

**REQUEST FOR PERMIT TO CONDUCT RIGHTS-OF-WAY SPRAYING
[IN VERMONT]**

Request is hereby made, pursuant to Title 6 V.S.A., Chapter 87, and the regulations issued pursuant thereto, for an approved permit to conduct spraying on rights-of-way within the State of Vermont.

A. General Information

1. Title of Organization **St. Lawrence & Atlantic Railroad**
2. Address: **225 First Flight Drive, Suite 201
Auburn, ME 04210**
3. Telephone Number: **802-624-6184 [Christopher Fletcher; Roadmaster]**
4. Contact Persons:
 1. **Christopher Fletcher, Roadmaster SLR; christopher.fletcher@gwrr.com;**
 2. **For preparers of this Request:**
 - **Wendy Shellito, Staff Scientist, Waite-Heindel Envir. Mgmt. [WHEM],
wshellito@waiteenv.com; 802-860-9400 x103;**
 - **Craig Heindel, C.P.G., WHEM; cheindel@gmavt.net; 802-860-9400 x102.**
5. Type of Right-of-Way:
 - a. Electric Power Transmission Line
 - b. Electric Power Distribution Line
 - c. Telephone Line
 - d. Highway
 - e. Pipeline (Specify: Gas, Soil, Water)
 - f. Railroad
 - g. Airport Approaches and Safety Zones
 - h. Other - Describe
6. Type of Treatment:
 - a. Selective Basal
 - b. Stump Treatment
 - c. Dormant Cane (Broadcast Basal)
 - d. Soil Applications (Soil Sterilant)
 - e. Ground Broadcast Stem-Foliage
 - f. Stem Injection (Frill Treatment)
 - g. Other - Describe:
7. Railroad Right-of-Way Treatment:
 - a. Ballast
 - b. Shoulder

B. Site Specific Information

1. List Towns where Treatment will be Made: **Warren Gore, Norton, Morgan, Brighton, Brunswick, Bloomfield.**
2. Total Acreage to be Treated **Total Acres: 170 acres**
**[based on 58 miles in VT, per parent company Genesee & Wyoming website;
and 24-ft. width of ballast treatment]**
Ground Application **Acres: 170 acres**
3. Width of Right-of-Way **Feet: varies: 25 to 160 ft.**
4. Width of Area In Right-of-Way to be Treated **Feet: 24 ft., typically [see details above]**
5. Anticipated Starting Date: **No earlier than May 15, 2021**

C. Special Needs - Treatment Within Buffer Strips: **No treatment is proposed within Buffer Strips.**

1. Specific Areas where Application is to be Made: **NA**
2. Type of Vegetation to be Controlled: **NA**
3. Pesticide(s) to be Applied (List Here and in Section E): **NA**
4. Rate of Application (List Here and in Section E): **NA**
5. Application Technique to be Implemented: **NA**
6. Application Equipment to be Used: **NA**
7. Explain how this Request will Protect Sensitive Areas, Sensitive Crops, Site Conditions, Wells, etc.:
NA.

D. Contractor Information

1. Contractor's Name: **Asplundh Railroad Division; Don Weimann**
2. Company Name: **Asplundh Railroad Division**
3. Company Address: **720 County Road 400
Ironton, OH 45638**
4. Current Vermont Applicator Certificate Number: **1499-4801**
5. Company Telephone Number: **740-532-7035**

E. Control Details

Pesticides to be used and rates to be applied. If more than one chemical is listed, a summary of the uses intended for each chemical must be provided. The summary should state whether the chemical will be mixed or applied separately, specifying which chemicals will control what types of vegetation. (Please Note: A copy of a label, MSDS sheet and EPA Fact Sheet [if available] must be supplied for each chemical to be used.)

1. Standard ballast treatment locations: spray 24-foot wide area from centerline, and wider between tracks in rail yards;
2. At public and private road crossings, spray 24 feet from center line on either side, for 300 feet preceding and following each crossing;
3. At whistle posts, spray 24 feet from centerline on the side of the whistle post, for 20 feet preceding the whistle post and 5 feet following the whistle post;
4. At mile posts, spray no greater than 24 feet from centerline, beginning no farther than 20 feet preceding and following the mile posts
5. Around signal cases, masts, stored materials and railroad yard applications: applications in accordance with product label.

Trade Name	Common Name of Active Ingredient(s)	EPA Reg. No.	Applic. Rate Product/Acre	Vegetation to Be Controlled	Type of Application and Equipment to be Used
Lock Down SC	Flumioxazin	71368-114	8 oz./acre	Weeds, Grass, Broadleaves	Highrail truck with boomless nozzle, or Fixed boom 18 in. above rails
Opensight	Aminopyralid Potassium; Metsulfuron Methyl	62719-597	2 oz./acre	Weeds, Grass, Broadleaves	Same as above
Razor Xtreme	Glyphosate	71368-81	2 pints/acre	Weeds, Grass, Broadleaves	Same as above
Spyder Extra	Sulfometuron Methyl; Metsulfuron Methyl	228-690	3 oz./acre	Weeds, Grass, Broadleaves	Same as above
					Formulations will be mixed in approximately 30 gallons of water per acre.

NOTE: The drift retardant "Control WM" manufactured by GARRCO will be added at a rate of 0.8 oz./acre to all formulations to reduce the chance of drift to non-targeted areas. Formulations will also include "Hot MES" manufactured by Drexel, at a rate of 2 oz./acre, which includes a surfactant/emulsifier blend and methylated seed oil to improve performance.

F. Methods of Notification

1. List the Newspapers in which you will Advertise this Application to Comply with Section IV, 4.b., of the Vermont Regulations for Control of Pesticides.
Newport Daily Express, Caledonian Record, News & Sentinel [or other newspapers providing approximately similar coverage].
2. Please Indicate Other Notification Option Chosen to Comply with Section IV, 4.c, of the Vermont Regulations for Control of Pesticides.
Radio Announcements on WMOO, WLTN [or other radio stations providing approximately similar coverage].


G. Other Information To Be Submitted With Application

1. Two (2) Sets of Geodetic (in 7.5-minute scale) or Orthophoto Maps indicating the Right-of-Way to be Treated. (Only one set of maps is needed if maps have been previously submitted and revisions have not been made.) **Maps are currently being checked for new wells shown on the ANR Natural Resources Atlas that were not identified on the 2020 maps. This updated set of maps will be provided as soon as available, certainly prior to permit issuance.**
2. Current Labelling for each Pesticide to be Used. **Attached.**
3. Current Material Safety Data Sheet (MSDS) for each Pesticide to be Used. **Attached.**
4. Current Environmental Protection Agency Pesticide Fact Sheet (if available).

The undersigned accepts full responsibility for all statutes and regulations of the State of Vermont and understands that any authorization is limited to the described materials, locations and time periods stated herein.

The undersigned further understands that weekly spray and dusting operations must be reported to the Vermont Agency of Agriculture. Such written report shall be on forms furnished by the Secretary of Agriculture and placed in the mail not later than the close of business on the Monday following the week's operation.

3/26/2021
Date



Signature of Applicant

(NOTE: Additional sheets may be attached to include further information.)

HERBICIDES: LABELS and SDSs

[VERMONT, 2021]

- 1. Lock Down SC [EPA Reg. No. 71368-114]**
- 2. Opensight [EPA Reg. No. 62719-597]**
- 3. Razor Xtreme [EPA Reg. No. 71368-81]**
- 4. Spyder Extra [EPA Reg. No. 228-690]**

Lock Down™ SC

Herbicide

FOR USE TO MAINTAIN BARE GROUND NON-CROP AREAS, †CONIFER AND POPLAR RE-FORESTATION SITES

ACTIVE INGREDIENT:

Flumioxazin*..... 41.4%

OTHER INGREDIENTS:..... 58.6%

TOTAL: 100.0%

*2-[7-fluoro-3,4-dihydro-3-oxo-4-(2-propynyl)-2H-1,4-benzoxazin-6-yl]-4,5,6,7-tetrahydro-1H-isoindole-1,3(2H)-dione

Lock Down SC contains 4 pounds flumioxazin per gallon.

†Not for use in CA

Shake Well, Agitate or Recirculate Before Use

KEEP OUT OF REACH OF CHILDREN

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

SEE NEXT PAGE FOR ADDITIONAL PRECAUTIONARY STATEMENTS

For Chemical Spill, Leak, Fire, or Exposure, Call CHEMTREC (800) 424-9300
For Medical Emergencies Only, Call (877) 325-1840

EPA Reg. No. 71368-114

Manufactured for
Nufarm Inc.
11901 S. Austin Avenue
Alsip, IL 60803



Net Contents
2.5 Gal.
(9.46 L)
Nonrefillable Container

15296000

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

Harmful if inhaled or absorbed through the skin. Causes moderate eye irritation. Avoid breathing spray mist. Avoid contact with skin, eyes or clothing.

HOT LINE NUMBER

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-877-325-1840 for emergency medical treatment information.

PERSONAL PROTECTIVE EQUIPMENT (PPE):

Some of the materials that are chemical-resistant to this product are listed below.

Applicators and other handlers must wear:

- long-sleeved shirt and long pants
- chemical-resistant gloves made of any waterproof material
- shoes and socks.

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

USER SAFETY RECOMMENDATIONS

Users Should:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- 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.

ENVIRONMENTAL HAZARDS

If not used in accordance with directions on the label, this product is toxic to non-target plants and aquatic invertebrates. For terrestrial uses: Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Drift and runoff may be hazardous to non-target plants and aquatic organisms in water adjacent to treated areas. Do not apply where runoff is likely to occur. Do not apply when weather conditions favor drift from treated areas. Do not contaminate water when disposing of equipment washwaters or rinsate.

This pesticide is toxic to plants. Use strictly in accordance with the drift and run-off precautions on this label in order to minimize off-site exposures.

Under some conditions this product may have a potential to run off to surface water or adjacent land. Where possible, use methods which reduce soil erosion, including no till, limited till and contour plowing; these methods also reduce pesticide run-off. Use of vegetation filter strips along rivers, creeks, streams, wetlands or on the downhill side of fields where run-off could occur will minimize water run-off. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans, or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the EPA.

PHYSICAL OR CHEMICAL HAZARDS

Do not mix or allow coming in contact with oxidizing agent. Hazardous chemical reaction may occur.

DIRECTIONS FOR USE

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

Read the entire label before using this product. Use strictly in accordance with label precautionary statements and directions, and with applicable state and federal regulations.

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.

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 (WPS) for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural crops on farms, forests, nurseries, or greenhouses.

Keep all unprotected persons out of operating areas, or vicinity where there may be drift.

Do not enter or allow others to enter the treated area until sprays have dried.

RISKS OF USING THIS PRODUCT

The Buyer and User (referred to collectively herein as "Buyer") of this product must be aware that there are inherent unintended risks associated with the use of this product which are impossible to eliminate. These risks include, but are not limited to, injury to plants and crops to which this product is applied, lack of control of the target pests or weeds, resistance of the target pest or weeds to this product, injury caused by drift,¹ and injury to rotational crops caused by carryover in the soil. Such risks of crop injury, non-performance, resistance or other unintended consequences are unavoidable and may result because of such factors as weather, soil conditions, disease, moisture conditions, irrigation practices, condition of the crop at the time of application, presence of other materials either applied in the tank mix with this product or prior to application of this product, cultural practices or the manner of use or application, (or a combination of such factors) all of which are factors beyond the control of Nufarm. The Buyer must be aware that these inherent unintended risks may reduce the harvested yield of the crop in all or a portion of the treated acreage, or otherwise affect the crop such that additional care, treatment and expense are required to take the crop to harvest. If the Buyer chooses not to accept these risks, THEN DO NOT APPLY THIS PRODUCT. By applying this product Buyer acknowledges and accepts these inherent unintended risks AND TO THE FULLEST EXTENT ALLOWED BY LAW, AGREES THAT ALL SUCH RISKS ASSOCIATED WITH THE APPLICATION AND USE ARE ASSUMED BY THE BUYER.

Nufarm shall not be responsible for losses or damages (including, but not limited to, loss of yield, increased expenses of farming the crop or such incidental, consequential or special damages that may be claimed) resulting from use of this product in any manner not set forth on the label. Buyer assumes all risks associated with the use of this product in any manner or under conditions not specifically directed or approved on the label.

See also **WARRANTY DISCLAIMER** and **LIMITATION OF LIABILITY** sections of the label for additional information.

TANK MIXES

NOTICE: Tank mixing or use of this product with any other product which is not specifically and expressly authorized by the label shall be the exclusive risk of user, applicator and/or application advisor, to the extent allowed by applicable law.

It is the pesticide user's responsibility to ensure that all products are registered for the intended use. Read and follow the applicable restrictions 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.

PRODUCT INFORMATION

This product is a selective herbicide to maintain bare ground non-crop areas when used in accordance with this label. This product is effective as a preemergence and/or postemergence herbicide for control of selected grass and broadleaf weeds.

This product controls weeds by inhibiting protoporphyrinogen oxidase, an essential enzyme required by plants for chlorophyll biosynthesis. Seeding weeds are controlled preemergence when exposed to sunlight following contact with the soil applied herbicide.

USE RESTRICTIONS

- Do not apply more than 12 fl oz (0.38 lb ai) of this product per acre per application.
- Do not apply more than 24 fl oz (0.75 lb ai) of this product per acre per year.
- Do not apply more than 2 applications at 12 fl oz (0.38 lb ai) per acre or 3 applications at 8 fl oz (0.25 lb ai) per acre per year.
- Do not apply when weather conditions favor spray drift from treated areas.
- Do not incorporate into soil after application.
- Do not apply this product through any type of irrigation system.
- Do not apply to moist or wet desirable plant foliage.
- Do not apply within 300 feet of non-dormant pome or stone fruit crops.

USE PRECAUTIONS

- Treatment of powdery, dry soil or light sandy soil, or light sandy soil when there is little to no likelihood of rainfall soon after may result in off target movement and possible damage to actively growing susceptible crops when soil particles are moved by wind or water. Do not apply when these soil and environmental conditions are present.

WEED RESISTANCE MANAGEMENT

This product is a Group 14 herbicide. Any weed population may contain or develop plants naturally resistant to this product and other Group 14 herbicides. The resistant biotypes may dominate the weed population if these herbicides are used repeatedly in the same field. Appropriate resistance-management strategies should be followed. To delay herbicide resistance take one or more of the following steps:

- Rotate this product or other Group 14 herbicides within a growing season sequence or among growing seasons with different herbicide groups that control the same weeds in a field.
- Use tank mixtures with herbicides from a different group if such use is permitted; where information on resistance in target weed species is available, use the less resistance-prone partner at a rate that will control the target weed(s) equally as well as the more resistance-prone partner. Consult your local extension service or certified crop advisor if you are unsure as to which active ingredient is currently less prone to resistance.
- Adopt an integrated weed-management program for herbicide use that includes scouting and uses historical information related to herbicide use and crop rotation, and that considers tillage (or other mechanical control methods), cultural (e.g., higher crop seedling rates; precision fertilizer application method and timing to favor the crop and not the weeds), biological (weed-competitive crops or varieties) and other management practices.

- Fields should be scouted prior to application to identify the weed species present and their growth stage to determine if the intended application will be effective. Fields should be scouted after application to verify that the treatment was effective and to monitor weed populations for early signs of resistance development. Indicators of possible herbicide resistance include: (1) failure to control a weed species normally controlled by the herbicide at the dose applied, especially if control is achieved on adjacent weeds; (2) a spreading patch of non-controlled plants of a particular weed species; (3) surviving plants mixed with controlled individuals of the same species. If resistance is suspected, prevent weed seed production in the affected area by an alternative herbicide from a different group or by a mechanical method such as hoeing or tillage. Prevent movement of resistant weed seeds to other fields by cleaning harvesting and tillage equipment when moving between fields, and planting clean seed.
- If a weed pest population continues to progress after treatment with this product, discontinue use of this product, and switch to another management strategy or herbicide with a different mode of action, if available.
- Contact your local sales representative, crop advisor, or extension agent to find out if suspected resistant weeds to this MOA have been found in your region. If resistant biotypes of target weeds have been reported, use the application rates of this product specified for your local conditions. Tank mix products so that there are multiple effective mechanisms of action.
- Contact your local sales representative, agricultural dealer, consultant, local extension specialist, applicator, crop advisor, and/or appropriate state agricultural extension service representative for additional pesticide resistance-management and/or integrated weed-management recommendations for specific crops and weed biotypes.
- Report any incidence of non-performance of this product against a particular weed species to your local sales representative or agricultural dealer.

BEST MANAGEMENT PRACTICES

- Plant into weed-free fields and keep fields as weed-free as possible.
- Use a diversified approach toward weed management. Whenever possible incorporate multiple weed-control practices such as mechanical cultivation, biological management practices, and crop rotation.
- Fields with difficult to control weeds should be rotated to crops that allow the use of herbicides with alternative mechanisms of action or different management practices.
- Do not allow weed escapes to produce seeds, roots or tubers. Manage weed seeds at harvest and post-harvest to prevent a buildup of the weed seed-bank.
- Prevent field-to-field and within-field movement of weed seed or vegetative propagules.
- Prevent an influx of weeds into the field by managing field borders.
- Identify weeds present in the field through scouting and field history and understand their biology. The weed-control program should consider all of the weeds present.
- Difficult to control weeds may require sequential applications of herbicides with differing mechanisms of action.
- Apply this herbicide at the correct timing and rate needed to control the most difficult weed in the field.
- Use a broad spectrum soil-applied herbicide with a mechanism of action that differs from this product as a foundation in a weed-control program. Do not use more than two applications of this or any other herbicide with the same mechanism of action within a single growing season unless mixed with an herbicide with another mechanism of action with an overlapping spectrum for the difficult-to-control weeds.
- If resistance is suspected, treat weed escapes with an herbicide with a different MOA or use non-chemical methods to remove escapes.

PREEMERGENCE APPLICATION

Make the preemergence application of this product prior to weed emergence. Moisture is necessary to activate this product for residual weed control. Moisture is needed to move this product into the soil for preemergence weed control. Dry weather following application of this product may reduce effectiveness.

POSTEMERGENCE APPLICATION

For best results, apply this product to actively growing weeds. Applying this product under conditions that do not promote active weed growth will reduce herbicide effectiveness.

Do not apply this product when the weeds are under stress due to drought, excessive water and extremes in temperatures or disease. This product is most effective when applied under sunny conditions at temperatures above 65° F.

This product is rainfast one hour after application. Do not make applications if rain is expected within one hour of application or efficacy may be reduced.

APPLICATION EQUIPMENT

Important: Thoroughly clean spray equipment, including all tanks, hoses, booms, screens and nozzles. **Do not use spray equipment used to apply this product to apply other materials to any desirable plant foliage.** Equipment with this product's residue remaining in the system may result in crop injury to subsequently treated crops.

SPRAYER PREPARATION

Before applying this product, start with clean, well maintained application equipment. Clean the spray tank, as well as all hoses and booms to ensure no residue from the previous spraying operation remains in the sprayer. Some pesticides, including but not limited to the sulfonyleurea and phenoxy herbicides, are active at very small amounts and can cause crop injury when applied to susceptible crops. Clean the spray equipment according to the manufacturer's directions for the last product used before the equipment is used to apply this product. If two or more products were tank mixed prior to this product's application, follow the most restrictive cleanup procedure.

MIXING INSTRUCTIONS

1. Fill clean spray tank 1/2 to 2/3 of desired level with clean water.
2. Agitate solution. Agitation creates a rippling or rolling action on the water surface.
3. If tank mixing this product with other labeled herbicides, add water soluble bags first, followed by dry formulations, flowables, emulsifiable concentrates and then solutions. Prepare no more spray mixture than is required for the immediate spray operation.
4. Add any required adjuvants.
5. Fill spray tank to desired level with water. **Continue agitation until all spray solution has been applied.**
6. Mix only the amount of spray solution that can be applied the day of mixing. Apply this product within 48 hours of mixing.

SPRAYER CLEANUP

If spray equipment is dedicated to herbicide applications, the following steps are to clean the spray equipment:

- Completely drain the spray tank and rinse the application equipment thoroughly, including the inside and outside of the tank and all in-line screens.

If spray equipment will be used for purposes other than applying herbicides, it must be thoroughly cleaned following application of this product. The following steps must be used to clean the spray equipment:

- Completely drain the spray tank, rinse the sprayer thoroughly, including the inside and outside of the tank and all in-line screens.
- Fill the spray tank with clean water and flush all hoses, booms, screens and nozzles.
- Top off tank, add suitable commercial spray tank cleaning material, following label directions, or add 1 gallon of 3% household ammonia for every 100 gallons of water, circulate through sprayer for 5 minutes, and then flush all hoses, booms, screens and nozzles for a minimum of 15 minutes.
- Drain tank completely.
- Add enough clean water to the spray tank to allow all hoses, booms, screens and nozzles to be flushed for 2 minutes.
- Remove all nozzles and screens and rinse them with clean water.

SPRAY DRIFT MANAGEMENT

Do not apply under circumstances where possible drift to unprotected persons or to food, forage or other plantings that might be damaged or crops thereof rendered unfit for sale, use or consumption can occur.

- Use the largest droplet size consistent with acceptable efficacy. Formation of very small droplets may be minimized by appropriate nozzle selection, by orienting nozzles away from the air stream as much as possible and by avoiding excessive spray boom pressure. For ground boom and aerial applications, use medium or coarser spray nozzles according to ASAE 572 definition for standard nozzles or a volume mean diameter (VMD) of 300 microns or greater for spinning atomizer nozzles.
- Make aerial or ground applications when the wind velocity favors on-target product deposition. Drift potential is lowest between wind speeds of 2-10 mph. For all non-aerial applications, wind speed must be measured adjacent to the application site on the upwind side, immediately prior to application.
- Do not make aerial or ground applications into areas of temperature inversions. Inversions are characterized by stable air and increasing temperatures with increasing distance above the ground. Mist or fog may indicate the presence of an inversion in humid areas. Where permissible by local regulations, the applicator may detect the presence of an inversion by producing smoke and observing a smoke layer near the ground surface.
- Low humidity and high temperatures increase the evaporation rate of spray droplets and therefore the likelihood of increased spray drift. Avoid spraying during conditions of low humidity and/or high temperatures.
- All aerial and ground application equipment must be properly maintained and calibrated using appropriate carriers.
- For ground boom applications, apply with nozzle height at the lowest boom height which provides uniform coverage and reduces exposure to evaporation and wind.

WEEDS CONTROLLED

When this product is applied preemergence or postemergence at directed rates and weed stages, the following grasses and broadleaf weeds are controlled:

TABLE 1. WEEDS CONTROLLED BY THIS PRODUCT

COMMON NAME	SCIENTIFIC NAME
Alyssum, Hoary	<i>Berteroa incana</i>
Amaranth	<i>Amaranthus palmeri</i>
Palmer	<i>Amaranthus spinosus</i>
Spiny	<i>Erechetites hieracifolia</i>
American Burnweed	<i>Echinochloa crus-galli</i>
Barnyardgrass*	<i>Desmodium Tortuosum</i>
Beggarweed, Florida	<i>Cardamine hirsute</i>
Bittercress, Hairy	<i>Poa annua</i>
Bluegrass, Annual	<i>Medicago Polymorpha</i>
Burclover, California	<i>Mollugo verticillata</i>
Carpetweed	

(continued)

TABLE 1. WEEDS CONTROLLED BY THIS PRODUCT *(continued)*

COMMON NAME	SCIENTIFIC NAME
Chamberbitter	<i>Phyllanthus urinaria</i>
Chickweed	
Common	<i>Stellaria media</i>
Mouseear	<i>Cerastium vulgatum</i>
Crabgrass	
Large*	<i>Digitaria sanguinalis</i>
Smooth*	<i>Digitaria ischaemum</i>
Southern*	<i>Digitaria ciliaris</i>
Croton, Tropic	<i>Croton glandulosus var.septentrionalis</i>
Dandelion*	<i>Taraxacum officinale</i>
Dogfennel	<i>Eupatorium capillifolium</i>
Doveweed	<i>Murdannia nudiflora</i>
Eclipta	<i>Eclipta prostrata</i>
Filaree, Redstem*	<i>Erodium cicutarium</i>
Foxtail	
Bristly*	<i>Setaria verticillata</i>
Giant*	<i>Setaria faberi</i>
Green*	<i>Setaria viridis</i>
Yellow*	<i>Setaria glauca</i>
Galinsoga, Hairy	<i>Galinsoga ciliata</i>
Geranium, Carolina	<i>Geranium carolinianum</i>
Goosegrass*	<i>Eleusine indica</i>
Groundsel, Common	<i>Senecio vulgaris</i>
Groundsel, Tree	<i>Baccharis halimifolia</i>
Henbit	<i>Lamium amplexicaule</i>
Horseweed*	<i>Conyza Canadensis</i>
Indigo, Hairy	<i>Indigofera hirsute</i>
Ivy, Ground*	<i>Glechoma hederacea</i>
Jimsonweed	<i>Datura stramonium</i>
Kochia	<i>Kochia scoparia</i>
Kyllinga, Green*	<i>Kyllinga brevifolia</i>
Ladysthumb	<i>Polygonum persicaria</i>
Lambsquarters, Common	<i>Chenopodium album</i>
Lovegrass, California*	<i>Eragrostis diffusa</i>
Liverwort	<i>Marchantia polymorpha</i>
Mallow	
Common	<i>Malva neglecta</i>
Little	<i>Malva parviflora</i>
Venice	<i>Hibiscus trionum</i>
Marsh Parsley	<i>Apium leptophyllum</i>
Mayweed*	<i>Anthemis cotula</i>
Morningglory	
Entireleaf	<i>Ipomoea hederacea var.integruscula</i>
Ivyleaf	<i>Ipomoea hederacea</i>
Red/Scarlet	<i>Ipomoea coccinea</i>
Smallflower	<i>Jacquemontia taminifolia</i>
Tall	<i>Ipomoea purpurea</i>
Moss	<i>Bryum spp.</i>
Mulberry Weed	<i>Fatua villosa</i>
Mustard	
Tumble	<i>Sisymbrium altissimum</i>
Wild	<i>Brassica kaber</i>
Nightshade	
Black	<i>Solanum nigrum</i>
Eastern Black	<i>Solanum ptycanthum</i>
Hairy	<i>Solanum sarrachoides</i>
Northern Willowherb	<i>Epilobium cillatum</i>

(continued)

TABLE 1. WEEDS CONTROLLED BY THIS PRODUCT *(continued)*

COMMON NAME	SCIENTIFIC NAME
Panicum	
Fall*	<i>Panicum dichotomiflorum</i>
Texas*	<i>Panicum texanum</i>
Parsley-Peirt	<i>Alchemilla arvensis</i>
Pearlwort, Birdseye*	<i>Sagina procumbens</i>
Pennycress, Field	<i>Thlaspi arvense</i>
Phyllanthus, Longstalked	<i>Phyllanthus tenellus</i>
Pigweed	
Prostrate	<i>Amaranthus blitoides</i>
Redroot	<i>Amaranthus retroflexus</i>
Smooth	<i>Amaranthus hybridus</i>
Tumble	<i>Amaranthus albus</i>
Pineapple-weed*	<i>Matricaria matricarioides</i>
Plantain	
Broadleaf*	<i>Plantago major</i>
Buckhorn*	<i>Plantago lanceolata</i>
Poinsettia, Wild	<i>Euphorbia heterophylla</i>
Puncturevine	<i>Tribulus terrestris</i>
Purslane, Common	<i>Portulaca oleracea</i>
Pusley, Florida	<i>Richardia scabra</i>
Ragweed	
Common	<i>Ambrosia artemisiifolia</i>
Giant	<i>Ambrosia trifida</i>
Redmaids	<i>Calandrinia ciliata</i>
Redweed	<i>Melochia corchorifolia</i>
Rocket, Yellow	<i>Barbarea vulgaris</i>
Senna, Coffee	<i>Cassia occidentalis</i>
Sesbania, Hemp	<i>Sesbania exaltata</i>
Shepherd's-Purse	<i>Capsella bursa-pastoris</i>
Sida, Prickly (Teaweed)	<i>Sida spinosa</i>
Signalgrass*	<i>Brachiaria platyphylla</i>
Smartweed, Pennsylvania	<i>Polygonum pensylvanicum</i>
Sowthistle, Annual	<i>Sonchus oleraceus</i>
Spiderwort, Tropical	<i>Commelina benghalensis</i>
Spurge	
Petty	<i>Euphorbia peplus</i>
Prostrate	<i>Euphorbia humistrata</i> Engelm
Spotted	<i>Euphorbia maculate</i>
Starbur, Bristly*	<i>Acanthospermum hispidum</i>
Tassle-flower	<i>Emilia</i> spp.
Thistle	
Canada*	<i>Cirsium arvense</i>
Russian	<i>Salsola iberica</i>
Velvetleaf	<i>Abutilon theophrasti</i>
Waterhemp	
Common	<i>Amaranthus rudis</i>
Tall	<i>Amaranthus tuberculatus</i>
Woodsorrel, Yellow*	<i>Oxalis stricta</i>

*Preemergence control only

DIRECTIONS FOR USE

TO MAINTAIN BARE GROUND NON-CROP AREAS

This product, when used as directed, can be used for non-selective vegetation control to maintain bare ground non-crop areas that must be kept weed-free. Apply this product only to:

- Bare ground under guard rails, above-ground pipelines, and railroad beds, railroad yards and surrounding areas
- Bare ground in parking and storage areas, plant sites, substations, pumping stations, and tank farms
- Bare ground areas of airports, brick yards, industrial plant sites, lumber yards, military installations, and storage areas
- Bare ground around farm buildings, and along ungrazed fence rows, wind breaks and shelter belts
- Road surfaces, improved roadside areas and gravel shoulders.

Follow all applicable directions as outlined above under Product Information. See Table 1 for a list of broadleaf weeds and grasses controlled by this product.

This product offers residual and postemergence control of susceptible broadleaf and grass weeds as well as additional mode of action to assist in the control of ALS (acetolactate synthase) resistant weeds. The length of residual control is dependent on the rate applied as well as on rainfall and temperature conditions. Length of residual control will decrease as temperature and precipitation increase.

PREEMERGENCE APPLICATION

Apply 8 to 12 fl oz (0.25 to 0.38 pound ai per acre) of this product per broadcast acre as a preemergence application. Make preemergence (to weed emergence) applications of this product to a weed free soil surface. Preemergence applications of this product must be completed prior to weed emergence. Moisture is necessary to activate this product on soil for residual weed control. Dry weather following application of this product may reduce effectiveness. However, when adequate moisture is received after dry conditions, this product will control susceptible germinating weeds.

POSTEMERGENCE APPLICATION

Apply 8 to 12 fl oz (0.25 to 0.38 pound ai per acre) of this product per broadcast acre plus an adjuvant (0.25% v/v non-ionic surfactant or 1 quart per acre crop oil concentrate). The addition of an adjuvant enhances this product activity on emerged weeds. Thorough spray coverage is necessary to maximize the postemergence activity of this product. Emerged weeds are controlled postemergence with this product, however, translocation of this product within a weed is limited, and control is affected by spray coverage and by the addition of an adjuvant. The most effective postemergence weed control with this product occurs when applied in combination with a surfactant to weeds less than 2 inches in height.

SOIL CHARACTERISTICS

Application of this product to soils with high organic matter and/or high clay content may require higher dosages than with soils with low organic matter and/or low clay content. Application to cloddy seedbeds can result in reduced weed control.

CARRIER VOLUME AND SPRAY PRESSURE

PREEMERGENCE APPLICATION

To ensure uniform coverage, use 10 to 30 gallons of spray solution per acre. Nozzle selection must meet manufacturer's gallonage and pressure directions for preemergence herbicide application.

POSTEMERGENCE APPLICATION

To ensure thorough coverage, use 15 to 30 gallons of spray solution per acre. Use 20 to 30 gallons per acre if dense vegetation or heavy residue is present on the soil surface. Nozzle selection must meet manufacturer's gallonage and pressure directions for postemergence herbicide application.

ADDITIVES

POSTEMERGENCE APPLICATION

When applying this product after weed emergence, mix with an agronomically approved adjuvant. Use a crop oil concentrate which contains at least 15% emulsifiers and 80% oil or a non-ionic surfactant containing at least 80% active ingredient when applying this product as part of a postemergence weed control program. Verify mixing compatibility by a jar test before using.

A spray grade nitrogen source (either ammonium sulfate at 2.0 to 2.5 pounds per acre or a 28 to 32% nitrogen solution at 1 to 2 quarts per acre) may be added to the spray mixture along with a crop oil concentrate or non-ionic surfactant to enhance weed control. The addition of a nitrogen source does not replace the need for crop oil concentrate or non-ionic surfactant.

JAR TEST TO DETERMINE COMPATIBILITY OF ADJUVANTS AND THIS PRODUCT

When using this product and an adjuvant, including in stale seed bed, layby, hooded/shielded or reduced tillage situations, perform a jar test before mixing commercial quantities of this product, when using this product for the first time, when using new adjuvants or when a new water source is being used.

1. Add 1 pint of the water to a quart jar. Use water from the same source and temperature as which will be used in the spray tank mixing operation.
2. Add 1 milliliter of this product to the quart jar for every 3 fl oz of this product per acre being applied (4 mls if 12 fl oz per acre is the desired rate of this product), gently mix until product goes into suspension.
3. Add 60 mls of crop oil to the quart jar or 1 milliliter of non-ionic surfactant if it is being used in place of oil, gently mix.

4. If nitrogen is being used, add 16 mls of the 28 to 32% nitrogen source to the quart jar. If ammonium sulfate is being used, add 19 g AMS to the quart jar in place of the 28 to 32% nitrogen.
5. Place cap on jar, invert 10 times, let stand for 15 minutes, evaluate.
6. An ideal tank mix combination will be uniform. If any of the following conditions are observed question the choice of adjuvant:
 - a) Layer of oil or globules on the mixture's surface.
 - b) Flocculation: fine particles in suspension or as a layer on the bottom of the jar.
 - c) Clabbering: Thickening texture (coagulated) like gelatin.

APPLICATION EQUIPMENT

Application equipment must be clean and in good repair. Nozzles must be uniformly spaced on boom and frequently checked for accuracy.

BROADCAST APPLICATION

Apply this product, and this product's tank mixes, with ground equipment using standard commercial sprayers equipped with nozzles designed to deliver the desired spray pressure and spray volume.

BAND APPLICATION

When banding, use proportionately less water and this product per acre.

HANDGUN APPLICATION

Applications may also be made using a handgun sprayer. Use a spray volume of at least 40 gallons per acre to insure uniform coverage.

AERIAL APPLICATION

To obtain satisfactory weed control with aerial applications of this product, uniform coverage must be obtained. Do not spray when drift is possible or when wind velocity is more than 10 mph. Avoid spraying this product within 200 feet of dwellings, adjacent sensitive crops or environmentally sensitive areas. To obtain satisfactory application and drift, the following directions must be observed:

Volume Pressure

Use this product in 5 to 10 gallons of water per acre with a maximum spray pressure of 40 PSI. Application at less than 5 gallons per acre will provide inadequate weed control. Higher gallonage applications provide more consistent weed control.

Nozzle and Nozzle Operation

Use nozzles that produce flat or hollow cone spray patterns. Use non-drip type nozzles, including diaphragm type nozzles to avoid unwanted discharge of spray solution. The nozzle must be directed toward the rear of the aircraft, at an angle between 0° and 15° downward. Do not place nozzles on the outer 25% of the wings or rotors.

Adjuvants

Refer to the additive section or the tank mix partner's label for adjuvant specifications.

TANK MIX APPLICATION

In addition to weeds controlled by this product used alone, tank mixtures with other preemergence and postemergence herbicides registered for use in non-crop areas provide a broader spectrum of weed control. This product must be tank mixed with other non-crop herbicides including, but not limited to those products listed below.

TANK MIX COMBINATIONS FOR NON-SELECTIVE VEGETATION CONTROL

2,4-D	hexazinone	picloram
bromacil	imazapic	pramitol
chlorsulfuron	imazapyr	prodiamine
dicamba	metsulfuron-methyl	simazine
diuron	norflurazon	sulfometuron-methyl
clopyralid	oryzalin	tebuthiuron
glyphosate	pendimethalin	triclopyr

IMPORTANT: Completely read and follow the label of any potential tank mix partner. When using tank mixtures, use conditions must be in accordance with the most restrictive of the label limitations and precautions on either herbicide label.

USE RESTRICTIONS

- Do not apply more than 2 applications at 12 fl oz (0.38 lb ai) per acre or 3 applications at 8 fl oz (0.25 lb ai) per acre per year.
- Do not re-apply this product within 30 days.

DIRECTIONS FOR USE

†IN CONIFER RE-FORESTATION SITES FOLLOWING TIMBER HARVEST

This product is a preemergence and postemergence herbicide for control of selected grass and broadleaf weeds in conifer re-forestation sites following timber harvest operations. This product may be used as a site preparation treatment prior to transplanting of conifers or as a conifer release treatment after stand establishment.

†*Not for use in CA*

Site Preparation - Application Before Transplanting

Apply 8 to 12 fl oz of this product per acre. Transplant operations must take place at least 3 months after application. To obtain optimal weed control, apply this product before weed emergence or after a burndown herbicide has controlled existing vegetation. If existing weed canopy is less than 40%, this product may be tank mixed with a burndown herbicide to provide preemergence weed control.

Apply this product in at least 10 gallons of water per acre to achieve uniform spray coverage using ground or aerial spray equipment.

Conifer Release Treatments — Applications only within 3 years after transplanting.

Apply 8 to 12 fl oz of this product per acre over the top of trees prior to budbreak in the spring or after dormancy in fall. Do not apply this product over the top of trees after budbreak or needle spotting and defoliation may occur. This product should not affect new growth of trees. See Table 2 for a list of tolerant conifers for over the top treatments.

TANK MIXING — Conifer Release Treatments

Certain liquid formulations of other pesticides may increase the postemergence activity of this product, but may also increase the potential for injury when applied over the top of various plants. Therefore, tank mixtures of these materials with this product may be more injurious than this product applied alone and need to be tested to determine if they can be used safely on a widespread basis.

ADJUVANTS — Conifer Release Treatments

When using as a Conifer Release Treatment, do not mix this product with any adjuvant or fertilizer.

IMPORTANT: When applied as directed, the conifers listed in Table 2 have shown tolerance to this product. However, this product is a very active herbicide. Exercise responsible judgment and caution until familiarity is gained with this product. If a desired conifer species is not listed in Table 2, evaluate the safety of this product on a small number of plants under commercial growing conditions, and monitor plant response for four to six weeks for phytotoxicity. Test this product on a small number of plants to determine if this product can be used safely on a widespread basis. Do not apply this product over the top of conifers until trees have been growing in the treated area for at least one year. The use of nylon mesh wraps, commonly used to deter animal browsing, may increase plant injury if placed on plants after over the top application of this product.

