the bark completely around the tree at a convenient height. The frill should allow for the herbicide to remain next to the inner stem and absorb into the plant. Wet the cut surface with undiluted or diluted solution.

Both of the above methods may be used successfully at any season except during periods of heavy sap flow of certain species - for example, maples.

Stump Treatment

Spray or paint the cut surfaces of freshly cut stumps and stubs with undiluted Vastlan. The cambium area next to the bark is the most vital area to wet.

Chemical Mowing

Vastlan may be applied to the cut surfaces of weed or brush stubble under the deck of a rotary mower such as the Brown Brush Monitor or other equipment that is designed to uniformly apply the herbicide. This method of application may be used for control of annual and perennial broadleaf weeds and for suppression and stem density reduction of woody species. Apply when growing conditions are favorable and there is active plant growth.

Application

Broadleaf Weed Control: Apply at labeled rates for Vastlan under the section "Broadcast Applications with Ground Equipment - Broadleaf Weed Control". Apply the specified rate in a minimum spray volume of 3 gallons per acre. Follow label directions for herbicides that may be applied in tank mix combination with Vastlan to improve weed control or broaden the spectrum of weeds controlled.

Woody Plant Control: For suppression and stem density reduction of woody species, use 2.25 to 4.5 quarts of Vastlan in a minimum spray volume of 5 gallons per acre. Follow label directions under the woody plant control for herbicides that may be applied in tank mix combination with Vastlan to improve control or broaden the spectrum of woody plants controlled.

Tank mixing: For possible increased effectiveness of this treatment, Vastlan may be tank mixed with other herbicides such as Milestone, Tordon*, Graslan L* or imazapyr. Follow all product use directions and do not exceed maximum labeled use rates.

* Tordon and Graslan L are not registered for use in the states of California and Florida. These products are restricted use pesticides. See product labels for more information.

Forest Management Applications

For best control from broadcast applications of Vastlan, add a surfactant and use a spray volume which will provide thorough plant coverage. Recommended spray volumes are usually 10 to 25 gallons per acre by air or 10 to 100 gallons per acre by ground. For spray volumes less than 50 gallons per acre the addition of a non-ionic surfactant will improve spray coverage. Nozzles or additives that produce larger droplets of spray may require higher spray volumes to maintain brush control.

Forest Site Preparation

Use up to 6 quarts of Vastlan alone and apply in a total spray volume of 10 to 30 gallons per acre or Vastlan may be used in a tank mix with other herbicides such as Graslan L*, Freelexx, or 2,4-D amine or low volatile ester in a total spray volume of 10 to 30 gallons per acre. Use a non-ionic surfactant for all foliar applications.

*Graslan L is not registered for use in the states of California and Florida. This product is a restricted use pesticide. Check to ensure tank mix partners are state registered before use. See product label for more information.

Note: Conifers planted sooner than one month after treatment with Vastlan at less than 4 lb ae of triclopyr (4 quarts of Vastlan) per acre or sooner than two months after treatment at 4 to 6 lb ae of triclopyr (4 to 6 quarts of Vastlan) per acre may be injured. When tank mixtures of herbicides are used for forest site preparation, labels for all products in the mixture must be consulted and the longest waiting period before conifer planting must be used.

Directed Spray Applications in Tree Plantations such as for Conifer Release

To release conifers or desirable trees from competing vegetation, mix 3 to 6 quarts of Vastlan in enough water to make 100 gallons of spray mixture. To improve spray coverage, add a non-ionic surfactant. The spray mixture should be directed onto foliage of competitive vegetation using knapsack or backpack sprayers with flat fan nozzles or equivalent any time after vegetation has reached full leaf size, but before autumn coloration. When treating woody plants, it is best if the majority of treated plants are less than 6 feet in height to ensure adequate spray coverage. Use care to direct spray away from contact with foliage of conifers and desirable vegetation as injury or death could occur.

Note: Spray may cause temporary damage and growth suppression where contact with conifers occurs; however, injured conifers should recover and grow normally. Over-the-top spray applications can kill pines.

Broadcast Applications for Conifer Release in the Northeastern United States

To release spruce, fir, red pine and white pine from competing hardwoods, such as red maple, sugar maple, striped maple, alder, birch (white, yellow or gray), aspen, ash, pin cherry and *Rubus* spp. and perennial and annual broadleaf weeds, use Vastlan at rates of 1.5 to 3 quarts per acre alone or with Freelexx, 2,4-D (like DMA 4 IVM), or a low volatile ester to provide no more than 4 lb ae per acre from both products. Apply in late summer or early fall after conifers have formed their over wintering buds and hardwoods are in full leaf and prior to autumn coloration.

Broadcast Applications for Douglas-fir Release in the Pacific Northwest and California

To release Douglas-fir from susceptible competing vegetation such as broadleaf weeds, alder, blackberry, or Scotch broom, apply Vastlan at 1 to 1.5 quarts per acre alone or in combination with other herbicides to broaden the spectrum of activity. Apply in early spring after hardwoods begin growth and before Douglas-fir bud break ("early foliar" hardwood stage) or after Douglas-fir seasonal growth has "hardened off" (set winter buds) in late summer, but while hardwoods are still actively growing. When treating after Douglas-fir bud set, apply prior to onset of autumn coloration in hardwood foliage. **Note:** Treatments applied during active Douglas-fir shoot growth (after spring bud break and prior to bud set) may cause injury to Douglas-fir trees.

Christmas Tree Plantations

Use Vastlan for the control of woody plants and annual and perennial broadleaf weeds in established Christmas tree plantations. For best results, apply when woody plants and weeds are actively growing. Vastlan does not control weeds which have not emerged at the time of application. If lower rates are used on hard to control woody species, resprouting may occur the year following treatment. Brush over 8 feet tall is difficult to treat efficiently using hand equipment such as backpack or knapsack sprayers. When treating large brush or trees or hard to control species such as ash, blackgum, choke cherry, elm, hazel, madrone, maples, oaks or sweetgum, and for applications made during drought conditions or in late summer when the leaves are mature, use the higher rates of Vastlan or use cut surface applications (see Cut Surface section above). For foliar applications, use a surfactant and apply in enough water to give uniform and complete coverage of the plants to be controlled. Applications made under drought conditions may provide less than desirable results.

Use Precautions:

- Newly seeded turf (alleyways, etc.) should be mowed two or three times before treatment with Vastlan.
- Use Vastlan where legumes, such as clover, are present only if injury and possible control of legumes can be tolerated.

Use Restrictions:

- Do not use on newly seeded grass until well established as indicated by vigorous growth and development of secondary root system and tillering.
- Do not reseed Christmas tree areas treated with Vastlan for a minimum of three weeks after application.
- Apply Vastlan only to established Christmas trees that were planted at least one full year prior to application.
- Do not apply with 2,4-D containing products.**

Application

Apply in late summer or early autumn after terminal growth of Christmas trees has hardened off but before leaf drop of the target weeds. Apply at a rate of 0.75 to 1.75 quarts of Vastlan per acre as a foliar spray directed toward the base of Christmas trees. Use sufficient spray volume to provide uniform coverage of target plants (20 to 100 gallons per acre). Application rates of Vastlan directed for Christmas trees will only suppress some well established woody plants that are greater than 2 to 3 years old (see table below). Broadcast sprays may also be applied in bands between the rows of planted trees. Use spray equipment that will ensure uniform coverage of the desired spray volume.

Vastlan can cause needle and branch injury to Christmas trees.

To minimize injury to Christmas trees, direct sprays so as to avoid or minimize contact with foliage. Blue spruce, white spruce, balsam fir, and Fraser fir are less susceptible to injury than white pine and Douglas-fir.

Application Rates and Species Controlled (or also see list above):

Vastlan		
0.75 quart/acre	1.25 to 1.5 quarts/acre	1.75 quarts/acre
clover	bindweed, field (TG)	arrowwood (SDL)
dandelion	blackberry ¹	aspen
dock, curly	chicory (S)	beech (SDL)
lambsquarters	fireweed	birch (SDL)
lespedeza	ivy, ground	chinquapin
plantain, broadleaf	lettuce, wild	cottonwood (SDL)
plantain, buckhorn	oxalis	elderberry
ragweed, common	poison ivy	grape, wild
vetch	smartweed (TG)	mulberry (SDL)
	thistle, Canada (TG)	poplar (SDL)
	violet, wild	sassafras (SDL)
	Virginia creeper ¹	sumac (SDL)
		sycamore (SDL)

(TG) Top growth control, retreatment may be necessary

(S) Suppression

(SDL) Seedlings less than 2 to 3 years old

¹Use 1.5 quarts per acre rate

Directed Applications

To control hardwoods such as red maple, sugar maple, striped maple, sweetgum, red and white oaks, ash, alder, birch, aspen, and pin cherry, mix 0.19 to 1 pint of Vastlan in enough water to make 3 gallons of spray mixture. For directed applications, do not exceed 6 quarts of Vastlan per acre per year. To improve coverage, add a non-ionic agricultural surfactant to the spray. This spray mixture should be directed onto foliage of competitive hardwoods using knapsack or backpack sprayers with flat fan nozzles or equivalent any time after hardwoods have reached full leaf size, but before autumn coloration (when plants are actively growing). The majority of treated hardwoods should be less than 8 feet in height to ensure adequate spray coverage. **Note:** To prevent Christmas tree injury, care should be taken to direct spray away from contact with Christmas tree foliage.