USE RESTRICTIONS

- Do not apply more than 2 applications at 12 fl oz (0.38 lb ai) per acre or 3 applications at 8 fl oz (0.25 lb ai) per acre per year.
- Do not re-apply this product within 30 days.

TABLE 2. TOLERANT CONIFER TREE SPECIES

COMMON NAME	SCIENTIFIC NAME
Arborvitae	
American	<i>Thuja occidentalis</i>
Oriental	<i>Thuja orientalis</i>
Fir	
Concolor	<i>Abies concolor</i>
Cork Bark	<i>Abies lasiocarpa</i>
Douglas	<i>Pseudotsuga menziesii</i>
Fraser	<i>Abies fraseri</i>
Grand	<i>Abies grandis</i>
Noble	<i>Abies procera</i>
Turkish	<i>Abies bommuelleriana</i>
Hemlock	
Eastern	<i>Tsuga Canadensis</i>
Western	<i>Tusga heterophylla</i>
Juniper	
Blue Star	<i>Juniperus scopularum</i>
Creeping	<i>Juniperus horizontalis</i>
Japanese Garden	<i>Juniperus chinensis</i>
Tamarix	<i>Juniperus Sabina</i>
Pine	
Austrian	<i>Pinus nigra</i>
Eastern White	<i>Pinus strobes</i>
Jack	<i>Pinus banksiana</i>
Japanese Black	<i>Pinus thunbergiana</i>
Loblolly	<i>Pinus taeda</i>
Lodgepole	<i>Pinus contorta</i>
Longleaf	<i>Pinus palustris</i>
Mugo	<i>Pinus mugo</i>
Ponderosa	<i>Pinus ponderosa</i>
Sand	<i>Pinus clausa</i>
Scotch	<i>Pinus sylvestris</i>
Shortleaf	<i>Pinus echinata</i>
Slash	<i>Pinus elliottii</i>
Virginia	<i>Pinus virginiana</i>
Spruce	
Blue	<i>Picea pungens</i>
Dwarf Alberta	<i>Picea glauca conica</i>
Norway	<i>Picea abies</i>
Sitka	<i>Picea sitchensis</i>
Yew	
English	<i>Taxus baccata</i>
Japanese	<i>Taxus cuspidate</i>

DIRECTIONS FOR USE

†IN POPLAR PLANTATIONS AND TIMBER RE-FORESTATION SITES

This product is a preemergence and postemergence herbicide for control of selected grass and broadleaf weeds in poplar plantations and timber re-forestation sites following timber harvest operations. This product may be used as a site preparation treatment prior to transplanting of trees or as a release treatment after stand establishment.

†*Not for use in CA*

Site Preparation - Application Before Transplanting

Apply 8 to 12 fl oz of this product per acre. Transplant operations must take place at least 3 months after application. To obtain optimal weed control, apply this product before weed emergence or after a burndown herbicide has controlled existing vegetation. If existing weed canopy is less than 40%, this product may be tank mixed with a burndown herbicide to provide preemergence weed control.

Apply this product in at least 10 gallons of water per acre to achieve uniform spray coverage using ground or aerial spray equipment.

Release Treatments — Applications Within 3 Years After Transplanting

Apply 8 to 12 fl oz of this product per acre over the top of trees prior to budbreak in the spring or after dormancy in fall. Do not apply this product over the top of trees after budbreak or leaf spotting and defoliation may occur. This product should not affect new growth of trees of tolerant poplars for over the top treatments.

TANK MIXING — Poplar Release Treatments

Certain liquid formulations of other pesticides may increase the postemergence activity of this product, but may also increase the potential for injury when applied over the top of various plants. Therefore, tank mixtures of these materials with this product may be more injurious than this product applied alone and need to be tested to determine if they can be used safely on a widespread basis.

ADJUVANTS — Poplar Release Treatments

When applying Release Treatments, do not mix this product with any adjuvant or fertilizer.

IMPORTANT: When applied as directed, poplars (*Populus balsamifera*, *P. niger* and *P. tremuloides*), hybrid poplars (*P. sp. x sp.*), and cottonwoods (*P. deltoides* and *P. trichocarpa*) have shown tolerance to this product. However, this product is a very active herbicide. Exercise responsible judgment and caution until familiarity is gained with this product. Test this product on a small number of plants to determine if this product can be used safely on a widespread basis. Do not apply this product over the top unless trees are more than one year old.

USE RESTRICTIONS

- Do not apply more than 2 applications at 12 fl oz (0.38 lb ai) per acre or 3 applications at 8 fl oz (0.25 lb ai) per acre per year.
- Do not re-apply this product within 30 days.

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage, disposal or cleaning of equipment.

PESTICIDE STORAGE

Keep pesticide in original container. Store in a cool, dry, secure place. Do not put formulation or dilute spray solution into food or drink containers. Do not contaminate food or foodstuffs. Do not store or transport near feed or food. Not for use or storage in or around the home. For help with any spill, leak, fire or exposure involving this material, call day or night **CHEMTREC (800) 424-9300**.

PESTICIDE DISPOSAL

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

CONTAINER HANDLING:

NOTE: This product is available in multiple containers. Refer to the Net Contents section of this products labeling for the applicable "No refillable" or "Refillable" designation. Follow the container disposal [handling] instructions below that apply to your container type / size.

Nonrefillable Containers 5 gallons or less: Nonrefillable container. Do not reuse or refill this container. **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. 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. Offer for recycling if available. If recycling or reconditioning not available, puncture and dispose of in a sanitary landfill, or by other procedures approved by State and local authorities. Plastic containers are also disposable by incineration, or, if allowed by State and local authorities, by burning. If burned stay out of smoke. **Refillable containers larger than 5 gallons:** Refillable container. Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or a mix tank. Fill the container about 10% full with water. Agitate vigorously or recirculate water with the pump for two minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times. Offer for recycling if available. If recycling or reconditioning not available, puncture and dispose of in a sanitary landfill, or by other procedures approved by State and local authorities. Plastic containers are also disposable by incineration, or, if allowed by State and local authorities, by burning. If burned stay out of smoke.

WARRANTY DISCLAIMER

The directions for use of this product must be followed carefully. **TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, (1) THE GOODS DELIVERED TO YOU ARE FURNISHED "AS IS" BY MANUFACTURER OR SELLER AND (2) MANUFACTURER AND SELLER MAKE NO WARRANTIES, GUARANTEES, OR REPRESENTATIONS OF ANY KIND TO BUYER OR USER, EITHER EXPRESS OR IMPLIED, OR BY USAGE OF TRADE, STATUTORY OR OTHERWISE, WITH REGARD TO THE PRODUCT SOLD, INCLUDING, BUT NOT LIMITED TO MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, USE, OR ELIGIBILITY OF THE PRODUCT FOR ANY PARTICULAR TRADE USAGE.** UNINTENDED CONSEQUENCES, INCLUDING BUT NOT LIMITED TO INEFFECTIVENESS, MAY RESULT BECAUSE OF SUCH FACTORS AS THE PRESENCE OR ABSENCE OF OTHER MATERIALS USED IN COMBINATION WITH THE GOODS, OR THE MANNER OF USE OR APPLICATION, INCLUDING WEATHER, ALL OF WHICH ARE BEYOND THE CONTROL OF MANUFACTURER OR SELLER AND ASSUMED BY BUYER OR USER. THIS WRITING CONTAINS ALL OF THE REPRESENTATIONS AND AGREEMENTS BETWEEN BUYER, MANUFACTURER AND SELLER, AND NO PERSON OR AGENT OF MANUFACTURER OR SELLER HAS ANY AUTHORITY TO MAKE ANY REPRESENTATION OR WARRANTY OR AGREEMENT RELATING IN ANY WAY TO THESE GOODS.

LIMITATION OF LIABILITY

TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, IN NO EVENT SHALL MANUFACTURER OR SELLER BE LIABLE FOR SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, OR FOR DAMAGES IN THEIR NATURE OF PENALTIES RELATING TO THE GOODS SOLD, INCLUDING USE, APPLICATION, HANDLING, AND DISPOSAL. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, MANUFACTURER OR SELLER SHALL NOT BE LIABLE TO BUYER OR USER BY WAY OF INDEMNIFICATION TO BUYER OR TO CUSTOMERS OF BUYER, IF ANY, OR FOR ANY DAMAGES OR SUMS OF MONEY, CLAIMS OR DEMANDS WHATSOEVER, RESULTING FROM OR BY REASON OF, OR ARISING OUT OF THE MISUSE, OR FAILURE TO FOLLOW LABEL WARNINGS OR INSTRUCTIONS FOR USE, OF THE GOODS SOLD BY MANUFACTURER OR SELLER TO BUYER. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, ALL SUCH RISKS SHALL BE ASSUMED BY THE BUYER, USER, OR ITS CUSTOMERS. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, BUYER'S OR USER'S EXCLUSIVE REMEDY, AND MANUFACTURER'S OR SELLER'S TOTAL LIABILITY SHALL BE FOR DAMAGES NOT EXCEEDING THE COST OF THE PRODUCT.

If you do not agree with or do not accept any of the directions for use, the warranty disclaimers, or limitations on liability, do not use the product, and return it unopened to the Seller, and the purchase price will be refunded.

Lock Down is a trademark of Nufarm Americas Inc.

RV051618 [1]



1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Lockdown® SC Herbicide

EPA Reg. No.: 71368-114

Product Type: Herbicide

Company Name: Nufarm Americas Inc
11901 S. Austin Avenue
Alsip, IL 60803
1-855-280-6609

Telephone Numbers: For Chemical Emergency, Spill, Leak, Fire, Exposure, or Accident,
Call CHEMTREC Day or Night: 1-800-424-9300
For Medical Emergencies Only, Call 1-877-325-1840

This product is an EPA FIFRA registered pesticide. Some classifications on this SDS are not exactly the same as on the FIFRA label. Certain sections are superseded by federal law governed by EPA for a registered pesticide. Please see Section 15. REGULATORY INFORMATION for explanation.

2. HAZARDS IDENTIFICATION

PHYSICAL HAZARDS:

Not Hazardous

HEALTH HAZARDS:

Not Hazardous

ENVIRONMENTAL HAZARDS:

Hazardous to aquatic environment, acute Category 1

Hazardous to aquatic environment, chronic Category 1

SIGNAL WORD

No Signal Word

HAZARD STATEMENTS

Very toxic to aquatic life with long-lasting effects.



PRECAUTIONARY STATEMENTS

Avoid unintended release to the environment.

Collect spillage.

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

3. COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENTS	CAS NO.	% BY WEIGHT
Flumioxazin	103361-09-7	41 – 43.5
Propylene Glycol	57-55-6	5.7 – 6.3
Other Ingredients	Trade Secret	Trade Secret

Synonyms: 2-[7-fluoro-3,4-dihydro-3-oxo-4-(2-propynyl)-2H-1,4-benzoxazin-6-yl]-4,5,6,7-tetrahydro-1H-isoindole-1,3(2H)-dione

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

4. FIRST AID MEASURES

If Swallowed: Do not give any liquid to the person. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person. If symptoms develop, get medical advice.

If in Eyes: Hold eye open and rinse slowly and gently with water for several minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Get medical attention if irritation persists. **If on Skin or**

Clothing: Take off contaminated clothing. Wash with soap and water. Get medical attention if irritation or symptoms develop.

If Inhaled: Move person to fresh air. If symptoms develop, get medical advice.

Most Important symptoms/effects, acute and delayed: Skin exposure may cause slight irritation. May cause mild eye irritation.

Indication of Immediate medical attention and special treatment if needed: None expected.

5. FIRE FIGHTING MEASURES

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

Special Fire Fighting Procedures: Firefighters should wear NIOSH approved self-contained breathing apparatus and full fire-fighting turn out gear. Dike area to prevent runoff and contamination of water sources. Dispose of fire control water later.

Unusual Fire and Explosion Hazards: If water is used to fight fire, contain runoff, using dikes to prevent contamination of water supplies. Dispose of fire control water later.

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

6. ACCIDENTAL RELEASE MEASURES

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

Environmental Precautions: Prevent material from entering public sewer systems or any waterways. Do not flush to drain. Large spills to soil or similar surfaces may necessitate removal of topsoil. The affected area should be removed and placed in an appropriate container for disposal.

Methods for Containment: Dike spill using absorbent or impervious materials such as earth, sand or clay. Collect and contain contaminated absorbent and dike material for disposal.

Methods for Cleanup and Disposal: Pump free liquid into an appropriate container. Absorb residual with inert absorbent material. Wash entire spill area with a detergent slurry, absorb and sweep into container for disposal. Decontaminate tools and equipment following cleanup. See Section 13: DISPOSAL CONSIDERATIONS for more information.

Other Information: Large spills may be reportable to the National Response Center (800-424-8802) and to state and/or local agencies.

7. HANDLING AND STORAGE**HANDLING:**

Avoid contact with skin, eyes or clothing. Do not breathe spray mist or vapors. Users should wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove clothing/Personal Protective Equipment (PPE) immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

STORAGE:

Keep pesticide in original container. Store in a cool, dry, secure place. Do not put formulation or dilute spray solution into food or drink containers. Do not contaminate food or foodstuffs. Do not store or transport near feed or food. Not for use or storage in or around the home. For help with any spill, leak, fire or exposure involving this material, call day or night **CHEMTREC (800) 424-9300**.

Do not contaminate other pesticides, fertilizers, water, food or feed by storage or disposal.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION**Engineering Controls:**

Where engineering controls are indicated by specific use conditions or a potential for excessive exposure, use local exhaust ventilation at the point of generation.

SAFETY DATA SHEET

Lockdown® SC Herbicide

Personal Protective Equipment:

Eye/Face Protection: To avoid contact with eyes, wear goggles or safety glasses.

Skin Protection: To avoid contact with skin wear long-sleeved shirt and long pants, shoes plus socks, and chemical-resistant gloves made of any waterproof material. Washing facilities should be readily accessible to the work area.

Respiratory Protection: Not normally required. If vapors or mists or dusts exceed acceptable levels, wear NIOSH approved air-purifying respirator with cartridges/canisters approved for use against pesticides.

General Hygiene Considerations: Personal hygiene is an important work practice exposure control measure and the following general measures should be taken when working with or handling this material: 1) do not store, use and/or consume foods, beverages, tobacco products, or cosmetics in areas where this material is stored; 2) wash hands and face carefully before eating, drinking, using tobacco, applying cosmetics or using the toilet.

Exposure Guidelines:

Component	OSHA		ACGIH		Unit
	TWA	STEL	TWA	STEL	
Flumioxazin	NE	NE	NE	NE	
Propylene Glycol	10 (WEEL)	NE	NE	NE	mg/m3

NE = Not Established

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Off white/milky liquid
Odor:	Moderately sour
Odor threshold:	No data available
pH:	6.38 (1% w/w dispersion in DIW @ 25° C)
Melting point/freezing point:	No data available
Initial boiling point and boiling range	No data available
Flash point:	Aqueous composition; >212° F (>100° C)
Evaporation rate:	No data available
Flammability:	No data available
Upper/lower flammability or explosive limits:	No data available
Vapor pressure:	No data available
Vapor density:	No data available
Relative density:	1.157 g/mL @ 24° C
Solubility(ies):	No data available
Partition coefficient: n-octanol/water:	No data available
Autoignition temperature:	No data available
Decomposition temperature:	No data available
Viscosity:	487.2 cPs @ 24° C; 266.8 cPs @ 42 ° C (50 RPM, Brookfield)

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: Excessive heat. Do not store near heat or flame.

Incompatible Materials: Strong oxidizing agents, such as chlorates, nitrates, and peroxides.

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

11. TOXICOLOGICAL INFORMATION

Likely Routes of Exposure: Inhalation, Skin contact, Eye contact

Eye Contact: May cause mild irritation. Non-irritating to the eye based on toxicity studies.

Skin Contact: May cause mild irritation on prolonged or repeated exposure. Non-irritating to slight/mild irritation to the skin based on toxicity studies.

Ingestion: May be harmful if swallowed in large amounts. Low toxicity if ingested.

Inhalation: May cause minor irritation to the respiratory tract. Low toxicity if inhale

Symptoms of Exposure: None expected.

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Delayed, immediate and chronic effects of exposure: Adverse effects observed in animals exposed to high doses of flumioxazin technical for long periods of time included effects on blood, liver and kidney.

Toxicological Data:

Data from laboratory studies conducted are summarized below:

Oral: Rat LD₅₀: > 5,000 mg/kg (female)

Dermal: Rat LD₅₀: >5,000 mg/kg

Inhalation: Rat 4-hr LC₅₀: >2.10 mg/L (No mortality at highest dose tested)

Eye Irritation: Rabbit: Non-irritating

Skin Irritation: Rabbit: Slightly irritating (PDII=0.1)

Skin Sensitization: Not a contact sensitizer in the Local Lymph Node Assay (LLNA) in Mice.

Subchronic (Target Organ) Effects: Compound related effects of Flumioxazin Technical noted in rats following subchronic exposures at high dose levels were hematotoxicity including anemia, and increases in liver, spleen, heart, kidney and thyroid weights. In dogs, the effects produced at high dose levels included a slight prolongation in activated partial thromboplastin time, increased cholesterol and phospholipid, elevated alkaline phosphatase, increased liver weights and histological changes in the liver. The lowest no-observable-effect-level (NOEL) in subchronic studies was 30 ppm in the three-month toxicity study in rats.

Carcinogenicity / Chronic Health Effects: Repeated exposures to Flumioxazin Technical in animals have produced anemia and other blood formation changes, organ weight changes and changes in blood chemistry. Flumioxazin Technical did not produce cancer in life-time feeding studies in laboratory animals.

Reproductive Toxicity: Reproductive effects were observed in rats exposed to high levels of Flumioxazin Technical.

Developmental Toxicity: Birth defects were produced in the offspring of female rats exposed to Flumioxazin Technical. No effects were observed in rabbits.

Genotoxicity: Flumioxazin technical does not present a genetic hazard.

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

12. ECOLOGICAL INFORMATION

Ecotoxicity: Flumioxazin technical is practically non-toxic to bees and avian species. It is slightly to moderately toxic to freshwater fish and moderately to highly toxic to aquatic invertebrates.

From studies conducted on Flumioxazin active ingredient:

96-hour LC ₅₀ Rainbow Trout:	2.3 mg/L	Bobwhite Quail Oral LD ₅₀ :	>2,250 mg/kg
96-hour LC ₅₀ Bluegill Sunfish	> 21 mg/L	Bobwhite Quail 8-day Dietary LC ₅₀ :	>5,620 ppm
48-hour EC ₅₀ Daphnia Magna :	> 5.5 mg/L	Mallard Duck Oral LD ₅₀ :	>2,250 mg/kg
96-hour LC ₅₀ Sheepshead Minnow:	>4.7 mg/L	Mallard Duck 8-day Dietary LC ₅₀ :	>5,620 ppm
96-hour LC ₅₀ Mysid Shrimp:	0.23 mg/L		
Acute Contact LC ₅₀ Honeybee:	105 µg/bee		

Environmental Fate:

Flumioxazin degrades rapidly in water and soil. Dissipation occurs by a combination of hydrolysis and microbial oxidation. Although flumioxazin dissipates rapidly, discrete intermediates do not accumulate and the ultimate environmental products are incorporated into soil organic matter and carbon dioxide. Based on column leaching studies and the short aerobic soil half-life, the potential for flumioxazin or its degradation products to leach in field agricultural soils is low. The low use rate and rapid soil dissipation results in low carryover potential to rotational crops.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method:

Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility. Improper disposal of excess pesticide is a violation of Federal law.

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.

SAFETY DATA SHEET

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Nonrefillable containers larger than 5 gallons: Nonrefillable container. Do not reuse or refill this container. Offer for recycling if available. If recycling or reconditioning not available, puncture and dispose of in a sanitary landfill, or by other procedures approved by State and local authorities. Plastic containers are also disposable by incineration, or, if allowed by State and local authorities, by burning. If burned stay out of smoke. Triple rinse or pressure rinse container (or equivalent) promptly after emptying.

Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times.

Pressure rinse as follows: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 psi for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

Refillable containers larger than 5 gallons: Refillable container. Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or a mix tank. Fill the container about 10% full with water. Agitate vigorously or recirculate water with the pump for two minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

14. TRANSPORTATION INFORMATION

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

DOT

< 119 Gallons per finished container

Non Regulated

≥ 119 Gallons per finished container

UN 3082, Environmentally hazardous substance, liquid, n.o.s., (Flumioxazin), 9, III, Marine Pollutant

IMO / IMDG

UN 3082, Environmentally hazardous substance, liquid, n.o.s., (Flumioxazin), 9, III, Marine Pollutant

IATA

UN 3082, Environmentally hazardous substance, liquid, n.o.s., (Flumioxazin), 9, III, Marine Pollutant

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.

Harmful if inhaled or absorbed through the skin. Causes moderate eye irritation. Avoid breathing spray mist. Avoid contact with skin, eyes or clothing.

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):

Chronic Health

Section 313 Toxic Chemical(s):

None

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

None

RCRA Waste Code:

SAFETY DATA SHEET

Lockdown® SC Herbicide

Under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste.

State Information:

Other state regulations may apply. Check individual state requirements.

California Proposition 65: Not Listed.

16. OTHER INFORMATION

National Fire Protection Association (NFPA) Hazard Rating:

Rating for this product: Health: 1 Flammability: 1 Reactivity: 0

Hazards Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

This Safety Data Sheet (SDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-ACCEPTED PRODUCT LABELING (attached to and accompanying the product container). This SDS provides important health, safety and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use, while the labeling provides that information specifically for product use in the ordinary course.

Use, storage and disposal of pesticide products are regulated by the EPA under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) through the product labeling, and all necessary and appropriate precautionary, use, storage, and disposal information is set forth on that labeling. It is a violation of Federal law to use a pesticide product in any manner not prescribed on the EPA-accepted label.

Although the information and recommendations set forth herein (hereinafter "Information") are presented in good faith and believed to be correct as of the date hereof, Nufarm Americas Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will Nufarm Americas Inc. be responsible for damages of any nature whatsoever resulting from the use of or reliance upon Information. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH INFORMATION REFERS AND ALL SUCH WARRANTIES ARE HEREBY SPECIFICALLY DISCLAIMED.

Date of Issue: October 11, 2018

Supersedes: May 29, 2018

Opensight [EPA Reg. No. 62719-597]

Specimen Label



Dow AgroSciences



SPECIALTY HERBICIDE

®Trademark of The Dow Chemical Company ("Dow") or an affiliated company of Dow

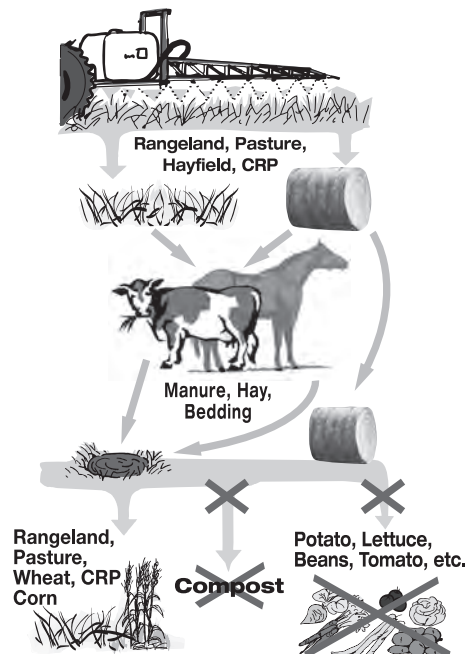
For control of susceptible weeds and certain woody plants, including invasive and noxious weeds, on rangeland, permanent grass pastures, Conservation Reserve Program (CRP) acres, non-cropland areas including industrial sites, rights-of-way (such as roadsides, electric utility and communication transmission lines, pipelines, and railroads), non-irrigation ditch banks, natural areas (such as wildlife management areas, wildlife openings, wildlife habitats, recreation areas, campgrounds, trailheads and trails), and grazed areas in and around these sites.

Hay from grass treated with Opensight within the preceding 18-months can only be used on the farm or ranch where product is applied unless allowed by supplemental labeling

IMPORTANT USE PRECAUTIONS AND RESTRICTIONS TO PREVENT INJURY TO DESIRABLE PLANTS

- Carefully read the section **"Restrictions in Hay or Manure Use ."**
- It is mandatory to follow the **"Use Precautions and Restrictions"** section of this label.
- Manure and urine from animals consuming grass or hay treated with this product may contain enough aminopyralid to cause injury to sensitive broadleaf plants.
- Hay can only be used on the farm or ranch where product is applied unless allowed by supplemental labeling.
- Consult with a Dow AgroSciences representative if you do not understand the "Use Precautions and Restrictions". **Call [1-(800) 263-1196] Customer Information Group.**

Forage and Manure Management



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Not For Sale, Distribution, or Use in New York State.

GROUP	2	4	HERBICIDE
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Active Ingredients:			
Potassium salt of 2-pyridine carboxylic acid, 4-amino-3,6-dichloro-.....			62.13%
Metsulfuron methyl (Methyl 2-[[[[(4-methoxy-6-methyl-1,3,5-triazin-2-yl)-amino]carbonyl]amino]sulfonyl]benzoate).....			9.45%
Other Ingredients			28.42%
Total			100.0%

Acid Equivalent: aminopyralid (2-pyridine carboxylic acid, 4-amino-3,6-dichloro-) - 52.5%

Contains 0.62 pound potassium salt of aminopyralid active ingredient (0.525 pound acid equivalent) and 0.0945 pound metsulfuron methyl per pound of product

Precautionary Statements

Hazards to Humans and Domestic Animals

EPA Reg. No. 62719-597

WARNING

Causes Substantial but Temporary Eye Injury • Harmful if Swallowed
Do not get in eyes or on clothing. Avoid contact with skin.

Personal Protective Equipment (PPE)

Applicators and other handlers must wear:

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

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

User Safety Recommendations

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.

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. Call a poison control center or doctor for treatment advice.

If on skin: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. 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 apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwater or rinsate.

This chemical has the 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

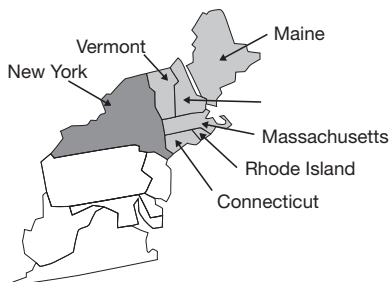
It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

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.

Not For Sale, Distribution, or Use in New York State.

Not for use on pastures in Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont. All other labeled uses are permitted in these states including grazed areas in and around approved use sites.



Light grey = states where use in pastures is not permitted
Dark grey = NY where the product is not registered

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 48 hours.

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:

- Coveralls
- Chemical-resistant gloves made of any waterproof material
- Shoes plus socks

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: Do not enter or allow people or pets to enter the treated area until sprays have dried.

Storage and Disposal

Do not contaminate water, food, feed or fertilizer by storage or disposal.

Pesticide Storage: Store in original container only. In case of spill, contain material and dispose as waste.

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

Nonrefillable rigid 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.

Nonrefillable nonrigid containers:

Container Handling: Nonrefillable container. Do not reuse or refill this container. Completely empty bag into application equipment. Then offer for recycling if available, or dispose in a sanitary landfill, or by incineration, or by other procedures allowed by state and local authorities.

Refillable rigid containers larger than 5 gal:

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 rigid containers larger than 5 gal:

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.

Storage and Disposal (Cont.)

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.

Opensight® specialty herbicide may be applied by aerial or ground equipment to control susceptible broadleaf weeds and certain woody plants, including invasive and noxious weeds on rangeland, permanent grass pastures, CRP acres, non-cropland areas including industrial sites, rights-of-way (such as roadsides, electric utility and communication transmission lines, pipelines, and railroads), non-irrigation ditch banks, natural areas (such as wildlife management areas, wildlife openings, wildlife habitats, recreation areas, campgrounds, trailheads and trails), and grazed areas in and around these sites without injury to most grasses.

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 only when dry. Opensight can be used to the waters edge. Do not apply directly to water and take precautions to minimize overspray to open water when treating target vegetation in and around non-flowing, quiescent or transient water. When making applications to control unwanted plants on banks or shorelines of flowing water, minimize overspray to open water. Note: Consult local public water control authorities before applying this product in and around public water. Permits may be required to treat such areas.

***Hay from grass treated with Opensight within the preceding 18-months can only be used on the farm or ranch where product is applied unless allowed by supplemental labeling.**

Resistance Management Guidelines

- This product contains two herbicides with different modes of action. Development of plant populations resistant to the mode of action of aminopyralid is usually not a problem on rangeland, permanent grass pastures, Conservation Reserve Program (CRP), or non-cropland sites since these sites receive infrequent pesticide applications. There may be resistant weed biotypes to metsulfuron and adequate control of these species cannot be expected.
- Similar looking biotypes of a given weed species occurring in a treated area may vary in their susceptibility to a herbicide. Application of a herbicide below its labeled rate may allow more tolerant weeds to survive and a shift to more tolerant biotypes within the treated area.
- Where identified, spreading of resistant weeds to other fields may be prevented by cleaning harvesting and tillage equipment before moving to other areas and by planting weed-free seed.
- Contact your extension specialist, certified crop consultant, or Dow AgroSciences representative for the latest resistance management information.

Use Precautions and Restrictions

Consult with a Dow AgroSciences representative if you do not understand the "Use Precautions and Restrictions." Call (1-800-263-1196) for more information.

- **Do not use grasses treated with Opensight in the preceding 18-months for hay intended for export outside the United States.**
- **Hay from areas treated with Opensight in the preceding 18-months CANNOT be distributed or made available for sale off the farm or ranch where harvested unless allowed by supplemental labeling.**
- **Hay from areas treated with Opensight in the preceding 18-months CANNOT be used for silage, haylage, baylage and green chop unless allowed by supplemental labeling.**

- **Do not move hay made from grass treated with Opensight within the preceding 18-months off farm unless allowed by supplemental labeling.**
- **Do not use hay or straw from areas treated with Opensight within the preceding 18-months or manure from animals feeding on hay treated with Opensight in compost.**
- **Do not use grasses treated with Opensight in the preceding 18-months for seed production.**

Maximum Application Rate: On all labeled use sites do not broadcast apply more than 3.3 ounce/acre of Opensight per year. The total amount of Opensight applied broadcast, as a re-treatment, and/or spot treatment cannot exceed 3.3 oz of product per acre per year. Spot treatments may be applied at an equivalent broadcast rate of up to 6.6 oz product of Opensight per acre per annual growing season; however, not more than 50% of an acre may be treated at that rate. Do not apply more than a total of 3.3 ounce/acre of Opensight per annual growing season as a result of broadcast, spot or repeat applications.

- Do not use on Timothy hay or other cool-season grasses grown for hay.
- Do not apply this product on lawns, turf, ornamental plantings, urban walkways, driveways, tennis courts, golf courses, athletic fields, commercial sod operations, or other high-maintenance, fine turfgrass areas, or similar areas.
- Do not overseed ryegrass for 4 months after treatment.
- **Opensight is highly active against many broadleaf plant species.** Do not use this product on areas where loss of broadleaf plants, including legumes, cannot be tolerated.
- **Chemigation:** Do not apply this product through any type of irrigation system.
- **Do not contaminate water intended for irrigation or domestic purposes.** Do not treat inside banks or bottoms of irrigation ditches, either dry or containing water, or other channels that carry water that may be used for irrigation or domestic purposes.
- Do not apply to irrigated land where the tailwater will be used to irrigate crops.
- Do not use this product for impregnation on dry fertilizer, unless specified in Dow AgroSciences state-specific product bulletin.
- Do not use Opensight in the following counties of Colorado: Alamosa, Conejos, Costilla, Rio Grande, and Saquache.
- **Trees** adjacent to or in a treated site can occasionally be affected by root uptake of Opensight. Do not apply Opensight within the root zone of desirable trees unless such injury can be tolerated. Use special caution near roses, and leguminous trees such as locusts, redbud, mimosa, and caragana.
 - Do not apply or drain or flush equipment on or near desirable trees or other plants, or on areas where their roots extend, or in locations where the product may be washed or moved into contact with their roots, as injury or loss of desirable trees or other plants may result.
- Applications made during periods of intense rainfall, to soils saturated with water, surfaces paved with materials such as asphalt or concrete, or soils through which rainfall will not readily penetrate may result in runoff and movement of Opensight. Injury to crops may result if treated soil and/or runoff water containing Opensight is washed, or moved onto land used to produce crops. Exposure to Opensight may injure or kill susceptible crops and other plants, such as grapes, soybeans, tobacco, sensitive ornamentals. Do not treat frozen soil where runoff could damage sensitive plants.
- **Seeding Legumes:** Do not plant forage legumes until a soil bioassay has been conducted to determine if aminopyralid or metsulfuron concentration remaining in the soil will adversely affect the legume establishment.
- Under certain conditions such as heavy rainfall, high pH, prolonged cold weather, or wide fluctuations in day/night temperatures prior to or soon after Opensight application, temporary discoloration and/or grass injury may occur. Opensight should not be applied to grass that is stressed by severe weather conditions, drought, low fertility, water-saturated soil, disease, or insect damage, as grass injury may result. Severe winter stress, drought, disease, or insect damage before or following application also may result in grass injury.
- Do not apply to frozen ground as surface runoff may occur.
- Do not apply to snow-covered ground.
- **Grazing and Haying Restrictions:** There are no restrictions on grazing or grass hay harvest intervals following application of Opensight at labeled rates. However, cutting hay too soon after spraying weeds will reduce weed control. Wait 14 days after herbicide application to cut grass hay to allow herbicide to work. Do not transfer grazing animals from areas treated with Opensight to areas where sensitive broadleaf crops occur without first allowing 3 days of grazing on an

untreated pasture. Otherwise, urine and manure may contain enough aminopyralid to cause injury to sensitive broadleaf plants.

- **Grazing Poisonous Plants:** Application of this product may increase palatability of certain poisonous plants. Do not graze areas treated with Opensight until poisonous plants are dry and no longer palatable to livestock.
- **Restrictions in Hay or Manure Use:**
 - ♦ Do not use treated plant residues, including hay or straw from areas treated within the preceding 18-months, in compost, mulch or mushroom spawn.
 - ♦ Do not use manure from animals that have grazed forage or eaten hay harvested from treated areas within the previous 3 days, in compost, mulch or mushroom spawn.
 - ♦ Do not spread manure from animals that have grazed or consumed forage or eaten hay from treated areas within the previous 3 days on land used for growing susceptible broadleaf crops.
 - ♦ Manure from animals that have grazed forage or eaten hay harvested from treated areas within the previous 3 days may only be used on pasture grasses, grass grown for seed, wheat and corn.
 - ♦ Do not plant a broadleaf crop (including soybeans, sunflower, tobacco, vegetables, field beans, peanuts, and potatoes) in fields treated with manure from animals that have grazed forage or eaten hay harvested from aminopyralid-treated areas until an adequately sensitive field bioassay is conducted to determine that the aminopyralid concentration in the soil is at level that is not injurious to the crop to be planted.
 - ♦ Do not plant a broadleaf crop in fields treated in the previous year with manure from animals that have grazed forage or eaten hay harvested from treated areas until an adequately sensitive field bioassay is conducted to determine that the aminopyralid concentration in the soil is at level that is not injurious to the crop to be planted.
 - ♦ To promote herbicide decomposition, plant residues should be evenly incorporated in the surface soil or burned. Breakdown of aminopyralid in plant residues or manure is more rapid under warm, moist soil conditions and may be enhanced by supplemental irrigation.
- **Crop Rotation:** Do not rotate to any crop from rangeland, permanent pasture or CRP acres within one year following treatment. Do not plant a broadleaf crop until an adequately sensitive field bioassay shows that the level of aminopyralid or metsulfuron present in the soil will not adversely affect that broadleaf crop.
- **Field Bioassay Instructions:** In fields previously treated with this product, plant short test rows of the intended rotational crop across the original direction of application in a manner to sample variability in field conditions such as soil texture, soil organic matter, soil pH, rainfall pattern or drainage. The field bioassay can be initiated one year after the last application of aminopyralid in that field. Observe the test crop for symptoms of herbicidal activity, such as poor stand (effect on seed germination), chlorosis (yellowing), and necrosis (dead leaves or shoots), or stunting (reduced growth). If herbicidal symptoms do not occur, the test crop can be grown. If there is apparent herbicidal activity, do not plant the field to the intended rotational crop; plant only to wheat, perennial forage grasses, native grasses or grasses grown for hay.
- **Avoiding Injury to Non-Target Plants:** Do not aerially apply Opensight within 50 feet of a border downwind (in the direction of wind movement), or allow spray drift to come in contact with, any broadleaf crop or other desirable broadleaf plants, including, but not limited to, alfalfa, cotton, dry beans, flowers, grapes, lettuce, potatoes, radishes, soybeans, sugar beets, sunflowers, tobacco, tomatoes or other broadleaf or vegetable crop, fruit trees, ornamental plants, or soil where sensitive crops are growing or will be planted. Avoid application under conditions that may allow spray drift because very small quantities of spray may seriously injure susceptible crops. Read and consider the "Precautions for Avoiding Spray Drift and Spray Drift Advisory" at the end of this label to help minimize the potential for spray drift.
- To reduce the potential for movement of treated soil due to wind erosion, do not apply to powdery dry or light sandy soils until they have been stabilized by rainfall, plant residue mulch, reduced tillage, or other cultural practices. Injury to immediately adjacent crops may occur when treated soil is blown onto land used to produce crops other than pasture, rangeland or CRP.

Sprayer Clean-Out Instructions

It is recommended to use separate spray equipment on highly sensitive crops such as tobacco, soybeans, peanuts and tomatoes.

Do not use spray equipment used to apply Opensight for other applications to land planted to, or to be planted to, broadleaf plants unless it has been determined that all residues of this herbicide has been removed by thorough cleaning of equipment.

Equipment used to apply Opensight should be thoroughly cleaned before reusing to apply any other chemicals as follows:

1. Rinse and flush application equipment thoroughly after use. Dispose of rinse water in non-cropland area away from water supplies.
2. Rinse a second time, adding 1 quart of household ammonia or tank cleaning agent for every 25 gallons of water. Circulate the solution through the entire system so that all internal surfaces are contacted (15 to 20 minutes). Let the solution stand for several hours, preferably overnight.
3. Flush the solution out of the spray tank through the boom.
4. Rinse the system twice with clean water, recirculating and draining each time.
5. Spray nozzles and screens should be removed and cleaned separately.

Do not apply this product with mist blower systems that deliver very fine spray droplets. Use of mist blower equipment can reduce control achieved with the herbicide and increase spray drift potential.

Application Methods

Apply the specified rate of Opensight as a coarse low-pressure spray. Do not apply this product with mist blower systems that deliver very fine spray droplets. Spray volume should be sufficient to uniformly cover foliage. Increase spray volume to ensure thorough and uniform coverage when target vegetation is tall and/or dense. To enhance foliage wetting and coverage, an approved non-ionic agricultural surfactant may be added to the spray mixture as specified by the surfactant label.

Ground Broadcast Application: Higher spray volumes (greater than 10 gallons per acre) generally provide better coverage and better control, particularly in dense and/or tall foliage.

Aerial Broadcast Application: Do not apply less than 2 gallons per acre total spray volume. Five gallons per acre or greater will generally provide better coverage and better control, particularly in dense and/or tall foliage.

High-Volume Foliar Application: High volume foliar treatments may be applied at rates equivalent to a maximum of 3.3 ounces per acre annual growing season. Use sufficient spray volume to thoroughly and uniformly wet foliage and stems.

Spot Application: Spot treatments may be applied at an equivalent broadcast rate of up to 6.6 oz of product per acre per annual growing season; however, not more than 50% of an acre may be treated at that rate. Do not apply more than a total of 3.3 ounce/acre of Opensight per annual growing season as a result of broadcast, spot or repeat applications. Spray volume should be sufficient to thoroughly and uniformly wet weed foliage, but not to the point of runoff. Repeat treatments may be made, but the total amount of Opensight applied must not exceed 3.3 ounce/acre per year. To prevent misapplication, spot treatments should be applied with a calibrated sprayer.

In general for spot treatments, mix 2.5 oz for weeds and 3.3 oz for brush of Opensight per 100 gallons of water (assuming an application volume of 100 gallons per acre).

Product Measurement

Opensight is measured using the Opensight volumetric measuring cylinder. Scales calibrated in ounces may also be used.

Mixing Instructions

1. Fill the tank 1/4 to 1/3 full of water (If using liquid nitrogen fertilizer solution in place of water, see Tank Mixtures sections for additional details).
2. While agitating, add the required amount of Opensight.
3. Continue agitation until the Opensight is fully dispersed, at least 5 minutes.
4. Once the Opensight is fully dispersed, maintain agitation and continue filling tank with water. Opensight should be thoroughly mixed with water before adding any other material.
5. As the tank is filling, add tank mix partners (if desired) then add the necessary volume of spray adjuvants. Always add spray adjuvants last.
6. If the mixture is not continuously agitated, settling will occur. If settling occurs, thoroughly re-agitate before using.
7. Apply Opensight spray mixture within 24 hours of mixing to avoid product degradation.
8. If Opensight and a tank mix partner are to be applied in multiple loads, pre-slurry the Opensight in clean water prior to adding to the tank. This will prevent the tank mix partner from interfering with the dissolution of the Opensight.

Soil pH Limitations

Opensight should not be used on soils having a pH above 7.9, as extended soil residual activity could extend crop rotation intervals beyond

normal. Under certain conditions, Opensight could remain in the soil for 34 months or more injuring wheat and barley. In addition, other crops planted in high-pH soils can be extremely sensitive to low concentrations of Opensight.

Checking Soil pH

Before using Opensight, determine the soil pH of the areas of intended use. To obtain a representative pH value for the test area, take several 0" to 4" samples from different areas of the field and analyze them separately. Consult local extension publications for additional information on recommended soil sampling procedures.

Spray Adjuvants

Unless otherwise directed, applications of Opensight must include either a crop oil concentrate or a nonionic surfactant. In addition, an ammonium nitrogen fertilizer can be used unless specifically prohibited by tank mix partner labeling. If another herbicide is tank mixed with Opensight, select adjuvants authorized for use with both products. Products must contain only EPA-exempt ingredients (40 CFR 1001).

Petroleum Crop Oil Concentrate (COC) or Methylated Seed Oil (MSO)

- Apply at 1% v/v (1 gallon per 100 gallons spray solution) or 2% under arid conditions.
- MSO adjuvants may be used at 0.5% v/v (0.5 gallons per 100 gallons spray solution) if specifically noted on adjuvant product labeling.
- Oil adjuvants must contain at least 80% high quality, petroleum (mineral) or modified vegetable seed oil with at least 15% surfactant emulsifiers.

Nonionic Surfactant (NIS)

- Apply at 0.25% v/v (1 quart per 100 gallons spray solution) or 0.5% under arid conditions.
- Surfactant products must contain at least 60% nonionic surfactant with a hydrophilic/lipophilic balance (HLB) greater than 12.

Ammonium Nitrogen Fertilizer

- Use 2 quarts/acre of a high-quality urea ammonium nitrate (UAN), such as 28%N or 32%N, or 2 pounds/acre of a spray grade ammonium sulfate (AMS). Use 4 quarts/acre UAN or 4 pounds/acre AMS under arid conditions.

Special Adjuvant Types

- Combination adjuvant products may be used at doses that provide the required amount of NIS, COC, MSO and/or ammonium nitrogen fertilizer. Consult product literature for use rates and restrictions. Exception: On tall fescue pastures use a reduced rate of 1/2 to 1 pint non-ionic surfactant per 100 gallons.
- Antifoaming agents may be used if needed.
- Do not use Opensight with spray additives that reduce the pH of the spray solution to below 3.0.

Tank Mixing with Other Herbicides: Opensight at rates of up to 3.3 ounce/acre may be mixed with labeled rates of other herbicides registered for application on all labeled use sites. Opensight may be applied in tank-mix combination with labeled rates of other herbicides provided: (1) the tank-mix product is labeled for the timing and method of application for the use site to be treated and (2) mixing is not prohibited by the label of the registered tank mixed products, and (3) that the tank-mix combination is physically compatible (see tank-mix compatibility testing below). When tank mixing, use only in accordance with the restrictions, precautions and limitations on the respective product labels.

- Read carefully and follow all applicable use directions, precautions, and limitations on the respective product labels.
- Do not exceed specified application rates. If products containing the same active ingredient are mixed, do not exceed the maximum allowable active ingredient use rates.
- For direct injection or other spray equipment where the product formulations will be mixed in undiluted form, special care should be taken to ensure tank mix compatibility.
- Always perform a jar test to ensure the compatibility of products to be used in tank mixture.

Tank Mix Compatibility Testing: Perform a jar test prior to mixing in a spray tank to ensure compatibility of Opensight and other pesticides or carriers. Use a clear glass jar with lid and mix ingredients in the same order and proportions as will be used in the spray tank. The mixture is compatible if the materials mix readily when the jar is inverted several times. The mixture should remain stable after standing for 1/2 hour or, if separation occurs, should readily remix if agitated. An incompatible mixture is indicated by separation into distinct layers that do not readily remix when agitated and/or the presence of flakes, precipitates, gels, or heavy oily film in the jar. Use of an appropriate compatibility aid may resolve mix incompatibility. If the mixture is incompatible do not use that tank mix partner in tank mixtures.

Note: Foliar-applied liquid fertilizers themselves can cause yellowing of the foliage of forage grasses and other vegetation.

Guidelines for Grass Management

Opensight may be applied to established native grasses such as wheatgrasses, bluestems and grama, and on other established pasture grasses such as bermudagrass, bluegrass, orchardgrass, bromegrass, and tall fescue that were planted the previous growing season (or earlier) and are fully tillered, unless otherwise directed on this label. Specific application timing information on several of these grass species follows:

- Opensight may suppress certain established grasses, such as smooth bromegrass (*Bromus inermis*), especially when plants are stressed by adverse environmental conditions. Plants should recover from this transient suppression with the onset of environmental conditions favorable to grass growth and upon release from weed competition.
- Varieties and species of forage grasses differ in their tolerance to herbicides. When using Opensight on a particular grass for the first time, limit use to a small area. If no injury occurs throughout the season, larger acreage may be treated.
- Application of Opensight to Pensacola bahiagrass, ryegrass (Italian or perennial) and Garrison's creeping foxtail may cause severe injury to and/or loss of pastures.

Seeding grasses:

Preemergence: In general, Opensight may be applied in the spring or early summer, depending on the target weed species, as a broadcast application over grass that was planted at least 4 months prior to the application and that has been growing under favorable conditions for grass establishment.

With fall applications, do not plant grasses the following spring. Do not overseed ryegrass for 4 months after treatment.

Tall Fescue:

Opensight may stunt tall fescue, cause it to turn yellow, or cause seed head suppression. To minimize these symptoms, take the following precautions:

- do not use on tall fescue grown for seed
- do not use more than 2 ounce/acre of Opensight
- tank-mix Opensight with 2,4-D
- use a reduced rate of non-ionic surfactant at 1/2 to 1 pint per 100 gallons of spray solution (1/16 to 1/8% v/v)
- make application later in the spring after the new growth is 5 to 6 inches tall (until after reproductive culm has started to elongate), or in the fall
- do not use surfactant when liquid nitrogen is used as a carrier
- do not use a spray adjuvant other than non-ionic surfactant

Initial grass yields may be reduced due to fescue seed head suppression resulting from treatment with Opensight at labeled rates. However, this could be beneficial because in tall fescue infected with the fungal endophyte (*Neotyphodium* spp.), the endophyte is concentrated in the seed and cattle grazing plants with the seed head will get the maximum exposure to the endophyte. Increased levels of ingestions of the fungal endophyte can reduce weight gain and conception rates in cattle. Since the first grazing is often delayed in the spring until long after seed head development, Opensight could potentially be used to reduce development of the seed head, thereby reducing the amount of the endophyte that would be consumed by livestock when grazing.

Seed Head Suppression: If the intent is to control weeds and reduce tall fescue seed heads, apply Opensight at 2.0 to 2.5 ounce/acre early to fescue that is less than 6 inches tall.

Pensacola bahiagrass control in established Bermudagrass pasture: Apply Opensight at 2-2.5 ounce/acre after green-up in the spring, but before bahiagrass seedhead formation. Application should be made when environmental conditions favor grass growth.

Bahiagrass suppression could take up to 30 days before the desired level of control is achieved. Application of 2,4-D mixed with Opensight could decrease bahiagrass control. In pastures severely infested with bahiagrass, a positive response in forage yield may be slowed until desired forage grasses, like bermudagrass, grow into areas previously infested with bahiagrass. To reduce this effect consider treating different portions of heavily infested pastures with Opensight over a period of several years. Do not apply Opensight to an entire farm or ranch in one year. Fertilization and/or replanting may accelerate bermudagrass recovery following bahiagrass control with Opensight.

Bahiagrass regrowth may occur in pastures heavily infested with bahiagrass, intense grazing pressure, or when adverse environmental conditions (heat and drought), slows the recovery of desired grass forages.

Opensight will not control common or Argentine bahiagrass.

Pensacola bahiagrass control can be reduced when Opensight is applied in liquid fertilizer solutions.

Use Rates and Timing

Opensight may be applied post emergence as a broadcast spray or as a spot application to control weeds and brush including, but not limited to, those listed on this label. When a rate range is given use the higher rate to control weeds at advanced growth stages, or under less than favorable growing conditions, or for longer residual control. Best results are obtained when spray volume is sufficient to provide uniform coverage of treated weeds. For optimum uptake and translocation of Opensight, avoid mowing, haying, shredding, burning or soil disturbance in treated areas for at least 14 days following application.

Opensight also provides preemergence control of emerging seedlings of susceptible weeds, and re-growth of certain perennial weeds following application. Preventing establishment of weeds will depend upon application rate, season of application, and environmental conditions after application.

Opensight can provide long-term control of susceptible weeds. The length of control is dependent upon the application rate, condition and growth stage of target weeds, environmental conditions at and following application, and the density and vigor of competing desirable vegetation. Long-term weed control is most effective where grass vegetation is allowed to recover from overgrazing, drought, etc., and compete with weeds.

Opensight can be an important component of integrated vegetation management programs designed to renovate or restore desired plant communities. To maximize and extend the benefits of weed control provided by Opensight, it is important that other vegetation management practices, including proper grazing management, biological control agents, replanting, fertilization, prescribed fire, etc., be used in appropriate sequences and combinations to further alleviate the adverse effects of weeds on desirable plant species and to promote development of desired plant communities. Agricultural and natural resources specialists with federal and state government agencies can provide guidance on best management practices and development of integrated vegetation management programs.

Species Controlled

General Mix of Broadleaf Weeds: Opensight at 2.0 ounce/acre is the standard rate to provide control of many problem weeds when applied early in the season. If a certain weeds are key targets, use the rate in Table 1 for that species. The addition of Garlon herbicides, DMA 4 IVM, or other herbicides allowed for use on the site to be sprayed can be tank mixed to broaden the weed spectrum.

Opensight controls weeds and woody plants primarily by postemergent activity. Although Opensight has Preemergence activity, best results are generally obtained when Opensight is applied to foliage after emergence or dormancy break. Generally, for the control of annual weeds, Opensight provides the best results when applied to young, actively growing weeds. For the control of perennial weeds, applications made at the bud/bloom stage or while the target weeds are in the fall rosette stage typically provide the best results. The use rate depends upon the weed species and size of the weed at the time of application.

The degree and duration of control depends on weed spectrum and infestation intensity, weed size at application, environmental conditions at and following treatment, soil pH, soil moisture, and soil organic matter, and other factors.

For best results, most weeds should be treated when they are actively growing and under conditions favorable for growth. Use a higher rate in the rate range indicated when growing conditions are less than favorable (drought conditions), weeds are large and mature, weed density and foliage cover is high and canopy height is tall, or when residual control is desired. Opensight also provides preemergence control of germinating seeds or seedlings of susceptible weeds following application.

For rates for specific weeds, see Table 1. The life cycle is included for each weed species. The general timing of application for each life cycle is as follows:

Annuals: Use lower rates when weeds are less than 6 inches and actively growing. Increase rate as season progresses and plants become more mature.

Biennials: Apply in the spring and early summer to rosette or bolting plants or in the fall to seedlings and rosettes before ground is frozen. Use higher rates after bolting through early flower.

Perennials: Apply to vegetative stage prior to bloom. Use higher rate when weeds are larger.

Table 1: Species Controlled with Opensight

Note: Weeds marked with a * indicate more information is included in the specific weed problems section after the table.

Broadleaf Weeds Controlled by Opensight

Weed Species				Opensight rate oz product/a
Common Name	Scientific Name	Life Cycle	Plant Family	
actinomeris, wingstem	<i>Verbesina alternifolia</i>	perennial	Asteraceae	3.0
alyssum, hoary	<i>Berteroa incana</i>	biennial	Brassicaceae	2.0-2.5
amaranth, spiny	<i>Amaranthus spinosus</i>	summer annual	Amaranthaceae	1.5-2.0
arrowgrass, seaside‡	<i>Triflochin maritima</i>	perennial	Juncaginaceae	3.0-3.3
aster	<i>Aster spp.</i>	perennial	Asteraceae	1.5-2.0
bahiagrass, Pensacola*	<i>Paspalum notatum</i> Flugge	perennial	Poaceae	2.0-2.5
babysbreath	<i>Gypsophila paniculata</i>	perennial	Caryophyllaceae	2.5-3.0
bedstraw	<i>Galium spp.</i>	perennial	Rubiaceae	2.0-2.5
bittercress	<i>Cardimane spp</i>	perennial	Brassicaceae	2.0-2.5
blackeyed-Susan	<i>Rudbeckia hirta</i>	annual	Asteraceae	1.5-2.0
brackenfern	<i>Pteridiums spp.</i>	perennial	Dennstaedtiaceae	2.5-3.3
broomweed, annual	<i>Amphiachyris dracunculoides</i>	annual	Asteraceae	1.0-1.5
bur buttercup (testiculate)	<i>Ranunculus testicularis</i>	annual	Ranunculaceae	1.0-1.5
burclover	<i>Medicago spp</i>	annual	Fabaceae	1.5-2.0
burdock, Common	<i>Arctium minus</i>	biennial	Asteraceae	2.0-2.5
buttercup, hairy	<i>Ranunculus sardous</i>	perennial	Ranunculaceae	1.0-1.5
buttercup, tall	<i>Ranunculus acris</i>	perennial	Ranunculaceae	2.0-2.5
camelthorn	<i>Alhagi pseudalhagi</i>	perennial	Fabaceae	2.0-3.0
camphorweed	<i>Heterotheca subaxillaris</i>	summer annual	Asteraceae	2.0-3.0
campion, bladder‡	<i>Silene vulgaris</i>	perennial	Caryophyllaceae	2.0-2.5
caraway, wild	<i>Carum carvi</i>	biennial	Apiaceae	2.5-3.0
carrot, wild	<i>Daucus carota</i>	biennial	Apiaceae	2.0-2.5
catchfly, conical	<i>Silene conoidea</i>	annual	Caryophyllaceae	1.0-1.5
chamomile	<i>Matricaria spp</i>	annual	Asteraceae	2.5-3.0
chickweed, common	<i>Stellaria media</i>	Winter annual	Caryophyllaceae	3.0

Broadleaf Weeds Controlled by Oversight (Cont.)

Weed Species				Oversight rate oz product/a
Common Name	Scientific Name	Life Cycle	Plant Family	
chicory	<i>Cichorium intybus</i>	perennial	Asteraceae	1.5-2.0
cinquefoil*	<i>Potentilla spp</i>	perennial	Rosaceae	2.0-2.5
clover, sweet	<i>Melilotus officinalis</i>	biennial	Fabaceae	2.5-3.0
clover, white	<i>Trifolium repens</i>	perennial	Fabaceae	1.5-2.0
cockle, corn	<i>Agrostemma githago</i>	annual	Caryophyllaceae	2.0-3.0
cocklebur	<i>Xanthium strumarium</i>	annual	Asteraceae	1.5-2.0
coreopsis, plains	<i>Coreopsis tinctoria</i>	annual	Asteraceae	2.0-3.0
cowcockle	<i>Vaccaria pyramidata</i>	annual	Caryophyllaceae	1.5-2.0
crazyweed, silky	<i>Oxytropis Lambertii</i>	perennial	Fabaceae	2.0-2.5
croton, woolly	<i>Croton capitatus</i>	annual	Euphorbiaceae	1.5-2.0
crownvetch	<i>Securigera varia</i>	perennial	Fabaceae	1.5-2.0
crupina, common	<i>Crupina vulgaris</i>	perennial	Asteraceae	3.0-3.3
cutweed, purple	<i>Gnaphalium purpureum</i>	annual	Asteraceae	2.0-2.5
daisy, oxeye*	<i>Leucanthemum vulgare</i>	perennial	Asteraceae	2.5-3.3
dandelion, common	<i>Taraxacum officinale</i>	perennial	Asteraceae	1.5-2.0
dock	<i>Rumex spp</i>	perennial	Polygonaceae	2.0-2.5
dyer's woad ‡	<i>Istis tinctoria</i>	perennial	Brassicaceae	3.3
evening primrose, cutleaf	<i>Oenothera laciniata</i>	annual	Asteraceae	1.5-2.0
false dandelion, Carolina	<i>Tragopogon dubius</i>	biennial	Asteraceae	1.5-2.0
falseflax, Smallseed	<i>Camelina microcarpa</i>	annual/biennial	Brassicaceae	1.5-2.0
fiddleneck, common	<i>Amsinckia intermedia</i>	annual	Boraginaceae	1.5-2.0
filaree, redstem	<i>Erodium cicutarium</i>	annual/biennial	Geraniaceae	3.0-3.3
fireweed	<i>Epilobium angustifolium</i>	perennial	Onagraceae	2.5-3.0
fleabane, annual	<i>Erigeron annuus</i>	annual	Asteraceae	1.5-2.0
garlic, wild	<i>Allium vineale</i>	perennial	Liliaceae	1.5-2.0
geranium, Carolina	<i>Geranium carolinianum</i>	Winter annual	Geraniaceae	1.5-2.0
goldenrod spp	<i>Solidago canadensis</i>	perennial	Asteraceae	2.0-2.5
gumweed, curlycup	<i>Grindelia squarrosa</i>	biennial	Asteraceae	2.0-2.5
halogeton	<i>Halogeton glomeratus</i>	annual	Chenopodiaceae	3.0-3.3
hawkweed, orange*	<i>Hieracium aurantiacum</i>	perennial	Asteraceae	2.5-3.3
hawkweed, yellow*	<i>Hieracium pratense</i>	perennial	Asteraceae	2.5-3.3
hemlock, poison‡	<i>Conium maculatum</i>	perennial	Apiaceae	2.5-3.3
henbane, black	<i>Hyoscyamus niger</i>	annual/biennial	Solanaceae	2.5-3.0
henbit	<i>Lamium amplexicaule</i>	annual/biennial	Lamiaceae	2.0-2.5
horsemint (beebalm)	<i>Monarda spp</i>	annual	Lamiaceae	1.5-2.0
horsenettle, Carolina	<i>Solanum carolinense</i>	perennial	Solanaceae	2.0-2.5
horseweed (maretail)	<i>Conyza canadensis</i>	annual	Asteraceae	1.5-2.0
houndstongue*	<i>Cynoglossum officinale</i>	biennial	Boraginaceae	2.5-3.3
ironweed, tall	<i>Vernonia gigantea</i>	perennial	Asteraceae	2.0-3.0
ironweed, western	<i>Vernonia baldwinii</i>	perennial	Asteraceae	2.0-3.0
knapweed	<i>Centaurea sp.</i>	biennial	Asteraceae	2.5-3.3
knapweed, brown	<i>Centaurea jacea</i>	perennial	Asteraceae	2.5-3.3
knapweed, diffuse*	<i>Centaurea diffusa</i>	biennial	Asteraceae	2.5-3.3
knapweed, Russian*	<i>Acroptilon repens</i>	perennial	Asteraceae	2.5-3.3
knapweed, spotted*	<i>Centaurea stoebe</i>	biennial	Asteraceae	2.5-3.3
knotweed, prostrate	<i>Polygonum aviculare</i>	annual	Polygonaceae	3.0
kochia*	<i>Kochia scoparia</i>	annual	Chenopodiaceae	1.5-2.0
lady's thumb	<i>Polygonum persicaria</i>	annual	Polygonaceae	1.5-2.0
lambquarters, common	<i>Chenopodium album</i>	annual	Chenopodiaceae	2.0-2.5
lespedeza, annual	<i>Lespedeza striata</i>	annual	Fabaceae	2.0-2.5
lespedeza, sericea*	<i>Lespedeza cuneata</i>	perennial	Fabaceae	2.5-3.0
lettuce, Miner's	<i>Montia perfoliata</i>	annual	Portulacaceae	1.5-2.0
lettuce, prickly*	<i>Lactuca serriola</i>	annual	Asteraceae	1.5-2.0
locoweed	<i>Astragalus spp.</i>	perennial	Fabaceae	2.0-2.5
loosestrife, purple	<i>Lythrum salicaria</i>	perennial	Lythraceae	3.0-3.3
marshelder, annual‡	<i>Iva annua</i>	annual	Asteraceae	2.0-2.5

Broadleaf Weeds Controlled by Opensight (Cont.)

Weed Species				Opensight rate oz product/a
Common Name	Scientific Name	Life Cycle	Plant Family	
mayweed, scentless	<i>Tripleurospermum perforata</i>	annual	Asteraceae	1.5-2.0
mayweed, stinking	<i>Anthemis cotula</i>	annual	Asteraceae	3.0-3.3
medic, black	<i>Medicago lupulina</i>	perennial	Fabaceae	2.0-2.5
mexicantea	<i>Dysphania ambrosioides</i>	annual/perennial	Chenopodiaceae	2.0-2.5
mullein*	<i>Verbascum spp.</i>	biennial	Scrophulariaceae	2.0-3.3
mustard, blue*	<i>Chorispora tenella</i>	annual	Brassicaceae	1.5-2.0
mustard, tumble/Jim Hill	<i>Sisymbrium altissimum</i>	Winter annual	Brassicaceae	1.5-2.0
mustard, wild	<i>Brassica kaber</i>	annual	Brassicaceae	1.5-2.0
needles, Spanish needles	<i>Bidens bipinnata</i>	annual	Asteraceae	2.0-2.5
oxtongue, bristly	<i>Picris echioides</i>	biennial	Asteraceae	2.5-3.0
parsnip, Wild	<i>Pastinaca sativa</i>	biennial	Apiaceae	2.0-3.0
partridgepea	<i>Chamaecrista fasciculata</i>	annual	Fabaceae	2.5-3.0
pepperweed, perennial‡*	<i>Lepidium latifolium</i>	perennial	Brassicaceae	3.3
pigweeds	<i>Amaranthus spp</i>	annual	Amaranthaceae	1.5-2.0
plantain, broadleaf	<i>Plantago major</i>	perennial	Plantaginaceae	2.0-2.5
plantain, buckhorn	<i>Plantago lanceolata</i>	perennial	Plantaginaceae	2.0-2.5
purslane, common	<i>Portulaca oleracea</i>	annual	Portulacaceae	1.5-2.0
ragweed, common	<i>Ambrosia artemisiifolia</i>	annual	Asteraceae	2.0-2.5
ragweed, western*	<i>Ambrosia psilostachya</i>	perennial	Asteraceae	2.0-2.5
ragwort, tansy	<i>Senecio jacobaea</i>	perennial	Asteraceae	2.5-3.0
rush skeletonweed	<i>Chondrilla juncea</i>	perennial	Asteraceae	2.5-3.0
salsify, Western‡	<i>Tragopogon dubius</i>	biennial	Asteraceae	3.0-3.3
scouringrush‡	<i>Equisetum hyemale</i>	grass	Equisetaceae	3.3
shephardspurse	<i>Capsella bursa-pastoris</i>	Winter annual	Brassicaceae	1.5-2.0
sicklepod	<i>Senna obtusifolia</i>	annual	Fabaceae	2.5-3.0
sida, arrowleaf	<i>Sida rhombifolia</i>	annual	Malvaceae	2-2.5
smartweed, Pennsylvania	<i>Polygonum pennsylvanicum</i>	annual	Polygonaceae	1.5-2.0
snakeweed, broom*	<i>Gutierrezia sarothrae</i>	perennial	Asteraceae	3.0
sneezeweed, bitter	<i>Helenium amarum</i>	annual	Asteraceae	1.0-1.5
snow-on-the-mountain	<i>Euphorbia marginata</i>	annual	Euphorbiaceae	2.0-2.5
soda apple, tropical*	<i>Solanum viarum</i>	perennial	Solanaceae	2.5-3.0
sorrel, red	<i>Rumex acetosella</i>	perennial	Polygonaceae	2.0-2.5
sowthistle, perennial	<i>Sonchus arvensis</i>	perennial	Asteraceae	2.0-2.5
sowthistle, prickly	<i>Sonchus asper</i>	annual	Asteraceae	1.5-2.0
St. Johnswort, common	<i>Hypericum perforatum</i>	perennial	Clusiaceae	2.5-3.0
starthistle, purple*	<i>Centaurea calcitrapa</i>	biennial	Asteraceae	1.5-2.0
star-thistle, Malta*	<i>Centaurea melitensis</i>	annual	Asteraceae	1.5-2.0
starthistle, yellow*	<i>Centaurea solstitialis</i>	annual	Asteraceae	1.5-2.0
sunflower, common	<i>Helianthus annua</i>	annual	Asteraceae	1.5-2.0
tansy, common	<i>Tanacetum vulgare</i>	perennial	Asteraceae	2.5-3.3
teasel	<i>Dipsacus spp.</i>	biennial	Dipsacaceae	2.0-3.0
thistle, Russian*	<i>Salsola iberica</i>	annual	Chenopodiaceae	1.5-2.0
thistle, artichoke	<i>Cynara cardunculus</i>	perennial	Asteracea	2.0-3.0
thistle, bull*	<i>Cirsium vulgare</i>	biennial	Asteraceae	1.0-2.5
thistle, Canada*	<i>Cirsium arvense</i>	perennial	Asteraceae	2.0-3.3
thistle, Italian	<i>Carduus pycnocephalus</i>	annual	Asteraceae	2.0-3.0
thistle, musk*	<i>Carduus nutans</i>	biennial	Asteraceae	1.0-2.5
thistle, plumeless*	<i>Carduus acanthoides</i>	biennial	Asteraceae	1.0-2.5
thistle, Scotch	<i>Onopordum acanthium</i>	biennial	Asteraceae	1.5-2.5
thistle, woolly distaff	<i>Carthamus lanatus</i>	annual	Asteraceae	1.5-2.0
vervain‡	<i>Verbena spp.</i>	perennial	Asteraceae	2.0-2.5
vetch, common*	<i>Vicia sativa</i>	annual	Fabaceae	1.5-2.0
wallflower, bushy	<i>Erysimum repandum</i>	annual	Brassicaceae	1.5-2.0
waterpod	<i>Ellisia nyctelea</i>	annual	Brassicaceae	1.5-2.0
whitetop (hoary cress)*	<i>Cardaria draba</i>	perennial	Brassicaceae	3.3
woodsorrel, yellow	<i>Oxalis stricta</i>	perennial	Oxalidaceae	3.0-3.3

Broadleaf Weeds Controlled by Opensight (Cont.)

Weed Species				Opensight rate oz product/a
Common Name	Scientific Name	Life Cycle	Plant Family	
wormwood, absinth*	<i>Artemisia absinthium</i>	perennial	Asteraceae	3.0-3.3
yankeeweed	<i>Eupatorium compositifolium</i>	perennial	Asteraceae	3.0-3.3
yarrow, common	<i>Achillea millefolium</i>	perennial	Asteraceae	1.5-2.0

‡ : This symbol denotes weed suppression which is a reduction in weed competition compared to untreated areas. A second treatment may be necessary. The addition of 0.5 lbs ae/acre of 2,4-D may improve initial control.

Hawkweed, orange or yellow: Apply Opensight at 2.5 to 3.3 ounce/acre to plants in the bolting stage of development.

Houndstongue: Apply 2.5 ounce/acre to rosettes. As plant bolts, increase the rate to 3.0 to 3.3 ounce/acre up to early bud stage. Add 1 quart of 2,4-D/acre after the bud stage.

Knapweeds, diffuse and spotted: Apply Opensight at 2.5 to 3.3 ounce/acre when plants are actively growing with the optimum time of application occurring from rosette to the bolting stages of development or in the fall. Plants will be controlled by mid-summer and fall applications even though plants may not show any changes in form or stature the year of application.

Knapweed, Russian: Apply Opensight at 2.5 to 3.3 ounce/acre to plants in the spring and summer to plants from early bud to flowering stage and to dormant plants in the fall.

Lespedeza, Sericea: Apply 2.5 to 3.0 ounce/acre beginning at flower bud initiation through the full bloom stage of growth.

Mullein: Apply 2.0 ounce/acre in the rosette stage in spring or fall. Use rates from 2.5 to 3.3 ounce/acre for bolting plants less than 12 inches tall.

Oxeye daisy: Apply Opensight at 2.5 to 3.3 ounce/acre to plants in the prebud stage of development.

Pepperweed, perennial: Apply Opensight at 3.3 ounce/acre plus 2 lb ae/a 2, 4-D when plants are at early flowering through bloom for optimum control.

Ragweed, Western: Apply Opensight at 2.0 to 2.5 ounce/acre when plants are in the vegetative growth stage. The addition of 0.5 to 1 lb ae/acre (1 to 2 pints/acre of 4 lb ae/gallon 2,4-D) of 2,4-D/acre will improve control in dense stands or when ragweed is greater than 6 inches.

Russian thistle, kochia, and prickly lettuce: Naturally occurring resistant biotypes of these weeds to metsulfuron are known to occur. For best results, use Opensight at 1.5 to 2.0 ounces/acre in tank-mix with 2,4-D. Applications to these weeds should be made early to weeds less than 6 inches in height.

Snakeweed, broom: Applications should be made in the fall at 3.0 ounces/acre. Spring applications will provide suppression only.

Soda apple, tropical: Apply Opensight at 2.5 to 3.0 ounce/acre at any growth stage, but application by flowering will reduce seed production potential.

Starthistle, malta, purple, and yellow: Apply Opensight at 1.5 to 2.0 ounce/acre to plants at the rosette through bolting growth stages.

Sulfur cinquefoil: Apply Opensight at 2.0 to 2.5 ounce/acre to plants in the prebud stage of development.

Thistle, Canada: Apply Opensight at 2.0 to 3.3 ounce/acre either in the spring or summer to fully emerged Canada thistle. The goal is to insure all plants have emerged and many of the thistles will be in the bud to early flower stage at this time. Applications are also effective in the fall before a killing frost. Use higher rates for older/dense stands or for longer residual control.

Thistles, Bull, musk, and plumeless: Apply Opensight at 1.0 to 2.0 ounce/acre in the spring and early summer to rosette or bolting plants or in the fall to seedlings and rosettes. Apply at 2.0 to 2.5 ounce/acre plus 0.5 lb ae/acre 2,4-D when plants are at the late bolt through early flowering growth stages.

Vervain: Apply 1.5 to 2.0 oz/acre of Opensight with 0.5 lb ae/acre (1 pint/acre of 4 lb ae/gallon 2,4-D) of 2,4-D.

Whitetop: Apply 3.3 ounce/acre early in the spring to actively growing rosettes or to regrowth before the bud stage. Treatment after bloom is generally less effective and the addition of 2,4-D at 1 lb ae/acre (2 pint/acre of 4 lb ae/gallon 2,4-D) is recommended. Treatments can also be made to fall regrowth before the first killing frost.

Wormwood, absinth: Apply 3.0 to 3.3 ounce/acre before wormwood is 12 inches tall. When applying by air on CRP, coverage is important and a minimum of 3 GPA is specified. Remove old duff and litter by fire or mowing for best results. Fall applications are also effective if green regrowth is present.

Woody Plant Control:

Apply Opensight at 3.3 ounce/acre at the timing described below in Table 2.

Table 2: Woody Plant Control with Opensight

Common Name	Scientific Name	Plant Family	Application Details
blackberry*	<i>Rubus spp</i>	Rosaceae	Apply when leaves are fully expanded and the plant has stopped rapid spring and early summer growth. Application after bloom and before frost is optimal. It is recommend that after mowing, shredding, or burning applications should wait until the next season and enough re-growth has occurred for good uptake and translocation..
buckbrush	<i>Symphoricarpos orbiculus</i>	Caprifoliaceae	Apply 2.0 to 3.0 oz/acre in spring or early summer when new growth is 6-12 inches tall. Add 0.5 to 1 lb ae/acre of 2,4-D (1 to 2 pints/acre of 4 lb ae/gallon 2,4-D) to the lower rate.
dewberry*	<i>Rubus flagellaris</i>	Rosaceae	Apply when leaves are fully expanded and the foliage is dark green, either before first flower or after fruit drop. Application after fruit drop is preferred until frost. It is recommend that after mowing, shredding, or burning applications should wait until the next season and enough re-growth has occurred for good uptake and translocation..
honey locust	<i>Gleditsia triacanthos</i>	Fabaceae	Apply in spring when leaves are fully expanded and foliage is mature.
honeysuckle	<i>Lonicera japonica</i>	Caprifoliaceae	Apply in spring when leaves are fully expanded and foliage is mature.
kudzu	<i>Pueraria montana</i>	Fabaceae	Apply at or after bloom (July) in the summer until fall when the foliage begins to senesce. Kudzu should be actively growing; avoid treating when drought stressed.
locust, black	<i>Robinia pseudoacacia</i>	Fabaceae	Apply in spring when leaves are fully expanded and foliage is mature.
mimosa	<i>Albizia julibrissin</i>	Fabaceae	Apply after full leaf emergence in the spring until fall foliage color change.
redbud	<i>Cercis canadensis</i>	Fabaceae	Apply after full leaf emergence in the spring until fall foliage color change.
rose, Cherokee	<i>Rosa laevigata</i>	Rosaceae	Apply from full leaf through flowering. For best results, delay treatment for 9-12 months after mowing.
rose, multiflora	<i>Rosa multiflora</i>	Rosaceae	Apply from full leaf through flowering. For best results, delay treatment for 9-12 months after mowing.
rose, prairie wild	<i>Rosa arkansana</i>	Rosaceae	Apply from full leaf through flowering. For best results, delay treatment for 9-12 months after mowing.

Table 2: Woody Plant Control with Opensight (Cont.)

Common Name	Scientific Name	Plant Family	Application Details
snowberry, Western	<i>Symphoricarpos occidentalis</i>	Caprifoliaceae	Apply 3 oz/acre of Opensight alone or 2.0 to 3.0 oz/acre with 1 lb ae/acre of 2,4-D ester (2 pints/acre of 4 lb ae/gallon 2,4-D) in the spring when leaves are fully expanded and foliage is mature. Apply 3 oz/acre with 1 lb ae/acre of 2,4-D ester (2 pints/acre of 4 lb ae/gallon 2,4-D) from full leaf expansion up to the flowering stage.
wisteria	<i>Wisteria brachybotrys</i>	Fabaceae	Apply after full leaf emergence in the spring until fall foliage color change.
yucca‡	<i>Yucca glauca</i>	Agavaceae	Add 1 lb ai/acre of 2,4-D ester (2 pints/acre of 4 lb ae/gallon 2,4-D) to Opensight at 3.3 ounce/acre. Another option for additional woody plant control is Chaparall plus 1 pint/acre Remedy® Ultra. Make applications from flower stalk elongation through seed pod development. Crop oil concentrate (COC), Methylated Seed Oil (MSO) or Methylated Seed Oil/Organosilicone (MSO/OS) are the preferred adjuvants. Aerial application is recommended with a minimum of 4 gallons per acre volume for dense yucca populations.

‡ : This symbol denotes weed suppression which is a reduction in weed competition compared to untreated areas. A second treatment may be necessary.

* This recommendation is for blackberry and dewberry control in bermudagrass or other non-sensitive grasses only. For control in tall fescue pastures, only apply Opensight as a spot treatment. For broadcast blackberry control in tall fescue pastures, use 1 pint/acre of Remedy Ultra + 2 pts/acre of ForeFront™ R&P

Opensight alone provides brush control for a number of woody/perennial species. In most situations, Opensight is added to brush control tank mixtures to improve control of the species listed below.