Aquatic and Wetland Sites

Use Vastlan for control of emerged, submersed and floating aquatic plants in aquatic sites such as ponds, lakes, reservoirs, non-irrigation canals, and ditches which have little or no continuous outflow, marshes and wetlands, including broadleaf and woody vegetation on banks and shores within or adjacent to these and other aquatic sites.

Obtain Required Permits: Consult with appropriate state or local water authorities before applying this product to public waters. State or local public agencies may require permits.

Aquatic Application Methods

Use a non-ionic surfactant in the spray mixture to improve control with foliar applications. Follow all directions and use precautions on the aquatic surfactant label.

Surface Application

Use a spray boom, handgun or other similar suitable equipment mounted on a boat or vehicle. Thorough wetting of foliage is essential for maximum effectiveness. Use 20 to 200 gallons per acre of spray mixture. Special precautions such as the use of low spray pressure, large droplet producing nozzles, or addition of a labeled thickening agent may minimize spray drift in areas near sensitive crops.

Aerial Application (Helicopter Only)

Apply with a helicopter using a Microfoil or Thru-Valve boom, or a drift control additive in the spray solution. Apply in a minimum of 10 gallons of total spray mix per acre. Do not apply when weather conditions favor drift to sensitive areas. See label section on aerial application directions and precautions.

Floating and Emerged Weeds

Apply when plants are actively growing. For control of waterhyacinth, alligatorweed (see specific directions below), and other susceptible emerged and floating herbaceous weeds and woody plants, apply 1.5 to 6 quarts of Vastlan per acre as a foliar application using surface or aerial equipment. Use higher rates in the rate range when plants are mature, when the weed mass is dense, or for difficult to control species. Repeat as necessary to control regrowth and plants missed in the previous operation, but do not exceed a total of 6 quarts of Vastlan per acre per annual growing season.

Aquatic Weeds

alligatorweed	parrotfeather ¹	purple loosestrife
aquatic sodaapple	phragmites	waterprimrose
Eurasian watermilfoil	pickereelweed	
milfoil species	pennywort	

¹Re-treatment may be needed to achieve desired level of control.

Alligatorweed

Apply Vastlan at 2 to 6 quarts per acre to control alligatorweed. It is important to thoroughly wet all foliage with the spray mixture. For best results, add an approved non-ionic aquatic surfactant to the spray mixture. Alligatorweed growing outside the margins of a body of water can be controlled with this treatment. However, alligatorweed growing in water will only be partially controlled. Top growth above the water will be controlled, but the plant will likely regrow from tissue below the water surface.

Restrictions for Potable Water Intakes for Emerged Aquatic Weed Control - Lakes, Reservoirs, Ponds:

See chart below for specific setback distances near functioning potable water intakes.

Note: Existing potable water intakes which are no longer in use, such as those replaced by potable water wells or connections to a municipal water system, are not considered to be functioning potable water intakes. These setback restrictions do not apply to terrestrial applications made adjacent to potable water intakes.

Area Treated (acres)	Vastlan Application Rate			
	1.5 qt/acre	3 qt/acre	4.5 qt/acre	6 qt/acre
Setback Distance (ft)				
4	0	200	400	500
>4 - 8	0	200	700	900
>8 - 16	0	200	700	1000
>16	0	200	900	1300

To apply Vastlan around and within the distances noted above from a functioning potable water intake, the intake must be turned off until the triclopyr level in the intake water is determined to be 0.4 parts per million (ppm) or less by laboratory analysis or immunoassay.

Recreational Use of Water in Treatment Area: There are no restrictions on use of water in the treatment area for recreational purposes, including swimming and fishing.

Livestock Use of Water from Treatment Area: There are no restrictions on livestock consumption of water from the treatment area.

Submerged Weeds

For control of Eurasian watermilfoil and other susceptible submerged weeds in ponds, lakes, reservoirs, and in non-irrigation canals or ditches that have little or no continuous outflow, apply Vastlan as either a surface or subsurface application. Select rates according to the rate chart below to provide a triclopyr concentration of 0.75 to 2.5 ppm ae in treated water. Use higher rates in the rate range in areas of greater water exchange. These areas may require a repeat application. However, total application of Vastlan must not exceed an application rate of 2.5 ppm of triclopyr for the treatment area per annual growing season.