Control of Woody Species with Opensight Alone			
Common Name	Scientific Name	Life Cycle	Plant Family
ash	<i>Fraxinus spp.</i>	perennial	Oleaceae
aspen	<i>Populus tremuloides</i>	perennial	Salicaceae
camelthorn	<i>Alhagi pseudalhagi</i>	perennial	Fabaceae
cherry	<i>Prunus spp.</i>	perennial	Rosaceae
cottonwood	<i>Populus spp.</i>	perennial	Salicaceae
Eastern red cedar	<i>Juniperus virginiana</i>	perennial	Cupressaceae
elder	<i>Sambucus spp.</i>	perennial	Caprifoliaceae
elm	<i>Ulmus spp.</i>	perennial	Ulmaceae
firs	<i>Abies spp.</i>	perennial	Pinaceae
hawthorn	<i>Crataegusspp.</i>	perennial	Rosaceae
mulberry	<i>Morus spp.</i>	perennial	Moraceae
muscadine (wild grape)	<i>Muscadinia rotundifolia</i>	perennial	Vitaceae
oaks	<i>Quercus spp.</i>	perennial	Fagaceae
ocean spray	<i>Holodiscus discolor</i>	perennial	Rosaceae
osage orange	<i>Maclura pomifera</i>	perennial	Moraceae
maple, red	<i>Acer rubrum</i>	perennial	Aceraceae
salmonberry	<i>Rubus spectabilis</i>	perennial	Rosaceae
spruce, black	<i>Picea mariana</i>	perennial	Pinaceae
spruce, white	<i>Picea glauca</i>	perennial	Pinaceae
thimbleberry	<i>Rubus parviflorus</i>	perennial	Rosaceae
tree of heaven	<i>Ailanthus altissima</i>	perennial	Simaroubaceae
willow	<i>Salix spp.</i>	perennial	Salicaceae
poplar, yellow	<i>Liriodendron tulipifera</i>	perennial	Magnoliaceae

Selective Weed Control with tank mixes

Opensight is tank mix compatible with other selective herbicides such as Garlon 3A. Spot treatments using a tank mixture of Garlon 3A at 3% to 5 % v/v + Opensight at 20 oz product per 100 gallons of water (0.2 oz product/gallon water) + non-ionic surfactant, will control the following species, **in addition to species listed above**, without harming the grasses.

Control of Woody Species with Opensight in Tank Mixes			
Common Name	Scientific Name	Life Cycle	Plant Family
alder	<i>Alnus rubra</i>	perennial	Betulaceae
arrowweed	<i>Pluchea sericea</i>	perennial	Asteraceae
Australian pine	<i>Pinus nigra</i>	perennial	Pinaceae
bear clover (bearmat)	<i>Chamaebatia foliolosa</i>	perennial	Rosaceae
beech	<i>Fagus spp.</i>	perennial	Fagaceae
birch	<i>Betula spp.</i>	perennial	Betulaceae
blackgum	<i>Nyssa sylvatica</i>	perennial	Cornaceae
Brazilian pepper-tree	<i>Schinus terebinthifolius</i>	perennial	Anacardiaceae
casacara	<i>Rhamnus purshiana</i>	perennial	Rhamnaceae
ceanothus	<i>Ceanothus spp.</i>	perennial	Rhamnaceae
chinquapin	<i>Chrysolepis chrysophylla</i>	perennial	Fagaceae
choke cherry	<i>Prunus virginiana</i>	perennial	Rosaceae

Control of Woody Species with Oversight in Tank Mixes (Cont.)			
Common Name	Scientific Name	Life Cycle	Plant Family
dogwood	<i>Cornus spp.</i>	perennial	Cornaceae
Douglas-fir	<i>Pseudotsuga menziesii</i>	perennial	Pinaceae
elderberry	<i>Sambucus spp.</i>	perennial	Adoxaceae
gallberry	<i>Ilex coriacea</i>	perennial	Aquifoliaceae
hazel	<i>Corylus spp.</i>	perennial	Betulaceae
hornbeam	<i>Corylus spp.</i>	perennial	Betulaceae
madrone	<i>Arbutus menziesii</i>	perennial	Ericaceae
maple	<i>Acer spp.</i>	perennial	Aceraceae
mulberry	<i>Morus spp.</i>	perennial	Moraceae
persimmon	<i>Diospyros spp.</i>	perennial	Ebenaceae
pine	<i>Pinus spp.</i>	perennial	Pinaceae
poison ivy	<i>Toxicodendron radicans</i>	perennial	Anacardiaceae
poison oak	<i>Toxicodendron pubescens</i>	perennial	Anacardiaceae
poplar	<i>Populus spp.</i>	perennial	Salicaceae
coyote bush	<i>Baccharis pilularis</i>	perennial	Asteraceae
sassafras	<i>Sassafras spp.</i>	perennial	Lauraceae
Scotch broom	<i>Cytisus scoparius</i>	perennial	Fabaceae
sumac	<i>Rhus coriaria</i>	perennial	Anacardiaceae
sweetbay magnolia	<i>Magnolia virginiana</i>	perennial	Magnoliaceae
sweetgum	<i>Liquidambar spp.</i>	perennial	Altingiaceae
sycamore	<i>Platanus spp.</i>	perennial	Platanaceae
tanoak	<i>Lithocarpus densiflorus</i>	perennial	Fagaceae
wax myrtle	<i>Myrica spp.</i>	perennial	Myricaceae
Western hemlock	<i>Tsuga heterophylla</i>	perennial	Pinaceae
winged elm	<i>Ulmus alata</i>	perennial	Ulmaceae

Apply either with a low volume backpack or handgun (hose reel 7 hydraulic spraygun). In all cases, use the amount specified to provide uniform and complete coverage of the plants to be controlled. Total spray volume should not exceed 16 gallons of spray mix per acre.

Non-selective weed control with tank mixes

Oversight is tank mix compatible with non-selective herbicides such as Accord XRT II or Rodeo at 3 to 4 quarts per acre + a non-ionic surfactant at 0.25% v/v for control of grasses and many broadleaf woody species such as red oak, white oak, cherry, sweetgum, loblolly pine, red maple and yellow poplar.

Precautions for Avoiding Spray Drift

Avoid application under conditions that may allow spray drift because very small quantities of spray, which may not be visible, may injure susceptible crops. This product should be applied only when the potential for drift to adjacent sensitive areas (e.g., residential areas, bodies of water, non-target crops and other plants) is minimal (e.g., when wind is blowing away from the sensitive areas). A drift control aid may be added to the spray solution to further reduce the potential for drift. If a drift control aid is used, follow the use directions and precautions on the manufacturer's label. Do not use a thickening agent with Microfoil, Thru-Valve booms, or other spray delivery systems that cannot accommodate thickened spray solutions.

Ground Equipment: With ground equipment spray drift can be lessened by keeping the spray boom as low as possible; by applying 10 gallons or more of spray per acre; by keeping the operating spray pressures at the manufacturer's specified minimum pressures for the specific nozzle type used (low pressure nozzles are available from spray equipment manufacturers); and by spraying when the wind velocity is low (follow state regulations). Avoid calm conditions which may be conducive to thermal inversions. Direct sprays no higher than the tops of target vegetation and keep spray pressures low enough to provide coarse spray droplets to minimize drift.

Aerial Application: Avoid spray drift at the application site. The interaction of many equipment-and-weather-related factors determine the potential for spray drift. Users are responsible for considering all these factors when making decisions.

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

1. The distance of the outer most operating nozzles on the boom must not exceed 75% of wingspan or 85% of rotor diameter.

2. Nozzles should be pointed backward parallel with the air stream or not pointed downwards more than 45 degrees.

State regulations must be followed.

The applicator should be familiar with and take into account the information covered in the following **Aerial Drift Reduction Advisory**. This information is advisory in nature and does not supersede mandatory label requirements.

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).

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 specified 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 will provide uniform coverage.
- **Nozzle Orientation** - Orient nozzles so that the spray is released parallel to the airstream to produce larger droplets than other orientations. 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 85% of 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 such as valleys and ravines 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.

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Dow AgroSciences LLC
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Indianapolis, IN 46268

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EPA accepted 04/15/14

Revisions:

1. Updated the statement "Do not apply directly to water and take precautions to minimize spray drift onto water" to "Do not apply directly to water and take precautions to minimize overspray to open water when treating target vegetation in and around non-flowing, quiescent or transient water. When making applications to control unwanted plants on banks or shorelines of flowing water, minimize overspray to open water. Note: Consult local public water control authorities before applying this product in and around public water. Permits may be required to treat such areas" throughout the label.
2. Updated the statement "The field bioassay can be initiated at any time between harvest of the treated crop and the planting of the intended rotational crop" to "The field bioassay can be initiated one year after the last application of aminopyralid in that field" throughout the label and supplemental label.
3. Added statement and graphic for Northeastern states.
4. Updated trademark line.

SAFETY DATA SHEET

DOW AGROSCIENCES LLC

Product name: OPENSIGHT™ Herbicide

Issue Date: 05/04/2015

Print Date: 05/07/2015

DOW AGROSCIENCES LLC encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. IDENTIFICATION

Product name: OPENSIGHT™ Herbicide

Recommended use of the chemical and restrictions on use

Identified uses: End use herbicide product

COMPANY IDENTIFICATION

DOW AGROSCIENCES LLC
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INDIANAPOLIS IN 46268-1053
UNITED STATES

Customer Information Number:

800-992-5994

info@dow.com

EMERGENCY TELEPHONE NUMBER

24-Hour Emergency Contact: 800-992-5994

Local Emergency Contact: 352-323-3500

2. HAZARDS IDENTIFICATION

Hazard classification

This material is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.

Eye irritation - Category 2B

Carcinogenicity - Category 2

Label elements

Hazard pictograms



Signal word: **WARNING!**

Hazards

Causes eye irritation.
Suspected of causing cancer.

Precautionary statements**Prevention**

Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Wash skin thoroughly after handling.
Use personal protective equipment as required.

Response

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed or concerned: Get medical advice/ attention.
If eye irritation persists: Get medical advice/ attention.

Storage

Store locked up.

Disposal

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

Other hazards

no data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is a mixture.

Component	CASRN	Concentration
Aminopyralid Potassium	566191-87-5	62.13%
Metsulfuron-methyl	74223-64-6	9.45%
Titanium dioxide	13463-67-7	0.1%
Kaolin	1332-58-7	>= 0.2 - <= 5.2 %
Balance	Not available	>= 23.12 - <= 28.12 %

4. FIRST AID MEASURES

Description of first aid measures

General advice: 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. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice. Suitable emergency safety shower facility should be available in work area.

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: No emergency medical treatment necessary.

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: May cause injury due to mechanical action. 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. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers.

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. Hydrogen chloride. Carbon monoxide. Carbon dioxide.

Unusual Fire and Explosion Hazards: Container may rupture from gas generation in a fire situation. Pneumatic conveying and other mechanical handling operations can generate combustible dust. To reduce the potential for dust explosions, do not permit dust to accumulate. Dense smoke is produced when product burns.

Advice for firefighters

Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Soak thoroughly with water to cool and prevent re-ignition. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Hand held dry chemical or carbon dioxide extinguishers may be used for small fires. Move container from fire area if this is possible without hazard. 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). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

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. Spilled material may cause a slipping hazard. 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: Sweep up. Collect in suitable and properly labeled containers. Large spills: Contact Dow AgroSciences 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. Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling. Do not swallow. Avoid breathing dust or mist. Use with adequate ventilation. Good housekeeping and controlling of dusts are necessary for safe handling of product. Keep away from heat, sparks and flame.

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

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value/Notation
Titanium dioxide	OSHA Z-1	TWA total dust	15 mg/m ³
	ACGIH	TWA	10 mg/m ³ , Titanium dioxide
Kaolin	ACGIH	TWA Respirable fraction	2 mg/m ³
	OSHA Z-1	TWA total dust	15 mg/m ³
	OSHA Z-1	TWA respirable fraction	5 mg/m ³

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: Polyvinyl chloride ("PVC" or "vinyl"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). 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, in dusty atmospheres, use an approved particulate 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	Granules.
Color	Brown
Odor	Mild
Odor Threshold	no data available
pH	10.3 1% pH Electrode (1% dispersion)
Melting point/range	No test data available
Freezing point	Not applicable
Boiling point (760 mmHg)	Not applicable
Flash point	closed cup Not applicable
Evaporation Rate (Butyl Acetate = 1)	Not applicable
Flammability (solid, gas)	no data available
Lower explosion limit	Not applicable

Upper explosion limit	Not applicable
Vapor Pressure	Not applicable
Relative Vapor Density (air = 1)	Not applicable
Relative Density (water = 1)	Not applicable
Water solubility	No test data available
Partition coefficient: n-octanol/water	no data available
Auto-ignition temperature	Not applicable
Decomposition temperature	No test data available
Dynamic Viscosity	Not applicable
Kinematic Viscosity	Not applicable
Explosive properties	no data available
Oxidizing properties	no data available
Liquid Density	Not applicable
Bulk density	0.0007 kg/m ³ <i>Literature</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 data available

Chemical stability: Thermally stable at typical use temperatures.

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to avoid: Active ingredient decomposes at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems.

Incompatible materials: Avoid contact with: Strong acids. Strong bases. Strong oxidizers.

Hazardous decomposition products: Decomposition products depend upon temperature, air supply and the presence of other materials. Toxic gases are released during decomposition.

11. TOXICOLOGICAL INFORMATION

Toxicological information on this product or its components appear in this section when such data is available.

Acute toxicity

Acute oral toxicity

Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.

As product:

LD50, Rat, female, > 5,000 mg/kg

Acute dermal toxicity

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

As product:

LD50, Rat, male and female, > 5,000 mg/kg

Acute inhalation toxicity

Inhalation is unlikely due to physical state. No adverse effects are anticipated from single exposure to dust.

LC50, Rat, male and female, 4 Hour, dust/mist, > 5.09 mg/l

Skin corrosion/irritation

Brief contact may cause moderate skin irritation with local redness.

Serious eye damage/eye irritation

May cause moderate eye irritation.

May cause slight corneal injury.

Solid or dust may cause irritation or corneal injury due to mechanical action.

Sensitization

Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:

No relevant information 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).

Aminopyralid.

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

Gastrointestinal tract.

Carcinogenicity

Lung fibrosis and tumors have been observed in rats exposed to titanium dioxide in two lifetime inhalation studies. Effects are believed to be due to overloading of the normal respiratory clearance mechanisms caused by the extreme study conditions. Workers exposed to titanium dioxide in the workplace have not shown an unusual incidence of chronic respiratory disease or lung cancer. Titanium dioxide was not carcinogenic in laboratory animals in lifetime feeding studies. For the active ingredient(s): Aminopyralid. Metsulfuron-methyl. Did not cause cancer in laboratory animals.

Teratogenicity

For the active ingredient(s): Aminopyralid. Metsulfuron-methyl. Did not cause birth defects or other effects in the fetus even at doses which caused toxic effects in the mother.

Reproductive toxicity

For the active ingredient(s): Aminopyralid. Metsulfuron-methyl. In animal studies, did not interfere with reproduction.

Mutagenicity

In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

For the active ingredient(s): Metsulfuron-methyl. In vitro genetic toxicity studies were predominantly negative.

Aspiration Hazard

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

Carcinogenicity

Component

Titanium dioxide

List

IARC

Classification

Group 2B: Possibly carcinogenic to humans

12. ECOLOGICAL INFORMATION

Ecotoxicological information on this product or its components appear in this section when such data is available.

Toxicity

Acute toxicity to fish

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).

LC50, *Oncorhynchus mykiss* (rainbow trout), semi-static test, 96 Hour, > 120 mg/l, OECD Test Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates

EC50, *Daphnia magna* (Water flea), semi-static test, 48 Hour, > 120 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants

ErC50, *Pseudokirchneriella subcapitata* (green algae), static test, 72 Hour, Growth rate inhibition, 17.58 mg/l, OECD Test Guideline 201 or Equivalent

Toxicity to Above Ground Organisms

Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg).

oral LD50, *Colinus virginianus* (Bobwhite quail), > 2,250 mg/kg

Toxicity to soil-dwelling organisms

LC50, *Eisenia fetida* (earthworms), 14 d, survival, 2,000 mg/kg

Persistence and degradability

Aminopyralid Potassium

Biodegradability: For similar active ingredient(s). Aminopyralid. Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.

10-day Window: Fail

Biodegradation: 0 %
Exposure time: 28 d
Method: OECD Test Guideline 301F or Equivalent

Metsulfuron-methyl

Biodegradability: No appreciable biodegradation is expected.

Titanium dioxide

Biodegradability: Biodegradation is not applicable.

Kaolin

Biodegradability: Biodegradation is not applicable.

Balance

Biodegradability: No relevant data found.

Bioaccumulative potential

Bioaccumulation: No data available.

Mobility in soil

Aminopyralid Potassium

For similar active ingredient(s).
Aminopyralid.
Potential for mobility in soil is very high (Koc between 0 and 50).

Metsulfuron-methyl

No data available.

Titanium dioxide

No data available.

Kaolin

No relevant data found.

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

OSHA Hazard Communication Standard

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

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

Acute Health Hazard
Chronic Health Hazard

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.

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)

This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:

The following product components are cited in the Pennsylvania Hazardous Substance List and/or the Pennsylvania Environmental Substance List, and are present at levels which require reporting.

ComponentsTitanium dioxide
Kaolin**CASRN**13463-67-7
1332-58-7**Pennsylvania (Worker and Community Right-To-KnowAct): Pennsylvania Special Hazardous Substances List:**

To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

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: 62719-597

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

Causes substantial but temporary eye injury
Harmful if swallowed

16. OTHER INFORMATION

Hazard Rating System**NFPA**

Health	Fire	Reactivity
1	1	0

Revision

Identification Number: 101188048 / A211 / Issue Date: 05/04/2015 / Version: 4.0

DAS Code: GF-2050

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

Legend

ACGIH	USA. ACGIH Threshold Limit Values (TLV)
OSHA Z-1	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
TWA	8-hour, time-weighted average

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.

Razor Xtreme [EPA Reg. No. 71368-81]

Razor® Xtreme

Herbicide

For Non-Selective, Broad-Spectrum Weed Control

1.0 INGREDIENTS

ACTIVE INGREDIENTS:

Glyphosate, N-(phosphonomethyl) glycine, in the form of its isopropylamine salt*	30.94%
Glyphosate, N-(phosphonomethyl) glycine, in the form of its potassium salt**	22.99%

OTHER INGREDIENTS:

TOTAL:	100.00%
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* Contains 400 grams per litre or 3.33 pounds per U.S. gallon of the active ingredient glyphosate, in the form of its isopropylamine salt.

Equivalent to 297 grams per litre or 2.5 pounds per U.S. gallon glyphosate acid.

** Contains 297 grams per litre or 2.5 pounds per U.S. gallon of the active ingredient glyphosate, in the form of its potassium salt.

Equivalent to 243 grams per litre or 2.0 pounds per U.S. gallon glyphosate acid.

Equivalent to 540 grams per litre or 4.5 pounds per U.S. gallon glyphosate acid.

KEEP OUT OF REACH OF CHILDREN CAUTION

SEE BACK PANEL FOR FIRST AID AND ADDITIONAL PRECAUTIONARY STATEMENTS

Read the entire label before using this product. Use only according to label instructions.

2.0 IMPORTANT PHONE NUMBERS

For Chemical Spill, Leak, Fire, or Exposure, Call CHEMTREC (800) 424-9300

For Medical Emergencies Only, Call (877) 325-1840

Read "LIMIT OF WARRANTY AND LIABILITY" before buying or using. If terms are not acceptable, return at once unopened.

AVOID CONTACT WITH FOLIAGE, GREEN STEMS, EXPOSED NON-WOODY ROOTS, DESIRABLE PLANTS AND TREES, SINCE SEVERE INJURY OR DESTRUCTION MAY RESULT.

A broad-spectrum herbicide for industrial, turf, ornamental, forestry, roadside, utility rights-of-way, and other listed terrestrial weed control. (For a complete list of terrestrial uses, see the Directions for Use section in the attached label booklet.)

This product is protected by Patent No's. 5,668,085, RE 37,866 and 6,365,551

EPA REG. NO. 71368-81

Manufactured for
Nufarm Inc.
11901 S. Austin Avenue
Alsip, IL 60803



Nufarm

Grow a better tomorrow.

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3.0 PRECAUTIONARY STATEMENTS
3.1 HAZARDS TO HUMANS AND DOMESTIC ANIMALS
KEEP OUT OF REACH OF CHILDREN
CAUTION

Causes moderate eye irritation. Avoid contact with eyes, skin, or clothing.

FIRST AID	
IF IN EYES	<ul style="list-style-type: none">• Hold eye open and rinse slowly and gently with water for 15 to 20 minutes.• Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.• Call a poison control center or doctor for treatment advice.
HOTLINE NUMBER	
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-877-325-1840 for emergency medical treatment information.	

DOMESTIC ANIMALS: This product is considered to be relatively nontoxic to dogs and other domestic animals; however, ingestion of this product or large amounts of freshly sprayed vegetation could result in temporary gastrointestinal irritation (vomiting, diarrhea, colic, etc.). If such symptoms are observed, provide the animal with plenty of fluids to prevent dehydration. Call a veterinarian if symptoms persist for more than 24 hours.

Personal Protective Equipment (PPE)

Some of the materials that are chemical-resistant to this product are listed below.

Applicators and other handlers must wear:

- long-sleeved shirt and long pants,
- socks and shoes, and
- chemical-resistant gloves made of any waterproof material, such as polyethylene or polyvinyl chloride.

Follow manufacturer's instructions for cleaning/maintaining PPE (Personal Protective Equipment). If there are no instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

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.

IMPORTANT: When reduced PPE is worn because a closed system is being used, handlers must be provided all PPE specified above for "applicators and other handlers" and have such PPE immediately available for use in an emergency, such as a spill or equipment breakdown.

USER SAFETY RECOMMENDATIONS	
Users should:	<ul style="list-style-type: none">• 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.

3.2 ENVIRONMENTAL HAZARDS

Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high-water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash waters and rinsate.

3.3 PHYSICAL OR CHEMICAL HAZARDS

Spray solutions of this product may be mixed, stored and applied using stainless steel, fiberglass, plastic or plastic-lined steel containers.

DO NOT MIX, STORE OR APPLY THIS PRODUCT OR SPRAY SOLUTIONS OF THIS PRODUCT IN GALVANIZED STEEL OR UNLINED STEEL (EXCEPT STAINLESS STEEL) CONTAINERS OR SPRAY TANKS. This product or spray solutions of this product react with such containers and tanks to produce hydrogen gas, which can form a highly combustible gas mixture. This gas mixture could flash or explode if ignited by open flame, spark, welder's torch, lighted cigarette or other ignition source and cause serious personal injury.

DIRECTIONS FOR USE

It is A Violation Of Federal Law To Use This Product In Any Manner Inconsistent With its Labeling. 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 regulations.

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 4 hours.

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: Coveralls, Chemical Resistant Gloves made of any waterproof material and shoes plus socks.

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.

Keep people and pets off treated areas until spray solution has dried.

4.0 PRODUCT INFORMATION

Product Description: This product is a postemergence, systemic herbicide with no soil residual activity. It is generally non-selective and gives broad-spectrum control of many annual and perennial weeds, woody brush, trees and vines. It is formulated as a water-soluble liquid containing surfactant and may be applied using standard and specialized pesticide application equipment after dilution and thorough mixing with water or other carrier according to label directions.

No additional surfactant in the spray solution is needed. This includes additives containing surfactants, buffering agents or pH adjusting agents when Razor Xtreme Herbicide is the only pesticide used, unless otherwise directed.

Mechanism of Action: The active ingredient in this product inhibits an enzyme found only in plants and microorganisms that is essential to the formation of specific amino acids.

No Soil Activity: This product binds tightly to soil particles and does not provide residual weed control. Weeds must be emerged at the time of application to be controlled by foliar application of this product. Weed seeds in the soil will not be affected by this product and will continue to germinate. Unattached plant rhizomes and root stocks beneath the soil surface will also not be affected by this product.

Biological Degradation: Degradation of this product is primarily a biological process carried out by soil microbes.

Stage of Weeds: Annual weeds are easiest to control when they are small. Enhanced control of most perennial weeds is obtained when this product is applied at late growth stages approaching maturity. Refer to the "ANNUAL WEEDS RATE SECTION," "PERENNIAL WEEDS RATE SECTION" and "WOODY BRUSH, TREES AND VINES RATE SECTION" for more information on the control of specific weeds.

Cultural Considerations: Reduced weed control could result when this product is applied to annual or perennial weeds that have been mowed, grazed or cut, and have not been allowed to re-grow prior to application. Always use a higher product application rate within the given range when weed growth is heavy or dense, or when weeds are growing in an undisturbed (non-cultivated) area. Reduced weed control could also result when this product is applied to weeds that show signs of disease or insect damage, are covered with dust, or are surviving under poor growing conditions.

Spray Coverage: For enhanced results, spray coverage must be uniform and complete. Do not spray foliage to the point of runoff.

Rainfastness: Heavy rainfall soon after application may wash this product off of the foliage and a repeat application may be required for adequate control. For maximum effectiveness, product should be applied 4 hours prior to irrigation or rain. Refer to specific use sections of this label for additional information on the minimum intervals required before re-application of this product.

Time to Symptoms: This product moves through the plant from the point of foliage contact to and into the root system. Visible effects are a gradual wilting and yellowing of the plant that advances to complete browning of aboveground growth and deterioration of underground plant parts. Effects are visible on most annual weeds within 2 to 4 days, but on most perennial weeds, effects might not be visible for 7 or more days after application. Extremely cool or cloudy weather following application could slow activity of this product and delay development of visual symptoms.

Maximum Application Rates: The maximum application or use rates stated throughout this label are given in units of volume (fluid ounces or quarts) of this product per acre. However, the maximum allowable application rates apply to this product combined with the use of any and all other herbicides containing the active ingredient Glyphosate, whether applied separately or in a tank mixture, on a basis of total pounds of Glyphosate (acid equivalents) per acre. If more than one Glyphosate-containing product is applied to the same site within the same year, you must ensure that the total use of Glyphosate (pounds acid equivalents) does not exceed the maximum allowed. See the "INGREDIENTS" section of this label for necessary product information.

Unless otherwise specified on this label, the combined total application of this product on a site must not exceed 5.3 quarts (6 pounds of Glyphosate acid) per acre per year. For applications on non-crop sites, or on tree, vine or shrub crop production sites, the combined total application of this product must not exceed 7 quarts (8 pounds of Glyphosate acid) per acre per year.

NOTE: Use of this product in any manner not consistent with this label could result in injury to persons, animals or crops, or have other unintended consequences.

5.0 WEED RESISTANCE MANAGEMENT

GROUP 9 HERBICIDE

Glyphosate, the active ingredient in this product, is a Group 9 herbicide based on the mechanism of action classification system of the Weed Science Society of America. Any weed population can contain plants that are naturally resistant to Group 9 herbicides. Weeds resistant to Group 9 herbicides can be effectively managed by using another herbicide from a different Group (either alone or in a mixture according to label directions), by using other cultural or mechanical methods of weed control, or a combination of the two. Consult your local company representative, state cooperative extension agent, professional consultant or other qualified authority to determine appropriate actions for controlling specific resistant weeds.

5.1 Weed Management Practices

Resistant populations arise when rare individual plants are uncontrolled by a normal dose of a given herbicide under normal environmental conditions. In the absence of other control measures these individuals survive, produce seed, and eventually become the dominant biotype in the field through continuous selection. The best means of reducing this selection is to use diverse weed control practices such as multiple herbicides with different mechanisms of action, and often in combination with various mechanical and cultural practices.

To minimize the occurrence of herbicide-resistant biotypes, including those resistant to Glyphosate, implement the following weed management practice options that are practical to your situation. These management practices are applicable to reduce the spread of confirmed resistant biotypes (managing existing resistant biotypes) and to reduce the potential for selecting for resistance in new species (proactive resistance management).

- Use a diversified approach toward weed management focused on preventing weed seed production and reducing the number of weed seeds in the soil.
- Plant crops into fields as weed-free as possible and then keep them as weed-free as possible.
- Plant crop seed that is as weed-free as possible.
- Scout fields routinely, before and after herbicide application.
- Use multiple herbicide mechanisms of action that are effective against the most troublesome weeds in your field and against those with known resistance.
- Apply herbicides at application rates listed on the label when weeds are within the size range indicated on the label.
- Emphasize cultural practices that suppress weeds by using crop competitiveness.
- Use mechanical and biological weed management practices where appropriate.
- Prevent field-to-field and within-field movement of weed seed or vegetative propagules.
- Manage weed seed at harvest and after harvest to prevent a buildup of the weed seedbank.

5.2 Management of Glyphosate-Resistant Biotypes

Appropriate testing is needed to determine if a weed is resistant to Glyphosate. Contact your Nufarm representative to determine if resistance in any particular weed biotype has been confirmed in your area.

Glyphosate-resistant weeds can be controlled or managed by applying this product in combination with residual preemergence herbicides and/or other postemergence herbicides labeled for control of the targeted weed in the crop being grown. For more information, see the "ANNUAL WEEDS RATE SECTION" and "PERENNIAL WEEDS RATE SECTION" of this label.

Since the occurrence of resistant weeds is difficult to detect prior to use, Nufarm accepts no liability for any losses that result from the failure of this product to control resistant weeds.

6.0 MIXING

Spray solutions of this product may be mixed, stored and applied using clean stainless steel, fiberglass, plastic or plastic-lined steel containers.

DO NOT MIX, STORE OR APPLY THIS PRODUCT OR SPRAY SOLUTIONS OF THIS PRODUCT IN GALVANIZED STEEL OR UNLINED STEEL (EXCEPT STAINLESS STEEL) CONTAINERS OR SPRAY TANKS.

Eliminate any risk of siphoning the contents of the tank back into the carrier source while mixing. Use approved anti-back-siphoning devices where required by State or local regulations.

A 50-mesh nozzle screen or line strainer on the spray equipment is adequate.

Clean sprayer parts promptly after using this product by thoroughly flushing with water.

6.1 Mixing with Water

PERFORMANCE OF THIS PRODUCT CAN BE SIGNIFICANTLY REDUCED IF WATER CONTAINING SOIL SEDIMENT IS USED AS CARRIER. DO NOT MIX THIS PRODUCT WITH WATER FROM PONDS OR DITCHES THAT IS VISIBLY MUDDY OR MURKY.

This product mixes readily with water. Mix spray solutions of this product as follows. Begin filling the mixing tank or spray tank with clean water. Add the required amount of this product near the end of the filling process and mix gently. Foaming of the spray solution can occur during mixing. To prevent or minimize foaming, mix gently, terminate bypass and return lines at the bottom of the tank, and, if necessary, add an appropriate anti-foam or defoaming agent to the spray solution.

6.2 Tank Mixtures

This product does not provide residual weed control. This product may be tank-mixed with other herbicides to provide residual weed control in the soil, a broader weed control spectrum, or an alternate mechanism of action.

Some tank-mix products have the potential to cause crop injury under certain conditions, at certain growth stages and/or under other circumstances. Read the label of all products to be used in the tank mixture prior to use to determine the potential for crop injury.

Tank mixtures with other herbicides, insecticides, fungicides, micronutrients or foliar fertilizers could result in reduced weed control or crop injury. Nufarm has not tested all tank-mix product formulations for compatibility, antagonism or reduction in product performance. To the extent consistent with applicable law, buyer and all users are responsible for any and all loss or damage in connection with the use or handling of mixtures of this product with herbicides or other materials that are not expressly specified on this label, or on separate supplemental labeling or Fact Sheets published for this product.

When a tank-mix with a generic active ingredient, such as 2,4-D, atrazine, dicamba, diuron, pendimethalin, or any other product or material, is listed on this label, the user is responsible for ensuring that the specific application being made is included on the label of the product being used in the mix.

Refer to all individual product labels, supplemental labeling and Fact Sheets for all products in the tank mixture, and observe all precautions and limitations on the label, including application timing restrictions, soil restrictions, minimum re-cropping intervals and any crop rotation restrictions. Use according to the most restrictive precautionary statements for each product in the tank mixture. For enhanced results, apply tank mixtures with this product at a minimum spray volume rate of 10 gallons per acre.

6.3 Tank-Mixing Procedure

Always predetermine the compatibility of all tank-mix products together in the carrier by mixing small proportional quantities in advance.

Mix only the quantity of spray solution that will be applied that day. Application of tank-mix solutions that are allowed to stand overnight could result in reduced weed control.

Prepare tank mixtures of this product as follows:

1. Place a 20- to 35-mesh screen or wetting basket over the filling port of the tank.
2. Through the screen, fill the tank one-half full with water and start gentle agitation.
3. If ammonium sulfate is to be used, add it slowly through the screen into the tank and continue adding water into the tank through the screen. If dry ammonium sulfate is being used, ensure that it is completely dissolved in the tank before adding other products.
4. If a wettable powder is used, prepare a slurry of it with water and add it SLOWLY through the screen into the tank while continuing gentle agitation.
5. If a flowable formulation is used, premix one part flowable with one part water and add the diluted mixture SLOWLY through the screen into the tank while continuing gentle agitation.
6. If an emulsifiable concentrate formulation is used, premix one part emulsifiable concentrate with two parts water and add the diluted mixture SLOWLY through the screen into the tank while continuing gentle agitation.
7. Continue filling the tank with water through the screen and add the required amount of this product near the end of the filling process.
8. If a nonionic surfactant is used, add it to the tank before completing the filling process.
9. Add individual tank-mix components to the tank as follows: wettable powders, flowables, emulsifiable concentrates, drift reduction additives, water soluble liquids, this product, surfactant.

Maintain gentle agitation at all times until the contents of the tank are sprayed out. If the spray mixture is allowed to settle, agitate thoroughly to re-suspend the mixture before resuming application.

Keep by-pass and return lines on or near the bottom of the tank to minimize foaming. A 50-mesh nozzle screen or line strainer on the spray equipment is adequate.

6.4 Mixing Spray Solution Concentrations

Prepare the desired volume of spray solution at a given concentration by mixing the amount of this product indicated in the following table in water.

Spray Solution Table:

Amount Razor Xtreme Herbicide						
Desired Volume	0.4%	0.7%	1.0%	1.5%	4.0%	7.0%
1 Gallon	0.5 fluid ounce	0.9 fluid ounce	1.3 fluid ounces	2 fluid ounces	5 fluid ounces	9 fluid ounces
25 Gallons	0.8 pint	0.7 quart	1 quart	1.5 quarts	4 quarts	7 quarts
100 Gallons	1.6 quarts	2.8 quarts	1 gallons	1.5 gallons	4 gallons	7 gallons

2 tablespoons = 1 fluid ounce (fl oz)

For filling backpack and pump-up sprayers, consider mixing the appropriate amount of this product with water in a larger container and then filling the sprayer from the larger container.

6.5 Surfactants

Although not always required, surfactant may be added to spray solutions of this product. However, additional surfactant can increase the performance of this product at water carrier volumes above 30 gallons per acre or at application rates below 16 fluid ounces of this product per acre.

Nonionic surfactants that are labeled for use with herbicides may be used. Do not reduce rates of this product when adding surfactant. Use a surfactant concentration of 0.25 to 0.5 percent (1 to 2 quarts per 100 gallons of spray solution) when adding surfactant that contains at least 70 percent active ingredient, or a 1-percent surfactant concentration (4 quarts per 100 gallons of spray solution) when adding surfactant that contains less than 70 percent active ingredient. Read and carefully observe all precautionary statements and other information on the surfactant label.

6.6 Ammonium Sulfate

Unless otherwise directed, the addition of 1 to 2 percent dry ammonium sulfate by weight (8.5 to 17 pounds per 100 gallons of water), could increase the performance of this product on annual and perennial weeds, particularly under hard water conditions, drought conditions or when tank-mixed with certain residual herbicides. An equivalent amount of a liquid formulation of ammonium sulfate may also be used. Ensure that dry ammonium sulfate is completely dissolved in the spray tank before adding herbicides. Thoroughly rinse the spray system with clean water promptly after use to reduce corrosion.

When using ammonium sulfate, apply this product at rates directed on this label; lower application rates will result in reduced performance.

6.7 Colorants and Dyes

Colorants and marking dyes may be added to spray solutions of this product; however, they can reduce the performance of this product. Use colorants and dyes according to the manufacturer's directions.

6.8 Drift Reduction Additives

Drift reduction additives may be used with all equipment types, except wiper applicators, sponge bars and controlled droplet applicators (CDA). When a drift reduction additive is used, read and follow all precautions, limitations and all other information on the product label. Use of drift reduction additives can affect spray coverage, which could reduce the performance of this product.

7.0 APPLICATION EQUIPMENT AND TECHNIQUES

This product may be applied with the following application equipment:

Aerial Application Equipment-fixed-wing and helicopter

Ground Application Equipment-boom or boomless systems, pull-type sprayers, floaters, pick-up sprayers, spray coupes and other ground broadcast application equipment

Handheld Sprayers-backpack sprayers, pump-up pressure sprayers, handguns, handwands, mistblowers*, lances and other handheld and motorized spray equipment used to direct the spray onto weed foliage

* This product is not registered in California or Arizona for use in mistblowers.

Selective Application Equipment-shielded and hooded sprayers, wiper applicator, sponge bar

Injection Systems-aerial or ground injection sprayers

Controlled Droplet Applicator (CDA)-handheld or boom-mounted applicators that produce a spray consisting of a narrow range of droplet sizes

APPLY THIS PRODUCT USING PROPERLY MAINTAINED AND CALIBRATED EQUIPMENT CAPABLE OF ACCURATELY DELIVERING DESIRED VOLUMES. Do not apply this product through any type of irrigation system.

7.1 Spray Drift Management

AVOID CONTACT OF THIS HERBICIDE WITH FOLIAGE, STEMS, EXPOSED NON-WOODY ROOTS OR FRUIT OF CROPS, DESIRABLE PLANTS AND TREES, AS SEVERE PLANT INJURY OR DESTRUCTION COULD RESULT.

Do not allow the herbicide solution to mist, drip, drift, or splash onto desirable vegetation, as small quantities of this product can cause severe damage or destruction to the crop, plants or other vegetation on which application was not intended.

AVOID DRIFT. USE EXTREME CARE TO PREVENT INJURY TO DESIRABLE PLANTS AND CROPS WHEN APPLYING THIS PRODUCT.

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

The likelihood of injury occurring as the result of spray drift while applying this product increases when winds are gusty, as wind velocity increases, when wind direction is constantly changing or when there are other meteorological conditions that favor spray drift. When spraying, avoid combinations of pressure and nozzle type that will result in splatter or fine particles (mist) that are likely to drift.

TO PREVENT INJURY TO ADJACENT DESIRABLE VEGETATION, APPROPRIATE BUFFERS MUST BE MAINTAINED.

AVOID APPLYING THIS PRODUCT AT EXCESSIVE SPEED OR SPRAYER PRESSURE.

7.2 Aerial Application Equipment

Unless otherwise prohibited, all applications of this product described on this label may be made using aerial application equipment where appropriate, provided that the applicator complies with the precautions and restrictions specified on this label or on separate supplemental labeling published for this product.

DO NOT APPLY THIS PRODUCT USING AERIAL APPLICATION EQUIPMENT EXCEPT UNDER CONDITIONS SPECIFIED ON THIS LABEL OR ON SEPARATELY PUBLISHED SUPPLEMENTAL LABELING FOR THIS PRODUCT.

FOR SPECIFIC USE INSTRUCTIONS, RESTRICTIONS AND REQUIREMENTS RELATED TO THE AERIAL APPLICATION OF THIS PRODUCT IN ARKANSAS AND CALIFORNIA, OR SPECIFIC COUNTIES THEREIN, REFER TO THE LIMITATIONS ON AERIAL APPLICATION IN THAT STATE OR COUNTY PRESENTED IN THIS SECTION.

Unless otherwise directed, the maximum single application rate of this product is 44 fluid ounces per acre when using aerial application equipment. Apply this product at the appropriate rate in 3 to 15 gallons of water per acre unless otherwise directed on this label or on separate supplemental labeling for this product. Refer to the individual use sections of this label for application rates, spray volumes and additional directions for use.

Drift control reduction additives may be used.

Ensure uniform application. To avoid streaked, uneven or overlapped application, use appropriate marking devices.

Aircraft Maintenance

Thoroughly wash aircraft, especially landing gear, after each day of spraying to remove residues of this product accumulated during spraying or from spills. PROLONGED EXPOSURE OF THIS PRODUCT TO UNCOATED STEEL SURFACES COULD RESULT IN CORROSION AND POSSIBLE FAILURE OF THE PART. LANDING GEAR IS MOST SUSCEPTIBLE. The maintenance of an organic coating (paint) that meets aerospace specification MIL-C-38413 can help prevent corrosion.

AERIAL SPRAY DRIFT MANAGEMENT

The following drift management requirements must be followed to minimize off-target drift movement during aerial application. These requirements do not apply to forestry applications.

1. The distance of the outermost 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 followed.

Importance of 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 the application is made improperly, or under unfavorable environmental conditions, such as in windy, high temperature with low humidity, and/or inversion conditions as described below.

Controlling Droplet Size

- **Volume:** Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with the higher rated flows produce larger droplets.
- **Pressure:** Operate at a sprayer pressure towards the lower end of the range listed for the nozzle. Higher pressure reduces droplet size and does not improve canopy penetration. When higher flow rates are needed, use higher flow rate nozzles instead of increasing the pressure.
- **Number of nozzles:** Use the minimum number of nozzles that provide uniform coverage.
- **Nozzle orientation:** Orienting nozzles so that the spray is released backwards, parallel to the air stream, will produce larger droplets than other orientations. Significant deflection from the 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 larger droplets than other nozzle types.
- **Boom length:** For some use patterns, reducing the effective boom length to less than 3/4 of the wingspan or rotor length could further reduce drift without reducing swath width.
- **Application height:** Application must be made at a height of 10 feet or less above the top of the largest plants unless a greater height is required for aircraft safety. Making the application at the lowest height that is safe reduces the exposure of the droplets to evaporation and wind.

Swath Adjustment

When an application is made with a crosswind present, the swath will be displaced downwind. Therefore, on the upwind and downwind edges of the field, the applicator must compensate for this displacement by adjusting the path of the aircraft upwind. Increase the swath adjustment distance with increasing drift potential (higher wind, smaller droplets, etc.).

Wind

Drift potential is lowest at wind speeds of between 2 and 10 miles per hour. However, many factors, including droplet size and equipment type, determine drift potential at any given wind speed. Avoid application when wind speeds are below 2 miles per hour due to variable wind direction and high inversion potential. **NOTE:** Local terrain can influence wind patterns. Every applicator must be familiar with local wind patterns and how they affect drift.

Temperature and Humidity

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

Temperature Inversion

Do not apply this product during a temperature inversion as drift potential is high under these conditions. Temperature inversions restrict vertical air mixing, which causes small droplets to remain suspended 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 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

Apply this product only 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).

Avoid direct application to any body of water.

State Specific Limitations on Aerial Application

LIMITATIONS ON AERIAL APPLICATION IN CALIFORNIA ONLY

DO NOT apply this product using aerial application equipment in residential areas.

AVOID DRIFT – DO NOT APPLY WHEN WINDS ARE GUSTY OR UNDER ANY OTHER CONDITION THAT FAVORS DRIFT. DRIFT OF THIS PRODUCT ONTO ANY VEGETATION TO WHICH APPLICATION WAS NOT INTENDED CAN CAUSE DAMAGE. TO PREVENT INJURY TO ADJACENT DESIRABLE VEGETATION, USE PROPER AERIAL APPLICATION EQUIPMENT FITTED WITH APPROPRIATE NOZZLES AND MAINTAIN ADEQUATE BUFFERS.

Follow the directions below when making an aerial application near non-target crops, desirable annual vegetation, or desirable perennial vegetation after bud break and before total leaf drop.

1. Do not apply this product within 100 feet of all desirable vegetation or non-target crops.
2. If winds are blowing up to 5 miles per hour TOWARD desirable vegetation or non-target crops, do not apply this product within 500 feet of the desirable vegetation or crops.
3. If winds are blowing between 5 and 10 miles per hour TOWARD desirable vegetation or non-target crops, a buffer zone greater than 500 feet might be needed to protect the desirable vegetation or crops.
4. Do not apply this product using aerial application equipment when winds are blowing in excess of 10 miles per hour.
5. Do not apply this product using aerial application equipment when inversion conditions exist.

When tank-mixing this product with 2,4-D, only 2,4-D amine formulations may be applied in California using aerial application equipment. Tank mixtures of this product with 2,4-D amine formulations may be applied by air in California in fallow fields and in reduced tillage systems, and for alfalfa and pasture renovation applications only. This product, when tank-mixed with dicamba, may not be applied by air in California.

ADDITIONAL LIMITATIONS FOR AERIAL APPLICATION IN FRESNO COUNTY, CALIFORNIA ONLY

Always read and follow the label directions and precautionary statements for all products used in the aerial application.

The following information applies only from February 15 through March 31 within the following boundaries of Fresno County, California:

North: Fresno County line

South: Fresno County line

East: State Highway 99

West: Fresno County line

Observe the following directions to minimize off-site movement during aerial application of this product. Minimization of off-site movement is the responsibility of the grower, Pest Control Advisor and aerial applicator.

Written Directions

Written directions MUST be submitted by or on behalf of the applicator to the Fresno County Agricultural Commissioner 24 hours prior to the application. These written directions MUST state the proximity of surrounding crops and that conditions of each manufacturer's product label and this label have been satisfied.

Aerial Applicator Training and Equipment

Aerial application of this product is limited to pilots who have successfully completed a Fresno County Agricultural Commissioner and California Department of Pesticide Regulation approved training program for aerial application of herbicides. All aircraft must be inspected, critiqued in flight and certified at a Fresno County Agricultural Commissioner approved fly-in. Test and calibrate spray equipment at intervals sufficient to insure that proper rates of herbicides and adjuvants are being applied during commercial use. Applicator must document such calibrations and testing. Demonstration of performance at Fresno County Agricultural Commissioner approved fly-ins constitutes such documentation, or other written records showing calculations and measurements of flight and spray parameters acceptable to the Fresno County Agricultural Commissioner.

Application at Night – Do not apply this product by air earlier than 30 minutes prior to sunrise and/or later than 30 minutes after sunset without prior permission from the Fresno County Agricultural Commissioner.

To report known or suspected misuse of this product, call 1-800-332-3111.

LIMITATIONS ON AERIAL APPLICATION IN ARKANSAS ONLY

AVOID DRIFT. DO NOT APPLY INTO STILL AIR WHERE THERE IS A TEMPERATURE INVERSION LAYER LOW ENOUGH FOR FINE SPRAY PARTICLES TO BECOME SUSPENDED AND MOVE OUTSIDE THE TARGET AREA WHEN THE INVERSION LAYER MOVES. DO NOT APPLY WHEN WINDS ARE GUSTY OR UNDER ANY OTHER CONDITION THAT FAVORS DRIFT. DRIFT IS LIKELY TO CAUSE DAMAGE TO ANY VEGETATION CONTACTED. TO PREVENT INJURY TO ADJACENT DESIRABLE VEGETATION, APPROPRIATE BUFFER ZONES MUST BE MAINTAINED.

Apply this product at the appropriate rate in 3 to 15 gallons of water per acre.

Use sufficient carrier volume and appropriate equipment set-up to form droplets large enough to avoid drift potential. Coarse droplets in the 300 to 500 (VMD) micron range have a lower drift potential.

Applications are typically to be made with the nozzle release point at 8 to 15 feet above the top of the target plants unless a greater height is required for aircraft safety.

The distance of the outermost nozzles on the boom must not exceed 75 percent of the length of the wingspan or rotor. In many cases, reducing this distance to 65 percent of the length of the wingspan or rotor will improve drift control without affecting the swath width.

Nozzles must always discharge backward parallel with the air stream and never discharge downwards more than 45 degrees on fixed wing aircraft or forward of the prevailing airflow on rotary winged aircraft. Avoid the use of nozzles with wide-angle discharge.

Do not apply this product when winds are in excess of 10 miles per hour.

Do not apply when there is a low-level inversion where fine spray particles could be suspended in still air and move outside the target area when the inversion layer moves. These conditions can occur when wind speeds are less than 2 miles per hour.

Follow the directions below when an aerial application is made near non-target crops or other desirable vegetation:

1. Do not apply this product within 100 feet of non-target crops or any desirable vegetation.
2. If winds are blowing up to 5 miles per hour TOWARD non-target crops or desirable vegetation, do not apply this product within 500 feet upwind of the desirable vegetation or crop.
3. If winds are blowing between 5 and 10 miles per hour TOWARD non-target crops or desirable vegetation, a buffer zone greater than 500 feet might be needed to protect the crop or desirable vegetation.

7.3 Ground Application Equipment

Apply this product at the appropriate rate as specified on this label in 3 to 40 gallons of water per acre when making a broadcast application using ground application equipment, unless otherwise directed on this label or on separate supplemental labeling or Fact Sheets published for this product. As the weed density increases, increase the spray volume towards the upper end of this range to ensure complete coverage. Use nozzles that will avoid generating a fine mist. For enhanced results with ground application equipment, use flat-fan nozzles. Check spray pattern for uniform distribution of spray droplets.

7.4 Handheld Sprayers

When using a handheld sprayer, apply spray solutions of this product uniformly and completely to the foliage of target weeds using a coarse droplet spectrum and a spray-to-wet technique; do not spray to the point of runoff. For the appropriate concentration of this product in the spray solution and timing of application to control specific weeds, woody brush, trees and vines, refer to the "ANNUAL WEEDS RATE SECTION," "PERENNIAL WEEDS RATE SECTION" and "WOODY BRUSH, TREES AND VINES RATE SECTION" of this label.

Spot treatment application of this product for weed control in a cropping system using a handheld sprayer may be made only when specifically directed on this label or on separate supplemental labeling for this product. The crop sprayed with this product will be killed along with the weeds. Take care not to spray or allow spray to drift outside the target area in order to avoid unwanted crop destruction.

7.5 Selective Application Equipment

Selective application equipment allows this product to be applied to weeds growing near the crop or other desirable vegetation without killing the desirable vegetation. Selective application equipment must be capable of preventing all contact of the herbicide solution with the crop or other desirable vegetation and operated without spray mist escape, leakage, or dripping of the herbicide solution.

AVOID CONTACT OF THIS HERBICIDE WITH DESIRABLE VEGETATION. Contact of this product with desirable vegetation could result in unwanted plant damage or destruction. To the extent consistent with applicable law, such damage shall be the sole responsibility of the applicator.

Shielded and Hooded Sprayers

A shielded sprayer directs the herbicide solution to the target weeds while protecting the crop or other desirable vegetation from being contacted by the herbicide spray with an impervious material or shield. Use nozzles that provide uniform coverage within the application area. Keep shields properly adjusted to protect desirable vegetation.

A hooded sprayer is a type of shielded sprayer where the spray pattern is fully enclosed, including the top, sides, front and back, thereby shielding the crop or other desirable vegetation from the spray solution.

This product may be diluted in water and applied using a shielded or hooded sprayer to weeds listed on this label growing on any non-crop site described on this label and in between rows of plants (row middles) in any cropping system listed on this label.

Properly adjust the hood to protect desirable vegetation. Ensure that the hood is capable of completely enclosing the spray pattern. If necessary when applying around crops grown on raised beds, extend the front and rear flaps of the hooded sprayer downward to reach the ground in deep furrows.

A hooded sprayer must be configured and operated in a manner that minimizes bouncing and avoids raising the hood up off the ground surface at any time. If the hood is raised, spray particles can escape and come into contact with the crop, causing damage to or destruction of the crop or other desirable vegetation. Avoid operating this equipment on rough or sloping terrain where the spray hood is likely to rise up off the ground surface.

Use hoods designed to minimize excessive dripping or runoff down the inside of the hood, such as a single, low pressure, low-drift, flat-fan nozzle with an 80- to 95-degree spray angle positioned at the top center of the hood, with a spray volume of 20 to 30 gallons per acre.

The following procedures will help reduce the potential for crop injury when using a hooded sprayer:

- Operate the sprayer with the hood on the ground or skimming across the ground surface.
- Leave at least an 8-inch untreated strip over the drill row. (For example, if the crop row width is 38 inches, make the maximum width of the spray hood 30 inches.)
- Operate at a ground speed of no greater than 5 miles per hour to minimize bouncing of the hooded sprayer.
- Apply when wind speed is 10 miles per hour or less.
- Use low-drift nozzles that will provide uniform coverage within the application area.

Injury to a crop or other desirable vegetation can occur when application is made to foliage of weeds that come into direct contact with the crop or desirable vegetation. Do not apply this product when leaves of desirable vegetation are growing in direct contact with weeds. Droplets, mist, foam or splatter of the herbicide solution settling onto desirable vegetation can result in discoloration, stunting or destruction.

Wiper Applicator

A wiper applicator is a device that physically wipes this product or solutions of this product directly onto the target weed or cut stump. Any handheld device that is capable of physically wiping this product or solutions of this product directly onto the target weed or cut stump, such as a paint brush, may be used.

A mechanical wiper applicator, such as a rope wick or sponge bar that can be driven through a field over the top of a crop or other desirable vegetation to control weeds that are taller than the desirable vegetation, must be designed, maintained and operated to prevent the herbicide solution from contacting desirable vegetation.

When using a mechanical wiper applicator, adjust the height of the applicator to ensure adequate contact with weeds and so that the wiper contact point is a minimum of 2 inches above the desirable vegetation. Enhanced results can be obtained when more of the weed is exposed to the herbicide solution and weeds are a minimum of 6 inches above the desirable vegetation. Weeds that do not come into contact with the herbicide solution will not be affected. Poor contact can occur when weeds are growing in dense clumps, when operating in an area of severe weed infestation or when weed height varies dramatically. In these situations, more than one application of this product might be necessary.

Operate wiper applicators at a ground speed of no greater than 5 miles per hour. Performance in areas of heavy weed infestation can be improved by reducing speed, which will provide more time for re-saturation of the wiper with the herbicide solution and more contact time of the wiper with the weed. Enhanced results with a wiper applicator can be obtained when two applications are made travelling in opposite directions in the field.

Keep wiper surfaces clean.

Droplets, mist, foam or splatter of the herbicide solution settling onto desirable vegetation can result in discoloration, stunting or destruction. Avoid leakage or dripping onto desirable vegetation. Be aware that on sloping ground the herbicide solution can migrate to one side, causing dripping on the lower end and drying of the wiper on the upper end of the applicator.

Do not apply this product using a wiper applicator when weeds are wet.

Do not add surfactant to the herbicide solution when using a wiper applicator.

For Rope and Sponge Wick Applicators- use solutions ranging from 33 to 75 percent of this product in water.

For Panel Applicators- use solutions ranging from 33 to 100 percent (undiluted) of this product in water.

Mix only the amount of this product that will be used during a 1-day period, as reduced product performance can result from the use of solutions held in storage.

Clean wiper parts promptly after using this product by thoroughly flushing with water.

7.6 Injection Systems

This product may be used in aerial and ground injection spray systems as a liquid concentrate or diluted prior to injecting into the spray stream. Do not mix this concentrated product with the undiluted concentrate of other products for use in injection systems, unless otherwise directed.

7.7 Controlled Droplet Applicator (CDA)

The amount of this product applied per acre using a controlled droplet applicator (CDA) must be no less than the rate specified on this label for application using conventional broadcast application equipment.

A controlled droplet applicator produces a spray pattern that is not easily visible. Use extreme care to avoid spray or drift from contacting the foliage or any other green tissue of desirable vegetation, as plant damage or destruction could result.

8.0 NONCROP TERRESTRIAL USE SITES

This product may be used according to the directions for use described on this label to control weeds, woody brush, trees and vines listed on this label on any terrestrial site described on this label.

This product may be used to control weeds, woody brush, trees and vines on maintained landscapes, on improved and unimproved land, on lawns and turf and around ornamentals on industrial, commercial and residential sites, including airports, apartment complexes, chaparrals, ditch banks, driveways, dry ditches, dry canals, farmsteads, fencerows, forestry sites, golf courses, greenhouses, lumber yards, manufacturing sites, municipal sites, natural areas, nurseries, office complexes, ornamental beds, parks, parking areas, pastures, petroleum tank farms, pumping installations, railroads, rangeland, recreational areas, residential areas, roadsides, schools, shadehouses, sod and turfgrass seed farms, sports complexes, storage areas, substations, utility rights-of-way, utility sites, warehouse areas, wildlife food plots and wildlife management areas.

This product may be used for non-selective control of unwanted vegetation on any site listed on this label for trim-and-edge application around objects, including around building foundations, equipment storage areas and trees, along and in fences, and to eliminate unwanted weeds growing in and around established shrub beds and ornamental plantings. This product may also be used for complete elimination of vegetation from a terrestrial site prior to planting ornamentals, flowers, or turfgrass (sod or seed), and prior to land development, including prior to beginning construction projects or the laying of asphalt or other road material. Application of this product may be repeated, as needed, to maintain bare ground, up to a total application of 7 quarts per acre per year.

This product may be used for establishment and maintenance of fuel breaks, for establishing fire perimeters and black lines, along fire roads and to facilitate prescribed burning practices on any site described on this label.

This product may also be used for weed control or growth regulation on Christmas tree farms, farmsteads, production nurseries, and sod farms and turfgrass seed farms. Unless otherwise directed, application of this product may be made according to the directions for use in the sections that follow on any of these sites using any method of application described on this label to control any weeds, woody brush, trees and vines listed in the "ANNUAL WEEDS RATE SECTION," "PERENNIAL WEEDS RATE SECTION" and "WOODY BRUSH, TREES AND VINES RATE SECTION" of this label.

9.0 ADDITIONAL NONCROP SITE MANAGEMENT INFORMATION

The following sections contain additional use information specifically related to certain use sites. Unless otherwise directed, any application of this product described in the "WEEDS CONTROLLED" section or any other section of this label may be made on the use sites described in the sections that follow, where applicable, using any method of application described on this label that is appropriate.

9.1 Forestry, Hardwood and Christmas Tree Management

This product may be used for control or partial control of woody brush, trees and herbaceous weeds on any tree site, including forestry settings, Christmas tree plantations, and silvicultural and production nursery sites, using any method of application listed on this label. See the "WEEDS CONTROLLED" section of this label for application rates and specific use directions.

Weed Management, Site Preparation

This product may be used to control or partially control undesirable woody brush, trees, vines and herbaceous weeds listed on this label for preparing sites prior to planting any tree species, including Christmas trees, eucalyptus trees and hybrid tree cultivars, and for controlling weeds around established trees, for the release of conifer and hardwood trees, establishing wildlife openings and maintaining roads on any tree site.

TANK MIXTURES: This product may be applied in a tank-mix with the products listed in this section to increase the spectrum of vegetation controlled. Any application rate of this product listed on this label may be used in a tank-mix with the following products for tree site management, including site preparation, provided that the product is labeled for the use on the site of application and prior to planting the desired species. Refer to the individual label of all products used in the tank mixture for approved uses and application rates. Read and follow directions for use and precautions for each product used, including planting interval restrictions, if any. Use this product according to the most restrictive precautionary statements of any product in the mix.

imazapyr; metsulfuron methyl; sulfometuron methyl; triclopyr

Patriot; Polaris; Spyder Extra; Tahoe

For control of herbaceous weeds, apply these tank-mix products at the lower end of the application rate range specified on the product label. For control or partial control of dense stands or for hard-to-control woody brush, trees and vines, apply these products at an application rate or spray solution concentration towards the higher end of the given range.

Conifer Release

This product may be broadly applied over the top of conifer tree species listed in this section after formation of final conifer resting buds in the fall or prior to initial bud swelling in the spring for control, partial control or suppression of herbaceous weeds and hardwoods listed in the "WEEDS CONTROLLED" section of this label to facilitate the release of these tree species in a forestry, plantation or nursery setting. Unless otherwise directed, make this application only where conifers have been established for a minimum of one growing season.

PRECAUTIONS: Conifer injury can occur when this product is applied at rates higher than prescribed on this label, where spray applications overlap, if application is made when conifers are actively growing, or when they are growing under stress from drought, flood, improper planting or insect, animal or disease damage.

Conifer Release Outside the Southeastern United States

For release of the following conifer species growing for a minimum of one growing season in most areas outside the southeastern United States, apply 22 to 44 fluid ounces of this product per acre as a broadcast application over the top of the conifer trees.

Douglas fir	Hemlock	California redwood
Fir species	Pines*	Spruce

*Includes all species **except** loblolly pine, longleaf pine, shortleaf pine or slash pine.

Apply 22 to 36 fluid ounces of this product for release of Douglas fir, pine and spruce that have been established for only one growing season (except in California).

For release of spruce (*Picea* spp.) in Maine, Michigan, Minnesota, New Hampshire and Wisconsin, up to 2 quarts of this product may be applied after formation of final resting buds in the fall for control of woody brush and tree species.

PRECAUTIONS: Ensure that the conifers are well hardened off before application of this product. The addition of non-ionic surfactants to spray solutions of this product when making over-the-top conifer release applications could cause conifer injury.

Conifer Release in the Southeastern United States

For release of the following conifer species established for more than one growing season in the southeastern United States, apply 32 to 54 fluid ounces of this product per acre in the fall as a broadcast application over the top of the trees. For release of these species after only one growing season, apply only 22 fluid ounces of this product per acre.

Eastern white pine	Longleaf pine	Slash pine
Loblolly pine	Shortleaf pine x	Virginia pine

TANK MIXTURES: This product may be applied for conifer release in a tank-mix with the following products to provide a broader spectrum of postemergence weed control and for residual control of weeds listed on the label of those products. Only apply these tank mixtures over the top of conifer species that are approved for this use for all products in the mix. Refer to the individual product labels for approved uses and application rates. Read and follow all directions for use and precautions for each product used. Use this product according to the most restrictive precautionary statements of any product in the mixture.

atrazine; imazapyr; sulfometuron methyl

Polaris; Spyder Extra

For release of Douglas fir established for a minimum of one growing season prior to bud swell in early-spring, apply 22 fluid ounces of this product in a tank-mix with 4 pounds (active ingredient) of atrazine per acre.

For herbaceous release of loblolly pine, Virginia pine and longleaf pine in the spring and early-summer, apply 11 to 16 fluid ounces of this product in a tank-mix with 2 to 4 ounces of Spyder Extra per acre.

Late-Summer and Fall after Resting Bud Formation

For release of jack pine and white spruce, apply 22 to 44 fluid ounces of this product in a tank-mix with 1 to 3 ounces of Spyder Extra per acre. For release of white pine, apply 22 to 44 fluid ounces of this product in a tank-mix with 1 to 1.5 ounces of Spyder Extra per acre.

For release of Douglas fir, apply 22 to 32 fluid ounces of this product in a tank-mix with 2 to 6 ounces of Polaris per acre.

For release of balsam fir and red spruce, apply 44 fluid ounces of this product in a tank-mix with 1 to 2.5 ounces of Polaris per acre.

9.2 Native and Wildlife Habitat Management

This product may be used to control exotic and other undesirable vegetation in wildlife habitat and natural areas, including riparian and estuarine areas, rangeland, and wildlife refuges. Application may be made to allow recovery of native plant species or prior to planting desirable native species, and for similar broad-spectrum vegetation control. Spot treatment, cut stump, cut stem, stem injection, wiper applicator and all other methods of application listed on this label may be used to selectively remove unwanted plants for habitat management and enhancement.

This product may also be used to eliminate annual and perennial weeds prior to planting wildlife food plots. Any wildlife food species may be planted after applying this product or native species may be allowed to repopulate the area. If tillage is needed to prepare a seedbed, wait a minimum of 7 days after application before tilling to allow translocation of this product into underground plant parts.

9.3 Ornamental and Production Nursery Management

All uses of this product described on this label may be used in a plant nursery setting using any method of application described.

This product may be used to control weeds growing around established woody ornamental species, such as arborvitae, azalea, boxwood, crabapple, eucalyptus, euonymus, fir, Douglas fir, jojoba, hollies, lilac, magnolia, maple, oak, poplar, privet, pine, spruce and yew. This product may also be used to trim and edge around potted plants and other objects in a plant nursery.

This product may also be used to clear an area of unwanted vegetation prior to planting any ornamental plant, tree, shrub or other plants.

PRECAUTIONS: Protect desirable plants from the spray solution using shields or coverings made of waterproof material. Take care to avoid contact of spray, drift or mist with foliage, green stems or immature bark of established ornamental species.

Greenhouse/Shadehouse

This product may be used to control weeds growing in and around greenhouses and shadehouses.

RESTRICTIONS: Desirable vegetation must not be present during application in a greenhouse. Turn air circulation fans off before applying this product inside a greenhouse or shadehouse and until the application solution has dried.

9.4 Commercial, Residential and Recreational Area Management

All applications of this product described on this label may be used on commercial, residential and recreational areas, including parks, schools and athletic fields, using any method of application described on this label, including spot treatment of unwanted vegetation, trim-and-edge application around trees, fences, walking paths, buildings, sidewalks, nature trails, and other objects in these areas, to eliminate unwanted weeds growing in established shrub and ornamental beds, for turf management and renovation, and to eliminate vegetation from a site prior to development, including prior to planting an area to ornamentals, flowers or turfgrass (sod or seed), or beginning construction projects.

9.5 Pasture Management

The use of this product in pastures includes use on bahiagrass, bermudagrass, bluegrass, brome, fescue, guineagrass, kikuyugrass, orchardgrass, pangola grass, ryegrass, Timothy, and wheatgrass.

Preplant, Preemergence, Pasture Renovation

This product may be applied prior to planting or emergence of forage or perennial grasses. Refer to the "WEEDS CONTROLLED" section of this label for application rates of this product for control of specific weeds.

RESTRICTIONS: If the total application rate of this product is 2 quarts per acre or less, no waiting period between application and feeding or livestock grazing is required. If the rate is greater than 2 quarts per acre, remove domestic livestock before application and wait a minimum of 8 weeks after application before grazing or harvesting.

Spot Treatment, Wiper Applicator

This product may be applied in pastures as a spot treatment or over the top of desirable grasses using a wiper applicator to control taller growing weeds. For enhanced weed control, remove domestic livestock before application to allow for sufficient plant growth and wait a minimum of 7 days after application before grazing livestock or harvesting for feed. See additional instructions on the use of wiper applicators in the "APPLICATION EQUIPMENT AND TECHNIQUES" section of this label.

RESTRICTIONS: For spot treatment or use with a wiper applicator at rates of 2 quarts per acre or less, this product may be applied over the entire pasture or any portion of it. At rates greater than 2 quarts per acre, this product may be applied over no more than 10 percent of the total pasture at any one time. Application may be repeated in the same area at 30-day intervals.

Weed Suppression in Dormant Pastures

This product may be applied in dormant pastures to suppress competitive growth and seed production of annual weeds and other undesirable vegetation. Apply 8 to 11 fluid ounces of this product per acre using broadcast application equipment on pastures in late-fall after desirable perennial grasses have reached dormancy or in late-winter before desirable perennial grasses break dormancy and initiate green growth.

PRECAUTIONS: Higher application rates may be used for hard-to-control weeds; however, higher rates can cause stand reduction. Some stunting of perennial grasses can occur if broadcast application is made when they are not dormant.

RESTRICTIONS: No waiting period is required between application and grazing or harvesting for feed. Do not apply more than 2 quarts of this product per acre per year onto pasture grasses except for renovation. If reseeding is needed due to severe stand reduction, no waiting period is required after application of this product before seeding the pasture grasses listed at the beginning of this section; for all other pasture grasses, wait a minimum of 30 days after application before seeding.

9.6 Railroad Management

All uses of this product described in the "WEEDS CONTROLLED" or any other section of this label may be used on railroad sites using any method of application described. Application of this product along railroad rights-of-way may be made in up to 80 gallons of spray solution per acre.

Bare Ground, Ballast and Shoulders, Crossings, Spot Treatment

This product may be used to maintain bare ground on railroad ballast and shoulders and reduce the need for mowing and mechanical brush removal along railroad rights-of-way. Application of this product may be repeated as weeds continue to emerge in order to maintain bare ground, up to a maximum total application rate of 7 quarts of this product per acre per year.

TANK MIXTURES: This product may be applied in a tank mixture with the following products for enhanced control of woody brush and trees for bare ground, ballast and shoulder, crossing and spot treatment, and brush, tree and vine control on railroad sites, provided that the product used is labeled for these applications. Refer to the individual label of all products used in the tank mixture for approved uses and application rates. Always read and follow label directions for each product in the mix.

2,4-D; atrazine; bromacil; chlorsulfuron; clopyralid; dicamba; diquat; diuron; hexazinone; imazapyr; metsulfuron methyl; pelargonic acid; simazine; sulfometuron methyl; sulfosulfuron; tebuthiuron; triclopyr

Hyvar; Krovar; Outrider; Patriot; Polaris; Princep; Sahara; Scythe; Spike; Spyder Extra; Tahoe; Telar; Transline; Velpar; Weedar 64

Brush, Tree and Vine Control

This product may be used to control woody brush, trees and vines along railroad rights-of-way. Apply 2.5 to 7 quarts of this product in up to 80 gallons of spray solution per acre as a broadcast application using either a boom or boomless sprayer. Apply a 0.7- to 1.5-percent solution of this product when using high-volume application equipment with a spray-to-wet technique, or a 4- to 7-percent solution when using low-volume directed sprays for spot treatment.

TANK MIXTURES: This product may be applied in a tank-mix with one or more of the following products for enhanced control of woody brush, trees and vines along railroad rights-of-way, provided that the product used is labeled for use on these sites. Refer to the individual product label for approved sites and application rates.

chlorsulfuron; clopyralid; dicamba; fosamine; hexazinone; imazapyr; metsulfuron methyl; picloram; triclopyr

Krenite; Patriot; Polaris; Tahoe; Telar; Tordon; Transline; Vanquish; Velpar

Weed Control in Dormant and Actively Growing Bermudagrass

This product may be used to control or partially control many annual and perennial weeds in dormant and actively growing bermudagrass along railroad rights-of-way. See the "WEEDS CONTROLLED" section of this label for directions for use of this product for weed control in grasses.

9.7 Rangeland Management

This product will control or suppress many annual weeds growing in perennial cool- and warm-season grass rangeland. Slight discoloration of the desirable grasses could occur, but will re-green and resume growing under moist soil conditions as effects of this product wear off.

Preventing seed production is critical to the control of invasive annual grassy weeds on rangeland. Yearly application of this product to eliminate invasive annual weeds before they produce seed will help eliminate viable weed seeds from the soil. Delay grazing of the area after application of this product to allow desirable perennials to grow, flower and re-seed the area.

Bromus Control: A broadcast application of 5 to 11 fluid ounces of this product per acre will control or suppress downy brome (*Bromus tectorum*), Japanese brome (*Bromus japonicus*), soft chess (*Bromus mollis*), cheatgrass (*Bromus secalinus*), cereal rye and jointed goatgrass on rangeland. For enhanced results, apply this product when most brome plants are in early-flower and before the plants, including seedheads, turn color. Allow for secondary weed flushes to occur after spring rains to further deplete the seed reserve in the soil and encourage perennial grass conversion on weedy sites. Apply this product in the fall in areas where spring moisture is normally limited and fall germination allows for good weed growth and weed seed depletion.

Medusahead Control: To control or suppress medusahead, apply 11 fluid ounces of this product per acre at the 3-leaf stage. Delaying application beyond this stage will result in reduced or unacceptable control. Controlled burning prior to application of this product will eliminate the thatch layer produced by slowly decaying culms. Allow new weed growth to occur before applying this product after a burn. Repeat this application annually to eliminate medusahead seeds in the soil and allow desirable perennial grasses to repopulate the area.

RESTRICTIONS: Do not apply more than 2 quarts of this product per acre per year on rangeland. Do not use ammonium sulfate when applying this product on rangeland grasses. No waiting period between application of this product and feeding or livestock grazing is required.

9.8 Roadside Management

All uses of this product described on this label may be used for weed management along roadways, including weed control in dormant and active bermudagrass and bahiagrass, weed control along shoulders and under and around guardrails, signposts and other objects along the road, using any method of application described on this label.

TANK MIXTURES: This product may be tank-mixed with the following products for shoulder, guardrail, spot treatment and maintaining bare ground applications, provided that the product used is labeled for use on these sites. Refer to the individual product labels for approved uses and application rates.

2,4-D; atrazine; bromacil; chlorsulfuron; clopyralid; dicamba; diuron; fosamine; hexazinone; imazapic; imazapyr; metsulfuron methyl; oryzalin; oxadiazon; pendimethalin; picloram; proflam; simazine; sulfometuron; sulfosulfuron; triclopyr

Crossbow; Endurance; Gallery; Krovar; Landmark; Outrider; Patriot; Plateau; Poast; Ronstar; Sahara; Spyder Extra; Surflan; Telar; Velpar; Weedar 64

9.9 Utility Management

This product may be used along electrical power, pipeline and telephone rights-of-way, and on all sites associated with these utility rights-of-way, including substations, access roads and railroads, and along similar rights-of-way that run in conjunction with utilities, for spot treatment of unwanted vegetation, side-trimming, trim-and-edge application around objects, weed control prior to planting a utility site to ornamentals, flowers, or turfgrass (sod or seed), turf management, to eliminate unwanted weeds growing in established shrub or ornamental beds, to prepare or establish wildlife openings and for eliminating vegetation prior to beginning construction projects. Application of this product may be repeated as needed to maintain bare ground as weeds continue to emerge, up to a maximum application rate of 7 quarts per acre per year.

TANK MIXTURES: This product may be tank-mixed with the following products for use on utility sites, provided that the product used is labeled for use on these sites. Refer to the individual product label for approved uses and application rates. For control of herbaceous weeds, use a lower application rate or spray solution concentration within the given ranges for these tank-mix products and increase the rate or concentration toward the higher end of the ranges for control of dense stands or hard-to-control woody brush, trees and vines.

2,4-D; atrazine; bromacil; chlorsulfuron; clopyralid; dicamba; diuron; fosamine; hexazinone; imazapic; imazapyr; metsulfuron methyl; oryzalin; pendimethalin; proflam; simazine; sulfometuron methyl; sulfosulfuron; triclopyr

Endurance; Krenite; Krovar; Outrider; Patriot; Polaris; Plateau; Sahara; Spyder Extra; Surflan; Tahoe; Telar; Transline; Vanquish; Velpar; Weedar 64

Ensure that the Tahoe product is thoroughly mixed with water according to label directions before adding this product to the spray mixture. Maintain continuous agitation when adding this product in order to avoid tank-mix compatibility problems.

For enhanced results with side trimming, apply this product in a tank-mix with Tahoe.

9.10 Bioenergy

This product may be applied as preplant broadleaf weed control, preemergent broadleaf weed control, and for broadleaf weed control when the crop is in a state of dormancy, for giant reedgrass (*Arundo donax*), switchgrass (*Panicum virgatum*) giant Miscanthus (*Miscanthus x giganteus*) and other non-food perennial grass bioenergy crops. It also can be applied as preplant broadleaf weed control, preemergent broadleaf weed control, and for broadleaf weed control when the crop is in a state of dormancy, for hybrid poplar trees, cottonwood trees and willow trees grown as bioenergy crops. Apply when weeds are actively growing.

This product can be used to control undesirable vegetation when the bioenergy crop is in a state of dormancy for broadleaf weed control. Bioenergy crops include giant reedgrass (*Arundo donax*), switchgrass (*Panicum virgatum*) giant Miscanthus (*Miscanthus x giganteus*), and other non-food perennial grass bioenergy crops. It also can be used to control undesirable vegetation in hybrid poplar trees, cottonwood trees and willow trees grown as bioenergy crops when the bioenergy crop is in a state of dormancy.

For specific rates of application for various annual and perennial weeds, see the "WEEDS CONTROLLED" section of the label. Applications may be made with wiper applicators or conventional spray equipment. For selective applications with broadcast spray equipment, apply 8 to 10.7 fluid ounces per acre of this product in early spring before desirable bioenergy crops break dormancy and initiate green growth. Late fall applications can be made after desirable perennial grasses have reached dormancy. Treat when bioenergy crops are in a state of dormancy. Bioenergy crop injury may occur if applications are made when crops are not dormant.

PRECAUTIONS:

- Use sufficient gallonage for thorough and uniform coverage, but a minimum of 8 gallons per acre for broadcast application.
- Apply to actively growing grass and broadleaf weeds.
- This product does not provide residual control; therefore, delay application until maximum weed emergence. A second treatment may be necessary to control later germinating weeds.

RESTRICTIONS:

- Maximum of 5.3 quarts of this product per acre per year.
- Do not make more than 2 applications per year.
- Applications must be made at least 30 days prior to planting.
- Do not apply through any type of irrigation system.
- Do not hay or graze treated plantings.
- Treated plantings not to be consumed by human or animal.

10.0 NONCROP WEEDS CONTROLLED

Read the entire label before proceeding to use this product.

Always use the higher application rate or spray solution concentration of this product within a given range when weed growth is heavy or dense, or when weeds are growing in an undisturbed (non-cultivated) area.

Poor weed control could be realized if application is made to weeds covered with dust. For weeds that have been mowed, grazed or cut, allow re-growth to occur prior to application of this product.

Refer to the sections that follow for application rates and timing of application for the control of annual and perennial weeds, woody brush, trees and vines.