Apply in spring or early summer when Eurasian watermilfoil or other submersed weeds are actively growing.

Areas near susceptible crops or other desirable broadleaf plants may be treated by subsurface injection applied by boat to avoid spray drift.

Surface Application

Apply the desired amount of Vastlan as either a concentrate or a spray mixture in water. However, use a minimum spray volume of 5 gallons per acre. Do not apply when weather conditions favor drift to sensitive areas.

Average water depth (feet) x 0.678 x target concentration (ppm) = gallons of Vastlan per surface acre treated.

Example: to achieve a 2 ppm concentration of triclopyr in water averaging 4 feet deep

$$4 \times 0.678 \times 2 \text{ ppm} = 5.4 \text{ gallons of Vastlan per surface acre treated}$$

Water Depth (ft)	Concentration of Triclopyr Acid in Water (ppm ae)				
	0.75 ppm	1 ppm	1.5 ppm	2 ppm	2.5 ppm
Gallons of Vastlan per Surface Acre at Specified Depth					
1	0.5	0.7	1.0	1.4	1.7
2	1.0	1.4	2.0	2.7	3.4
3	1.5	2.0	3.1	4.1	5.1
4	2.0	2.7	4.1	5.4	6.8
5	2.5	3.4	5.1	6.8	8.5
6	3.1	4.1	6.1	8.1	10.2
7	3.6	4.7	7.1	9.5	11.9
8	4.1	5.4	8.1	10.8	13.6
9	4.6	6.1	9.2	12.2	15.3
10	5.1	6.8	10.2	13.6	17.0
15	7.6	10.2	15.3	20.3	25.4
20	10.2	13.6	20.3	27.1	33.9

Subsurface Application

Apply desired amount of Vastlan per acre directly into the water through boat-mounted distribution systems. When treating target plants that are 6 feet below the surface of the water, trailing hoses should be used along with an aquatic approved sinking agent (except California).

Restrictions for Potable Water Intakes for Submerged Weed Control – Lakes, Reservoirs, Ponds:

For applications of Vastlan to control submerged weeds in lakes, reservoirs or ponds that contain a functioning potable water intake for human consumption, see the chart below to determine the minimum setback distances of the application from the functioning potable water intakes.

Area Treated (acres)	Concentration of Triclopyr Acid in Water (ppm ae)				
	0.75 ppm	1 ppm	1.5 ppm	2 ppm	2.5 ppm
Required Setback Distance (ft) from Potable Water Intake					
<4	300	400	600	800	1000
>4 – 8	420	560	840	1120	1400
>8 – 16	600	800	1200	1600	2000
>16 – 32	780	1040	1560	2080	2600
>32 acres, calculate a setback using the formula for the appropriate rate	Setback (ft) = (800*ln (acres) – 160)/3.33	Setback (ft) = (800*ln (acres) – 160)/2.50	Setback (ft) = (800*ln (acres) – 160)/1.67	Setback (ft) = (800*ln (acres) – 160)/1.25	Setback (ft) = (800*ln (acres) – 160)

Example Calculation 1: to apply 2.5 ppm Vastlan to 50 acres:

$$\begin{aligned} \text{Setback in feet} &= (800 \times \ln (50 \text{ acres}) - 160) \\ &= (800 \times 3.912) - 160 \\ &= 2970 \text{ feet} \end{aligned}$$

Example Calculation 2: to apply 0.75 ppm Vastlan to 50 acres:

$$\begin{aligned} \text{Setback in feet} &= (800 \times \ln (50 \text{ acres}) - 160) / 3.33 \\ &= (800 \times 3.912) - 160 / 3.33 \\ &= 892 \text{ feet} \end{aligned}$$

Note: Existing potable water intakes which are no longer in use, such as those replaced by potable water wells or connections to a municipal water system, are not considered to be functioning potable water intakes. These setback restrictions do not apply to terrestrial applications made adjacent to potable water intakes.

To apply Vastlan around and within the distances noted above from a functioning potable water intake, the intake must be turned off until the triclopyr level in the intake water is determined to be 0.4 parts per million (ppm) or less by laboratory analysis or immunoassay.

Wetland Sites

Wetlands include flood plains, deltas, marshes, swamps, bogs, and transitional areas between upland and lowland sites. Wetlands may occur within noncropland, rangeland, pastures, forests, wildlife habitat restoration and management areas and similar sites as well as areas adjacent to or surrounding domestic water supply reservoirs, lakes and ponds.

For control of woody plants and broadleaf weeds in wetland sites, follow use directions and application methods on this label for terrestrial sites.

Note: Consult local public water control authorities before applying this product in and around public water. Permits may be required to treat such areas.

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