10.1 Weed Control, Renovation and Chemical Mowing in Turf

The use of this product described in this section may be applied to turfgrass growing on any terrestrial site listed on this label. Ensure that any tank-mix product applied with this product is labeled for the intended use and on the site of application.

Weed Control in Dormant Bermudagrass and Bahiagrass

This product may be used to control or suppress many winter annual weeds and tall fescue for effective release of dormant bermudagrass and bahiagrass prior to spring green-up in areas where these turfgrasses are desirable ground covers and some temporary injury or discoloration can be tolerated.

Apply 5 to 44 fluid ounces of this product in 10 to 40 gallons of water per acre when bermudagrass and bahiagrass are dormant and prior to spring green-up.

Application of more than 11 fluid ounces of this product per acre on highly maintained bermudagrass and bahiagrass turf, such as golf courses and lawns, could result in injury or delayed green-up in the spring.

For residual weed control in dormant bermudagrass and bahiagrass, this product may be tank-mixed with Outrider or Spyder Extra herbicides. Apply 5 to 44 fluid ounces of this product in a tank-mix with 0.75 to 1.33 ounces of Outrider herbicide per acre, or with 0.25 to 1 ounce of Spyder Extra herbicide in 10 to 40 gallons of water per acre. To avoid delays in green-up and minimize injury, apply no more than 1 ounce of Spyder Extra herbicide per acre on bermudagrass and no more than 0.5 ounce on bahiagrass and avoid application when these grasses are in a semi-dormant condition.

DO NOT apply this product in a tank-mix with Outrider or Spyder Extra herbicides on highly maintained bermudagrass and bahiagrass turf, such as on golf courses and lawns.

Weed Control in Actively Growing Bermudagrass

This product may be used to control or partially control many annual and perennial weeds in actively growing bermudagrass. Some bermudagrass injury could result from the application of this product, but the bermudagrass will recover under moist conditions once the effects of the product wear off. Use only on well-established bermudagrass where some temporary injury or discoloration can be tolerated.

Apply 11 to 32 fluid ounces of this product in 10 to 40 gallons of spray solution per acre. Use a lower application rate within this range when controlling annual weeds less than 4 inches tall (or runner length) and increase the rate towards the upper end of the range as weeds increase in size or as they approach flower or seedhead formation. At these application rates, this product will provide partial control of the following perennial weeds in actively growing bermudagrass:

Bahiagrass	Fescue, tall	Trumpet creeper
Bluestem, silver	Johnsongrass	Vaseygrass

PRECAUTIONS: Applying more than 11 fluid ounces of this product per acre on highly maintained bermudagrass, such as on golf courses and lawns, could cause unacceptable turf injury and discoloration.

For a broader weed control spectrum in actively growing bermudagrass, this product may be tank-mixed with Outrider or Spyder Extra herbicides. Apply these tank-mixtures only on well-established bermudagrass where some temporary injury or discoloration can be tolerated. Make no more than one application of this product in these tank mixtures in the same season, otherwise the bermudagrass could be severely injured.

Apply 5 to 22 fluid ounces of this product per acre in a tank-mix with 0.75 to 1.33 ounces of Outrider herbicide for control or partial control of johnsongrass and other weeds listed on the Outrider herbicide label. Use the higher application rate of both products within the given ranges for control of annual or perennial weeds greater than 6 inches tall.

Apply 11 to 22 fluid ounces of this product per acre in a tank-mix with 1 to 2 ounces of Spyder Extra herbicide per acre for enhanced control of weeds listed on the Spyder Extra herbicide label. Use a lower application rate of each product within the given ranges to control annual weeds listed on the labels that are less than 4 inches tall (or runner length) and increase the rates toward the upper end of the ranges as annual weeds increase in size and approach the flower or seedhead stage. This tank-mix will provide partial control of the following perennial weeds in actively growing bermudagrass:

Bahiagrass	Dallisgrass	Fescue, tall	Trumpetcreeper
Bluestem, silver	Dock, curly	Johnsongrass	Vaseygrass
Broomsedge	Dogfennel	Poorjoe	Vervain, blue

PRECAUTIONS: Apply these tank mixtures only on well-established bermudagrass where some temporary injury or discoloration can be tolerated. DO NOT apply this product in a tank mixture with Outrider herbicide or Spyder Extra herbicide on highly maintained bermudagrass, such as on golf courses and lawns.

Weed Control in Actively Growing Bahiagrass

For suppression of vegetative growth and seedhead inhibition of bahiagrass for approximately 45 days, apply 4 fluid ounces of this product in 10 to 40 gallons of water per acre 1 to 2 weeks after full green-up or after mowing to a uniform height of 3 to 4 inches prior to seedhead emergence.

For growth suppression of bahiagrass for up to 120 days, apply 3 fluid ounces of this product per acre, followed by an application of 1.5 to 3 fluid ounces per acre about 45 days later. Make no more than two growth suppression applications per year.

For broad spectrum weed control in actively growing bahiagrass, this product may be tank-mixed with Outrider or Spyder Extra herbicides.

Apply 1.5 to 3.5 fluid ounces of this product in a tank-mix with 0.75 to 1.33 ounces of Outrider herbicide per acre to control perennial weeds or annual weeds greater than 4 inches in height.

Apply 4 fluid ounces of this product in a tank-mix with 0.25 ounce of Spyder Extra herbicide per acre 1 to 2 weeks following an initial spring mowing for enhanced control of weeds listed on the Spyder Extra herbicide label in actively growing bahiagrass. Make this application only once per year.

PRECAUTIONS: Apply these tank mixtures only on well-established bahiagrass where some temporary injury or discoloration can be tolerated.

Turf Renovation

This product controls most existing vegetation prior to renovating turfgrass areas or establishing turfgrass grown for seed or sod. For maximum control of existing vegetation, delay planting or sodding until after determining if any re-growth of underground plant parts will occur. Where repeat applications are necessary, sufficient re-growth must be attained prior to re-application of this product. Summer or fall application provides enhanced control of warm-season grasses, such as bermudagrass. For managed turfgrass, apply this product after omitting at least one regular mowing to allow sufficient growth for good interception of the spray solution.

This product has no residual soil activity and will not affect plants, seed or sod planted back into the area after application.

A handheld sprayer may be used for spot treatment of unwanted vegetation growing in existing turfgrass. Broadcast application or spot treatment using a handheld sprayer may be used to control sod remnants or other unwanted vegetation after sod is harvested.

PRECAUTIONS: Do not disturb soil or underground plant parts before application of this product. Delay tillage and renovation techniques, such as vertical mowing, coring or slicing, a minimum of 7 days after application to allow translocation of this product into underground plant parts.

RESTRICTIONS: If application rates total 2 quarts of this product per acre or less, no waiting period between application and feeding or livestock grazing is required. If the rate is greater than 2 quarts per acre, remove domestic livestock before application and wait 8 weeks after application before grazing or harvesting.

Chemical Mowing

This product may be used to suppress growth of perennial and annual grasses listed in this section to serve as a substitute for mowing.

Perennial Grasses – apply 4 fluid ounces of this product per acre to suppress growth of Kentucky bluegrass, or 5 fluid ounces to suppress tall fescue, fine fescue, orchardgrass, quackgrass or reed canarygrass in 10 to 40 gallons of spray solution per acre after grasses have greened up to at least 75 percent green color in the spring, or 7 to 10 days after mowing when sufficient re-growth has occurred to provide a desirable height for growth regulation. Use chemical mowing only in areas where some temporary injury or discoloration of perennial grasses can be tolerated.

Annual Grasses – apply 3 to 4 fluid ounces of this product in 10 to 40 gallons of spray solution per acre to suppress growth of some annual grasses, such as annual ryegrass, wild barley and wild oats when actively growing in coarse turf on roadsides or other industrial areas and before the seedheads are in the boot stage of development. This application could injure the desired annual grasses.

PRECAUTIONS: Use this product for chemical mowing only in areas where some temporary injury or discoloration of perennial and annual grasses can be tolerated.

10.2 Annual Weeds

Annual weeds are easiest to control when they are small and actively growing. New leaf development indicates active growth.

To control or partially control the annual weeds listed in this section when they are less than 6 inches in height or runner length and actively growing, apply 22 fluid ounces of this product per acre. If they are over 6 inches in height or runner length, or slowly growing under stressed conditions, increase the application rate to 1 to 2.7 quarts per acre, depending on weed height and severity of the poor growing conditions.

For application using a handheld sprayer with a spray-to-wet technique, apply a 0.4-percent solution of this product to annual weeds less than 6 inches in height or runner length prior to seedhead formation in grasses or bud formation in broadleaf weeds. To control annual weeds over 6 inches tall, or even smaller weeds growing under stressed conditions, apply a 0.7- to 1.5-percent solution. Apply the maximum concentration of this product within this range for hard-to-control weeds or weeds over 24 inches tall.

For the control of annual weeds using a handheld controlled droplet applicator (CDA), apply a 15-percent solution of this product (19 to 20 fluid ounces of this product per gallon of spray solution) at a flow rate of 2 fluid ounces of spray solution per minute and a walking speed of 1.5 miles per hour (1 quart of spray solution per acre). When using a vehicle-mounted CDA, apply the appropriate amount of this product in 2 to 15 gallons of water per acre.

For enhanced control, do not mow, cut, till, burn or disturb vegetation in the application area for a minimum of 3 days after application.

This product has no residual soil activity and does not control emergence of new annual weeds from seed. Subsequent applications of this product will be needed to control weeds that continue to emerge.

ANNUAL WEED SPECIES

Anoda, spurred	Foxtail	Ragweed, common
Balsam apple ¹	Foxtail, Carolina	Ragweed, giant
Barley	Geranium, Carolina	Rice, red
Barley, little	Goatgrass, jointed	Rocket, London
Barnyardgrass	Goosegrass	Rocket, yellow
Bassia, fivehook	Groundsel, common	Rye
Bittercress	Henbit	Ryegrass
Bluegrass, annual	Horseweed/Marestail (<i>Coryza canadensis</i>)	Sandbur, field
Bluegrass, bulbous	Itchgrass	Sesbania, hemp
Brome, downy	Johnsongrass, seedling	Shattercane
Brome, Japanese	Junglerice	Shepherd's-purse
Broomsedge	Knotweed	Sicklepod
Buttercup	Kochia	Signalgrass, broadleaf
Castor bean ²	Lambsquarters	Smartweed, ladystumb
Cheatgrass	Lettuce, prickly	Smartweed, Pennsylvania
Cheeseweed (<i>Malva parviflora</i>)	Mannagrass, eastern	Sorghum, grain (milo)
Chervil	Mayweed	Sowthistle, annual
Chickweed	Medusahead	Spanish needles ³
Cocklebur	Morningglory (<i>Ipomoea</i> spp.)	Speedwell, corn
Copperleaf, hophornbeam	Mustard, blue	Speedwell, purslane
Copperleaf, Virginia	Mustard, tansy	Sprangletop
Coreopsis, plains/tickseed	Mustard, tumble	Spurge, annual
Corn	Mustard, wild	Spurge, prostrate
Crabgrass	Nightshade, black	Spurge, spotted
Cupgrass, woolly	Oats	Spurry, umbrella
Dwarf dandelion	Panicum, browntop	Starthistle, yellow
Eclipta	Panicum, fall	Stinkgrass
False dandelion	Panicum, Texas	Sunflower
Falseflax, smallseed	Pennycress, field	Teaweed / Prickly sida
Fiddleneck	Pepperweed, Virginia	Thistle, Russian

(continued)

Filaree	Pigweed	Velvetleaf
Fleabane, annual	Puncturevine	Wheat
Fleabane, hairy (<i>Conyza bonariensis</i>)	Purslane, common	Wild oats
Fleabane, rough	Pusley, Florida	Witchgrass

¹ For control of balsam apple, apply this product using handheld equipment only.

² Control of castor bean can also be achieved by injecting 4 milliliters of this concentrated (undiluted) product per plant into the lower portion of the main stem.

³ For control of Spanish needles, apply 44 fluid ounces of this product per acre.

10.3 Perennial Weeds

Enhanced control of perennial weeds can be obtained when this product is applied when target weeds are small and actively growing. New leaf development indicates active growth. If application of this product must be made to larger weeds or to weeds that are slowly growing under stressful conditions, apply at a rate or spray solution concentration towards the upper end of the specified range.

If weeds have been mowed or tilled, do not apply this product until plants have resumed active growth and have reached the specified stage of growth, or sufficient growth has been achieved to allow for good interception of the spray solution. For enhanced control, do not mow, cut, till, burn or disturb vegetation in the application area for a minimum of 7 days after application.

For control of perennial weeds listed on this label using backpack or handheld equipment and a low-volume application technique, apply a 4- to 7-percent solution of this product over the crown of the target plant to cover 50 percent of the upper plant foliage.

For control of perennial weeds with a handheld controlled droplet applicator (CDA), apply a 15- to 30-percent solution of this product (19 to 38 fluid ounces of this product per gallon of spray solution) at a flow rate of 2 fluid ounces of spray solution per minute and a walking speed of 0.75 mile per hour (2 to 4 quarts of spray solution per acre). When using a vehicle-mounted CDA, apply the required amount of this product, as indicated in the following table, in 2 to 15 gallons of water per acre.

Application of this product in the fall must be made before a killing frost.

This product has no soil activity and does not control emergence of perennial weeds from seed and dormant underground roots, rhizomes or tubers present in the soil at the time of application. More than one application of this product will be necessary for continued control of weeds that emerge following application.

PERENNIAL WEEDS RATE TABLE

Perennial Weed Species	Broadcast Rate (quarts/acre)	Handheld Sprayer Concentration (%Solution)
Alfalfa*	1 – 1.5	1.5%
Alligatorweed*	3	1%
Apply this product when most of the target plants are in bloom. More than one application will be needed to achieve control.		
Anise (fennel)	1.3 – 2.7	1 – 1.5%
Bahiagrass	2 – 3.3	1.5%
Beachgrass, European (<i>Ammophila arenaria</i>)	-	3.5
Apply a 3.5-percent solution of this product using a spray-to-wet technique or an 8-percent solution using a low-volume application technique. Enhanced results are obtained when application is made onto target weeds that are actively growing at the boot through the full-heading stage of development. Make application prior to the loss of more than 50 percent of green leaf color in the fall. Monitor application site and re-apply this product to any target weeds that were missed, if necessary, before re-seeding the area with desirable vegetation. For selective control of European beachgrass, apply a 33.3-percent solution of this product during period of active growth using a wiper applicator. Maximizing the amount of individual leaf tissue contacted by the wiper applicator or making a second pass in the opposite direction will improve control. Avoid contact of the herbicide solution with desirable vegetation.		
Bentgrass	1	1.5%
This product alone will provide only partial control of bentgrass (<i>Agrostis</i> spp.). For enhanced control, apply 1.6 to 2.2 quarts of this product in a tank-mix with an appropriate rate of Envoy, Fusilade II, Fusion, or Vantage herbicide in a spray volume of 20 to 40 gallons per acre using broadcast application equipment. For enhanced control using a handheld sprayer, apply this product at a concentration of 1.5 fluid ounces per gallon of a spray solution in a tank mix with an appropriate amount of Envoy, Fusilade, Fusion, or Vantage herbicide. More than one application might be needed for complete control.		
Bermudagrass	3.3	1.5%
Make application when seedheads are present.		
Bermudagrass, water (knotgrass)	1	1.5%

(continued)

Perennial Weed Species	Broadcast Rate (quarts/acre)	Handheld Sprayer Concentration (%Solution)
Bindweed, field	2 – 3.3	1.5%
For control, apply 2.7 to 3.3 quarts of this product per acre as a broadcast application west of the Mississippi River and 2 to 2.7 quarts per acre east of the Mississippi River when bindweed is at or beyond full bloom. For enhanced results, apply in late-summer or fall.		
Bittersweet, Oriental	2	1.5%
For control of oriental bittersweet, apply this product as a broadcast spray in 30 to 40 gallons of spray solution per acre. For enhanced results, ensure complete coverage of the target plant with the spray solution.		
Bluegrass, Kentucky	1.5	1.5%
Apply when most target plants have reached the boot to head stage of development. When application is made prior to the boot stage, reduced control can result. In the fall, make application before plants have turned brown.		
Blueweed, Texas	2.7 – 3.3	1.5%
Apply 2.7 to 3.3 quarts of this product per acre west of the Mississippi River and 2.3 to 3 quarts per acre east of the Mississippi River when most target plants are at or beyond full bloom. For enhanced results, apply in late-summer or fall.		
Brackenfern	2 – 3	1%
Apply to fully expanded fronds that are at least 18 inches long.		
Bromegrass, smooth	1.5	1%
Apply this product when most target plants have reached the boot to head stage of development. When application is made prior to the boot stage, reduced control can result. In the fall, make application before plants have turned brown.		
Bursage, woolly-leaf	-	1.5%
Canarygrass, reed	1.5 – 2	1.5%
Apply this product when most target plants have reached the boot to head stage of development. When application is made prior to the boot stage, reduced control can result. In the fall, make application before plants have turned brown.		
Cattail	2 – 3.3	1.5%
Apply this product when target plants are actively growing and are at or beyond the early to full bloom stage of development. Enhanced results are achieved when application is made during the summer or fall months.		
Clover, red, white	2 – 3.3	1.5%
Cogongrass	2 – 3.3	1.5%
Apply this product in late-summer or fall when cogongrass is at least 18 inches tall and actively growing. Due to uneven stages of growth and the dense nature of cogongrass vegetation, more than one application might be necessary to achieve control.		
Dallisgrass	2 – 3.3	1.5%
Dandelion	2 – 3.3	1.5%
Dock, curly	2 – 3.3	1.5%
Dogbane, hemp	2.5	1.5%
Apply this product when most target plants have reached the late-bud to flower stage of growth. For enhanced results, make application in late-summer or fall.		
Fescue (except tall)	3	1.5%
Fescue, tall	2	1.5%
Apply this product when most target plants have reached the boot to head stage of growth. If applied prior to the boot stage, less than desirable control might be obtained.		
Guineagrass	2	1%
Apply this product when most target plants have at least reached the 7-leaf growth stage.		
Hemlock, poison	1.3 – 2.7	1 – 1.5%
Control can also be achieved by injecting 5 milliliters of a 5-percent solution of this product using a handheld injection device in one leaf cane per plant, 12 inches above the root crown. ¹		
Hogweed, giant	-	-
Inject 5 milliliters of a 5-percent solution of this product into one leaf cane per plant, 12 inches above the root crown. ¹		
Horsenettle	2 – 3.3	1.5%

(continued)

Perennial Weed Species	Broadcast Rate (quarts/acre)	Handheld Sprayer Concentration (%Solution)
Horseradish	3	1.5%
Apply this product when most target plants have reached the late-bud to flower stage of development. For enhanced results, apply in late-summer or fall.		
Horsetail, field	-	-
Inject 0.5 milliliter of this product per stem directly into the plant stem, one segment above the root crown. ¹		
Iceplant	1.3	1.5 – 2%
Ivy; cape, German	1.3 – 2.7	1 – 1.5%
Jerusalem artichoke	2 – 3.3	1.5%
Johnsongrass	1.3 – 2	1%
Apply this product when most target plants have reached the boot to head stage of development or before plants have turned brown in the fall. When applied prior to the boot stage, reduced control can result.		
Kikuyugrass	1.5 – 2	1.5%
Knapweed	3	1.5%
Apply this product when most target plants have reached the late-bud to flower stage of growth. For enhanced results, apply in late-summer or fall.		
Knotweed; Bohemian, giant, Japanese	2.75	2%
Apply 2.7 quarts of this product per acre as a broadcast application in 3 to 40 gallons of spray solution. For application using a backpack sprayer and a spray-to-wet technique, apply a 2-percent solution of this product. For enhanced control, do not disturb vegetation in the application area for a minimum of 7 days after application. Control can also be achieved by cutting stems cleanly just below the 2nd or 3rd node above the ground and immediately apply 0.36 fluid ounce (10 milliliters) of a 50-percent solution of this product in water into the "well" or remaining internode. Ensure that the upper plant material that was removed is gathered and properly discarded to prevent new plants from propagating from sprouting buds. Use of a bio-barrier, such as cardboard, plywood or plastic sheeting, will help guard against the spread of plant material. The combined total application rate of this product must not exceed 6 quarts per acre. ¹ Control can also be achieved by injecting 5 milliliters of this product per stem into the second or third internode using a handheld injection device. ¹		
Lantana	-	1%
Apply this product when most target plants are at or beyond the bloom stage of growth. Use the higher spray solution concentration on plants that have reached the woody stage of growth.		
Lespedeza	2 – 3.3	1.5%
Loosestrife, purple	1.75	1 – 1.5%
Apply this product when most target plants are at or beyond the bloom stage of growth. Enhanced results are achieved when application is made during summer or fall months. Fall application must be made before a killing frost.		
Lotus, American	1.75	0.75%
Apply this product when most target plants are at or beyond the bloom stage of growth. Enhanced results are achieved when application is made during summer or fall months. Fall application must be made before a killing frost. More than one application of this product might be necessary to control re-growth of underground plant parts and seeds.		
Milkweed, common	2	1.5%
Apply this product when most target plants have reached the late-bud to flower stage of growth.		
Muhly, wirestem	1.5	1.5%
Make application when most target plants are at least 8 inches in height (3- to 4-leaf stage of development) and actively growing.		
Mullein, common	2 – 3.3	1.5%
Napiergrass	2 – 3.3	1.5%
Nightshade, silverleaf	2 – 3.3	1.5%
Apply 2.7 to 3.3 quarts of this product per acre as a broadcast application west of the Mississippi River and 2 to 2.7 quarts per acre east of the Mississippi River when most target plants are at or beyond full bloom. Enhanced results can be obtained when application is made in late-summer or fall after berries have formed.		
Nutsedge; purple, yellow	2	1 – 1.5%
Apply this product to control existing nutsedge plants and attached immature nutlets when target plants are in flower or when new nutlets can be found at rhizome tips. Nutlets that have not germinated will not be controlled and will require repeated application of this product for long-term control.		

(continued)

Perennial Weed Species	Broadcast Rate (quarts/acre)	Handheld Sprayer Concentration (%Solution)
Orchardgrass	1.5	1.5%
Make application when most target plants have reached the boot to head stage of development. When applied prior to the boot stage, less than desirable control could be obtained. In the fall, make application before plants have turned brown.		
Pampasgrass	2 – 3.3	1 – 1.5%
Para grass	2 – 3.3	1.5%
More than one application of this product will be needed to achieve complete control. Allow plants to re-grow to the 7- to 10-leaf stage before making next application.		
Pepperweed, perennial	2.7	1.5%
Phragmites*	2 – 3.3	1 – 1.5%
For partial control of phragmites in Florida and the counties of other states bordering the Gulf of Mexico, apply 3.3 quarts of this product per acre as a broadcast application or a 1.5-percent solution using a handheld sprayer. In other areas of the U.S., apply 1.75 to 2.7 quarts per acre as a broadcast application or, for partial control, apply a 0.75-percent solution using a handheld sprayer. For enhanced results, make application in late-summer or fall when plants are actively growing and in full bloom. Due to the dense nature of this vegetation (which can prevent good spray coverage) and uneven stages of growth, more than one application of this product might be necessary to achieve control. Visual symptoms of control will be slow to develop.		
Quackgrass	1.3 – 2	1.5%
Apply this product when most target plants are at least 8 inches in height (3- to 4-leaf stage of development) and actively growing.		
Redvine*	1.5	1.5%
Reed; common, giant	2.7 – 3.3	1.5%
For enhanced results make application in late-summer or fall. Control can also be achieved by injecting 5 milliliters of this concentrated (undiluted) product directly into the second or third internode using a handheld injection device. ¹		
Ryegrass, perennial	1.5 – 2	1%
Apply this product when most target plants have reached the boot to head stage of growth. When applied prior to the boot stage, reduced control can result. In the fall, make application before ryegrass turns brown.		
Smartweed, swamp	2 – 3.3	1.5%
Spatterdock	2.7	0.75%
Make application when most target plants are in full bloom. For enhanced results, apply in the summer or fall.		
Sowthistle, perennial	1.5 – 2	1.5%
Spurge, leafy*	-	1.5%
Starthistle, yellow	1.5	1.5%
Sweet potato, wild*	-	1.5%
Make application when most target plants are at or beyond the bloom stage of growth. More than one application will be needed to achieve control.		
Thistle, artichoke	1.3 – 2	1 – 1.5%
Make application when target plants are at or beyond the bud stage of growth.		
Thistle, Canada	1.5 – 2	1.5%
Make application when target plants are at or beyond the bud stage of growth. Control can also be achieved by stem-injection. Cut 8 to 9 of tallest plants in a clump at bud stage. Push a cavity needle into the stem center and then slowly remove it as you inject 0.5 milliliter of this concentrated (undiluted) product into the stem. ¹		
Timothy	1.5 – 2	1.5%
Make application when most target plants have reached the boot to head stage of development. If application is made prior to the boot stage, reduced control can result. In the fall, make application before plants turn brown.		
Torpedograss*	2.7 – 3.3	1.5%
Trumpetcreeper*	1.5 – 2	1.5%

(continued)

Perennial Weed Species	Broadcast Rate (quarts/acre)	Handheld Sprayer Concentration (%Solution)
Tules, common	-	1.5%
Make application to target plants at or beyond the seedhead stage of development. Visual symptoms will be slow to appear and might not appear for 3 or more weeks after application.		
Vaseygrass	2 – 3.3	1.5%
Velvetgrass	2 – 3.3	1.5%
Wheatgrass, western	1.5 – 2	1.5%
Make application when most target plants have reached the boot to head stage of development. Application made prior to the boot stage could result in reduced control. In the fall, make application before plants turn brown.		

* Partial control

¹ When using stem injection, the combined total use of this product must not exceed 7 quarts per acre per year. At 5 milliliters of concentrated (undiluted) product per stem, 7 quarts will treat approximately 1300 stems per acre per year. The number of stems that can be treated per acre will vary depending on the injection volume and the concentration of this product in the application solution.

10.4 Woody Brush, Trees and Vines

Apply this product to brush and trees that are actively growing after full leaf expansion, unless otherwise directed. Use the higher application rates within a given range for larger brush and trees and/or application in areas of dense vegetative growth. For control of vines, apply this product at the higher application rate or spray solution concentration within the given range when target plants have reached the woody stage of growth.

Enhanced control of woody brush and trees is obtained when application is made in late-summer or fall after fruit formation; however, in arid areas, enhanced control can be obtained when application is made in the spring to early-summer when brush and trees are at high moisture content and flowering. Poor control can be expected when this product is applied to drought-stressed brush and trees.

Some autumn color on undesirable deciduous species is acceptable when applying this product to brush and trees in the fall, provided no major leaf drop has occurred. Reduced performance of this product could result if application is made following a frost. Symptoms might not appear prior to frost or senescence following a fall application.

For enhanced results, allow 7 or more days after application before mowing, cutting, tilling, burning or removal of woody brush, trees and vines from the application site. Additional applications of this product will be required to control brush and trees regenerating from underground parts or seed.

TANK MIXTURES: This product may be applied at any rate stated on this label in a tank mixture with the following products to increase the spectrum of control of herbaceous weeds, woody brush, trees and vines. For control of herbaceous weeds, apply the tank-mix product at the lower end of the given application rate or spray solution concentration range. For control of dense stands or hard-to-control woody brush, trees and vines, increase the application rate or spray solution concentration of the tank-mix product towards the higher end of the range. Refer to the individual product labels for approved uses and application rates.

imazapyr; metsulfuron methyl; triclopyr

Patriot; Polaris; Tahoe

Ensure that the proper amount of Tahoe is thoroughly mixed with water in the spray tank before adding this product.

Cut Stump Application

This product may be used to control re-growth and re-sprouting of woody brush and trees on any site listed on this label.

Cut the woody brush or tree close to the soil surface and immediately apply a 50- to 100-percent (undiluted) solution of this product to the freshly-cut surface using an applicator capable of applying this product to the entire cambium. A delay in application could result in reduced performance. For enhanced results, cut the woody brush or tree during period of active growth and full leaf expansion and apply this product.

For control of the Tree of Heaven (*Ailanthus altissima*), cut the tree close to the soil surface and immediately apply a 50-percent solution of this product (16 fluid ounces per quart of solution) and 10 percent Polaris herbicide (3 to 4 fluid ounces per quart of solution) in water to the freshly-cut surface.

DO NOT MAKE A CUT STUMP APPLICATION WHEN THE ROOTS OF DESIRABLE WOODY BRUSH OR TREES MIGHT BE GRAFTED TO THE ROOTS OF THE CUT STUMP, AS INJURY COULD OCCUR IN THE ADJACENT TREES. Some sprouts, stems, or trees can share a common root system. Adjacent trees having a similar age, height and spacing could be an indicator of a shared root system. Whether grafted or shared, injury is likely to occur to adjacent stems or trees when this product is applied to one or more trees sharing a common root system.

Woody Brush and Tree Injection and Frill Application

This product may be used to control woody brush and trees listed in this section by injection or frill application on any site listed on this label.

Inject or apply the equivalent of 1 milliliter (0.04 fluid ounce) of this product for every 2 to 3 inches of trunk diameter at breast height (DBH). If injecting this product into the woody brush or tree, use equipment capable of penetrating into the living plant tissue under the bark.

For frill application, apply a 50- to 100-percent (undiluted) solution of this product in water to either a continuous frill around the tree or to cuts evenly spaced around the tree below all branches. As tree diameter increases, enhanced results can be achieved by applying this product to a continuous frill or more closely spaced cuttings. Avoid application techniques that allow runoff of this product to occur from frilled or cut areas. In species that freely exude sap, make the frill or cuts at an oblique angle to produce a cupping effect and apply this concentrated product undiluted. For enhanced results, make this application during period of active growth and after full leaf expansion.

Modified High-Volume and Low-Volume Backpack Application

For control and partial control of woody brush, trees and vines listed on this label when using a backpack sprayer or other handheld equipment and a directed low-volume foliar application technique, apply a 4- to 8-percent solution of this product evenly over the plant crown to cover 50 percent of the upper foliage of undesirable woody brush, trees and vines.

WOODY BRUSH, TREES AND VINES RATE TABLE

Species	Broadcast Rate (quarts/acre)	Handheld Sprayer Concentration (%Solution)
Alder	2 – 3	1%
Ash *	1.5 – 3.3	1 – 1.5%
Aspen, quaking	1.5 – 2	1%
Bearmat (Bearclover) *	1.5 – 3.3	1 – 1.5%
Beech *	1.5 – 3.3	1 – 1.5%
Birch	1.5 – 2	1%
Blackberry	2 – 3	1%
Blackgum	1.5 – 3.3	1 – 1.5%
Bracken	1.5 – 3.3	1 – 1.5%
Broom; French, Scotch	1.3 – 3.3	1 – 1.5%
Buckwheat, California *	1.3 – 3.3	1 – 1.5%
Cascara *	1.5 – 3.3	1 – 1.5%
Castorbean		
Also for control, inject 4 milliliters of this concentrated (undiluted) product per plant directly into the lower portion of the main stem using a handheld injection device. ¹		
Catsclaw ¹	-	1%
Ceanothus *	1.5 – 3.3	1 – 1.5%
Chamise *	1.3 – 3.3	1%
Cherry; bitter, black, pin	1.5 – 2	1%
Coyote brush	2 – 2.7	1 – 1.5%
For control, apply this product when at least 50 percent of the new leaves are fully developed.		
Deerweed	1.3 – 3.3	1%
Dogwood *	1.5 – 3.3	1 – 1.5%
Elderberry	1.5 – 2	1%
Elm *	1.5 – 3.3	1 – 1.5%
Eucalyptus	-	1.5%
For control of eucalyptus re-sprouts, apply this product using a handheld sprayer when re-sprouts are 6 to 12 feet tall. Ensure complete coverage.		
Gallberry	1.5 – 3.3	1 – 1.5%
Gorse *	1.5 – 3.3	1 – 1.5%
Hackberry, western	1.5 – 3.3	1 – 1.5%

(continued)

Species	Broadcast Rate (quarts/acre)	Handheld Sprayer Concentration (%Solution)
Hasardia*	1.3 – 2.5	1 – 1.5%
Hawthorn	1.5 – 2	1%
Hazel	1.5 – 2	1%
Hickory *	1.5 – 3.3	1 – 1.5%
Honeysuckle	2 – 3	1%
Hornbeam, American *	1.5 – 3.3	1 – 1.5%
Ivy, poison	2.5 – 3.3	1.5%
Kudzu	2.5 – 3.3	1.5%
Locust, black *	1.5 – 3	1 – 1.5%
Madrone re-sprouts *	-	1.5%
Manzanita *	1.5 – 3.3	1 – 1.5%
Maple, red	1.5 – 3	1%
For control, apply a 1-percent solution of this product using a handheld sprayer when leaves are fully developed. For partial control, apply 1.5 to 3 quarts per acre as a broadcast application.		
Maple, sugar	-	1%
For control, apply this product using a handheld sprayer when at least 50 percent of the new leaves are fully developed.		
Maple, vine*	1.5 – 3.3	1 – 1.5
Monkey flower *	1.3 – 2.7	1 – 1.5%
Oak; black, white *	1.5 – 3	1 – 1.5%
Oak; northern, pin	1.3 – 2.7	1%
For control, apply this product when at least 50 percent of the new leaves are fully developed.		
Oak, poison	2.5 – 3.3	1.5%
Repeat applications might be required to maintain control. Application in the fall must be made before leaves lose green color.		
Oak, post	2 – 3	1%
Oak, red	-	1%
For control, apply this product using a handheld sprayer when at least 50 percent of the new leaves are fully developed.		
Oak, scrub*	1.3 – 2.7	1%
Oak, southern red	1.5 – 2	1%
Orange, Osage	1.2 – 3.3	1 – 1.5%
Peppertree, Brazilian (Florida holly)*	1.3 – 3.3	1 – 1.5%
Persimmon *	1.5 – 3.3	1 – 1.5%
Pine	1.5 – 3.3	1 – 1.5%
Poplar, yellow *	1.5 – 3.3	1 – 1.5%
Redbud, eastern	1.5 – 3.3	1 – 1.5%
Rose, multiflora	1.5	1%
Make application prior to leaf deterioration by leaf-eating insects.		
Russian olive *	1.5 – 3.3	1 – 1.5%
Sage, black	1.3 – 2.7	1%
Sage, white *	1.5 – 2.7	1 – 1.5%
Sagebrush, California	1.3 – 2.7	1 – 1.5%
Salmonberry	1.5 – 2	1%

(continued)

Species	Broadcast Rate (quarts/acre)	Handheld Sprayer Concentration (%Solution)
Saltcedar *	1.5 – 3.3	1 – 1.5%
For partial control, apply a 1- to 1.5-percent solution of this product using a handheld sprayer or 1.5 to 3.3 quarts per acre as a broadcast application. For control, apply a 1- to 1.5-percent solution of this product with 0.25 percent by volume Arsenal herbicide (one-third of an ounce per gallon) using a handheld sprayer. For control using broadcast application, apply 1.3 quarts of this product per acre in a tank-mix with 16 fluid ounces of Arsenal herbicide to plants less than 6 feet tall. To control saltcedar greater than 6 feet tall using broadcast application, apply 2.75 quarts of this product per acre in a tank-mix with 1 quart of Arsenal herbicide.		
Sassafras *	1.5 – 3.3	1 – 1.5%
Sourwood *	1.5 – 3.3	1 – 1.5%
Sumac; laurel, poison, smooth, sugarbrush, winged *	1.5 – 3	1 – 1.5%
Sweetgum	1.5 – 2	1%
Swordfern *	1.5 – 3.3	1 – 1.5%
Tallowtree, Chinese	-	1%
Tan oak re-sprouts *	-	1.5%
Thimbleberry	1.5 – 2	1%
Tobacco, tree *	1.5 – 2.5	1 – 1.5%
Toyon*	-	1.5%
Trumpetcreeper	1.5 – 2	1%
Virginia creeper	1.5 – 3.3	1 – 1.5%
Waxmyrtle, southern *	1.5 – 3.3	1 – 1.5%
Willow	2 – 3	1%
Yerba santa, California*	-	1.5%

* Partial control

11.0 STORAGE AND DISPOSAL

Do not contaminate water, foodstuffs, feed or seed by storage or disposal.

PESTICIDE STORAGE: STORE ABOVE 10°F (-12°C) TO KEEP PRODUCT FROM CRYSTALLIZING. Crystals will settle to the bottom. If allowed to crystallize, place in a warm room 68°F (20°C) for several days to redissolve and shake or roll to mix well before using.

PESTICIDE DISPOSAL: Wastes resulting from the use of this product that cannot be used or chemically reprocessed should be disposed of in a landfill approved for pesticide disposal or in accordance with applicable Federal, state or local procedures. Emptied container retains vapor and product residue. Observe all label safeguards until container is destroyed.

CONTAINER HANDLING:

NOTE: This product is available in multiple containers. Refer to the Net Contents section of this products labeling for the applicable "No refillable" or "Refillable" designation. Follow the container handling instructions below that apply to your container type / size.

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. If recycling or reconditioning not available, puncture and dispose of in a sanitary landfill, or by other procedures approved by State and local authorities. Plastic containers are also disposable by incineration, or, if allowed by State and local authorities, by burning. If burned stay out of smoke. Triple rinse or pressure rinse container (or equivalent) promptly after emptying. **Triple rinse as follows:** Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. **Pressure rinse as follows:** Empty the remaining contents into application equipment or a mix tank and collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container and rinse at about 40 psi for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

Refillable Containers Larger than 5 Gallons: Refillable container. Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container.

Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or a mix tank. Fill the container about 10% full with water. Agitate vigorously or recirculate water with the pump for two minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

12.0 WARRANTY DISCLAIMER

The directions for use of this product must be followed carefully. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, (1) THE GOODS DELIVERED TO YOU ARE FURNISHED "AS IS" BY MANUFACTURER OR SELLER AND (2) MANUFACTURER AND SELLER MAKE NO WARRANTIES, GUARANTEES, OR REPRESENTATIONS OF ANY KIND TO BUYER OR USER, EITHER EXPRESS OR IMPLIED, OR BY USAGE OF TRADE, STATUTORY OR OTHERWISE, WITH REGARD TO THE PRODUCT SOLD, INCLUDING, BUT NOT LIMITED TO MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, USE, OR ELIGIBILITY OF THE PRODUCT FOR ANY PARTICULAR TRADE USAGE. UNINTENDED CONSEQUENCES, INCLUDING BUT NOT LIMITED TO INEFFECTIVENESS, MAY RESULT BECAUSE OF SUCH FACTORS AS THE PRESENCE OR ABSENCE OF OTHER MATERIALS USED IN COMBINATION WITH THE GOODS, OR THE MANNER OF USE OR APPLICATION, INCLUDING WEATHER, ALL OF WHICH ARE BEYOND THE CONTROL OF MANUFACTURER OR SELLER AND ASSUMED BY BUYER OR USER. THIS WRITING CONTAINS ALL OF THE REPRESENTATIONS AND AGREEMENTS BETWEEN BUYER, MANUFACTURER AND SELLER, AND NO PERSON OR AGENT OF MANUFACTURER OR SELLER HAS ANY AUTHORITY TO MAKE ANY REPRESENTATION OR WARRANTY OR AGREEMENT RELATING IN ANY WAY TO THESE GOODS.

LIMITATION OF LIABILITY

TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, IN NO EVENT SHALL MANUFACTURER OR SELLER BE LIABLE FOR SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, OR FOR DAMAGES IN THEIR NATURE OF PENALTIES RELATING TO THE GOODS SOLD, INCLUDING USE, APPLICATION, HANDLING, AND DISPOSAL. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, MANUFACTURER OR SELLER SHALL NOT BE LIABLE TO BUYER OR USER BY WAY OF INDEMNIFICATION TO BUYER OR TO CUSTOMERS OF BUYER, IF ANY, OR FOR ANY DAMAGES OR SUMS OF MONEY, CLAIMS OR DEMANDS WHATSOEVER, RESULTING FROM OR BY REASON OF, OR ARISING OUT OF THE MISUSE, OR FAILURE TO FOLLOW LABEL WARNINGS OR INSTRUCTIONS FOR USE, OF THE GOODS SOLD BY MANUFACTURER OR SELLER TO BUYER. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, ALL SUCH RISKS SHALL BE ASSUMED BY THE BUYER, USER, OR ITS CUSTOMERS. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, BUYER'S OR USER'S EXCLUSIVE REMEDY, AND MANUFACTURER'S OR SELLER'S TOTAL LIABILITY SHALL BE FOR DAMAGES NOT EXCEEDING THE COST OF THE PRODUCT.

If you do not agree with or do not accept any of the directions for use, the warranty disclaimers, or limitations on liability, do not use the product, and return it unopened to the Seller, and the purchase price will be refunded.

RV061317

This product is protected by Patent No's. 5,668,085, RE 37,866 and 6,365,551



1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Razor® Xtreme Herbicide
EPA Reg. No.: 71368-81
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 on the FIFRA label. Certain sections are superseded by federal law governed by EPA for a registered pesticide. Please see Section 15. Regulatory Information for explanation.

2. HAZARDS IDENTIFICATION

PHYSICAL HAZARDS:

Not Hazardous

HEALTH HAZARDS:

Acute Toxicity (inhalation)	Category 4
Eye irritation	Category 2B

ENVIRONMENTAL HAZARDS

Hazardous to aquatic environment, acute	Category 2
Hazardous to aquatic environment, chronic	Category 2

SIGNAL WORD

WARNING

HAZARD STATEMENTS:

Harmful if inhaled. Causes eye irritation. Toxic to aquatic life with long lasting effects.



PRECAUTIONARY STATEMENTS

Avoid breathing mists or spray. Wash hands thoroughly after handling. Use only outdoors or in a well-ventilated area. Avoid unintended release to the environment.

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 INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor if you feel unwell.

Collect spillage.

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

3. COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENTS	CAS NO.	% BY WEIGHT
N-(phosphonomethyl)glycine, Isopropylamine salt	38641-94-0	30 – 32
N-(phosphonomethyl)glycine, Potassium salt	70901-12-1	22 – 24
Other Ingredients	Trade Secret	Trade Secret

Synonyms: Mixture of Glyphosate IPA salt and Glyphosate K⁺ salt ; N-(phosphonomethyl) glycine, in the form of isopropylamine and potassium salts.

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 develops and persists.

If Swallowed: Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person. If symptoms develop, get medical advice.

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

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

Most Important symptoms/effects, acute and delayed: May cause moderate eye irritation. May be harmful if inhaled.

Indication of Immediate medical attention and special treatment if needed: Medical attention if recommended for inhalation exposures. For ingestion there is no specific antidote available. Treat symptomatically.

5. FIRE FIGHTING MEASURES

Extinguishing Media: Recommended for large fires: foam or water spray. Recommended for small fires: dry chemical or carbon dioxide.

Special Fire Fighting Procedures: Firefighters should wear NIOSH approved self-contained breathing apparatus and full fire-fighting turn out gear. Dike area to prevent runoff and contamination of water sources. Dispose of fire control water later.

Unusual Fire and Explosion Hazards: If water is used to fight fire, contain runoff, using dikes to prevent contamination of water supplies. Dispose of fire control water later. This product reacts with galvanized steel or unlined steel (except stainless steel) to produce hydrogen gas that may form a highly combustible gas mixture which could flash or explode.

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

6. ACCIDENTAL RELEASE MEASURES

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

Environmental Precautions: Prevent material from entering public sewer systems or any waterways. Do not flush to drain. Large spills to soil or similar surfaces may necessitate removal of topsoil. The affected area should be removed and placed in an appropriate container for disposal.

Methods for Containment: Dike spill using absorbent or impervious materials such as earth, sand or clay. Collect and contain contaminated absorbent and dike material for disposal.

Methods for Cleanup and Disposal: Pump any free liquid into an appropriate closed container. Collect washings for disposal. Decontaminate tools and equipment following cleanup. See Section 13: DISPOSAL CONSIDERATIONS for more information.

Other Information: Large spills may be reportable to the National Response Center (800-424-8802) and to state and/or local agencies.

7. HANDLING AND STORAGE

Handling:

Avoid contact with eyes, skin and clothing. Avoid breathing spray mist. 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.

Spray solutions of this product should be mixed, stored and applied using only stainless steel, aluminum, fiberglass, plastic or plastic-lined containers.

DO NOT MIX, STORE OR APPLY THIS PRODUCT OR SPRAY SOLUTIONS OF THIS PRODUCT IN GALVANIZED STEEL OR UNLINED STEEL (EXCEPT STAINLESS STEEL) CONTAINERS OR SPRAY TANKS. This product or spray solutions of this product react with such containers and tanks to produce hydrogen gas which may form a highly combustible gas mixture. This gas mixture could flash or explode, causing serious personal injury, if ignited by open flame, spark, welder's torch, lighted cigarette or other ignition source.

Storage:

Keep container closed to prevent spills and contamination. 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, socks and shoes. Washing facilities should be readily accessible to the work area.

Respiratory Protection: Avoid breathing mists or sprays. If vapors or mists exceed acceptable levels, wear NIOSH approved air-purifying respirator with cartridges/canisters approved for use against pesticides.

General Hygiene Considerations: Personal hygiene is an important work practice exposure control measure and the following general measures should be taken when working with or handling this material: 1) do not store, use and/or consume foods, beverages, tobacco products, or cosmetics in areas where this material is stored; 2) wash hands and face carefully before eating, drinking, using tobacco, applying cosmetics or using the toilet.

Exposure Guidelines:

Component	OSHA		ACGIH		Unit
	TWA	STEL	TWA	STEL	
Glyphosate IPA Salt	NE	NE	NE	NE	
Glyphosate K ⁺ Salt	NE	NE	NE	NE	
Other Ingredients	NE	NE	NE	NE	

NE = Not Established

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Amber liquid
Odor:	Faint
Odor threshold:	No data available
pH:	4.93 (1% w/w solution in DIW)
Melting point/freezing point:	No data available
Initial boiling point and boiling range	No data available
Flash point:	Not applicable (aqueous salt based composition)
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:	1.295 g/mL @ 20° C
Solubility(ies):	No data available

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Partition coefficient: n-octanol/water: No data available
Autoignition temperature: No data available
Decomposition temperature: No data available
Viscosity: 614.078 cSt @ 20° C; 192.88 cSt @ 40° C
VOC Emission Potential (%): 8.83

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 product quality specification.

10. STABILITY AND REACTIVITY

Reactivity: Not reactive.

Chemical Stability: This material is stable under normal handling and storage conditions.

Possibility of Hazardous Reactions: Will not occur.

Conditions to Avoid: Excessive heat. Do not store near heat or flame.

Incompatible Materials: Strong oxidizing agents: bases and acids. This product reacts with galvanized steel or unlined steel (except stainless steel) to produce hydrogen gas that may form a highly combustible gas mixture which could flash or explode.

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

11. TOXICOLOGICAL INFORMATION

Likely Routes of Exposure: Eye contact, Skin contact

Symptoms of Exposure:

Eye Contact: The undiluted product may cause pain, redness and tearing based on toxicity studies.

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

Ingestion: Slightly toxic based on toxicity studies. No significant adverse health effects are expected to develop if only small amounts (less than a mouthful) are swallowed.

Inhalation: May be harmful if inhaled based on toxicity studies. Inhalation of spray or mists may cause respiratory irritation.

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

Toxicological Data:

Data from laboratory studies on this product are summarized below:

Oral: Rat LD₅₀: >5,000 mg/kg

Dermal: Rat LD₅₀: >5,000 mg/kg

Inhalation: Rat 4-hr LC₅₀: >2.07mg/l

Eye Irritation: Rabbit: Mildly irritating (MMTS=20.0)

Skin Irritation: Rabbit: Slightly irritating (PDII= 1.2)

Skin Sensitization: Not a contact sensitizer in guinea pigs following repeated skin exposure.

Subchronic (Target Organ) Effects: Repeated overexposure to glyphosate may decrease body weight gains and effects to liver.

Carcinogenicity / Chronic Health Effects: Prolonged overexposure to glyphosate may cause effects to the liver. EPA has given glyphosate a Group E classification (evidence of non-carcinogenicity in humans). Canada PMRA has classified glyphosate as non-carcinogenic. In 2015 IARC classified glyphosate as a probable human carcinogen Group 2A based on limited human evidence and some evidence in animals.

Reproductive Toxicity: In laboratory animal studies with glyphosate, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals.

Developmental Toxicity: In animal studies, glyphosate 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: Glyphosate has produced no genetic changes in a variety of standard tests using animals and animal or bacterial cells.

ASSESSMENT CARCINOGENICITY:

Component	Regulatory Agency Listing As Carcinogen			
	ACGIH	IARC	NTP	OSHA
Glyphosate	No	2A	No	No
Other Ingredients	No	No	No	No

12. ECOLOGICAL INFORMATION

Ecotoxicity:

Data on Glyphosate IPA

96-hour LC ₅₀ Rainbow Trout:	>1000 mg/l
48-hour EC ₅₀ Daphnia:	930 mg/l
72-hour ErC ₅₀ Algae:	166 mg/l

Data on Glyphosate Acid:

96-hour LC ₅₀ Bluegill:	120 mg/l	Bobwhite Quail Acute Oral LD ₅₀ :	>3,851 mg/kg
96-hour LC ₅₀ Rainbow Trout:	786 mg/l	Bobwhite Quail 5-day Dietary LC ₅₀ :	>4,640 ppm
48-hour EC ₅₀ Daphnia:	780 mg/l	Mallard Duck 5-day Dietary LC ₅₀ :	>4,640 ppm
96-hour EC ₅₀ Diatoms:	1.3 mg/l		
14-day EC ₅₀ Duckweed:	25.5 mg/l		
72-hour EC ₅₀ Algae:	450 mg/l		

Environmental Fate:

In the environment glyphosate adsorbs strongly to soil and is expected to be immobile in soil. Glyphosate is readily degraded by soil microbes to AMPA (aminomethyl phosphonic acid) that is further degraded to carbon dioxide. Glyphosate and AMPA are unlikely to enter ground water due to their strong adsorptive characteristics. Terrestrially-applied glyphosate has the potential to move into surface waters through soil erosion because it may be adsorbed to soil particles suspended in the runoff. Aquatic applications registered for certain formulations may also result in glyphosate entering surface waters. Complete degradation is slow, but dissipation in water is rapid because glyphosate is bound in sediments and has low biological availability to aquatic organisms. These characteristics suggest a low potential for bioconcentration in aquatic organisms and this has been verified by laboratory investigations of glyphosate bioconcentration in numerous marine and freshwater organisms with and without soil. The maximum whole body bioconcentration factors for fish were observed to be less than 1X. Bioconcentration factors for sediment dwelling mollusks and crayfish tended to be slightly higher, but were always less than 10X. In addition, any residues accumulated in organisms were rapidly eliminated.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method:

Wastes resulting from use of this product that cannot be used or chemically reprocessed should be disposed of in a landfill approved for pesticide disposal or in accordance with applicable Federal, state or local procedures. Emptied container retains vapors and product residue. Observe all labeled safeguards until container is cleaned, reconditioned or destroyed.

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. If recycling or reconditioning not available, puncture and dispose of in a sanitary landfill, or by other procedures approved by State and local authorities. Plastic containers are also disposable by incineration, or, if allowed by State and local authorities, by burning. If burned stay out of smoke. Triple rinse or pressure rinse container (or equivalent) promptly after emptying.

Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times.

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Razor® Xtreme Herbicide

Pressure rinse as follows: Empty the remaining contents into application equipment or a mix tank and collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 psi for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

Refillable containers larger than 5 gallons: Refillable container. Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or a mix tank. Fill the container about 10% full with water. Agitate vigorously or recirculate water with the pump for two minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

14. TRANSPORTATION INFORMATION

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

DOT

Non Regulated

IMDG

Non-regulated

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. Avoid contact with eyes, skin, or clothing.

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

Section 313 Toxic Chemical(s):

None

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

None

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, birth defects or other reproductive harm. (ethylene oxide, acetaldehyde, 1,4-dioxane)

16. OTHER INFORMATION

National Fire Protection Association (NFPA) Hazard Rating:

Rating for this product: Health: 2 Flammability: 1 Reactivity: 0

Hazards Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

This Safety Data Sheet (SDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-ACCEPTED PRODUCT LABELING (attached to and accompanying the product container). This SDS provides

SAFETY DATA SHEET

Razor® Xtreme Herbicide

Important health, safety and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use, while the labeling provides that information specifically for product use in the ordinary course.

Use, storage and disposal of pesticide products are regulated by the EPA under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) through the product labeling, and all necessary and appropriate precautionary, use, storage, and disposal information is set forth on that labeling. It is a violation of Federal law to use a pesticide product in any manner not prescribed on the EPA-accepted label.

Although the information and recommendations set forth herein (hereinafter "Information") are presented in good faith and believed to be correct as of the date hereof, Nufarm Americas Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will Nufarm Americas Inc. be responsible for damages of any nature whatsoever resulting from the use of or reliance upon Information. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH INFORMATION REFERS AND ALL SUCH WARRANTIES ARE HEREBY SPECIFICALLY DISCLAIMED.

Date of Issue: August 30, 2017

Supersedes: NEW

Spyder Extra [EPA Reg. No. 228-690]

GROUP 2 HERBICIDE

Spyder[®] Extra



Selective Herbicide

Dispersible Granules

ACTIVE INGREDIENTS:

Sulfometuron Methyl:

Methyl 2-[[[(4,6-dimethyl-2-pyrimidinyl)amino]-carbonyl]amino]sulfonyl]benzoate..... 56.25%

Metsulfuron Methyl:

Methyl 2-[[[(4-methoxy-6-methyl-1,3,5-triazin-2-yl)amino]-carbonyl]amino]sulfonyl]benzoate..... 15.00%

OTHER INGREDIENTS:..... 28.75%

TOTAL:..... 100.00%

BY WEIGHT

**KEEP OUT OF REACH OF CHILDREN
CAUTION**

SEE INSIDE BOOKLET FOR FIRST AID AND ADDITIONAL
PRECAUTIONARY STATEMENTS

For Chemical Spill, Leak, Fire,
or Exposure, Call CHEMTREC
(800) 424-9300

For Medical Emergencies Only,
Call (877) 325-1840

EPA Reg. No. 228-690
Product of China

EPA Est. No. 67997-IL-003

**Net Weight
5 Lbs.
(2.26 Kg)**

Manufactured for
Nufarm Americas Inc.
11901 S. Austin Avenue
Alsip, IL 60803



**PRECAUTIONARY STATEMENT
HAZARDS TO HUMANS AND DOMESTIC ANIMALS
CAUTION**

Harmful if absorbed through skin. Causes moderate eye irritation. Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet.

PERSONAL PROTECTIVE EQUIPMENT (PPE):

Some materials that are chemical-resistant to this product are polyethylene and nitrile rubber. If you want more options, follow the instructions for category A on an EPA chemical-resistance category selection chart.

All mixers, loaders, applicators and other handlers must wear:

- Long-sleeved shirt
- Long pants
- Shoes plus socks
- Chemical-resistant gloves

See engineering controls for more requirements.

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

ENGINEERING CONTROLS:

Pilots must use an enclosed cockpit in a manner that is consistent with the WPS for Agriculture Pesticides [40 CFR 170.240(d)(6)].

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 ON SKIN OR CLOTHING	<ul style="list-style-type: none"> • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15 to 20 minutes. • Call a poison control center or doctor for treatment advice.
IF IN EYES	<ul style="list-style-type: none"> • Hold eye open and rinse slowly and gently with water for 15 to 20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.

HOT LINE NUMBER

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-877-325-1840 for emergency medical treatment information.

ENVIRONMENTAL HAZARDS

For terrestrial uses, except for under the forest canopy: **DO NOT** apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. **DO NOT** contaminate water when disposing of equipment washwater or rinsate.

Exposure to this product can injure or kill plants. Damage to susceptible plants can occur when soil particles are blown or washed off target onto cropland.

PHYSICAL AND CHEMICAL HAZARDS

Do not use with or store near oxidizing agents.

DIRECTIONS FOR USE

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

Read the entire label before using this product. Use strictly in accordance with label precautionary statements and directions.

Nufarm will not be responsible for losses or damages resulting from the use of this product in any manner not specified by Nufarm. User assumes all risks associated with such non-specified use.

DO NOT use on food or feed crops.

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.

Applications may not be made to soil that is subject to wind erosion when less than a 60% chance of rainfall is predicted to occur in the treatment area within 48 hours. Soils that are subject to wind erosion usually have a high silt and/or fine to very fine sand fractions. Soils with low organic matter also tend to be prone to wind erosion.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard (WPS), 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 statement 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 4 hours.

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: coveralls, shoes plus socks and chemical-resistant gloves made of any waterproof material.

NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box only 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.

Use on non-crop sites and turf (unimproved) are not within the scope of the Worker Protection Standard.

Entry Restriction for non-WPS uses applied as a spray:

- Do not enter or allow others to enter until sprays have dried.

Entry Restriction for non-WPS uses applied dry:

- Do not enter or allow others to enter until dusts have settled.

PRODUCT INFORMATION

This product is a dispersible granule that is mixed in water and applied as a spray or impregnated on dry, bulk fertilizer. This product controls many annual and perennial grasses and broadleaf weeds in conifer plantations and non-crop sites. It also may be used to control certain hardwoods and vines when applied in site preparation treatments.

This product may be used for general weed control on terrestrial non-crop sites and for selective weed control in certain types of unimproved turf grasses on these same sites. This product may be used for the control of certain woody plants, vines and herbaceous weeds in site preparation and release of various conifers. This product can be tank mixed with other herbicides registered for use in conifer plantations and non-crop sites. When tank mixing, use the most restrictive limitations from the labeling of both products.

Herbaceous weeds are controlled by both preemergence and postemergence activity. The best results on undesirable hardwoods and vines are obtained with a foliar spray between full leaf expansion in the spring and normal defoliation in the fall. The best results are obtained when the application is made before or during the early stages of weed growth before weeds develop an established root system. Moisture is required to move this product into the root zone of weeds for preemergence control.

This product may be applied on conifer plantations and non-crop sites that contain areas of temporary surface water caused by a collection of water between planting beds, in equipment ruts, or in other depressions created by management activities. It is permissible to treat intermittently flooded low lying sites, seasonally dry flood plains and transitional areas between upland and lowland sites when no water is present. It is also permissible to treat marshes, swamps and bogs after water has receded, as well as seasonal dry flood deltas. **DO NOT** make applications to natural or man-made bodies of water such as lakes, reservoirs, ponds, streams and canals.

A drift control agent can be used at the manufacturer's specified rate in the application of this product.

This product is non-corrosive, nonflammable, nonvolatile, and does not freeze.

For best postemergence results, apply this product to young, actively growing weeds. The use rate depends upon the weed species, weed size at application and soil texture. The degree and duration of control may depend on the following:

- Weed spectrum and infestation intensity
- Weed size at application
- Environmental conditions at and following treatment
- Soil pH, soil moisture, and soil organic matter

Use a high rate on established plants and on fine-textured soils and a lower rate on smaller weeds and coarse-textured soils.

This product contains sulfometuron methyl. When applied alone or in combination with other products containing sulfometuron methyl, **DO NOT** apply more than 6 ounces of active ingredient per acre per year.

This product contains metsulfuron methyl. When applied alone or in combination with other products containing metsulfuron methyl, **DO NOT** apply more than 2.4 ounces of active ingredient per acre per year.

ENVIRONMENTAL CONDITIONS AND BIOLOGICAL ACTIVITY

When applied as a spray, this product is absorbed by both the roots and foliage of plants, rapidly inhibiting the growth of susceptible weeds. When applied on dry fertilizer, this product is absorbed primarily by the roots. 2 to 3 weeks after application to weeds, leaf growth slows, and the growing points turn reddish-purple. Within 4 to 6 weeks of application, leaf veins and leaves become discolored and the growing points subsequently die.

Warm, moist conditions following application accelerate the herbicidal activity of this product; cold, dry conditions delay the herbicidal activity. In addition, undesirable hardwoods, vines and weeds hardened-off by drought stress are less susceptible to this product. Moisture is needed to move this product into the soil for preemergence weed control.

RESISTANCE

When herbicides that affect the same biological site of action are used repeatedly over several years to control the same weed species in the same field, naturally-occurring resistant biotypes may survive a correctly applied herbicide treatment, propagate, and become dominant in that field. Adequate control of these resistant weed biotypes cannot be expected. If weed control is unsatisfactory, it may be necessary to retreat the problem areas using a product affecting a different site of action.

To better manage herbicide resistance through delaying the proliferation and possible dominance of herbicide resistant weed biotypes, it may be necessary to change cultural practices within and between crop seasons such as using a combination of tillage, retreatment, tank-mix partners and or sequential herbicide applications that have a different site of action. **DO NOT** let weed escapes go to seed. If applicable, see **Weeds Controlled** section of label for additional information on managing herbicide resistant weed biotypes.

It is advisable to keep accurate records of pesticides applied to individual fields to help obtain information on the spread and dispersal of resistant biotypes. Consult your agricultural dealer, consultant, applicator, and/or appropriate state agricultural extension service representative for specific alternative cultural practices or herbicides available in your area.

INTEGRATED PEST MANAGEMENT

This product may be used as a part of an Integrated Pest Management (IPM) program that can include biological, cultural, and genetic practices aimed at preventing economic pest damage. IPM principals and practices include field scouting or other detection methods, correct target pest identification, population monitoring, and treating when target pest populations reach locally determined action thresholds. Consult your state cooperative extension service, professional consultants or other qualified authorities to determine appropriate action treatment threshold levels for treating specific pest/crop systems in your area.

SPRAY EQUIPMENT

Following an application of this product, **DO NOT** use sprayer for application to agricultural or ornamental crops. The mixing and application equipment must be used for forestry and noncrop applications only. This is extremely important as low rates of this product can kill or severely injure most crops.

BROADCAST APPLICATION

For Ground Applications for Railroad and Roadside Rights-of Way Uses:

For broadcast ground applications, **DO NOT** apply within 25 feet of aquatic vegetation (including, but not limited to, lakes, reservoirs, rivers, streams, marshes, ponds, estuaries, and commercial fish ponds), or water used as an irrigation source, or crops.

For Ground Applications for All Other Uses (Other than Railroad and Roadside Rights-of Way):

For broadcast ground application, **DO NOT** apply within 50 feet of aquatic vegetation (including, but not limited to, lakes, reservoirs, rivers, streams, marshes, ponds, estuaries, and commercial fish ponds) or water used as an irrigation source, or crops.

For Ground Applications for All Uses

For ground boom applications, apply spray at lowest height that is consistent with pest control objectives to minimize drift.

When applying this product as a broadcast application. Select a spray volume and delivery system that will ensure thorough coverage and a uniform spray pattern. Be sure the sprayer is calibrated before use. Avoid overlapping and shut off spray booms while starting, turning, slowing, or stopping to avoid injury to desired species.

For Aerial Applications for All Uses:

DO NOT apply liquid applications of this product with fixed wing aircraft. Liquid applications of this product must be applied via rotary aircraft.

DO NOT apply within 75 feet of aquatic vegetation (including, but not limited to, lakes, reservoirs, rivers, streams, marshes, ponds, estuaries, and commercial fish ponds) or water used as an irrigation source, or crops.

Spray must be released at the lowest height consistent with pest control objectives and flight safety.

The spray boom should be mounted on the aircraft as to minimize drift caused by rotor vortices. The minimum practical boom length should be used and must not exceed 80% rotor blade diameter.

Flight speed and nozzle orientation must be considered in determining compliance with the allowable droplet size spectrum.

When applications are made with a cross-wind, the swath will be displaced downwind. The applicator must compensate for this displacement at the downwind edge of the application area by adjusting the path of the aircraft upwind.

When applying this product, select a spray volume and delivery system that will ensure thorough coverage and a uniform spray pattern. Be sure the sprayer is calibrated. Avoid overlapping and shut off spray booms while starting, turning or slowing to avoid injury to desired species.

For Handheld Applications for All Uses:

For hand held spot treatment applications, **DO NOT** apply within 15 feet of aquatic vegetation (including, but not limited to, lakes, reservoirs, rivers, streams, marshes, ponds, estuaries, and commercial fish ponds), or water used as an irrigation source, or crops.

TANK MIXES

Unless otherwise prohibited on this label or the label of an intended tank mix product, this product may be applied in combination with any pesticide registered for the same crop, timing, and method of application. Observe the most restrictive label statements of various tank mix products used.

IMPORTANT: PESTICIDE TANK MIXES MAY INCREASE THE RISK OF MIXING INCOMPATIBILITIES, REDUCED EFFECTIVENESS AND/OR CAUSE CROP INJURY OR LOSS. ANY LIABILITY FOR LOSS, INJURY OR DAMAGE RESULTING FROM A TANK MIXTURE NOT SPECIFIED ON THIS LABEL OR IN MANUFACTURER'S SUPPLEMENTAL LABELING DISTRIBUTED FOR THIS PRODUCT IS SPECIFICALLY DISCLAIMED BY MANUFACTURER.

COMPATIBILITY

Before full-scale mixing of this product with other pesticides, adjuvants, surfactants or oils, you must determine the compatibility of the proposed mixture. Use proportionate quantities of each ingredient and mix in a small container. Always mix one product thoroughly with the diluent before adding another product. If no incompatibility is evident after 30 minutes, the mixture is generally compatible for spraying. To evaluate potential short term effects of applying the mixture, test the tank mix combination on a few plants or a small area before larger-scale treatments. Wait at least 2 to 3 days for problems to become apparent.

IMPORTANT: MIXING WITH OTHER SUBSTANCES MAY INCREASE THE RISK OF MIXING INCOMPATIBILITIES, REDUCED EFFECTIVENESS AND/OR CAUSE CROP INJURY OR LOSS. ANY LIABILITY FOR LOSS, INJURY OR DAMAGE RESULTING FROM A MIXTURE NOT SPECIFIED ON THIS LABEL OR IN MANUFACTURER'S SUPPLEMENTAL LABELING DISTRIBUTED FOR THIS PRODUCT IS SPECIFICALLY DISCLAIMED BY MANUFACTURER.

MIXING INSTRUCTIONS

1. Fill spray tank 1/2 full of water.
2. With the agitator running, add the proper amount of this product.
3. If using a companion product, add the specified label amount.
4. For postemergent applications, add the proper amount of spray adjuvant.
5. Add the remaining water.
6. Agitate the spray tank thoroughly.

Spray preparations are stable if they are pH neutral or alkaline and stored at or below 100°F

SPRAYER CLEANUP

Thoroughly clean all mixing and spray equipment following applications of this product as follows:

1. Drain tank; thoroughly rinse spray tanks, boom and hoses with clean water.
2. Fill the tank with clean water and 1 gallon of household ammonia (contains 3% active) for every 100 gallons of water. Flush the hoses, boom, and nozzles with the cleaning solution. Then add more water to completely fill the tank. Circulate the cleaning solution through the tank and hoses for at least 15 minutes. Flush the hoses, boom and nozzles again with the cleaning solution and then drain the tank. Equivalent amounts of an alternate-strength ammonia solution or a commercial cleaner can be used in the cleanout procedure. If a commercial cleaner is used, carefully read and follow the individual cleaner instructions.
3. Remove the nozzles and screens and clean separately in a bucket containing cleaning agent and water.
4. Repeat step 2.
5. Rinse the tank, boom and hoses with clean water.
6. Dispose of the rinsate on a labeled site or at an approved waste disposal facility. If a commercial cleaner is used, follow the directions for rinsate disposal on the label.

Notes:

1. **DO NOT** use chlorine bleach in combination with ammonia when cleaning spray equipment. **DO NOT** clean spray equipment in an enclosed area.
2. Steam-clean aerial spray tanks before performing the above cleanout procedure to facilitate the removal of any caked deposits.
3. When this product is tank mixed with other pesticides, all required cleanout procedures should be examined and the most rigorous procedure should be followed.

SPRAY DRIFT MANAGEMENT

The interaction of many equipment- and weather-related factors determines the potential for spray drift. The applicator is responsible for considering all these factors when making application decisions.

AVOIDING SPRAY DRIFT IS THE RESPONSIBILITY OF THE APPLICATOR.

Importance of Droplet size

Application must be made using extremely coarse or coarser droplet size spectrum according to ASABE (S572) definition. The best drift management strategy is to apply the largest droplets that provide sufficient coverage and control. The presence of sensitive species nearby, the environmental conditions, and pest pressure may affect how an applicator balances drift control and coverage. **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 **Surface Temperature Inversions** sections of this label.

CONTROLLING DROPLET SIZE

GENERAL TECHNIQUES

- **VOLUME** - Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.
- **PRESSURE** - Use the lower spray pressures recommended for the nozzle. Higher pressure reduces droplet size and does not improve canopy penetration. **WHEN HIGHER FLOW RATES ARE NEEDED, USE A HIGHER-CAPACITY NOZZLE INSTEAD OF INCREASING PRESSURE.**
- **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.

CONTROLLING DROPLET SIZE- AIRCRAFT

- **NUMBER OF NOZZLES** - Use the minimum number of nozzles with the highest flow rate that provide uniform coverage.
- **NOZZLE ORIENTATION** - Orienting nozzles so that the spray is emitted backwards, parallel to the airstream, will produce larger droplets than other orientations.
- **NOZZLE TYPE** - Solid stream nozzles (such as disc and core with swirl plate removed) oriented straight back produce larger droplets than other nozzle types

BOOM LENGTH AND HEIGHT

- **BOOM LENGTH (aircraft)** - The spray boom should be mounted on the aircraft as to minimize drift caused by wingtip or rotor vortices. The minimum practical boom length should be used and must not exceed 75% of the wing span or 80% rotor blade diameter.
- **BOOM HEIGHT (aircraft)** - Setting the boom at the lowest labeled height (if specified) which provides uniform coverage reduces the exposure of droplets to evaporation and wind. The boom should remain level with the crop and have minimal bounce.
- **BOOM HEIGHT (ground)** - For ground boom applications, apply spray at the lowest height consistent with pest control objectives to minimize drift.

WIND DIRECTION AND SPEED

DO NOT apply when wind speed is greater than 10 mph.

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 hot and dry conditions, set up equipment to produce larger droplets to reduce effects of evaporation.

TEMPERATURE INVERSION

DO NOT make aerial or ground applications into temperature inversions.

Inversions are characterized by stable air and increasing temperature with altitude above the ground. Mist or fog may indicate the presence of an inversion in humid areas. The applicator may detect the presence of an inversion by producing smoke and observing a smoke layer near the ground surface.

SHIELDED SPRAYERS

Shielding the boom or individual nozzles can reduce the effects of wind. However, it is the responsibility of the applicator to verify that the shields are preventing drift and not interfering with uniform deposition of the product.

CONIFER PLANTATIONS

Application Information

When applied as a spray, this product is used to control certain undesirable woody plants, vines, and many broadleaf weeds and grasses in conifer plantation sites.

Apply sprays by ground equipment or by helicopter. Apply impregnated fertilizer by ground equipment or by air (helicopter or fixed wing aircraft) to control broadleaf weeds and grasses.

When applied as a spray, this product controls woody plants and vines by postemergent foliar activity. The best results are obtained with foliar spray between full leaf expansion in the spring and normal defoliation in the fall.

This product may be tank mixed with other herbicides registered for use in conifer plantations; when tank mixing use the most restrictive limitations from the labels of both products.

Application Timing

To control broadleaf weeds and grasses, spray this product before herbaceous weeds emerge or shortly thereafter. Apply impregnated fertilizer before weeds emerge.

Application Rate

Apply this product at the rates indicated by conifer species. Use a lower rate on coarse-textured soils (i.e., loamy sands, sandy loams) and a higher rate on fine textured soils (i.e. sandy clay loams and silt clay loams).

Maximum Application Rate

Forestry (Including Deciduous, Conifers, Christmas Trees); 0.199 lb ai per acre per application [5.66 oz. of product per acre per application].

Weeds Controlled

This product effectively controls or suppresses the weeds and vines listed under the **Weeds Controlled** in the **Non-Crop** section of this label when applied at the rates specified.

Conifer Site Preparation - Application Before Transplanting

Make all applications before transplanting to control specified hardwoods, vines, broadleaf weeds and grasses. To improve control of targeted pests, add a surfactant at the rate specified on the manufacturer's label or as limited by the companion product (tank mixtures) label.

USE RATES FOR SELECTED SPECIES USE RATES BEFORE TRANSPLANTING CONIFERS		
Species	Rate (ounces/acre)	When to Transplant into Treated Areas
Loblolly Pine, Longleaf Pine	3 to 4	Planting season following application
Slash Pine	3	Planting season following application
Black Spruce	2 - 2/3 to 5 - 1/3	Not less than 13 months following application.
Red Pine	1 - 1/3 to 2 - 2/3	The following spring or summer but not less than 3 months after application. Areas receiving 2/3 to 1 - 1/3 oz./acre may be transplanted in a minimum of 30 days following application.
Douglas Fir	2 - 2/3 to 5 - 1/3	Planting season following application.
Sitka Spruce	2 - 2/3 to 5 - 1/3	Planting season following application.

(continued)

USE RATES FOR SELECTED SPECIES USE RATES BEFORE TRANSPLANTING CONIFERS <i>(continued)</i>		
Species	Rate (ounces/acre)	When to Transplant into Treated Areas
Western Hemlock	2 - 2/3 to 5 - 1/3	Planting season following application.
Ponderosa Pine	2 - 2/3 to 5 - 1/3	Arid regions: Apply in fall and plant the next spring. West of Cascades: Planting season following application.
Western Red Cedar	2 to 3	Planting season following application.
Grand Fir	2 to 3	Planting season following application.

Other species of conifers may be planted providing the user has experience indicating acceptable tolerance to this product. Without prior experience, test for tolerance to this product on a small area of plantings before large-scale plantings are made. The user accepts all responsibility for injury on any conifer species not listed above.

TANK MIXTURES

South/Southeast US

This product may be tank mixed with site preparation treatments applied in the late summer to broaden the spectrum of undesirable hardwoods controlled and provide herbaceous weed control in the year following transplanting. The tank mixture rates specified below are for the specific brush species listed in each section or in the tank mixture partner label.

GLYPHOSATE

Tank mix 4 to 5.66 ounces of this product with 2 to 10 pounds of active ingredient (isopropylamine salt) of glyphosate (such as Razor®, Razor® Pro, or AquaNeat®) per acre. Refer to the glyphosate product container for a list of species controlled.

IMAZAPYR

Tank mix 4 to 5.66 ounces of this product with 5 to 12 ounces of active ingredient (isopropylamine salt) of imazapyr (such as Nufarm Polaris® AC Complete) per acre. This tank mixture controls:

- | | |
|----------|-----------|
| Cherry | Oak water |
| Dogwood | Persimmon |
| Elms | Sassafras |
| Hickory* | Sweetgum |
| Oak, red | |

*Suppression – a visible reduction in plant population and/or plant vigor as compared to an untreated area and generally not accepted as control."

GLYPHOSATE + IMAZAPYR

Mix 3 to 4 ounces of this product with 8 to 32 ounces of active ingredient (isopropylamine salt) of glyphosate (such as Razor®, Razor® Pro, or AquaNeat®) plus 5 to 6 ounces of active ingredient (isopropylamine salt) of imazapyr (such as Nufarm Polaris® AC Complete) per acre. This tank mixture controls:

- | | |
|----------|-----------|
| Cherry | Oak water |
| Dogwood | Persimmon |
| Elms | Sassafras |
| Hickory* | Sweetgum |
| Oak, red | |

*Suppression - a visible reduction in plant population and/or plant vigor as compared to an untreated area and generally not accepted as control.

VELPAR® DF, VELPAR® L OR VELPAR® ULW

Tank mix 4 to 5.66 ounces of this product per acre with the rates specified on the Velpar® label for various soil textures. Refer to the Velpar® product label for a list of species controlled.

IMPROVED BRUSH CONTROL

Following a spring Velpar® ULW application, a tank mixture of this product at 4 ounces per acre plus a minimum of 2.5 ounces of active ingredient imazapyr (isopropylamine salt) (such as Nufarm Polaris® AC Complete) per acre will provide improved brush control.

These brush species include but are not limited to:

- | | |
|----------------------|-----------------------------|
| American beautyberry | <i>Callicarpa Americana</i> |
| Southern dewberry | <i>Rubus</i> spp. |
| Huckleberry | <i>Vaccinium</i> spp. |

Application should be made in the summer or fall following a spring application of Velpar® ULW. For best results make the application after brush species have completely defoliated twice following the Velpar® ULW application and refoilation of target brush species is evident.

This product applied at this time will provide herbaceous weed control into the early growing season of the year following application. This treatment also targets brush species remaining after the spring Velpar® ULW application.

Loblolly, slash and longleaf pine may be transplanted the planting season following application.

Where burning is desired, burn only after adequate rainfall has occurred to move this product into the soil. Soil disturbance from bedding or plowing may reduce spring herbaceous weed control.

CONIFER RELEASE

APPLICATION AFTER TRANSPLANTING

Apply this product after transplanting to control certain species of hardwoods, broadleaf weeds and grasses as listed in the **Weeds Controlled** listed in the **Non-Crop** section of this label

USE RATES FOR SELECTED SPECIES CHART

Use Rates After Transplanting Conifers

Species	Rate (ounces/acre)
Loblolly pine	2 - 2/3 to 4
Slash pine	2 - 2/3 to 3

TANK MIXTURES

HERBACEOUS WEED CONTROL

For loblolly pine, apply this product at 2 to 4 ounces per acre plus Imazapyr (such as Arsenal® AC Applicators Concentrate or Nufarm Polaris® AC Complete Herbicide) at 4 to 6 fluid ounces per acre.

For slash pine, apply this product at 2 ounces per acre plus Arsenal® AC or Polaris® AC Complete at 4 fluid ounces per acre. This tank mixture controls:

- | | |
|----------------|--------------|
| Common ragweed | Late boneset |
| Dogfennel | Panicgrass |
| Firewood | Pokeweed |

In addition to the herbaceous weeds listed, this tank mixture will aid in the suppression of perennial grasses such as bermudagrass and johnsongrass.

UNDESIRABLE HARDWOOD CONTROL

Apply 4 ounces of this product with 8 to 16 fluid ounces of imazapyr (such as Arsenal® AC or Nufarm Polaris® AC Complete) per acre to control herbaceous weeds, grasses and undesirable hardwoods. Some minor conifer growth inhibition may be observed when release treatments are made during periods of active conifer growth. To minimize potential conifer height growth inhibition, broadcast release treatments may be made late in the growing season.

For loblolly pine a registered conifer release surfactant may be added at the rate specified on the surfactant label.

For slash pine, over-the-top broadcast release treatments must be made after mid-August and only in stands 2 to 5 years old. For over-the-top applications to slash pine, **DO NOT** add a surfactant. For light (sandy) soils **DO NOT** exceed 12 fluid ounces of imazapyr (4 pounds a.l./gal., such as Arsenal® AC or Nufarm Polaris® AC Complete) per acre.

Tank mixture controls:

Ash	Myrtle dahoon
Black gum	Oak, red
Blackberry*	Oak, white
Cherry	Oak, water
Dogwood*	Persimmon*
Elms*	Red Maple*
Hawthorn	Sassafras
Hickories*	Sweetgum
Honeysuckle	Vaccinium
Hophornbeam	

*Suppression- a visible reduction in plant population and/or plant vigor as compared to an untreated area and generally not accepted as control.

SPECIFIC WEED PROBLEMS

SITE PREPARATION OR AFTER PLANTING

Kudzu

Apply 5.66 ounces of this product per acre as part of a kudzu abatement program. Retreatment of any re-sprouting kudzu crowns following the initial treatment is necessary to fully control kudzu. Make applications to kudzu after leaves are fully mature and the plant has begun to bloom. Applications may continue until first frost. Apply this product as a broadcast treatment for the initial application. Use spot-spray or broadcast follow-up applications as needed for thorough coverage. Thoroughly treat foliage and stems (spray-to-wet) without excess runoff. For handgun applications, use a minimum of 100 gallons per acre. Boom or boomless sprayer applications made by ground or air (helicopter only) equipment should use a minimum of 30 gallons per acre per application pass. Double-pass applications from different directions can improve spray coverage. Prior to planting use, a non-ionic surfactant (90% active ingredient) at the rate of 1 quart per 100 gallons of spray solution (0.25% v/v). After planting use a crop oil concentrate at the rate of 1 quart per 100 gallons of spray solution.

FERTILIZER IMPREGNATION

Dry bulk fertilizer may be impregnated or coated with this product for application in the establishment of conifer plantations.

IMPREGNATION

To impregnate the fertilizer, use a system consisting of a conveyor or closed drum used to blend dry bulk fertilizers such as potassium nitrate, sodium nitrate and triple super phosphate are not compatible with this product. Diammonium phosphate, potassium chloride, 16-16-16 and 24-4-4 have been used successfully. **DO NOT** use this product on limestone.

If fertilizer materials are excessively dusty, use a suitable additive to reduce dust prior to impregnation. Dusty fertilizer may result in poor distribution and excessive risk of drift during application. The dry fertilizer must be properly impregnated and uniformly applied to avoid potential tree injury or mortality and poor weed control.

Consult the **Application Rates** section of this label for the appropriate rate of this product to be used per acre. Apply this amount of this product to the volume of fertilizer to be applied per acre. To impregnate dry bulk fertilizer, mix the amount of this product as prescribed above in a sufficient quantity of water to uniformly coat the desired amount of fertilizer. Suspensions of this product will require thorough agitation. Direct the spray nozzles to deliver a fine spray of the mixture toward the fertilizer for uniform coverage. The use of a colorant may be beneficial to visually determine the uniformity of impregnation.

Impregnation of this product to dry bulk fertilizer may vary. If absorption of the impregnating spray by the fertilizer is not adequate, the use of an absorptive powder or additive, such as Microcel E (Johns Manville Product Company) or HiSil — 233 (Pittsburg Plate Glass) may be required to produce a dry, free-flowing mixture.

Apply impregnated fertilizer as soon as possible after impregnation for optimum performance. Impregnated fertilizer may become lumpy and difficult to apply following storage. Uniform and precise application of the fertilizer impregnated with this product is essential for satisfactory weed control and to minimize tree injury.

Follow the instructions for spray tank clean out on this label for cleaning the equipment used to impregnate, transport and apply the fertilizer. **DO NOT** use the impregnation, transport or application equipment to make subsequent applications to crops.

Low rates of this product can kill or severely injure most crops. Following an application of this product, the use of spray equipment to apply other pesticides to crops on which this product or its active ingredients are not registered may result in their damage. The most effective way to reduce this crop damage potential is to use dedicated mixing and application equipment.

BROADCAST APPLICATION

Applications may be made by ground or air (helicopter or fixed wing aircraft). Accurate calibration of the application equipment is essential for uniform distribution on the soil surface. Overlaps or skips between adjoining swaths or non-uniform distribution or impregnated fertilizer within the swath will deliver poor results and may result in tree injury or mortality.

IMPORTANT PRECAUTIONS & RESTRICTIONS CONIFER PLANTATIONS ONLY

Applications of this product made to conifers that are suffering from loss of vigor caused by insects, disease, drought, winter damage, animal damage, excessive soil moisture, planting shock, previous agricultural practices, or other stresses, may injure or kill trees.

Applications of this product made after transplanting should only be made after adequate rainfall has closed the planting slit and settled the soil around the roots following transplanting.

DO NOT apply this product to conifers grown for Christmas trees or ornamentals.

DO NOT use a surfactant with this product for herbaceous weed control when making over-the-top application to conifer seedlings in the spring after transplanting. A surfactant specifically registered for conifer release may be used when targeting specific weed problems such as undesirable hardwoods. Refer to the surfactant label for specified use rates.

Applications of this product may result in damage and mortality to other species of trees when they are present on sites with those listed in the preceding use instructions for conifer plantation uses.

NON-AGRICULTURAL USES

NON-CROP SITES

Application Information

Use this product for general weed control as follows: uncultivated non-agricultural areas (such as airports, highway, railroad, and utility rights-of-way, sewage disposal areas); uncultivated agricultural areas (non-crop producing, which includes: farmyards, fuel storage areas, fence rows, soil bank land, barrier strips); industrial sites (outdoor, such as lumberyards, pipeline and tank farms).

This product cannot be used on recreation areas or for direct application to paved areas (surfaces).

Apply this product as a preemergence or early postemergence spray before or during the rainy season when weeds are actively germinating or growing.

Apply by ground or helicopter.

Combination with other herbicides broadens the spectrum of weeds controlled. In addition, total vegetation control can be achieved with higher rates of this product plus residual-type companion herbicides. To improve the control of weeds, add surfactant at the rate of 0.25% by volume or at the rate specified on the manufacturer's label.

Apply this product at the rates indicated by weed type. When applied at lower rates, this product provides short-term control of weeds listed; when applied at higher rates, weed control is extended.

Maximum Application Rate:

Non-Agricultural Right-of Way: 0.281 lb ai per acre per application [8.0 oz. of product per acre per application].

Weeds Controlled

This product effectively controls the following broadleaf weeds and grasses when applied at the rates shown in non-crop sites:

2 - 2/3 to 3 Ounces Per Acre

Annual bluegrass	Common vetch	Maximillion sunflower	Snowberry, western
Annual sowthistle	Common yarrow	Medusahead	Spreading orach
Aster	Conical catchfly	Miners lettuce	Sweet clover
Bahiagrass	Corn cockle	Mousear chickweed	Tansy ragwort
Barnyardgrass	Cow cockle	Oxeye daisy	Tansy mustard
Beackchervil (bur, woodland)	Crown vetch	Pennsylvania smartweed	Treacle mustard
Bearded sprangletop	Dandelion	Pepperweed	Tumble mustard
Beebalm	Downy brome (cheat)	Plains coreopsis	Tumble pigweed
Bitter sneezeweed	False chamomile	Plantain	Western ragweed
Black mustard	Fescue	Poison hemlock	Wheat
Blackeyed-Susan	Fiddleneck tarweed	Prickly coontail	Whitetop
Blue mustard	Field pennycress	Red brome	Whitestem filaree
Bouncingbet	Flixweed	Red fescue	Wild barley
Bur buttercup	Florida pusley	Red root pigweed	Wild carrot
Bur clover	Foxtail barley	Redstem filaree	Wild garlic
Carolina geranium	Foxtail fescue	Reed Canarygrass	Wild lettuce
Chicory	Goldenrod	Riggut brome	Wild mustard
Clover	Green foxtail	Rough fleabane	Wild oat
Cocklebur	Hairy vetch	Rye	Wood sorrel
Common chickweed	Hop clover	Salsify	Woolly croton
Common groundsel	Houndstongue	Sandbur (southern, field)	Yankeweed
Common mallow	Italian ryegrass	Seashore saltgrass	Yellow foxtail
Common mullein	Japanese stiltgrass	Seaside heliotrope	
Common pokeweed	Johnsongrass	Shepherd's purse	
Common purslane	Jointed goatgrass	Signalgrass	
Common ragweed	Lambsquarters	Silky crazyweed	
Common speedwell	Little barley	Smallseed falseflax	
Common tansy	Marestail/horseweed*	Smooth pigweed	

*Certain biotypes of marestail/horseweed are less sensitive to this product and may be controlled by tank mixes with herbicides with a different mode of action.

3 to 4 Ounces Per Acre

Black henbane	Dewberry	Multiflora rose (wild rose)	Sericea lespedeza
Blackberry	Dogfennel	Musk thistle	Snowberry
Broom snakeweed	Dyer's woad	Panicums (annual)	St. Johnswort
Buckhorn plantain	Fireweed	Plumeless thistle	Teasel
Bull thistle	Gorse	Poorjoe	White snakeroot
Common crupina	Gumweed	Prostrate knotweed	Whitetop, hairy
Common sunflower	Halogeton	Rosering gaillardia	Wild caraway
Crabgrass	Henbit	Scotch thistle	
Curly dock	Honeysuckle	Seaside arrowgrass	

4 to 5 - 1/3 Ounces Per Acre

Crimson clover	Giant ragweed	Perennial pepperweed	Yellow nutsedge
Dogfennel	Little mallow	Purple starthistle	Yellow rocket
Giant foxtail	Palmer pigweed	Rush	

Note: Use the higher rate ranges under the following conditions:

- Heavy weed growth
- Soils containing more than 2-1/2% organic matter
- High soil moisture areas, such as along road edges or railroad shoulders

SPECIFIC WEED PROBLEMS NON-CROP SITES

Kochia, Russian thistle, and Prickly Lettuce

Since biotypes of kochia, marehail, Russian thistle, and prickly lettuce are known to be resistant to this product, tank mixture combinations with herbicides having different modes of action, such as Karmex® DF, HYVAR® X or KROVAR® I DF must be used. In areas where resistance is known to exist, these weeds should be treated postemergence with other herbicides registered for their control, such as dicamba (such as Vanquish® Herbicide, Diablo® Herbicide), or 2,4-D (such as Weedestroy® AM-40 Amine Salt). **DO NOT** allow kochia, Russian thistle or prickly lettuce to form mature seed.

Kudzu

Apply 8 ounces of this product per acre as part of kudzu abatement program. Retreatment of any re-sprouting kudzu crowns following the initial treatment is necessary to fully control kudzu. Make applications to kudzu after leaves are fully mature and the plant has begun to bloom. Applications may continue until first frost. Apply this product as a broadcast treatment for the initial application. Use sport-spray or broadcast follow-up applications as needed for thorough coverage. Thoroughly treat foliage and stems (spray-to-wet) without excess runoff. For handgun applications use a minimum of 100 gallons per acre. Boom or boom-less sprayer applications made by ground or air (helicopter only) equipment should use a minimum of 30 gallons per acre per application pass. Double-pass applications from different directions can improve spray coverage. Use a non-ionic surfactant (90% active ingredient) or crop oil concentrate at the rate of 1 quart per 100 gallons of spray solution (0.25% v/v).

TANK MIX COMBINATIONS

To improve preemergence to early postemergence control of weeds and grasses, add 2 - 2/3 to 5 - 1/3 ounces of this product per acre to the specified label rates of the following herbicides: HYVAR® X herbicide, Karmex® DF herbicide, KROVAR® I DF herbicide, VELPAR® L herbicide, VELPAR® DF herbicide, TELAR® herbicide, glyphosate (such as Razor® Herbicide, Razor® Pro Herbicide, AquaNeat® Aquatic Herbicide), dicamba (such as Vanquish® Herbicide, Diablo® Herbicide), or 2,4-D (such as Weedestroy® AM-40 Amine Salt).

Apply this product plus a combination herbicide at the rates and timing as shown on package labels for target weeds. For application method and other specifications, use the most restrictive directions for the intended combination.

DO NOT tank mix this product with HYVAR® X-L herbicide.

INDUSTRIAL TURFGRASS

APPLICATION INFORMATION

This product is used to control weeds on unimproved turf, on roadsides, or on other non-crop sites where the turfgrass is well established as a ground cover. Applications may temporarily suppress grass growth and inhibit seedhead formation (chemical mowing).

BERMUDAGRASS RELEASE

APPLICATION TIMING

Apply this product at 1/2 to 2 ounces per acre after bermudagrass has broken dormancy and is well established, usually 30 days after initial spring flush. If additional applications are necessary, apply this product again during late spring early summer. On established weeds, apply this product one to two weeks after mowing for the best results.

This product may also be applied in late fall or early winter. Use the lower rates on small seedling weeds and higher rate on larger weeds.

CENTIPEDEGRASS RELEASE

APPLICATION TIMING

Apply 1/2 to 2 ounces per acre of this product in the fall or early winter, or in the early summer following green-up of the centipede. Refer to the listing of **Weeds Controlled** in this section for use rates and species controlled.

SMOOTH BROME AND CRESTED WHEATGRASS RELEASE AND SUPPRESSION APPLICATION TIMING

Apply 1/2 to 1 - 1/2 ounces of this product per acre to turf after green-up and before seedheads emerge (boot stage). Ensure that desirable grasses are well established at application, as premature treatment may result in top kill and stand reduction of desirable turf. Make only one application per year.

WEEDS CONTROLLED

This product may be used to control the following weeds in turf (unimproved only) when applied at the use rates shown.

1/2 to 1 Ounce Per Acre

Asters (except heath aster)	Common sunflower	Field pennycress	Redroot pigweed
Buttercups	Common vetch	Fleabanes	Sweetclover
Common broomweed	Common yarrow	Goldenrod	Tansy mustard
Common chicory	Curly dock	Little barley	White clover
Common chickweed	False chamomile	Mouseear chickweed	Wild garlic

1 to 2 Ounces Per Acre

Bitter sneezeweed	Common ragweed	Hopclover	Redstem filaree
Buckhorn plantain	Crimson clover	Japanese stiltgrass	Tumble mustard
Carolina geranium	Eveningprimrose	Jointed goatgrass	Wild carrot
Cheat (Downy brome)	Foxtail barley	Medusahead	Wild oats
Common dandelion	Giant ragweed	Musk thistle	Wild parsnip
Common mullein	Hairy vetch	Prairie coneflower	

USE PRECAUTIONS - INDUSTRIAL TURFGRASS

Excessive injury to turf may result if a surfactant is used with this product applications made to actively growing turfgrass. The user assumes all responsibility for turf injury if a surfactant is used with this product treatments applied to actively growing turf.

This product may temporarily discolor or cause top kill of turf grasses. Applications made while turf is dormant may delay green-up in the spring.

Annual retreatments may reduce vigor, particularly at the higher specified rates, where bahiagrass, crested wheatgrass and smooth brome are grown.

Applications of this product on turf that is under stress from drought, insects, disease, cold temperatures or late spring frost may result in injury.

GRASS REPLANT INTERVALS

Following a treatment with this product, at use rates up to 2 ounces per acre, the following grasses may be replanted:

Alta fescue	Smooth brome
Meadow foxtail	Sheep fescue
Orchardgrass	Western wheatgrass

The intervals are used for soils with a pH of less than 7.5. Soils having a pH greater than 7.5 will require longer intervals. The intervals are for applications made in the spring. Because degradation of this product is slowed by cold or frozen soils, applications made in the fall should consider the intervals as beginning in the spring following treatment.

Testing has indicated that there is considerable variation in response among species of grasses when seeded into areas treated with this product. If species other than those listed above are to be planted into areas treated with this product a field bioassay should be performed, or previous experience may be used to determine the feasibility of replanting treated areas.

ADDITIONAL PRECAUTIONS AND RESTRICTIONS FOR AGRICULTURAL AND NON-AGRICULTURAL USES

Injury to or loss may occur if equipment is drained or flushed on or near desirable trees or other plants, or on areas where their roots may extend, or in locations where the chemical may be washed or moved into contact with their roots.

Treated soil should be left undisturbed to reduce the potential for movement of this product by soil erosion due to wind or water.

Treatment of powdery, dry soil or light, sandy soil when there is little likelihood of rainfall soon after treatment may result in off target movement and possible damage to susceptible crops when soil particles are moved by wind or water. Injury to crops may result if treated soil is washed, blown, or moved onto land used to produce crops. Exposure to this product may injure or kill most crops. Injury may be more severe when the crops are irrigated. **DO NOT** apply this product when these conditions are identified and powdery, dry soil or light or sandy soils are known to be prevalent in the area to be treated.

Applications made where runoff water flows onto agricultural land may injure crops. Applications made during periods of intense rainfall, to soils saturated with water, surfaces paved with materials such as asphalt or concrete, or soils through which rainfall will not readily penetrate may result in runoff and movement of this product.

DO NOT treat frozen soil.

DO NOT use on lawns, walks, driveways, tennis courts, or similar areas.

Keep from contact with fertilizers, insecticides, fungicides, and seeds.

DO NOT apply in or on irrigation ditches or canals including their outer banks.

DO NOT apply through any type of irrigation system.

Low rates of this product can kill or severely injure most crops. Following an application of this product, the use of spray equipment to apply other pesticides to crops on which this product is not registered may result in their damage. The most effective way to reduce this crop damage potential is to use dedicated mixing and application equipment.

DO NOT use this product in the following counties Colorado: Saguache, Rio Grande, Alamosa, Costilla and Conejos.

If noncrop or forested sites treated with this product are to be converted to a food, feed, or fiber agricultural crop, or to horticultural crop, **DO NOT** plant the treated sites for at least one year after the application of this product. A field bioassay must then be completed before planting to crops.

DO NOT use this product in California.

FIELD BIOASSAY

To conduct a field bioassay, grow to maturity test strips of the crop(s) you plan to grow the following year. The test strips should cross the entire field including knolls and low areas. Crop response to the bioassay will indicate whether or not to plant the crops(s) grown in the test strips. In the case of suspected offsite movement of this product to cropland, soil samples should be quantitatively analyzed for this product or any other herbicide which could be having an adverse effect on the crop, in addition to conducting the above-described bioassay.

STORAGE AND DISPOSAL

DO NOT contaminate water, food, or feed by storage and disposal.

PESTICIDE STORAGE: Store product in original container only. Store in cool, dry place.

PESTICIDE DISPOSAL: Waste resulting from the use of this product must be disposed of on site or at an approved waste facility.

CONTAINER DISPOSAL: Non-refillable 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. 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 flow begins to drip. Repeat this procedure two more times.

WARRANTY DISCLAIMER

The directions for use of this product must be followed carefully. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, (1) THE GOODS DELIVERED TO YOU ARE FURNISHED "AS IS" BY MANUFACTURER OR SELLER AND (2) MANUFACTURER AND SELLER MAKE NO WARRANTIES, GUARANTEES, OR REPRESENTATIONS OF ANY KIND TO BUYER OR USER, EITHER EXPRESS OR IMPLIED, OR BY USAGE OF TRADE, STATUTORY OR OTHERWISE, WITH REGARD TO THE PRODUCT SOLD, INCLUDING, BUT NOT LIMITED TO MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, USE, OR ELIGIBILITY OF THE PRODUCT FOR ANY PARTICULAR TRADE USAGE. UNINTENDED CONSEQUENCES, INCLUDING BUT NOT LIMITED TO INEFFECTIVENESS, MAY RESULT BECAUSE OF SUCH FACTORS AS THE PRESENCE OR ABSENCE OF OTHER MATERIALS USED IN COMBINATION WITH THE GOODS, OR THE MANNER OF USE OR APPLICATION, INCLUDING WEATHER, ALL OF WHICH ARE BEYOND THE CONTROL OF MANUFACTURER OR SELLER AND ASSUMED BY BUYER OR USER. THIS WRITING CONTAINS ALL OF THE REPRESENTATIONS AND AGREEMENTS BETWEEN BUYER, MANUFACTURER AND SELLER, AND NO PERSON OR AGENT OF MANUFACTURER OR SELLER HAS ANY AUTHORITY TO MAKE ANY REPRESENTATION OR WARRANTY OR AGREEMENT RELATING IN ANY WAY TO THESE GOODS.

LIMITATION OF LIABILITY

TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, IN NO EVENT SHALL MANUFACTURER OR SELLER BE LIABLE FOR SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, OR FOR DAMAGES IN THEIR NATURE OF PENALTIES RELATING TO THE GOODS SOLD, INCLUDING USE, APPLICATION, HANDLING, AND DISPOSAL. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, MANUFACTURER OR SELLER SHALL NOT BE LIABLE TO BUYER OR USER BY WAY OF INDEMNIFICATION TO BUYER OR TO CUSTOMERS OF BUYER, IF ANY, OR FOR ANY DAMAGES OR SUMS OF MONEY, CLAIMS OR DEMANDS WHATSOEVER, RESULTING FROM OR BY REASON OF, OR ARISING OUT OF THE MISUSE, OR FAILURE TO FOLLOW LABEL WARNINGS OR INSTRUCTIONS FOR USE, OF THE GOODS SOLD BY MANUFACTURER OR SELLER TO BUYER. TO THE

EXTENT CONSISTENT WITH APPLICABLE LAW, IN NO EVENT SHALL ALL SUCH RISKS SHALL BE ASSUMED BY THE BUYER, USER, OR ITS CUSTOMERS. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, BUYER'S OR USER'S EXCLUSIVE REMEDY, AND MANUFACTURER'S OR SELLER'S TOTAL LIABILITY SHALL BE FOR DAMAGES NOT EXCEEDING THE COST OF THE PRODUCT.

If you do not agree with or do not accept any of the directions for use, the warranty disclaimers, or limitations on liability, do not use the product, and return it unopened to the Seller, and the purchase price will be refunded.

(RV092713)

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GROUP 2 HERBICIDE

SPYDER® Extra

SELECTIVE HERBICIDE

Dispersible Granules	
ACTIVE INGREDIENTS:	
Sulfometuron Methyl:	
Methyl 2-[[[4,6-dimethyl-2-pyrimidinyl)amino]-carbonyl]amino]sulfonyl]benzoate	56.25%
Metsulfuron Methyl:	
Methyl 2-[[[4-methoxy-6-methyl-1,3,5-triazin-2-yl)amino]-carbonyl]amino]sulfonyl]benzoate.....	15.00%
OTHER INGREDIENTS:	28.75%
TOTAL:	100.00%

PULL HERE TO OPEN

**KEEP OUT OF REACH OF CHILDREN
CAUTION**

SEE INSIDE BOOKLET FOR FIRST AID AND ADDITIONAL PRECAUTIONARY STATEMENTS

For Chemical Spill, Leak, Fire, or Exposure, Call CHEMTREC (800) 424-9300
For Medical Emergencies Only, Call (877) 325-1840

**PRECAUTIONARY STATEMENT
HAZARDS TO HUMANS AND
DOMESTIC ANIMALS
CAUTION**

Harmful if absorbed through skin. Causes moderate eye irritation. Avoid contact with skin, eyes, or clothing.

FIRST AID	
IF ON SKIN OR CLOTHING	<ul style="list-style-type: none"> Take off contaminated clothing. Rinse skin immediately with plenty of water for 15 to 20 minutes. Call a poison control center or doctor for treatment advice.
IF IN EYES	<ul style="list-style-type: none"> Hold eye open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

HOT LINE NUMBER

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-877-325-1840 for emergency medical treatment information.

EPA Reg. No. 228-690
EPA Est. No. 67997-IL-003

Net Wt. 5 Pounds (2.26 kg)

STORAGE AND DISPOSAL

DO NOT contaminate water, food, or feed by storage and disposal.

PESTICIDE STORAGE: Store product in original container only. Store in cool, dry place.

PESTICIDE DISPOSAL: Waste resulting from the use of this product must be disposed of on site or at an approved waste facility.

CONTAINER DISPOSAL: Non-refillable 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. 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 flow begins to drip. Repeat this procedure two more times.

Product of China

Manufactured for
Nufarm Americas Inc.
11901 S. Austin Avenue
Alsip, IL 60803

13015000 [1]

(RV092713)



1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Spyder Extra Selective Herbicide
EPA Reg. No.: 228-690
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 on the FIFRA label. Certain sections are superseded by federal law governed by EPA for a registered pesticide. Please see Section 15. REGULATORY INFORMATION for explanation.

2. HAZARDS IDENTIFICATION

PHYSICAL HAZARDS:

Not hazardous

HEALTH HAZARDS:

Eye Irritation	Category 2B
Carcinogen	Category 1A
Specific Target Organ Toxicity – Repeat Exposure	Category 1

ENVIRONMENTAL HAZARDS:

Hazardous to aquatic environment, acute	Category 1
Hazardous to aquatic environment, chronic	Category 1

SIGNAL WORD:

DANGER

HAZARD STATEMENTS:

Causes eye irritation. May cause cancer by inhalation. Causes damage to lungs through prolonged or repeated exposure. Very toxic to aquatic life with long lasting effects.



PRECAUTIONARY STATEMENTS

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust. Wash thoroughly after handling. Do not eat, drink, or smoke when using this product. Use personal protective equipment as required. Avoid release to the environment.

IF exposed or concerned: Get medical advice. Get medical advice if you feel unwell.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice. Collect spillage.

Store locked up.

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

3. COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENTS	CAS NO.	% BY WEIGHT
Sulfometuron Methyl	74222-97-2	54.5 – 58
Metsulfuron Methyl	74223-64-6	14.25 – 15.75
Limestone	1317-65-3	12.4 – 13.7
Cyrstalline Silica (quartz)	14808-60-7	<0.30
Proprietary process impurities	Trade Secret	Trade Secret

Synonyms: Mixture containing Sulfometuron methyl (methyl 2-(4,6-dimethylpyrimidin-2-ylcarbamoysulfamoyl)benzoate) and Metsulfuron methyl (methyl 2-(4-methoxy-6-methyl-1,3,5-triazin-2-ylcarbamoysulfamoyl)benzoate)

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

4. FIRST AID MEASURES

If on Skin or Clothing: Take off contaminated clothing. Rinse skin with plenty of water for several minutes. Call a poison control center or doctor for treatment advice.

If in Eyes: Hold eye open and rinse slowly and gently with water for several minutes. Remove contact lenses, if present, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

If Swallowed: Call a poison control center or doctor for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

If Inhaled: Move person to fresh air. If breathing is difficult, administer oxygen. If symptoms develop, get medical advice.

Most important symptoms/effects, acute and delayed: May cause mild eye irritation. May cause slight skin irritation. Prolonged or repeated inhalation may cause lung damage or cancer.

Indication of immediate medical attention and special treatment needed, if necessary: Immediate medical attention should not be required.

5. FIRE FIGHTING MEASURES

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

Special Fire Fighting Procedures: Firefighters should wear NIOSH approved self-contained breathing apparatus and full fire-fighting turn out gear. Dike area to prevent runoff and contamination of water sources. Dispose of fire control water later.

Unusual Fire and Explosion Hazards: If water is used to fight fire, contain runoff, using dikes to prevent contamination of water supplies. Dispose of fire control water later.

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

6. ACCIDENTAL RELEASE MEASURES

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

Environmental Precautions: Prevent material from entering public sewer systems or any waterways. Do not flush to drain. Large spills to soil or similar surfaces may necessitate removal of topsoil. The affected area should be removed and placed in an appropriate container for disposal.

Methods for Containment: Dike spill using absorbent or impervious materials such as earth, sand or clay. Collect and contain contaminated absorbent and dike material for disposal.

Methods for Cleanup and Disposal: If dry, sweep or scoop up material and place into container for disposal. If wet, pump any free liquid into an appropriate closed container. Decontaminate tools and equipment following cleanup. See Section 13: DISPOSAL CONSIDERATIONS for more information.

Other Information: Large spills may be reportable to the National Response Center (800-424-8802) and to state and/or local agencies.

7. HANDLING AND STORAGE

HANDLING:

Avoid contact with eyes or clothing. Users should wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.

STORAGE:

Store product in original container only. Do not contaminate water, food, or feed by storage and 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: Not normally required. To avoid contact with eyes, wear chemical goggles or shielded safety glasses. An emergency eyewash or water supply should be readily accessible to the work area.

Skin Protection: To avoid contact with skin, wear long pants, long-sleeved shirt, socks and shoes. An emergency shower or water supply should be readily accessible to the work area.

Respiratory Protection: Not normally required. If vapors or mists exceed acceptable levels, wear NIOSH approved air-purifying respirator with cartridges/canisters approved for use against pesticides.

General Hygiene Considerations: Personal hygiene is an important work practice exposure control measure and the following general measures should be taken when working with or handling this material: 1) do not store, use and/or consume foods, beverages, tobacco products, or cosmetics in areas where this material is stored; 2) wash hands and face carefully before eating, drinking, using tobacco, applying cosmetics or using the toilet.

Exposure Guidelines:

Component	OSHA		ACGIH		Unit
	TWA	STEL	TWA	STEL	
Sulfometuron Methyl	NE	NE	NE	NE	
Metsulfuron Methyl	NE	NE	NE	NE	
Limestone	15 (T) 5 (R)	NE	NE	NE	mg/m ³
Crystalline Silica (quartz)	30 / %SiO ₂ +2 (T) 10 / %SiO ₂ +2 (R)	NE	0.025 (R)	NE	mg/m ³
Other Ingredients	NE	NE	NE	NE	

NE = Not Established

T = Total Dust

R = Respirable fraction

9. PHYSICAL AND CHEMICAL PROPERTIES
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Appearance:	Tan colored granules
Odor:	Faint
Odor threshold:	No data available
pH:	7.54 (1% w/w dispersion in DIW)
Melting point/freezing point:	No data available
Initial boiling point and boiling range	No data available
Flash point:	No data available
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:	1.2562 g / cc (tap)
Solubility(ies):	No data available
Partition coefficient: n-octanol/water:	No data available
Autoignition temperature:	No data available
Decomposition temperature:	No data available
Viscosity:	Not applicable due to product form (Solid)

Note: Physical data are typical values, but may vary from sample to sample. A typical value should not be construed as a guaranteed analysis or as a specification.

10. STABILITY AND REACTIVITY

Reactivity: Not reactive.

Chemical Stability: This material is stable under normal handling and storage conditions.

Possibility of Hazardous Reactions: Will not occur

Conditions to Avoid: Keep away from heat, sparks and open flame. Minimize dust generate and accumulation.

Incompatible Materials: Not known.

Hazardous Decomposition Products: Under fire conditions may produce oxides of carbon and nitrogen.

11. TOXICOLOGICAL INFORMATION

Likely Routes of Exposure: Inhalation, Eye contact, Skin contact.

Symptoms of Exposure:

Eye Contact: Mildly irritating based on toxicity studies.

Skin Contact: Minimally toxic and slightly irritating based on toxicity studies.

Ingestion: Slightly toxic if ingested based on toxicity studies.

Inhalation: Low inhalation toxicity. May cause cancer or lung damage through prolonged or repeated exposure.

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

Toxicological Data:

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

Oral: Rat LD₅₀: >5,000 mg/kg

Dermal: Rabbit LD₅₀: >2,000 mg/kg

Inhalation: Rat 4 hr: > 2.09 mg/L (no mortalities at highest dose tested).

Eye Irritation: Rabbit: Mildly irritating (MMTS=11.3)

Skin Irritation: Rabbit: Slightly irritating (PDII= 0.4)

Skin Sensitization: Not a contact sensitizer in guinea pigs following repeated skin exposure.

Subchronic (Target Organ) Effects: Repeated overexposure to sulfometuron-methyl may cause decreased body weight gain, liver changes, red blood cell hemolysis and altered white blood cell counts. Prolonged or repeated inhalation may cause cancer or lung damage.

Carcinogenicity / Chronic Health Effects: Prolonged overexposure to sulfometuron-methyl can cause mild hemolytic anemia, decreased body weight, alteration of clinical chemical parameters, and changes in the bile duct. There was no evidence of carcinogenicity in animal studies using sulfometuron-methyl. The carrier for this product is not listed as a carcinogen. However, it may contain crystalline silica (e.g. quartz), a naturally occurring component. Inhalation of crystalline silica may cause pulmonary fibrosis (silicosis). Crystalline silica has been classified by IARC as carcinogenic to humans (Group 1), by the U.S. National Toxicology Program as a known human carcinogen and by ACGIH as a suspected human carcinogen (A2).

Reproductive Toxicity: In a two-generation reproduction study in rats with sulfometuron-methyl, decreased numbers of pups were observed at the 5,000 ppm level, a dose that was also maternally toxic. No reproductive effects were observed at 500 ppm.

Developmental Toxicity: Animal tests with sulfometuron-methyl have not demonstrated developmental effects.

Genotoxicity: Sulfometuron-methyl did not produce genetic damage in bacterial or mammalian cell cultures.

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

Component	Regulatory Agency Listing As Carcinogen			
	ACGIH	IARC	NTP	OSHA
Sulfometuron Methyl	No	No	No	No
Crystalline Silica (quartz)	A2	1	Known	No
Other Ingredients	No	No	No	No

12. ECOLOGICAL INFORMATION

Ecotoxicity:

Data on Sulfometuron-methyl:

96-hour LC ₅₀ Bluegill:	>150 mg/l	Bobwhite Quail 8-day Dietary LC ₅₀ :	>5,620 ppm
96-hour EC ₅₀ Rainbow Trout:	>148 mg/l	Mallard Duck 8-day Dietary LC ₅₀ :	>5,000 ppm
48-hour EC ₅₀ Daphnia:	>150 mg/l	Mallard Duck Oral LD ₅₀ :	>5,000 mg/kg
120-hour EC ₅₀ Green Algae:	0.0046 mg/l		

Data on Metsulfuron-methyl technical:

SAFETY DATA SHEET

Spyder Extra Selective Herbicide

96-hour LC ₅₀ Bluegill:	>150 mg/l	Bobwhite Quail 8-day Dietary LC ₅₀ :	>5,620 ppm
96-hour EC ₅₀ Rainbow Trout:	>150 mg/l	Mallard Duck 8-day Dietary LC ₅₀ :	>5,620 ppm
48-hour EC ₅₀ Daphnia:	>150 mg/l	Mallard Duck Oral LD ₅₀ :	>2,510 mg/kg
72-hour EC ₅₀ Green Algae	0.045 mg/l	Honey Bee Contact LD ₅₀ :	>25 ug/bee

Environmental Fate:

Sulfometuron-methyl is moderately mobile in the environment but rapidly degrades. Sulfometuron-methyl is degraded by microbial action, photodegradation and hydrolysis. It will degrade more rapidly under acidic conditions, and in soils with higher moisture and organic contents and higher temperature. The photolysis half-life in soil is between 1 to 2 weeks. The hydrolysis soil half-life is reported as 4 weeks with longer times in colder conditions. In well aerated acidic water, sulfometuron-methyl is broken down quickly with reported half-lives from 1 to 3 days to 2 months. Metsulfuron-methyl is relatively mobile in most soils, but will be retained longer in soils with higher percentages of organic matter. It is more mobile in alkaline soils than in acidic soils. Metsulfuron-methyl will degrade faster under acidic conditions, and in soils with higher moisture contents and higher temperature. Metsulfuron-methyl is stable to photolysis, but will break down in ultraviolet light. Half-life estimates in soil range from 14 to 180 days, with an average of 30 days. Metsulfuron-methyl is stable to hydrolysis at neutral and alkaline pHs. The estimated half-life in acidic water is 3 weeks.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method:

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

Non-refillable 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. 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 flow begins to drip. Repeat this procedure two more times.

14. TRANSPORTATION INFORMATION

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

DOT

Non Regulated

IMDG

UN 3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, NOS, (METSULFURON-METHYL), 9, III, MARINE POLLUTANT

IATA

UN 3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, NOS, (METSULFURON-METHYL), 9, III, MARINE POLLUTANT

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. Harmful if absorbed through skin. Causes moderate eye irritation. Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet.

U.S. FEDERAL REGULATIONS

TSCA Inventory: This product is exempted from TSCA because it is solely for FIFRA regulated use.

SAFETY DATA SHEET

Spyder Extra Selective Herbicide

SARA Hazard Notification/Reporting:

Hazard Categories Under Criteria of SARA Title III Rules (40 CFR Part 370):

Acute Health, Chronic Health

Section 313 Toxic Chemical(s):

None

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

None

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: 1 Flammability: 1 Reactivity: 0

Hazards Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

This Safety Data Sheet (SDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-ACCEPTED PRODUCT LABELING (attached to and accompanying the product container). This SDS provides important health, safety and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use, while the labeling provides that information specifically for product use in the ordinary course.

Use, storage and disposal of pesticide products are regulated by the EPA under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) through the product labeling, and all necessary and appropriate precautionary, use, storage, and disposal information is set forth on that labeling. It is a violation of Federal law to use a pesticide product in any manner not prescribed on the EPA-accepted label.

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